

Chapter 2: Calendars of the Greek East under Rome: a new look at the *Hemerologia* tables

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I. INTRODUCTION

The term *Hemerologia* identifies a set of calendar conversion tables preserved in a few early medieval Greek manuscripts. They list in parallel columns the days of the month of the Roman (Julian) calendar and those of a number of local calendars of the provinces and cities of the eastern half of the Roman Empire. The manuscripts comprise separate tables for each of the twelve months of the Julian calendar. The Julian calendar thus serves as common reference point; its days are listed in the first column, while the other columns give the equivalent days in thirteen to fifteen different calendars of the Roman East. Different *Hemerologia* tables are known in four manuscripts:

1. Leiden, Bibliotheek der Rijksuniversiteit, *BPG* 78, ff. 145v–150v, 152 (<http://hdl.handle.net/1887.1/item:1597397>)
2. Città del Vaticano, Biblioteca Apostolica Vaticana, *Vat.gr.* 1291, ff. 10-15v (https://digi.vatlib.it/view/MSS_Vat.gr.1291)
3. Firenze, Biblioteca Medicea Laurenziana, *Plut.* 28.26, ff. 45r–50v (<http://mss.bmlonline.it/catalogo.aspx?Collection=Plutei&Shelfmark=Plut.28.26>)
4. Firenze, Biblioteca Medicea Laurenziana, *Plut.* 28.12, ff. 187r–192v (<http://mss.bmlonline.it/catalogo.aspx?Collection=Plutei&Shelfmark=Plut.28.12>).¹

The earliest manuscripts are *Leidensis BPG 78* and *Vaticanus gr.* 1291, which were both copied in the early ninth century; *Laurentianus* 28.26 has been attributed to the late ninth or early tenth century, while *Laurentianus* 28.12 is a fourteenth century copy of the Leiden manuscript.² The only full

¹ While *Leidensis BPG 78*, *Laurentianus* 28.26, and *Laurentianus* 28.12 include thirteen calendars of the Roman East, the eastern calendars are fifteen in *Vaticanus gr.* 1291.

² The *Hemerologia* tables included in *Leidensis BPG 78* belong to the earliest portion of the codex, traditionally dated to 813–20; A. Tihon, *Πτολεμαίου Πρόχειροι Κανόνες. Les 'Tables Faciles' de Ptolémée volume 1a. Tables A1-A2. Introduction, édition critique* (Publications de l'Institut Orientaliste de Louvain 59a; Louvain-La-Neuve : Peeters, 2011), pp. 24–25, 30–31. There is a general consensus that the *Hemerologia* in *Vaticanus gr.* 1291 should be assigned approximately to the same period; T. Janz, 'The scribes and the date of the *Vat. gr.* 1291', *Miscellanea Bibliothecae Apostolicae Vaticanae*, X (Vatican City: Biblioteca Apostolica Vaticana, 2003), pp. 159–80; Tihon, *Πτολεμαίου Πρόχειροι Κανόνες*, p. 34. Different dates were proposed, e.g., by I. Spatharakis, 'Some observations on the Ptolemy MS. *Vat. gr.* 1291: its date and the two initial miniatures', *Byzantinische Zeitschrift* 71 (1978), pp. 41–49; A. Cutler and J.-M. Spieser, *Byzance médiévale: 700-1204* (Paris: Gallimard, 1996), p. 46. The *Hemerologia* in *Laurentianus* 28/26 were copied between 886 and 912; D. Bianconi, 'Il *Laur. Plut.* 28.26 ovvero la storia di Bisanzio nella storia di un codice', in M. D'Agostino (ed.), *Alethes Philia. Studi in onore di Giancarlo Prato* (Collectanea, 23; Spoleto: Fondazione Centro italiano di studi sull'alto Medioevo, 2010); P. Orsini, 'Genesi e articolazioni della "maiuscola liturgica"', in A. Bravo Garcia (ed.), *The Legacy of Bernard de Montfaucon: Three Hundred Years of Studies on Greek Handwriting. Proceedings of the Seventh International Colloquium of Greek Palaeography (Madrid - Salamanca, 15-20 September 2008)* (Turnhout: Brepols, 2010), pp. 17–35, 669–82, esp. 33–4; Tihon, *Πτολεμαίου Πρόχειροι Κανόνες*, p. 24. *Laurentianus* 28/12 belongs to the fourteenth century and is a copy of *Leidensis BPG 78*; see, most recently, J. Lempire, *Le commentaire astronomique aux Tables Faciles de Ptolémée attribué à Stéphanos d'Alexandrie* (Publications de

edition of the *Hemerologia* was produced by Wilhelm Kubitschek, who published the tables in 1915.³ Kubitschek edited the manuscripts with transcriptions and critical commentary. He also compared the data of the *Hemerologia* to that of epigraphic, literary, and documentary sources, and offered on this basis a detailed analysis of the calendars of the provinces and cities of the eastern half of the Roman Empire.

[Figure 2.1. *Hemerologion*, month of September (ms Firenze, Biblioteca Medicea Laurenziana, Plut. 28.26, fol. 49r). Courtesy of MiBAC. Further reproduction in any medium is prohibited.]

Figure 2.1 shows the September table from *Laurentianus* 28.26. On the first column to the left, under the heading Ῥωμαίων / Σεπτέμβριος, which can be resolved as '(calendar) of the Romans – (month of) September', are listed the days of the month of September in the Julian calendar: the three fixed dates of the Roman month –calends, nones, ides– are labelled as καλ^ς (for καλάνδαι), νων^ς (for νῶναι), and εἶδοί, in the first, third, and seventh box, respectively (each box contains two days). For the other days of the month, Greek numerals and the Roman system are simultaneously used: for instance, the calends (καλ^ς) are followed by the Greek letter delta, which indicates (by Roman inclusive reckoning) the fourth day before the nones of September; after the nones (νων^ς) is an eta, marking the eighth day before the ides, and so on. The other columns refer to a number of calendars of the Roman East and give each day, in these local calendars, equivalent to each Roman month day. In the heading line, next to Ῥωμαίων / Σεπτέμβριος, are Ἀλεξανδρέων / Θωθ, (calendar) of the Alexandrians – (month of) Thoth,⁴ Ἑλλήνων / Γορπιῆος, (calendar) of the *Hellenes*, (month of) Gorpieos,⁵ Τυρίων / Λῶος, (calendar) of the Tyrians,⁶ (month of) Loos, Ἀράβων / Γορπιῆος, (calendar) of the *Araboi*, (month of) Gorpieos,⁷ etc. The last column on the right was designed to track the days

l'Institut Orientaliste de Louvain 68; Louvain-La-Neuve: Peeters Publishers, 2016), pp. 13–14. Tihon, *Πολεμίου Πρόχειροι Κανόνες*, p. 48, assigns it more specifically to the first half of the century.

³ W. Kubitschek, *Die Kalenderbücher von Florenz, Rom und Leyden* (Vienna: Hölder, 1915). On the *Hemerologia* see also H. Lietzmann, *Zeitrechnung der römischen Kaiserzeit: des Mittelalters und der Neuzeit für die Jahre 1-2000 nach Christus* (Berlin-Leipzig: Walter de Gruyter, 1934), pp. 78–81, 106–17; U. Laffi, 'Le iscrizioni relative all'introduzione nel 9 a.C. del nuovo calendario della provincia d'Asia', *Studi classici e orientali* 16 (1967), pp. 5–98, esp. 72–5; A.E. Samuel, *Greek and Roman Chronology: Calendars and Years in Classical Antiquity* (Munich: C.H. Beck, 1972), pp. 171–78; idem, A.E. Samuel, 'Calendars and time-telling', in M. Grant and R. Kitzinger (eds), *Civilization of the Ancient Mediterranean: Greece and Rome Vol. 1* (New York: Scribner's, 1988), pp. 389–95, esp. 394; Y.E. Meimaris and K.I. Kritikakou-Nikolaropoulou, *Inscriptions from Palaestina Tertia, Ia: The Greek Inscriptions from Ghor Es-Safi (Byzantine Zoora)* (Meletemata 41; Athens: National Hellenic Research Foundation, 2005), pp. 35–36; S. Stern, *Calendars in Antiquity. Empires, States, and Societies* (Oxford: Oxford University Press, 2012), pp. 260–62.

⁴ The label Ἀλεξανδρέων refers to the Egyptian calendar after it was modified to adapt to the Julian in 22 BCE. On the Alexandrian calendar: V. Grumel, *Traité d'études byzantines. I. La chronologie* (Paris: Presses Universitaires de France, 1958), pp. 166–8; R. Hannah, *Greek and Roman Calendars: Constructions of Time in the Classical World* (London: Duckworth, 2005), pp. 85–91; C. Bennett, 'The early Augustan calendars in Rome and Egypt', *Zeitschrift für Papyrologie und Epigraphik* 142 (2003), pp. 221–40; C. Bennett, 'The two Egyptian birthdays of Augustus', *Zeitschrift für Papyrologie und Epigraphik* 161 (2007), pp. 195–98; Stern, *Calendars in Antiquity*, pp. 263–69.

⁵ As already recognised by Kubitschek (*Kalenderbücher*, pp. 81, 101), the calendar of the *Hellenes* identifies with the so-called calendar of Antioch, on which see especially Stern, *Calendars in Antiquity*, Ch. 5. Cf. Grumel, *Traité d'études byzantines*, p. 174; Samuel, *Greek and Roman Chronology*, p. 174.

⁶ See Grumel, *Traité d'études byzantines*, pp. 173–74; Samuel, *Greek and Roman Chronology*, p. 176; Y.E. Meimaris, in collaboration with K. Kritikakou and P. Bougia, *Chronological Systems in Roman-Byzantine Palestine and Arabia: The Evidence of Dated Greek Inscriptions* (Athens: National Hellenic Research Foundation, 1992), p. 41; Stern, *Calendars in Antiquity*, p. 285.

⁷ By Ἀράβων is meant the so-called calendar of Provincia Arabia, which was apparently instituted at the moment of creation of the province of Arabia in 106 CE, and was also used in various areas of Roman Judaea/Palaestina: Grumel, *Traité d'études byzantines*, p. 173; Samuel, *Greek and Roman Chronology*, p. 177;

of the seven-day week, which are marked by the series of Greek letters from alpha to eta (i.e. the alphabetical sequence α, β, γ, δ, ε, ζ, η, in place of the usual numeral system, according to which numbers six and seven are indicated by the letters ς and ζ, respectively), as well as the course of the lunar month, expressed by the succession of Greek letters from alpha to kappa. The heading displays the word ἡμέραι, 'days', along with the symbol of the moon. This particular column appears in the Florence *Hemerologion* only.⁸ The month days of the thirteen calendars of the cities and provinces of the Roman East listed next to the Julian calendar are numbered consecutively by using Greek numerals. Several of these calendars shared the same Macedonian month-names: as an example, both Γορπιῆος (also spelt Γορπιαῖος) and Λῶος were originally month-names of the Macedonian calendar.⁹ As several of these calendars had months whose beginning did not fall on the calends (first day) of the Julian months, the table also indicates the point where the ensuing months started: for instance, 22 September (the tenth day before the calends of October) in the Julian calendar coincided with the thirty-first day of the month *Basilios* in the Cretan calendar (listed under the heading Κρήτης / Βασίλιος), after which the month *Thesmophorion* started – marked by the abbreviation Θεσμ with a superscript omicron in smaller print. It should be observed that the four extant *Hemerologia* manuscripts preserve information on different calendars: as an example, both the Vatican manuscript (*Vat. gr.* 1291) and the Leiden manuscript (*Leid.* BPG 78) include the calendars of Ascalon (marked as Ἀσκαλω^ς) and Gaza (labelled as Γαζέων), which, however, do not appear in the earlier of the Florence manuscripts (*Laur.* 28.26).

In what follows I shall present the results of my research on the *Hemerologia*,¹⁰ which involved a re-assessment of the information provided by these manuscripts by taking into account newly discovered evidence since Kubitschek's work over a century ago.

II. THE JULIAN CALENDAR AND ITS DIFFUSION IN THE ROMAN EAST. THE CALENDAR OF ASIA

The existence of calendar conversion tables of the type of the *Hemerologia* is directly dependent upon the institution of the Julian calendar and its subsequent diffusion in the eastern provinces of the Roman Empire. As is known, in 46 BCE Julius Caesar introduced a new calendar consisting of a fixed 365-day year, with the regular intercalation of one day every four years, the so-called leap or bissextile year.¹¹ The calendar of the Roman Republic, whose intercalation system had failed to keep

Meimaris, *Chronological Systems*, pp. 40–41; Meimaris and Kritikakou-Nikolaropoulou, *Inscriptions*, p. 47; Stern, *Calendars in Antiquity*, pp. 291–22, 374.

⁸ Kubitschek, *Kalenderbücher*, pp. 79–81.

⁹ After the conquest of the Persian Empire by Alexander the Great, the Macedonian calendar became widespread throughout Asia Minor, the Near East, and Egypt, both in its original form and by fusing with local calendars across Alexander's new empire. As a result, the Macedonian month names continued to be widely used throughout the Roman East until late antiquity. See Grumel, *Traité d'études byzantines*, p. 169; Samuel, *Greek and Roman Chronology*, pp. 139–51, 177–82; Hannah, *Greek and Roman Calendars*, pp. 82–83; Stern, *Calendars in Antiquity*, pp. 72, 234–59.

¹⁰ The research was conducted from September 2013 to January 2018 within the framework of the ERC-funded project *Calendars in Antiquity and the Middle Ages: Standardization and Fixation*, based at UCL and led by Sacha Stern. My search for possible further *Hemerologia* manuscripts that may have been overlooked by Kubitschek or may have been inaccessible to him returned no results.

¹¹ On the institution of the Julian calendar, see especially Grumel, *Traité d'études byzantines*, pp. 175–76; Samuel, *Greek and Roman Chronology*, pp. 155–58; E.J. Bickerman, *Chronology of the Ancient World* (London: Thames & Hudson, 1980), pp. 47–51; Samuel, 'Calendars and time-telling', pp. 392–93; Meimaris, *Chronological Systems*, pp. 41–45; J. Rüpke, *Kalender und Öffentlichkeit. Die Geschichte der Repräsentation und religiösen Qualifikation von Zeit in Rom* (Berlin: Walter de Gruyter, 1995), pp. 369–91 (= idem, *The Roman*

the civil year in step with the seasons, was abandoned in favour of a purely solar one, which was ‘essentially an improved version of the Egyptian calendar’.¹² Soon after its introduction, the Julian calendar started spreading throughout the Empire, although its diffusion differed considerably between the western and the eastern provinces: whereas it appears that in the West the new calendar spread massively and soon replaced completely all local calendars,¹³ in the eastern provinces –specifically in Asia Minor, Egypt, and the Near East– it also spread quickly but did not supplant completely pre-existing calendars.¹⁴ Before the eastern Mediterranean came under the control of Rome, the several Hellenistic kingdoms and cities operated under a multiplicity of calendrical systems, which were mostly lunar.¹⁵ After the introduction of the new solar calendar by Julius Caesar in 46 BCE, the eastern cities and provinces did not simply adopt it but adapted their local calendars to its length. This process led to the creation of several different calendars, which, however, were arranged so as to follow the Julian year. The month-names of the local calendars were generally preserved. Some calendars had months equal in length but not coterminous with the Julian months; some began the year with Augustus’ birthday, while others had different New Year’s dates; some calendars had a fixed 365-day year with a leap year every four years, others had 30-day months plus intercalary days to bring alignment to the Julian year, while others had more complex methods of adjustment.

Apart from the Alexandrian calendar, which is very well documented, one of the better known calendars of the eastern half of the Roman Empire is that of the province of Asia. We owe such knowledge to a series of epigraphic fragments found in different cities of the province and preserving a decree of the provincial association (*koinon*) of the Greeks of Asia, which prescribed the introduction of the new calendar in the province in 8 BCE.¹⁶ The decree adopts the suggestion of the

Calendar from Numa to Constantine. Time, History, and the Fasti [Chichester: Wiley-Blackwell] pp. 109–21); Hannah, *Greek and Roman Calendars*, pp. 112–24; Stern, *Calendars in Antiquity*, pp. 204–5, 211–27.

¹² Stern, *Calendars in Antiquity*, p. 214.

¹³ With the notable exception of the so-called Coligny inscription, which represents a unique source for our knowledge of the Gallic calendar, evidence of the use of non-Roman calendars after 46 BCE in the western half of the Empire is next to non-existent. On the Coligny inscription and the Gallic calendar, see most recently Stern, *Calendars in Antiquity*, pp. 303–13; S. Stern, ‘Calendars, politics, and power relations in the Roman Empire’, in J. Ben-Dov and L. Doering (eds), *The Construction of Time in Antiquity. Ritual, Art, and Identity* (Cambridge: Cambridge University Press, 2017), pp. 31–49, esp. 44–8.

¹⁴ Stern, *Calendars in Antiquity*, pp. 259–60.

¹⁵ On these, see Samuel, *Greek and Roman Chronology*, pp. 139–52; Hannah, *Greek and Roman Calendars*, pp. 71–97; Stern, *Calendars in Antiquity*, pp. 231–59.

¹⁶ On the introduction of the calendar of the province of Asia and the relevant decree: V. Ehrenberg and A.H.M. Jones, *Documents Illustrating the Reigns of Augustus and Tiberius* (Oxford: Oxford University Press, 1955), pp. 81–83, no. 98; Laffi, ‘Le iscrizioni’; R.K. Sherk, *Roman Documents from the Greek East. Senatus Consulta and Epistulae to the Age of Augustus* (Baltimore: Johns Hopkins Press, 1969), pp. 328–37, no. 65 (Greek and Latin texts); Samuel, *Greek and Roman Chronology*, pp. 174–76, 181–82; R.K. Sherk, *Rome and the Greek East to the Death of Augustus* (Cambridge: Cambridge University Press, 1984), pp. 124–27, no. 101 (English translation); Hannah, *Greek and Roman Calendars*, pp. 131–35; B. Dreyer and H. Engelmann, ‘Augustus und Germanicus im ionischen Metropolis’, *Zeitschrift für Papyrologie und Epigraphik* 158 (2006), pp. 172–82, esp. 175–82 (= *SEG* 56, 1233 = *AE* 2006, 1452: new Metropolis copy); T. Witulski, *Kaiserkult in Kleinasien. Die Entwicklung der kultisch-religiösen Kaiserverehrung in der römischen Provinz Asia von Augustus bis Antoninus Pius* (Göttingen: Vandenhoeck & Ruprecht, 2007), pp. 25–32; Stern, *Calendars in Antiquity*, pp. 274–84; idem, ‘Calendars, politics, and power relations’, pp. 34–38; A. Heller, ‘Domination subie, domination choisie: les cités d’Asie Mineure face au pouvoir romain, de la République à l’Empire’, *Pallas. Revue d’Études Antiques* 96 (2014), pp. 217–32, esp. 222–32; *I.Priene* (2014), 14 (new edition of Priene copy, on which cf. *SEG* 63, 982; *SEG* 64, 1122); P. Thonemann, ‘The calendar of the Roman province of Asia’, *Zeitschrift für Papyrologie und Epigraphik* 196 (2015), pp. 123–41. The date of introduction of the new calendar has been the subject of some debate; for instance, Buxton and Hannah made a case for 5 BCE (B. Buxton and R. Hannah, ‘OGIS 458, the Augustan calendar, and the succession’, in C. Deroux [ed.], *Studies in Latin Literature and Roman History, XII*

proconsul (the Roman governor of the province) Paullus Fabius Maximus¹⁷ to move the beginning of the civil year to Augustus' birthday, 23 September. A dossier comprising of the proconsul's edict –in both Greek and Latin– and two implementing decrees issued at the proposal of the high priest of the provincial *koinon* (the leading figure of the confederation) was inscribed on stone and publicly exhibited in a number of cities of the province: copies of the text –in varying states of preservation– come from Priene, Apamea, Eumeneia, Dorylaion, Metropolis, and Meonia. In addition to prescribing that the New Year shall henceforth occur on the ninth day before the calends of October (23 September), the decree also reaffirmed a previous ruling that the first month of the year be named Kaisar – again in honour of Augustus. It also established that the beginning of each month of the year should fall on the ninth day, by Roman reckoning, before the calends of the following month. In leap years, the extra day was to be added to the month Xandikos (after day 1), which on those years would thus consist of 32 days. The decree includes a list of the months and their lengths: Kaisar, 31 days; Apellaios, 30 days; Audnaios, 31 days; Peritios, 31 days; Dystros, 28 days; Xandikos, 31 days; Artemision, 30 days; Daisios, 31 days; Panemos, 30 days; Loos, 31 days; Gorpiaios, 31 days; Hyperberetaios, 30 days. Apart from Kaisar, the month-names of the new calendar correspond to the old Macedonian month-names. The text specifies that the total number of days of the year is 365. Finally, details are provided on how to switch from the old to the new system.¹⁸ The circumstances that led to the proconsul's proposal to reform the calendar are described in the decree of the *koinon*: around 30 BCE, in Smyrna, the province of Asia decreed that a golden wreath should be awarded to whoever could excogitate the greatest manner of honouring Augustus. Twenty years on, the decree informs us that the prize is to be given to the Roman proconsul Paullus Fabius Maximus for his proposal that Augustus' birthday be the first day of the Asian year, which, therefore, was also set to be the day on which 'all men should enter into their public office' in the province of Asia.¹⁹ The story of the contest sponsored by the provincial assembly of Asia makes it unequivocal that the proconsul's suggestion to modify the local calendar, enthusiastically endorsed by the *koinon*, was mainly motivated by the desire of both the Roman governor and the province to demonstrate loyalty and devotion to the emperor Augustus –a fact already apparent from the contents, language, and tone of both the proconsul's edict and the decree of the *koinon*. It is therefore clear that the introduction of the calendar of Asia should ultimately be regarded as an expression of political allegiance.²⁰ In this context, it is important to underline the central role of the cult worship of Augustus as new facet of the interplay between Rome and her eastern provinces.²¹ Differently from the West, where no tradition of devoting divine honours to mortals had ever existed before the introduction of the Roman imperial cult, the Greek East had the notable precedent of Hellenistic

[Brussels: Éditions Latomus, 2005], pp. 290–306), while others opted for 10/9 BCE, e.g. F. Hurlet, and A. Suspène, 'Le proconsul et le prince. À propos des portraits monétaires des proconsuls d'Afrique et d'Asie sous le Principat d'Auguste', in R. Baudry and S. Destephen (eds), *La société romaine et ses élites: hommages à Élizabeth Deniaux* (Paris: Picard, 2012), pp. 73–90; F. Kirbihler, 'César, Auguste et l'Asie: continuités et évolutions de deux politiques', in O. Devillers and K. Sion-Jenkis (eds), *César sous Auguste* (Bordeaux: Ausonius Éditions, 2012), pp. 125–44, esp. 128. In an in-depth analysis of the issue, Stern (*Calendars in Antiquity*, pp. 274–76) has convincingly argued that the new calendar was established in 8 BCE (cf. Hannah, *Greek and Roman Calendars*, pp. 134–35).

¹⁷ Consul in 11 BCE: *PIR*², F 47; W. Eck in *DNP* 4 (1998), p. 377.

¹⁸ See Sherk, *Roman Documents*, p. 332, ll. 71–76 (Greek text) and idem, *Rome and the Greek East*, p. 126 (English translation).

¹⁹ Sherk, *Roman Documents*, ll. 22–23; translation from idem, *Rome and the Greek East*, pp. 124–25.

²⁰ Stern, *Calendars in Antiquity*, p. 277; idem, 'Calendars, politics, and power relations', pp. 34–38.

²¹ On the religious significance of the introduction of the new calendar as a key event in the history of the early imperial cult in Asia Minor, cf. Sherk, *Roman Documents*, pp. 334–37; S.J. Weinstock, *Divus Iulius* (Oxford: Clarendon Press, 1971), pp. 206–10; S.R.F. Price, *Rituals and Power: The Roman Imperial Cult in Asia Minor* (Cambridge: Cambridge University Press, 1984), pp. 54–55; P. Zanker, *The Power of Images in the Age of Augustus* (Ann Arbor: University of Michigan Press, 1988), pp. 302–6; Witulski, *Kaiserkult in Kleinasien*, pp. 25–32.

ruler cults, and it was presumably the familiarity with the concept of a human attaining divine status that led the East to embrace the imperial cult at a very early stage: in 30/29 BCE the provinces of Asia and Bithynia were granted permission by Octavian to worship *Dea Roma* and *Divus Iulius* (the deceased Caesar).²² In the decree of the *koinon* of Asia, Augustus is addressed as ‘saviour of mankind’ and described as the greatest benefactors of all times, and his birthday is regarded as a new start, a day of salvation, joy and happiness for the whole world (ll. 34–41); moreover, the emperor is explicitly and repeatedly referred to as ‘the god’ (ll. 40–1: [ἡ γενέθλιος ἡμέ]ρα τοῦ θεοῦ – ‘[the birthday] of the god’; l. 43: τῶι μεγίστας γ’ εἰς τὸν θεὸν καθευρόντι τιμὰς εἶναι στέφανον – ‘that the person who found the greatest honours for the god should have a crown’). As effectively illustrated by the story of the province of Asia bestowing an award to the person who could invent the most creative way of celebrating Augustus, the imperial cult generated an intense competition in the worship of the emperor among cities of the Greek East. Moreover, the imperial cult allowed for a closer bond with Rome and Augustus, and created a new and stronger sense of belonging to the Roman Empire.²³ While it may be assumed that the Greeks of the province of Asia adopted the Julian calendar to demonstrate their loyalty to the emperor following the Roman governor’s directive, it is unlikely that a major reform of the calendar of a large province was independently designed and set in motion by the proconsul Paullus Fabius Maximus alone.²⁴ Significantly, in the same year when the decree was issued (8 BCE), Augustus corrected an error in the intercalation of the Julian calendar and was honoured by having the month Sextilis renamed after himself (Augustus).²⁵ All this suggests that around that particular year ‘calendar reform was clearly in the air’.²⁶ It has long been observed that Augustus made extensive use of the calendar as a tool to assert his hegemony: by creating new festivals related to events that revolved around the emperor and his family – victories, births, marriages, the assumption of civil and religious offices, etc. – Augustus appropriated civic time and incorporated himself and his own house into the Roman calendar.²⁷ The emperor’s *dies natalis* (birthday), in particular, had been celebrated all over the empire well before it became the New Year

²² Dio Cassius 51.20.6–9. It has to be emphasised that the worship of Roman emperors emerged as an entirely new phenomenon and should not in any way be regarded as an evolution from the cults for Hellenistic kings; F. Millar, *Rome, the Greek World, and the East, Vol. 1: The Roman Republic and the Augustan Revolution* (Chapel Hill: University of North Carolina Press, 2002), pp. 308–9. On the idea that Octavian’s measures of 30/29 BCE were not a new foundation but an alteration of an older cult, which would have been in place as early as c. 40/39 BCE, see F. Kirbihler and L. Zabrana, ‘Archäologische, epigraphische und numismatische Zeugnisse für den Kaiserkult im Artemision von Ephesos. Der Kult der Dea Roma und des Divus Iulius unter dem Triumvirat’, *Jahreshefte des Österreichischen Archäologischen Institutes in Wien* 83 (2014), pp. 101–31; F. Kirbihler, ‘Ruler cults and imperial cults at Ephesos: first century BCE to third century CE’, in D. Schowalter et al. (eds), *Religion in Ephesos Reconsidered. Archaeology of Spaces, Structures, and Objects* (Leiden: Brill, 2019), pp. 195–210, esp. 196–201.

²³ Zanker, *Power of Images*, pp. 302–6.

²⁴ Cf. Buxton and Hannah, ‘OGIS 458’, p. 300; Stern, *Calendars in Antiquity*, p. 278; Heller, *Domination subie*, pp. 222–26. The fact that the proconsul’s edict is only concerned with the institution of the New Year on Augustus’ birthday does not, in my view, demonstrate a lack of awareness or disregard of the complex consequences and technicalities involved in converting the local calendar to a 365-day year (*pace* Stern, *Calendars in Antiquity*, p. 277; *idem*, ‘Calendars, politics, and power relations’, p. 36). Rather, the focus on the observance of the emperor’s birthday as a New Year’s day is consistent with the primary aim of the proconsul’s move, that is, promoting the celebration of Augustus and instilling a greater sense of belonging to the Roman Empire in the province; after all, Paullus’ edict is essentially an honorific document. Additionally, it appears unlikely that the proconsul or the local population should be informed of the technical details relating to the implementation of the new calendar.

²⁵ Macrobius, *Saturnalia* 1.12.35, 1.14.13–5; Pliny, *Natural History* 18.211; Cassius Dio 55.6.6; Censorinus, *De die natali*, 22.16; Suetonius, *Augustus* 31.2; Solinus, 1.45–7. Cf. Rüpke, *Kalender und Öffentlichkeit*, p. 85; Stern, *Calendars in Antiquity*, pp. 214–15, 278.

²⁶ Stern, *Calendars in Antiquity*, p. 278. On calendar changes in the Roman East as a ‘direct result of Roman imperial rule’, see further *ibid.*, p. 263. Cf. Bickerman, *Chronology of the Ancient World*, p. 48.

²⁷ See especially A. Frascchetti, *Roma e il Principe* (Rome: Laterza, 2nd ed., 2005), pp. 9–39.

in the province of Asia and is, in fact, the most frequently attested new imperial festivity.²⁸ In view of the massive use that Augustus made of the Roman calendar as an instrument of propaganda, it does not seem far-fetched to assume that the emperor was involved first-hand in the reform of the calendar of the Asiatic province.²⁹ While the fact that the Greeks of Asia did not fully replace their own calendar with the Julian has been seen by some primarily as the result of the Roman calendar being ‘a distinctive marker of Romanness’,³⁰ i.e. as a trait specific to Roman identity and culture which would not be suitable to the Greeks of the East, it appears plausible that the Romans themselves did not attempt to impose their calendar on the Greek East, consistently with their *laissez-faire* policy in provincial administration. This approach on the part of the Romans would have offered the additional advantage of creating an impression of independence with their subjects. After all, the Romans never failed to recognise the strong and long-lived cultural traditions of the Greeks, including, I would argue, their calendars³¹. At the same time, some form of calendrical homogeneity across the Roman provinces would have arguably been deemed useful for managing such a vast empire. This suggests that the Roman imperial power opted for the ‘compromise’ of tolerating that the Greeks of Asia, and in fact the whole Roman East, retained several features of their calendars –thus preserving an important cultural trait– while at the same time having these calendars –for convenience– adapted to the structure and length of the Julian year. This strategy allowed the Romans, as it were, to kill two birds with one stone: it facilitated both conversions between the calendars and relations between the Romans and their subjects in the provinces of the East.

III. EQUATING CALENDARS IN THE ROMAN EMPIRE

Although the four manuscripts preserving the *Hemerologia* were produced in medieval times, it is clear that the information included in the tables (i.e. the calendar equations themselves) originated during the Roman imperial period or in late antiquity, when the calendars that appear in the tables were still in use.³² Equivalences among these calendars appear in literary, documentary, and

²⁸ G. Almagno and G.L. Gregori, ‘L’istituzione e la ricorrenza del *dies natalis* augusteo nella documentazione epigrafica’, *Maia* 68 (2016), pp. 446–59; idem, *Roman Calendars: Imperial Birthdays, Victories and Triumphs* (Beau-Bassin: LAP-Lambert Academic Publishing, 2019), pp. 15–25. Augustus’ birthday became a public festival in Rome in 30 BCE; subsequently, games were added which in 8 BCE were made annual: Dio 51.19.2; 54.8.5; 55.6.6. Cf. also *ILS* 112, 15 = *CIL* 12, 4333 (from Narbonne). There is no doubt that the public sacrifices instituted on Caesar’s birthday in 45 BCE functioned as a model for the celebration of Augustus’ birthday; in turn, the introduction of the commemoration of Caesar’s *dies natalis* had been influenced by the habit of having public festivals on the birthdays of Hellenistic rulers: Weinstock, *Divus Iulius*, pp. 206–10; Price, *Rituals and Power*, p. 105; Heller, ‘Domination subie’, pp. 226–27; Almagno and Gregori, ‘L’istituzione’, p. 447; idem, *Roman Calendars*, pp. 10, 135.

²⁹ Cf. Heller, ‘Domination subie’, p. 225: ‘(...) la mesure adoptée par Paullus Fabius Maximus (...) pour la province d’Asie traduit la volonté impériale et correspond à un vaste projet destiné à inscrire le nouveau pouvoir dans le temps sacré et civil.’

³⁰ D. Feeney, *Caesar’s Calendar: Ancient Time and the Beginnings of History* (Berkeley: University of California Press, 2007), pp. 209–11. Cf. Stern, *Calendars in Antiquity*, p. 226 n. 196.

³¹ The plural here is better suited to the calendrical fragmentation that characterised the ancient Greek world throughout its history, as is glaringly exemplified by the multiplicity of calendars used in the various Hellenistic kingdoms and cities before the Roman annexation of the Greek East. Cf. p. 4 with note 15. As a way of example, see *I.Priene*, 132, an inscription dating from the early second century BCE which includes equivalences between the calendars of Rhodes and Priene (l. 42–44): ὡς μὲν Ῥόδιοι ἄγοντι μῆνος Πανάμου ἐνάται [ἐπὶ δέκα?], ὡς δὲ Πριανεῖς [μην]ὸς [Θαργη]λ<ι>ῶνο[ς].

³² Cf. Kubitschek, *Kalenderbücher*, pp. 61, 75, 79; Samuel, *Greek and Roman Chronology*, p. 173; Meimaris, *Chronological Systems*, p. 36; Stern, *Calendars in Antiquity*, p. 260, all assuming that the tables were copied from earlier works.

epigraphic sources dating from the early imperial period to late antiquity. These, however, are not usually arranged in tabular format and compare dates of a limited number of different calendars. A notable exception in terms of the amount of calendars involved is a passage from Epiphanius' *Panarion* (late fourth century CE), where the dates of Jesus' birth and baptism are given according to the Roman, Egyptian, Syrian, Cypriot, Paphian, Arabian, Cappadocian, Athenian, and Hebrew calendars.³³ Other literary sources displaying the ability to produce dates according to different calendars include Ptolemy (mid-second century CE), who dates an observation according to the Old Egyptian (or pre-Alexandrian) and the Bithynian calendars,³⁴ the *Life of Porphyry of Gaza* (fifth century CE) in which a number of dates are expressed according to the Roman calendar and the calendar of Gaza,³⁵ Eusebius (early fourth century CE), who frequently dates events according to multiple calendars,³⁶ Theophilus of Alexandria (late fourth – early fifth century CE),³⁷ Athanasius of Alexandria (fourth century CE),³⁸ Evagrius Scholasticus (sixth century CE),³⁹ and a series of Christian Councils of the fifth and sixth centuries CE.⁴⁰ These sources, spanning from the mid-second century CE to late antiquity, may imply that their authors had access to calendar conversion tables of the type of the *Hemerologia*.

³³ *Panarion* 51.24. Cf. Kubitschek, *Kalenderbücher*, pp. 73–75. Stern, *Calendars in Antiquity*, p. 260, assumes that Epiphanius consulted a *hemerologion* to supply the dates in such a large variety of calendars.

³⁴ *Almagest* 7.3. Cf. Kubitschek, *Kalenderbücher*, p. 97; G.J. Toomer, *Ptolemy's Almagest (Translated and Annotated)* (London: Duckworth, 1984), pp. 14, 334. While the Old Egyptian calendar is not represented in the *Hemerologia*, the Bithynian calendar appears in all the extant manuscripts and is marked as 'of the Bithynians' (Βιθυνῶν). The date mentioned by Ptolemy corresponds to 29 November 92 CE, the Bithynian date being 'the 7th of Metroos', which matches the information given in the *Hemerologia*.

³⁵ Cf. G.F. Hill, *The Life of Porphyry of Gaza* (Oxford: Clarendon Press, 1913), pp. 122, 130; Kubitschek, *Kalenderbücher*, p. 99. The calendar of Gaza occurs in *Leid. BPG* 78 and *Vat. gr.* 1291 (marked as Γαζέων) but is absent from *Laur.* 28/26. All the equivalences between the Roman and the Gazean calendars in the *Life of Porphyry of Gaza* are in agreement with the *Hemerologia*, except one (c. 34): ἡμέρα ὀγδόη καὶ εἰκάδι Γορπιαίου, κατὰ δὲ Ῥωμαίους Σεπτεμβρίῳ εἰκάδι τρίτῃ, that is, 'the twenty-eighth day of Gorpiaios, according to the Romans the twenty-third of September'; in the *Hemerologia*, 23 September corresponds to 26 Gorpiaios in the calendar of Gaza.

³⁶ Cf. Kubitschek, *Kalenderbücher*, p. 101. Eusebius' dates are usually given according to the Julian calendar and the calendar of Antioch; occasionally (e.g. in *Historia ecclesiastica* 7.32.14) he also includes the equivalent date in the Egyptian (= Alexandrian) calendar.

³⁷ Cf. Kubitschek, *Kalenderbücher*, p. 101; A. Mosshammer, *The Prologues on Easter of Theophilus of Alexandria and [Cyril]* (Oxford: Oxford University Press, 2017), pp. ???. In Ch. 2 of his *Easter Letter*, Theophilus sets the date of the spring equinox (21 March) on 'the 12th day before the calends of April, which is 25 Phamenoth, and, according to the Syrians of Antioch and the Macedonians, 21 Dystros'. This matches the equivalence between the Julian, Egyptian, and Antiochene calendars in the *Hemerologia*.

³⁸ Athanasius was bishop of Alexandria in 328–73 CE. In *De synodis Arimini in Italia et Seleucia in Isauria* 12.1, he provides a concordance between Julian, Egyptian, and Macedonian months (the latter presumably referring to the calendar of Antioch).

³⁹ Cf. Kubitschek, *Kalenderbücher*, p. 101. In his *Historia ecclesiastica* (2.12), Evagrius gives the date of an earthquake that occurred in Antioch in 457 CE according to the local calendar and adds the equivalent Julian month: 'the 14th day of the month Gorpiaios, which the Romans call September'. Cf. M. Whitby, *The Ecclesiastical History of Evagrius Scholasticus* (Liverpool: Liverpool University Press, 2000), pp. 94–95.

⁴⁰ For example, in the Acts of the Council of Chalcedon of the year 451 CE, the date of 25 February 449 CE is provided according to the calendar of Tyre and the Julian calendar: 'After the consulship of Flavius Zenon and Postumianus, on the fifth day before the calends of March, in the colony of Tyre (...), in the year 574, on the tenth of the month Peritios, according to the Romans on the twenty-fifth of February (...).' Cf. Kubitschek, *Kalenderbücher*, p. 109; R.M. Price and M. Gaddis, *The Acts of the Council of Chalcedon: Volume 2* (Liverpool: Liverpool University Press, 2007), p. 261. The calendar of Tyre appears in all the *Hemerologia* (marked as Τυρίων), where the fifth day before the calends of March of the Julian calendar does correspond to 10 Peritios in the calendar of Tyre.

In terms of both format and contents, the closest parallels for the *Hemerologia* tables are found in the epigraphic and documentary evidence. A notable and in fact unique case is that of an inscription preserved on three joining fragments of a white marble slab, which were discovered about twenty years ago in the ancient city of Metropolis (Lydia, Asia Minor).⁴¹ The inscription has been attributed on paleographical grounds to the early first century CE, and more precisely to the reign of Tiberius (14–37 CE). Not only is the marble slab from Metropolis one of the most significant pieces of external evidence for the study of the *Hemerologia*, but it also counts among the earliest attestations of the practice of providing correspondences between dates of the (relatively) recently instituted Julian calendar and dates of other calendars that were in use in the eastern provinces of the Empire. The inscription comprises equivalences between the Julian calendar and the calendar in use at Metropolis (i.e. the calendar of the province of Asia), arranged in columns. The following is a transcription of the first column of text:

	ιδ´	N[ω]. Ὀκ[τω-]
		βρίαι
	ιε´	πρὸ η´ εἰ-
		δῶν Ὀκτω-
5		βρίων
	ις´	πρὸ ζ´
	ιζ´	πρὸ ς´
	ιη´	πρὸ ε´

To the left are Greek numerals referring to the days of a month in the calendar of the province of Asia, followed, to the right, by their corresponding dates in the Julian calendar, expressed in Greek. The first two lines, for instance, equate the 14th day of a month in the local calendar with the nones of October (7 October) in the Julian calendar. The arrangement of the inscribed text is comparable to the layout of the *Hemerologia* tables; yet the date equivalences in the Metropolis inscription are considered from an opposite perspective vis-à-vis the *Hemerologia* manuscripts: in the latter, the days of the Roman month are consistently listed in the first column on the left, which is followed by a series of columns showing the corresponding days in numerous calendars of the provinces and cities of the Roman East; this arrangement clearly shows that the Roman calendar served as common reference point in the *Hemerologia*. Conversely, the Metropolis inscription prioritises the calendar of the province of Asia, whose dates appear before the Julian dates on the stone. The inscribed marble slab was most likely produced to be displayed in a public place –perhaps in the agora or in proximity of some major civic building—⁴² and was meant to be used as an aid to convert dates of the calendar of the province of Asia into Julian dates, and vice versa. The inscription must have represented a helpful resource for locals and Romans alike, though the priority assigned to the

⁴¹ H. Engelmann, 'Inscriben aus Metropolis', *Zeitschrift für Papyrologie und Epigraphik* 125 (1999), pp. 137–46, esp. 142–43 (AE 1999, 1538 = SEG 49, 1523). Cf. Stern, *Calendars in Antiquity*, pp. 260–61; Thonemann, 'Calendar', p. 126.

⁴² Engelmann, 'Inscriben aus Metropolis', p. 143.

local calendar on the stone suggests that the inscribed document was presumably designed with the Greek inhabitants in mind.⁴³ This particular arrangement of the text on the marble slab is also likely to reflect the relatively early stage of development of the Julian calendar at the time when the inscription was engraved: in the age of Tiberius the calendar first introduced by Julius Caesar and later restructured by Augustus had probably not yet fully developed into the standard, dominant dating system in use throughout the provinces of the Roman Empire. Among the various functions of the inscription from Metropolis was undoubtedly that of spreading knowledge about the Julian calendar in the Roman East, while at the same time making a political point about the relationship between the province of Asia and the Roman Empire. This two-column *hemerologion*⁴⁴ suggests that similar epigraphic monuments may have been displayed in central locations of other cities of the eastern provinces of the Roman Empire to facilitate date conversions between the Roman and local calendars. Although it can hardly be demonstrated that texts such as the Metropolis inscription acted as a direct model for the production of the *Hemerologia* that appear in the four early medieval manuscripts described earlier, based on the available evidence, the Metropolis inscription represents the earliest and closest parallel for the early medieval multi-column calendar conversion tables.

In addition to the inscription from Metropolis and the assorted textual sources including double dates or dates given according to multiple calendars,⁴⁵ it is worth considering a limited number of Greek documents on papyrus that establish approximate concordances among months of different calendars. As one would expect, these sources regularly include the Egyptian calendar: in three cases its months appear along with the Roman months,⁴⁶ while a sixth/seventh century CE scrap of parchment codex provides correspondences between Egyptian and Bithynian months.⁴⁷ In addition, there are two cases of month concordances among three different calendars: a late seventh/early eighth century CE papyrus, possibly from Fayum, provides equivalences among Roman, Cappadocian, and Egyptian months,⁴⁸ and a fifth century CE papyrus from Lycopolis displays a synoptic table of Egyptian, Roman, and Macedonian months.⁴⁹ While the former, however, compares Roman and Egyptian months and, on separate columns, Cappadocian and Egyptian

⁴³ Engelmann (ibid.) assumes that the aim of the inscription was to facilitate date conversions primarily for those who were involved in provincial administration.

⁴⁴ I am borrowing the expression used by Stern, *Calendars in Antiquity*, p. 261.

⁴⁵ A list of new sources updating the evidence presented by Kubitschek in *Kalenderbücher* is appended to Section VI.

⁴⁶ *P.Fay.* 135 V = *C. Gloss. Biling.* 1.11 (Fayum, fourth century CE); *SB* 26 16521 (ostrakon – provenance unknown, fourth/fifth century CE); *P.land.* inv. 654 (provenance unknown, sixth/seventh century CE).

⁴⁷ D. Montserrat, 'A Fragment of a Monastic Duty Roster?', *The Bulletin of the American Society of Papyrologists* 27 (1990), pp. 163–68 (provenance unknown).

⁴⁸ *P.Rain. Cent.* 31 (provenance unknown). Grassien offers a comprehensive edition of the text and compares its calendrical data with the information provided by the *Hemerologia*; C. Grassien, 'Deux hymnes et une litanie chrétiennes byzantines conservés par le P.Rainer Cent. 31 et cinq autres témoins', *Tyche* 12 (1997), pp. 51–84, esp. 67–70, 81–84. She points out that the Cappadocian language is very little known: this is the first and only Egyptian papyrus preserving Cappadocian words (transliterated into Greek); there are no inscriptions in Cappadocian from Asia Minor, and the very limited number of literary sources (such as the writings of the Church Father Gregory of Nazanzus) preserve merely a few Cappadocian month names (again, transliterated into Greek/Latin). In her study of *P. Rain. Cent.* 31 –which comprises a number of further texts in addition to the table of month correspondences– Grassien assumes that the papyrus had some sort of Christian amuletic function. Her interpretation is partly based on the occurrence of Cappadocian month names in the document: observing that Cappadocian is a mysterious language and that, perhaps significantly, everything we know about it are month names, Grassien assumes that Cappadocian was a purely liturgical language.

⁴⁹ *P.Acad. inv.* 1 r^o = J.-L. Fournet and J. Gasco, 'Un lot d'archives inédit de Lycopolis (Égypte) à l'Académie des inscriptions et belles-lettres', *Comptes rendus de l'academie des inscriptions et belles lettres* 3-4 (2008), pp. 1066–69.

months, in the papyrus from Lycopolis Egyptian, Roman, and Macedonian month-names are listed alongside each other, on three parallel columns, and are therefore simultaneously equated; in addition, a fourth column consisting of numerals accompanies the list of Roman months, detailing the number of days in each of them.⁵⁰

	⊕				
	⊕	Τυβι	[Ια]νουάριος	λα	Αύδυναῖος
		Μεχειρ	[Φ]εβράριος	κη	Περίτιο[ς]
		Φαμεν[ω]θ	[Μ]άρτιος	λα	Δύστρο[ς]
5		Φαρμου[θ]ι	[Α]πρίλιος	λ	Ξανθι[κ]ός
		Παχων	Μάϊος	λα	Ἄρτεμίσιος
		Παυνι	Ἰούνιος	λ	Δέσιος
		[Επειφ]	Ἰούλιος	λα	Πάνεμος
		Μεσορη	Ἀύγουστος	λα	Λῶιος
10		Θωθ	Σεπτέμβερ	λ	Γορπιαῖος
		Φαωφι	Ὀκτώβερ	λα	Ὑπερβερετῆος
		Ἄθυρ	Νοέμβερ	λ	Δῖος
		Χο[ι]ακ	Δεκέμβερ	λα	Ἄπιλλῆος
		κατ' Αἰγυπτίους	κατὰ Ῥωμαίους		κατὰ Ἀσιανούς

Although the Egyptian months occupy the first column on the left, the order followed by the three calendars is that of the Roman year, running from January to December. The Egyptian year started with Thoth and ended with Mesore, while our text lists Egyptian months from Tybi to Choiak.⁵¹ Each of the three calendars is identified by a formula written at the bottom of each column: κατ' Αἰγυπτίους, 'according to the Egyptians', κατὰ Ῥωμαίους, 'according to the Romans', and κατὰ Ἀσιανούς, 'according to the Asians'. These formulae effectively function as headings –albeit in an upside down position– and parallel the labels that appear across the top on the *Hemerologia*

⁵⁰ The names of the Roman months are similarly complemented by numerals indicating their lengths in a sixth century CE mosaic inscription from Scythopolis (*SEG* 8, 42).

⁵¹ On the order of the months in the Egyptian year see, e.g., Samuel, *Greek and Roman Chronology*, p. 177. It appears that the writer of the comparative table was not particularly familiar with the Greek version of the Roman month-names, as is especially revealed by the transliterations Σεπτέμβερ, Ὀκτώβερ, Νοέμβερ, Δεκέμβερ in place of the canonical Greek forms Σεπτέμβριος, Ὀκτώβριος, Νοέμβριος, Δεκέμβριος.

manuscripts: there, above each column, the name of the calendar, along with that of the local month corresponding to the relevant Roman month, identify the specific calendar whose month-days are listed underneath. Κατὰ Ῥωμαίους clearly identifies the Julian calendar. Although the formula κατ'Αἰγυπτίους is occasionally used with reference to the Old Egyptian calendar,⁵² in this case it is more likely to identify the 'new Egyptian' or Alexandrian calendar.⁵³ The calendar whose month-names are listed on the right hand column of the Lycopolis papyrus is labelled as 'according to the Asians': what calendar could be characterised in this manner? The obvious response would be the calendar of the province of Asia.⁵⁴ The *Hemerologia* list this calendar under various headings – Ἐφέσου, Ἀσίας, Παμφυλίας, Ἀσιανῶν – which identify a series of calendars that were in use in the provinces of western Asia Minor (corresponding to the area known as Diocese of Asia in the fifth century CE). All these calendars shared the same structure and yet presented differences in the names and order of their months, as well as minor one-day variations. It has to be observed that the order of the months on the κατὰ Ἀσιανούς column of the Lycopolis papyrus does not match the order of the months of any of the various 'Asian' calendars that used Macedonian month-names and that appear in the *Hemerologia*. On the other hand, the month order of the κατὰ Ἀσιανούς column does correspond to that of the calendar labelled as 'of the Hellenes' (Ἑλλήνων) on the *Hemerologia*, which identifies with the so-called calendar of Antioch. Arguably, this was the most widespread calendar in the Diocese of the East during the fifth century.⁵⁵ It is conceivable that there never was total uniformity and consistency in the denomination of the multitude of calendars of the provinces and cities of the eastern half of the Roman Empire; even more so, presumably, in the case of the various calendars that used the Macedonian month-names and that were not peculiar to a specific city, such as the calendar of Asia and the calendar of Antioch. Under these circumstances, one could perhaps expect that the calendar labelled as 'of the Hellenes' in the early medieval *Hemerologia* manuscripts could be referred to as 'of the Asians' in a fifth-century document on papyrus from Egypt.⁵⁶ After all, 'Hellenes' is terribly vague. Moreover, it would have been easy for someone in Egypt to commit an error, either with the label or with the month names, without anyone there to correct him. The editors of *P.Acad. inv. 1 r^o* inform us that the person who transcribed the synoptic table of Egyptian, Roman, and Macedonian month-names also wrote a petition on the verso of the same papyrus, as well as two further documents in the same dossier, including a second petition.⁵⁷

⁵² This appears to be the case in sources that give a date according to both the Old Egyptian and the Alexandrian calendar, such as in some ancient horoscopes, where Old Egyptian dates are sometimes specified as either κατὰ Αἰγυπτίους (more rarely as παρά Αἰγυπτίους) or κατ'ἀρχαίους, 'according to the Egyptians', or 'according to the ancients', whereas dates designated as καθ' Ἑλληνας (or καθ' Ἑλλήνων), 'according to the Greeks', refer to the Alexandrian calendar; D. Baccani, *Oroscopi greci. Documentazione papirologica* (Messina Sicania, 1992), pp. 60–61; A. Jones, *Astronomical Papyri from Oxyrhynchus (P. Oxy. 4133–4300a)* (Philadelphia: American Philosophical Society, 1999), pp. 12–33; M. Ross, 'An introduction to the horoscopic ostraca of Medinet Madi', *Egitto e Vicino Oriente* 29 (2006), pp. 147–80, esp. 151. The distinction between κατὰ Αἰγυπτίους and καθ' Ἑλληνας dates as referring, respectively, to the Old Egyptian and the Alexandrian calendar, can also be observed in *P.Kellis* 41 (dated to 12 July 310 CE), on which see further no. 37 in the list of new sources below.

⁵³ As observed earlier, in the *Hemerologia* the Alexandrian calendar is labelled as Ἀλεξανδρέων, 'of the Alexandrians', and not as Αἰγυπτίων, even though the Old Egyptian calendar is not represented there, a circumstance that would have left no room for confusion. Similarly, in a Greek inscription from Rome (*IGUR* I 77) the date (6 May 146 CE) is expressed according to the Roman as well as the Egyptian calendar, the latter being specified as κατὰ Ἀλεξανδρεῖς, 'according to the Alexandrians', rather than with the more common formula κατὰ Αἰγυπτίους, 'according to the Egyptians'.

⁵⁴ As assumed by Fournet and Gascou, 'Un lot d'archives', pp. 1053–54.

⁵⁵ Pace Fournet and Gascou, 'Un lot d'archives', p. 1054, who affirm that the calendar normally used in the Diocese of East during that period was the calendar of Asia.

⁵⁶ In this context, it appears significant to note that in the Leiden manuscript (*Leid. BPG* 78) the *Hemerologia* are followed by a synoptic table (ff. 151–152^v) of the Egyptian, Roman, and Antiochene years. On this table, see Kubitschek, *Kalenderbücher*, pp. 70–71.

⁵⁷ These fragmentary texts have not yet been fully published.

Interestingly, it appears that both petitions were addressed to the praetorian prefect of the East. The nature of these texts leads the editors of *P.Acad. inv.* 1 r^o to the very plausible conclusion that, differently from most documentary texts providing concordances, this is not a school exercise.⁵⁸ Similarly to the Metropolis inscription, the Lycopolis papyrus presumably functioned as a reference tool for converting dates between the local calendar (the Egyptian) and two of the main systems in use at the time in the Roman East. The month concordance table may have been useful for both the sender and the addressee of the petitions. In fact, however, since the months in the three calendars were not coterminous, the table would have been of limited use, providing, as it did, only loose concordances between the months in the three systems. It is nevertheless worth pointing out that this is the only known text on papyrus that correlates the Egyptian (i.e. Alexandrian), Roman, and (if the hypothesis expressed here is correct) Antiochene calendars. Although the Lycopolis papyrus obviously differs from the *Hemerologia* in that it does not provide full-length calendar tables but only (approximate) equivalences among the months of the three calendars, nonetheless it does represent the best documentary counterpart of the *Hemerologia* manuscripts.

What precedes has shown that a variety of literary, documentary, and epigraphic sources suggest that calendar conversion tables of the type of the *Hemerologia* may have been in use already in the early Roman imperial period and continued to do so until late antiquity. Yet the question of when the *Hemerologia* were first composed and in what form (e.g. manuscripts, papyri, inscriptions), as well as the question of the mode of their transmission prior to their appearance in the early ninth century as part of the Greek manuscripts *Leidensis* BPG 78 and *Vaticanus* gr. 1291 (followed by *Laurentianus* 28/26 in the late ninth or early tenth century, and *Laurentianus* 28/12 in the fourteenth century) remain to be answered. One may argue that the dearth of inscriptions, papyri, ostraka, and other writing media displaying conversion tables among different calendars in use throughout the Roman Empire signals that such tables were not widespread – hence their chances of preservation have been considerably lower than those of other, more prevalent, types of texts. However, the evidence –or rather the lack thereof– may also imply that the *Hemerologia* were not copied from an imperial or late antique model; it could be supposed that the tables were first compiled in the early Middle Ages by drawing from a miscellany of earlier sources. In other words, is it conceivable that the one and same ‘Grundliste’⁵⁹ from which the preserved *Hemerologia* derive was composed not long before the early ninth century, when *Leidensis* BPG 78 and *Vaticanus* gr. 1291 were produced?

IV. THE *HEMEROLOGIA* MANUSCRIPTS: TIMES, CONTEXTS, AND MODES OF COMPOSITION AND TRANSMISSION

The question of whether the *Hemerologia* originated in the imperial, late antique, or early medieval period ought to be considered in the light of the context of production and transmission of the manuscripts to which the preserved texts belong. The four sets of *Hemerologia* published by Kubitschek in 1915 are all incorporated within medieval copies of Ptolemy’s *Handy Tables* (Πρόχειροι Κανόνες).⁶⁰ This work consists of a series of astronomical tables designed to provide

⁵⁸ It cannot be ruled out that the letter on the verso is only a copy of the letter that was sent, which would explain why it stayed in Egypt. If that were the case, then the fact that these texts appear on both sides of the same papyrus would not be significant.

⁵⁹ The term is used by Kubitschek, *Kalenderbücher*.

⁶⁰ A critical edition of the *Handy Tables* is offered in Tihon’s *Les ‘Tables Faciles’ de Ptolémée* and in R. Mercier, *Πτολεμαίου Πρόχειροι Κανόνες. Ptolemy’s Handy Tables volume 1b. Tables A1-A2. Transcription and Commentary* (Publications de l’Institut Orientaliste de Louvain 59b; Louvain-La-Neuve: Peeters, 2011). See also

directions for using the tables included in Ptolemy's *Almagest*. The *Handy Tables* permit the calculation of the positions of the Sun, the Moon, and the planets, as well as the rising and setting of the stars, which in turn enable one to solve related astronomical and astrological problems, such as the determination of horoscopes and the character of lunar and solar eclipses. In addition to astronomical tables proper, as well as geographical tables listing 'renowned cities' (πόλεις ἐπίσημοι), both of which were certainly designed by Ptolemy, the manuscript tradition of the *Handy Tables* preserves a variety of additional tables, images, and diagrams of uncertain date and provenance. Anne Tihon has classified the supplementary material included in the *Handy Tables* manuscripts according to the following categories: tables specific to the climate of Byzantium, chronological tables, and ancillary tables of various types.⁶¹ The *Hemerologia* belong to the chronological material, which include tables of regnal years –starting either with Nabonassar (747 BCE) or with Philip, Alexander's successor (324/3 BCE)–, lists of consuls, tables of bissexts, tables of epacts, tables for determining the day of the week, tables of concordance among Egyptian, Roman, and Greek months, tables of lunar dates, etc. The only tables explicitly mentioned by Ptolemy as complementary to the use of the astronomical tables are the lists of regnal years.⁶² The rest of the chronological material should therefore be regarded as spurious, which implies that the *Hemerologia* were not originally part of Ptolemy's *Handy Tables*.⁶³ Thus, although we now have a *terminus post quem* for their production, we are still left with the question of the authorship and date of composition of the *Hemerologia*. The fact that these were consistently handed down together with Ptolemy's *Handy Tables* is certainly significant; yet, this circumstance does not necessarily imply that the tables were originally produced as part of a scholarly, scientific tradition during the Roman imperial period or in late antiquity. Indeed, there is no reason to exclude the possibility, for instance, that the *Hemerologia* were created –at some unspecified time– for one or more different purposes and subsequently 'reused' in association with Ptolemy's *Handy Tables* to assist medieval astronomers and astrologers in their calculations.

Whatever the time and context of their production, one may raise the objection that our tables for calendar conversion would have served little purpose in medieval times, as by the ninth century the calendars represented in the *Hemerologia* were no longer in use, with the sole exception of the Julian calendar. However, it should be observed that examples of dates and astronomical events from antiquity were commonly employed in medieval scientific practice.⁶⁴ Even though the extant astronomical-astrological sources may not feature dates in the calendars of Gaza, Cappadocia, or Ascalon (to name some of the 'unusual' calendars that appear in the *Hemerologia*), the general scarcity of evidence does not preclude the possibility that similar dates may have appeared in other material that might have been of use to a medieval astrologer: for instance, astronomical phenomena mentioned in chronicles, the foundation date of a city, a birthday or a dated horoscope. Indeed, as is witnessed by the early ninth century manuscripts *Leidensis BPG 78* and *Vaticanus gr. 1291*, the late ninth or early tenth century *Laurentianus 28/26*, and the fourteenth century *Laurentianus 28/12*, the *Hemerologia* were deemed worth copying throughout the Middle Ages. On the basis of these premises, it appears equally plausible that the *Hemerologia* were first composed

A. Tihon, 'Les *Tables Faciles* de Ptolémée dans les manuscrits en onciale (IXe-Xe siècles)', *Revue d'histoire des textes* 22 (1992), pp. 47–87; eadem, 'Theon of Alexandria and Ptolemy's *Handy Tables*', in N.M. Swerdlow (ed.), *Ancient Astronomy and Celestial Divination* (Cambridge, Mass.: MIT Press, 1999), pp. 357–69; and eadem, 'Les *Tables faciles* de Ptolémée: une édition critique', in C. Burnett et al. (eds), *Studies in the History of the Exact Sciences in Honour of David Pingree* (Leiden: Brill, 2004), pp. 223–46.

⁶¹ Tihon, *Les 'Tables Faciles' de Ptolémée*, p. 8.

⁶² *Ibid.*, 10.

⁶³ Pace Kubitschek (*Kalenderbücher*, p. 79), who assumed that *similar* calendar conversion tables might have already been joined with the *Handy Tables* by Ptolemy.

⁶⁴ Thanks are due to Philipp Nothaft for pointing out this important piece of information during the ERC conference *Calendars in Antiquity and the Middle Ages* that took place at UCL on 3–5 July 2017.

sometime in the early middle ages from a variety of earlier material, rather than being a product of the imperial or late antique period as it has been assumed so far.⁶⁵

Ptolemy's *Handy Tables* experienced enduring popularity in the Byzantine Empire since its inception and until the fifteenth century.⁶⁶ They were particularly suited to making astrological forecasts, and it has been suggested that certain deluxe manuscripts produced between the eighth and the early tenth century and incorporating the *Handy Tables*, such as *Laurentianus 28/26*, were intended for use by court astrologers who were requested to cast horoscopes by Byzantine emperors.⁶⁷ More generally, apart from the specific use of the *Handy Tables* for the purpose of making astrological predictions, the works of Ptolemy and ancient commentaries on them constituted a major portion of the legacy of ancient astronomical writings preserved by the Byzantines. The interest in ancient texts and especially in scientific and astrological works from Greek and Roman antiquity reached a peak during two specific periods of the Byzantine Empire: with the advent of the Macedonian dynasty in the second half of the ninth century, especially during the reign of Constantine VII Porphyrogenitus (first half of the tenth century), and in the fourteenth and fifteenth centuries, with the re-conquest of Constantinople and the rise of the Paleologan dynasty.⁶⁸ Significantly, the *Handy Tables* are preserved in forty-five manuscripts that mostly date either to the ninth/tenth or to the fourteenth to sixteenth centuries, with the *Hemerologia* being included in four manuscripts dating to the ninth/tenth and fourteenth century, thus confirming this distribution pattern.

While all this may shed some light on the times, contexts, and modes of transmission of the *Hemerologia* during the middle ages, it becomes clear that the surviving evidence does not allow to determine with any certainty whether the *Hemerologia* originated in the Roman period, in late antiquity, or in the early middle ages. The question of the date of creation of the *Hemerologia* –in the form in which they are currently preserved– remains open.

V. THE *HEMEROLOGIA*: FUNCTIONS AND PURPOSES

The question of whether the *Hemerologia* tables originated in the Roman or early medieval period is directly linked to another central issue: for what purpose or purposes were the *Hemerologia* produced? The answer to this question is relatively straightforward if we assume that early medieval scholars composed the *Hemerologia*. Comparative calendar tables which permit the transposition of dates from local calendars of the eastern Roman provinces to the Julian calendar and vice versa would have been of service to medieval intellectuals as an additional aid to astrological and astronomical reckonings based on examples of dates and astronomical events from antiquity, as well as, presumably, for a variety of chronological calculations (including Computus and other liturgical calculations). On the other hand, if we assume that the *Hemerologia* originated in the Roman period, a univocal and definite answer to the question of their purposes and functions can hardly be provided. In his fundamental edition of the four preserved sets of calendar conversion tables, Wilhelm Kubitschek did not concern himself with what might have been the point of composing

⁶⁵ Kubitschek, *Kalenderbücher*, pp. 79–81; Stern, *Calendars in Antiquity*, pp. 260–61.

⁶⁶ Tihon, *Les 'Tables Faciles' de Ptolémée*, p. 52.

⁶⁷ F. Marchetti, 'La trasmissione della cultura scientifica greca a Bisanzio: codici di medicina e astronomia della Biblioteca Medicea Laurenziana', in M. Bernabò (ed.), *Voci dell'Oriente. Miniature e testi classici da Bisanzio alla Biblioteca Medicea Laurenziana* (Firenze: Polistampa, 2011), pp. 121–32, esp. 122.

⁶⁸ *Ibid.*, pp. 123–24.

them in the first place. The first scholar to make assumptions on their possible functions and purposes seems to have been Sacha Stern. Assuming, as he does, that large comparative calendar tables of the type of the *Hemerologia* did exist in the Roman period, one can only agree on his plausible idea that these 'were probably intended for scribes and imperial administrators, to help them with the conversion of multiple calendar dates into one another'.⁶⁹ In this perspective, one can imagine that such conversion tables, perhaps written on scrolls or wax tablets or some other perishable material that has not been preserved over time, were at the disposal of provincial officials and governors in the Roman East.

Additional functions and purposes of these texts are just as plausible: as suggested again by Stern, the *Hemerologia* may have also served the needs of commercial and other private uses, or carried ideological and political significance, representing local adherence to the Roman imperial power. In this respect, one may think of the calendar of Asia that was adopted very early in celebration of the emperor Augustus; or the Metropolis inscription, whose large dimensions and central position within the public space of the city suggest that the monument was not merely aimed at facilitating conversions of dates of the calendar of the province of Asia into Julian dates and vice versa; presumably, it also functioned as a means to popularise the Julian calendar in the eastern provinces and as such it did carry ideological and political significance, as a tangible sign of the Roman presence in the Greek East.

In this respect, one might wonder whether the *Hemerologia* may be seen as an instrument for the fixation of provincial calendars and the imposition of conformity to the Julian calendar, or, on the contrary, as a 'celebration of diversity'. In this connection, it is deemed worth formulating some reflections on the social and political implications of the use of multiple dating systems in the Roman East. Let us consider the relatively numerous cases of double dates, that is, dates given according to the Julian calendar and a local calendar, in epigraphic and papyrological documents from the Eastern provinces of the Roman Empire, which are mostly documents of an official character. In a number of instances, dates are given in Latin as well as Greek, such as in *P.Flor. 2.278 = CPL 145*, col. II (a military text from Heliopolis dating to the late second or early third century CE, on which see further no. 25 in the list of new external sources below): *X Kal(endas) Aug(ustas) Ἐπειφ κθ*. This bilingual date gives the day of the month in both the Julian calendar (in Latin) and the Alexandrian calendar (in Greek), and translates as 'the 10th day before the calends of August, 29 Epeiph', both dates corresponding to 23 August. In cases like this, as well as when double dates are given in one language, either Latin or Greek, the Roman date is required to confer official status on the document, whereas the date given according to the local calendar is presumably for the benefit of those who were not particularly familiar with the Roman system and, at the same time, adds precision to the document itself. In general terms, it could be said that double dates, particularly bilingual ones, testify to the celebration of diversity and the multiculturalism that in many respects did characterise the Roman Empire. Quite different assumptions can be drawn from the case of official documents emanating from the Roman administration in the Eastern provinces dated exclusively according to the Julian calendar and the Roman consular system – which seem to have been the norm, judging from the available evidence. Whether translated into Greek or put into Latin, a Roman date in a Greek document from the East might indeed be seen as symbolic of Roman domination, and even more so if that date is also expressed in Latin.⁷⁰ That said, it should not be forgotten that after the introduction of the Julian calendar, the Roman East was characterised by the unique feature of having multiple dating systems in place. On the contrary, in the western provinces the new calendar rapidly replaced completely all pre-existing local calendars. This phenomenon is in itself revelatory of the complexity of the social and political dynamics associated to the Roman

⁶⁹ Stern, *Calendars in Antiquity*, p. 261.

⁷⁰ J.N. Adams, *Bilingualism and the Latin Language* (Cambridge: Cambridge University Press, 2003), pp. 391–92.

presence in the East. It is clear that the Romans acknowledged the rich cultural tradition of their Greek subjects in the East, including as regards their calendrical traditions. And, as considered earlier, it appears that the eastern provinces (at least the Greeks of the Province of Asia) adopted the Julian calendar or adapted their local calendars to the Julian as part of a political game to demonstrate their loyalty to the Roman emperor. In this perspective, one can hardly conceive of the *Hemerologia* or more generally of the coexistence of the Julian calendar and a multiplicity of local calendars in the Roman East as a signal of Roman cultural and political hegemony on the eastern provinces.⁷¹

VI. NEW EXTERNAL EVIDENCE SINCE KUBITSCHKE'S 1915 STUDY

The *Hemerologia* were edited by Wilhelm Kubitschek, who not only published the tables with transcriptions and critical commentary, but also compared the data of the *Hemerologia* to that of relevant epigraphic, literary, and documentary sources that were available to him in the early twentieth century. My research on the *Hemerologia* within the framework of the project *Calendars in Antiquity and the Middle Ages* included a re-assessment of the information provided by these manuscripts by taking into account newly discovered epigraphic and documentary evidence since Kubitschek's work over a century ago.⁷² To this end, I carried out a systematic search for literary, epigraphic, and documentary evidence comprising a date given according to two or multiple calendars, as well as for sources providing equivalence among month names of different calendars, and related evidence. The current section, along with the paper itself, concludes with a full list of these new external sources accompanied by an indication of whether or not in each case the calendrical information is in agreement with that provided by the *Hemerologia*. One of the purposes of collecting and analysing these new data has been to establish to what extent the *Hemerologia* are consistent with external textual evidence from the Roman Empire, and how inconsistencies should be accounted for. While it appears that broad conclusions can hardly be drawn from the new evidence, to some extent one can still evaluate the significance of inconsistencies on a case-by-case basis. Even so, it must be borne in mind that in several cases discrepancies could be due to a wide range of factors, including ignorance of the local calendar on the part of Roman imperial administrators or, vice versa, ignorance of the Julian calendar on the part of the locals, as well as computational or scribal error. At least in some cases, however, inconsistencies between the *Hemerologia* and external evidence may also reflect regional diversity of calendars and/or diachronic change. Indeed, the historical reality behind the *Hemerologia* was probably more complex and flexible than the fixed schematism of the information provided by the four sets of calendar tables that are the focus of this paper: provincial calendars may have evolved and changed in the course of the Roman period, and it is clear that widespread calendars such as the calendar of Asia were not uniformly reckoned in any given period or geographic area – as is evident from the different types of Asian calendars listed in the *Hemerologia* themselves.

⁷¹ See generally Stern, *Calendars in Antiquity*, pp. 260–62.

⁷² In addition to his 1915 publication, a number of relevant sources also appear in W. Kubitschek, 'Kalenderstudien', *Jahreshefte des Österreichischen Archäologischen Institutes in Wien* 8 (1905), pp. 87–118 and idem, 'Der pamphyliche Kalender', *Wiener Studien. Zeitschrift für klassische Philologie* 34 (1912), pp. 347–51.

The large majority of these new sources include a double date or a date given according to multiple calendars.⁷³ More than half of these are dates expressed according to the Roman (= Julian) and the Egyptian (= Alexandrian) calendars. As noted above (p. 2 note 4), the latter is represented in the *Hemerologia* as the 'calendar of the Alexandrians'. About twenty new sources show a date given according to the Julian calendar and the calendar of Provincia Arabia, i.e. the calendar that was mainly used in the Province of Palaestina Tertia, formerly known as Province of Arabia (cf. p. 2 note 7). A papyrus from Oxyrhynchus (no. 64) is dated according to the Egyptian calendar and the calendar of Provincia Arabia. The date of a funerary inscription from Abda in the Province of Arabia (no. 68) is given according to the calendars of Gaza and Elousa, the latter corresponding to the calendar of Provincia Arabia. In twelve sources the date is expressed according to the Roman calendar and the calendar of the Province of Asia. We then have four cases of dates given according to the Roman calendar and the calendar of Antioch (cf. p. 2 note 5); a text dated by the Roman calendar and the calendar of Gaza (no. 88); and a text dated by the Roman calendar and a calendar used in the province of Judaea/Palaestina (no. 89).

Out of a total of twenty-three sources including double dates that are not in agreement with the *Hemerologia*,⁷⁴ it is to be noted that in nine cases the discrepancy in the two dates is of one day.⁷⁵ Four of these nine sources involve equivalences between the Roman and Egyptian calendars;⁷⁶ obviously, this proportion may be simply reflecting the higher amount of sources comprising the Roman and Egyptian calendars. Also, in six further cases the discrepancy in the two dates appears to be of one month.⁷⁷ The relatively high number of one-day or one-month discrepancies is potentially significant, though it does not necessarily imply developments in the calendars involved: the possibility remains that these incongruities are due to recurrent computational or scribal errors.

The sources including double dates which were collected and analysed by Kubitschek in the early 20th century do not dramatically change the picture drawn so far. These are twenty-five and provide a total of twenty-nine date equivalences. Of these, six are in disagreement with the *Hemerologia*. In the aforementioned passage by Epiphanius of Salamis giving the date of the Epiphany as well as the date of Jesus's baptism according to a number of different calendars (cf. p. 8 with note 33), all dates agree with the *Hemerologia* except for those given according to the Cappadocian calendar. In this specific case it is difficult to assess the extent of the deviation, due to the fact that the limited number of ancient sources pertaining to the Cappadocian calendar give different names for the months of this poorly attested calendar (cf. p. 11 note 48). The remaining four cases comprise a two-day discrepancy in a date equivalence between the Julian calendar and the calendar of Gaza;⁷⁸ a one-month discrepancy in a date equivalence between the Julian and Pamphylian calendars, the latter corresponding to the calendar of Asia;⁷⁹ and, finally, two inscriptions providing date equivalences between the Julian calendar and the calendar of the ancient city of Tyras in Lower Moesia (northern coast of the Black Sea). Earlier scholars assumed that the calendar used in Tyras was the calendar of Asia, in which case there would be a five-day and a seventeen-day discrepancy

⁷³ These are 88, out of a total of 104 new sources. Only sources providing fully preserved double dates have been taken into account. Documents including fragmentary double dates in which only one of the two dates is complete were normally restored on the basis of the equivalent date, and are therefore of no use for our present purposes.

⁷⁴ These are nos. 1, 23, 27–29, 32, 47, 49–52, 56, 60, 63–64, 67, 74–75, 78, 80, 83, 87, 89. The percentage of new sources with double dates that are not in agreement with the *Hemerologia* is c. 26%.

⁷⁵ Nos. 27–28, 32, 47, 50–51, 74–75, 87.

⁷⁶ Nos. 27–28, 32, 47.

⁷⁷ Nos. 23, 29, 60, 63, 67, 83.

⁷⁸ In a passage from the *Life of Porphyry of Gaza*, on which see Kubitschek, 'Kalenderstudien', p. 103 n. 18; *ibid.*, p. 99.

⁷⁹ In a papyrus (BGU 3.887), on which see Kubitschek, *Kalenderbücher*, p. 108.

in the two date equivalences.⁸⁰ The assumption that the calendar used in Tyras was the calendar of Asia is based on the fact that Tyras was a Milesian colony. In actual fact, however, we have no evidence of this, as neither of the Tyras inscriptions is anywhere near compatible with the calendar of Asia. Moreover, by the Roman period, the identity of Tyras as a Milesian colony may have been long forgotten; therefore, there is no reason why, in the Roman period, Tyras should have adopted the calendar of Asia. It thus appears safer to conclude that the two dates in question do not correspond to any known calendar.

The list of new sources is arranged according to the provincial calendar which the texts attest; within each subdivision, the entries are ordered chronologically from the earliest to the most recent.⁸¹ Unless otherwise stated, equations are in agreement with the *Hemerologia*.

List of new sources

i. DOUBLE/MULTIPLE DATES

a) EGYPTIAN (= ALEXANDRIAN) CALENDAR

- 1) Papyrus. Provenance unknown (Egypt), late first century BCE (CPL 247 = CEL 8 = ChLA 43.1241c). Private letter, dated according to the Julian and Egyptian calendars: XIII · K(alendas) · August(as) · Ἐπειφ κζ. 'On the 14th day before the calends of August, the 27th of Epeiph.' The equation is not in agreement with the *Hemerologia*. There is a two-day discrepancy: the 14th day before the calends of August = 19 July; 27 Epeiph = 21 July. De Romanis points out that the equivalence is correct if we assume that the Egyptian date is in fact not an Alexandrian but an Old Egyptian one.⁸² According to the reconstruction of the late first-century BCE Julian and Alexandrian calendars by Bennett, the equation 27 Epeiph = 19

⁸⁰ The inscriptions are *IosPE* I² 2 and *IosPE* I² 3, on which see Kubitschek, *Kalenderbücher*, p. 111. The date equivalence in *IosPE* I² 3 has been read by V. Latyshev as πρὸ · ιγ' καλανδῶν Μαρτίων, Ληνεῶνος η' ('on the 13th day before the calends of March, on the 8th of Lenaion'). Kubitschek assumes that the local date should be read instead as Ληνεῶνος Η^α, that is, Η ἀπιόντος, which indeed corresponds to the 13th day before the calends of March. Sacha Stern adds that the initial alpha of the word that follows the date equivalence (ἀνεστάθη) might have been confused with the alpha of the date (abbreviation of ἀπιόντος) and hence erroneously omitted.

⁸¹ Both no. 64 and no. 68 appear under 'Calendar of Provincia Arabia', though they are also relevant to the Egyptian calendar and the calendar of Gaza, respectively.

⁸² F. De Romanis, 'Lysas e il tempo: ulteriori considerazioni su *AEp*, 1954, 121a', *Epigraphica* 63 [2001], pp. 18–22.

July would have applied in the years 11, 8, and 7 BCE.⁸³ If the old Egyptian calendar was used in this papyrus, as De Romanis suggests, then the equation would have applied in the years 20–18 BCE.⁸⁴ Given that these solutions only apply to a limited number of years in the late first century BCE, it is plausible to suggest that this equation might be an error.

- 2) Papyrus. Provenance unknown, 62 CE (CPL 148). Birth certificate, dated according to the Julian and Egyptian calendars: *X K(alendas) Augustas, mense Epiph die XXIX*. ‘On the 10th day before the calends of August, the 29th of the month Epiph.’
- 3) Papyrus. Provenance unknown, 81 CE (the text is dated to ‘the third year of the *theos* Titus’) (P.Lond. 1.130). Horoscope dated according to the Alexandrian, Julian, and Old Egyptian calendars: Φαρμοῦθι ἕκτηι, ὡς δὲ Ῥωμαῖοι ἄγουσι καλάνδαις Ἀπριλείαις, κατ’ ἀρχαίους δὲ Παχῶν νεομηνία εἰς τὴν δευτέραν. ‘On the sixth of Pharmouthi; according to the Roman reckoning, on the calends of April, while according to the old (calendar), on Pachon the first to the second.’⁸⁵
- 4) Wood tablet. Philadelphia, Egypt, 94 CE (CPL 104 = ILS 3.2 9059). Edict of Domitian on the military, dated according to the Julian and Egyptian calendars: *VI Non(as) Iulias, mense Epiph die VIII*. ‘On the 6th day before the nones of July, the 8th of the month Epiph.’
- 5) Wood tablet. Alexandria, Egypt, 109 CE (CPL 150 = BGU VII 1691) Birth certificate, dated according to the Julian and Egyptian calendars: *[pr(idie)] K(alendas) Iu[l](ias), [mense] Ehip die VI*. ‘On the day before the calends of July, the 6th of the month Epiph.’
- 6) Papyrus. Alexandria, Egypt, 119 CE (BGU 1.140). Imperial letter, dated according to the Julian and Egyptian calendars: *πρίδιε νό[ν]ας Ἀουγο[ύ]σ[τ]ας, ὃ ἔστιν Μεσορῆ ια*. ‘On the day before the nones of August, which is the 11th of Mesore.’
- 7) Wood tablet. Arsinoites, Egypt, 128 CE (CPL 151) Birth certificate, dated according to the Julian and Egyptian calendars: *Idib(us) April(ibus), mense Pharmuthi die XVIII*. ‘On the ides of April, the 18th day of the month Pharmouthi.’
- 8) Wood tablet. Philadelphia, Egypt, 131 CE (CPL 160). Birth certificate dated according to the Julian and Egyptian calendars: *VII Kal(endas) Ia[nuar](ias)], mense Choeac die XXX*. ‘On the 7th day before the calends of January, the 30th day of the month Choiak.’ As De Romanis explains, the date should be 27 December (instead of 26 December), as 131 CE was a leap year in the Alexandrian calendar.⁸⁶ This source, when considered along with nos. 16 and 20 below, raises the following question: is this just an error, or does it reveal, in fact, a certain scribal practice, namely that when a one-day discrepancy occurred between the Alexandrian and the Julian calendars (between the extra epagomenal day in August, and the bissextile day in the

⁸³ C. Bennett, ‘The early Augustan calendars in Rome and Egypt’, *Zeitschrift für Papyrologie und Epigraphik* 142 (2003), pp. 221–40; idem, ‘The two Egyptian birthdays of Augustus’, *Zeitschrift für Papyrologie und Epigraphik* 161 (2007), pp. 195–98.

⁸⁴ Cf. Stern, *Calendars in Antiquity*, pp. 266–67, table 5.4.

⁸⁵ See O. Neugebauer and H.B. van Hoesen, *Greek Horoscopes* (Philadelphia: American Philosophical Society, 1959), p. 24; D. Hagedorn and K. Worp, ‘Das Wandeljahr im Römischen Ägypten’, *Zeitschrift für Papyrologie und Epigraphik* 104 (1994), pp. 243–55, esp. 247.

⁸⁶ De Romanis, ‘Lysas e il tempo’, p. 17.

following February) – which only lasted for a period of six months, every four years – scribes often did not bother to take account of it?⁸⁷

- 9) Papyrus. Oxyrhynchus, Egypt, 134 CE (*P.Oxy.* 38.2857 = *ChLA* 47.1413). Roman will, dated according to the Julian and Egyptian calendars: πρὸ ις Καλανδ(ῶν) Ἰουνίων, Παχῶν κβ. ‘On the 16th day before the calends of June, the 22nd of Pachon.’
- 10) Papyrus. Provenance unknown, 143 CE (*BGU* 1.113). Document connected with the army, dated according to the Julian and Egyptian calendars: ἀπὸ τῆς πρ[ὸ] ιε καλανδῶν Μ[αρτίω]ν, ἥτι[ς] ἐστ[ί]ν ἰ [το]ῦ Ἰ [Μ]εχείρ κα, ἄ[χρι] τῆς πρὸ ιζ καλανδῶν Ἰου[ν]ίων, [ἥτι]ς ἐστίν μ[ηνὸς] Παχῶν] κα. ‘From the 15th day before the calends of March, that is, the 21st of Mecheir, until the 17th day before the calends of June, that is the 21st of the month of Pachon.’
- 11) Wood tablet. Alexandria, Egypt, 144 CE (*CPL* 152). Birth certificate, dated according to the Julian and Egyptian calendars: *Idib(us) Octobr(ibus), mense Phaophi die XVIII*. ‘On the ides of October, the 18th of the month Phaophi.’
- 12) Wood tablet. Provenance unknown, 145 CE (*CPL* 153). Birth certificate, dated according to the Julian and Egyptian calendars: *XI kq[!] Iulias, [me]nse Paun[i die] XX[VI]I*. ‘On the 11th day before the calends of July, the 27th of the month Pauni.’
- 13) Wood tablet. Alexandria, Egypt, 145 CE (*CPL* 154). Birth certificate, dated according to the Julian and Egyptian calendars: *XVI K(alendas) Iun(ias), mense Pachon die XXII*. ‘On the 16th day before the calends of June, the 22nd of the month Pachon.’
- 14) Wood tablet. Karanis, Arsinoites, 145 CE (*CPL* 162) Birth certificate, dated according to the Julian and Egyptian calendars: *III · K(alendas) · Maias, mense Pachon die · IIII*. ‘On the 3rd day before the calends of May, the 4th of the month Pachon.’
- 15) Inscription on stone. Rome, 146 CE (*IGUR* I 77 = *IG* XIV 1084). Dedication of the *Paianistai* of Serapis, dated according to the Julian and Egyptian calendars: τῆ πρ(ὸ) · α · νωνῶν Μαίων, ἥτις ἐστίν κατὰ Ἀλεξανδρεῖς Παχῶν ια’. ‘On the day before the nones of May, which is, according to the Alexandrians, the 11th of Pachon.’
- 16) Wood tablet. Alexandria, Egypt, 147 CE (*CPL* 155). Birth certificate, dated according to the Julian and Egyptian calendars: *IIII Kal(endas) Septembres, mense Mesore die intercalari VI*. ‘On the 4th day before the calends of September, the 6th intercalary day of the month Mesore.’⁸⁸

⁸⁷ Sacha Stern (personal communication).

⁸⁸ 148 CE was a leap year, with a bissextile in February. This means that the preceding 1 Thoth, 147 CE, was postponed to 30 August through the intercalation of a 6th epagomenal (on 29 August). This appears to be the only attestation of the use of *intercalaris* to designate an epagomenal day in Latin non-literary sources. Bede (*De ratione temporum* 11) refers that the Egyptians ‘call the remaining five days epagomenals – ‘intercalated’ or ‘added’. Every fourth year, they add a sixth day to these five, made up from the quarter-days’ (*residuos quinque die epagomenas, vel intercalares, sive additos vocant, quibus etiam quarto anno diem sextum, qui ex*

- 17) Wood tablet. Alexandria, Egypt, 148 CE (CPL 156). Birth certificate, dated according to the Julian and Egyptian calendars: *III non(as) Novembr(es), mense Athyr VII*. 'On the 3rd day before the nones of November, the 7th of the month Hathyr.'
- 18) Wood tablet. Philadelphia, Egypt, 157 CE (BGU 7.1695 = CPL 223 = AE 1927, 180). Will of a soldier, dated according to the Julian and Egyptian calendars: *Nonis Octobr(ibus), mense Phaophi die X*. 'On the nones of October, the 10th day of the month Phaophi.'
- 19) Papyrus. Arsinoites, Egypt, 160 CE (P.Ross. Georg. 2.26). Roman will, dated according to the Julian and Egyptian calendars: *πρὸ τεσσάρων καλανδῶν Φεβ[ρουα]ρίω(ν), ὃς ἐστὶν Μεχίρ τετράς*. 'On the fourth day before the calends of February, which is the fourth of Mecheir.'
- 20) Wood tablet. Alexandria, Egypt, 163 CE (CPL 157). Birth certificate, dated according to the Julian and Egyptian calendars: *X K(alendas) Dec(embres), mense Ath[y]r die XXV*. 'On the 10th day before the calends of December, the 25th of the month Hathyr.'⁸⁹
- 21) Papyrus. Philadelphia, Egypt, 169 CE (BGU 7.1655). Opening of a Roman will, dated according to the Julian and Egyptian calendars: *πρὸ ις Καλανδῶν Μ[α]ρτίων, μηνὸς [Ἑλλ]ήνων Μεχεῖρ κ*. 'On the 16th day before the calends of March, the 20th day of the Greek month Mecheir.' *πρὸ γ Νουῶν Ἰουνίων, Παο[ῖ]νι . . . [ἡμ]έρῃ θ*. 'On the 3rd day before the nones of June, the 9th day of Payni.'
- 22) Wood tablet. Krokodilopolis, Egypt, 170 CE (AE 1906, 172 = CPL 215). Document regarding inheritance, dated according to the Julian and Egyptian calendars: *III Kal(endas) Octobr(es), mense Phaophi die II*. 'On the 3rd day before the calends of October, the 2nd day of the month Phaophi.'
- 23) Papyrus. Karanis Arsinoites, Egypt, 189 and 194 CE (BGU 1.326). Greek version of a Roman will, dated according to the Julian and Egyptian calendars. There are two different date equivalences. The first runs as follows: *πρὸ ιε καλανδῶν Νοεμβρ[ι]ῶν, Ἀθῦρ κα*. 'On the 15th day before the calends of November, the 21st of Hathyr.' There is a discrepancy of one month: the 15th day before the calends of November = 18 October; 21 Hathyr = 17 November. The equivalence is correct if we assume that the Egyptian date is correct and that the scribe accidentally wrote November instead of December in the Roman date.⁹⁰ The second equation is in agreement with the *Hemerologia*: *πρὸ θ καλανδῶν Μαρτιῶν, Μεχεῖρ κζ*. 'On the 9th day before the calends of March, the 27th of Mecheir.'

quadrantibus confici solet, adnectunt). Bede appears to be quoting Isidore of Seville (*De natura rerum* 4.7; cf. also 1.5), who in turn presumably draws on Macrobius (*Sat.* 1.15.1). The latter tells that the Egyptians 'return' the remaining five days to their year, and refers to the 6th epagomenal as *intercalaris* (*reliquos quinque dies anno suo reddunt, annectentes quarto quoque anno exacto intercalarem, qui ex quadrantibus confit*). In Latin inscriptions, *intercalaris* occurs mostly as part of date formulae according to the pre-Julian calendar. Greek documentary and epigraphic sources from Egypt show formulae such as *Μεσορῆ ἐπαγομένων δ'* to express epagomenal dates (SB 1.411). It thus seems that there was no standard Latin term for the epagomenals, and that *mense Mesore die intercalari VI* in our source reproduces the standard Greek formula.

⁸⁹ There is no discrepancy in these dates, as 163 CE was an Egyptian leap year.

⁹⁰ Cf. J. Rowlandson, *Women and Society in Greek and Roman Egypt: A Sourcebook* (Cambridge: Cambridge University Press, 1998), p. 190; nos. 29, 60, 63, 67, 83.

- 24)** Wood tablet. Alexandria, Egypt, 198 CE (*SB* 3.6223 = *CPL* 202 = *AE* 1919, 23). Assignment of a guardian to a woman, dated according to the Julian and Egyptian calendars: *VIII Kal(endas) Octobr(es), mense Thoth die XXVI*. 'On the 9th day before the calends of October, the 26th day of the month Thoth.'
- 25)** Papyrus. Heliopolites, Egypt, late second/early third century CE (*P.Flor.* 2.278 = *CPL* 145, col. II). Military letter, dated according to the Julian and Egyptian calendars: *X Kal(endas) Aug(ustas), Ἐπειφ κθ*. 'On the 10th day before the calends of August, 29 Epeiph.'
- 26)** Papyrus. Provenance unknown, late second or early third century CE (*P.Ryl.* 2.92). List of work-people, dated according to the Julian and Egyptian calendars: *πρὸ ιδ̄ καλανδῶν Ἰουνῶν, [Πα]χῶν κδ*. 'On the 14th day before the calends of June, 24th of Pachon.' *πρὸ ιᾱ καλανδῶ[ν] Ἰουνίων], Παχῶν κζ*. 'On the 11th day before the calends of June, 27th of Pachon.'
- 27)** Wood tablet. Hermopolis, Egypt, 211 or 221 CE (*CPL* 172). Manumission dated according to the Julian and Egyptian calendars: *VII Kal(endas) Augustas, mense Mesore die I*. 'On the 7th day before the calends of August, the 1st of the month Mesore.' The equation is not in agreement with the *Hemerologia*. There is a discrepancy of one day: the 7th day before the calends of August = 26 July; 1 Mesore = 25 July.
- 28)** Papyrus. Apollonopolites Heptakomias, Egypt, 212 CE (*P.Giss.* 40).⁹¹ Edicts of Caracalla, dated according to the Julian and Egyptian calendars: *πρὸ ε̄ εἰδῶν Ἰουλίων, Ἐπειφ ις*. 'On the 5th day before the ides of July, 16th Epeiph.' The equation is not in agreement with the *Hemerologia*. There is a discrepancy of one day: the 5th day before the ides of July = 11 July; 16 Epeiph = 10 July.⁹²
- 29)** Papyrus. Oxyrhynchus, Egypt, 224 or 225 CE (*P.Oxy.* 22.2348). Greek version of a Roman will, dated according to the Julian and Egyptian calendars. There are two different date equivalences; in the first one the Egyptian month day is fragmentary and has been restored on the basis of the Julian date: *πρὸ ιβ̄ καλανδῶν Α[ύγ]οῦστων, Ἐπειφ κ[ζ]*. 'On the 12th day before the calends of August, the 27th of Epeiph.' The second equation is not in agreement with the *Hemerologia*: *τῆ̄ πρὸ μιᾶς εἰδῶν Ὀκτωβρίαν, Θῶθ ιε*. 'On the day before the ides of October, the 15th of Thoth.' The day before the ides of October = 14 October; 15 Thoth = 12 September. As already pointed out by M. Amelotti (reported in *P.Oxy*) and more recently restated by De Romanis,⁹³ there appears to be a discrepancy of one month: the equivalence between the two dates is correct if we assume that the scribe wrote October instead of September, whereupon the day before the Ides becomes the 12th.⁹⁴

⁹¹ = P. Van Minnen, 'Three edicts of Caracalla? A new reading of P.Giss.40', *Chiron* 46 (2016), pp. 205-21.

⁹² Taking into consideration that the Roman date of Caracalla's edicts is confirmed by the Justinian Code as 11 July, Sijpensteijn ('Some remarks on Roman dates in Greek papyri', *Zeitschrift für Papyrologie und Epigraphik* 33 [1979], pp. 229-40, esp. 235) and Van Minnen ('Three edicts of Caracalla?', pp. 205-21, esp. 217 n. 9) suggest two different (though equally plausible) explanations for the reasons that may have led to this error. The first attributes it to 'the different ways the Greek scribes used to express the day immediately before one of the three fixed points in a month (...) if the scribe took *πρὸ ᾱ εἰδῶν Ἰουλίων* as an equivalent of *pridie idus Iulias* he would arrive with *πρὸ ε̄ εἰδῶν Ἰουλίων* at Epeiph 16.' According to Van Minnen, the scribe was 'probably distracted by the date in the next line (16 Mecheir)' and wrote 16 Epeiph instead of 17 Epeiph.

⁹³ De Romanis, 'Lysas e il tempo', p. 17.

⁹⁴ Cf. sources nos. 23, 60, 63, 67, 83.

- 30)** Wood tablet. Oxyrhynchus, Egypt, 242 CE (*CPL* 163) Birth certificate, dated according to the Julian and Egyptian calendars: *mense Phamenoth die XXI, XVI Kal(endas) April(es)*. ‘On the 21st day of the month Phamenoth, the 16th day before the calends of April.’
- 31)** Papyrus. Oxyrhynchites, Egypt, 245 CE (*P.Oxy.* 12.1466 = *ChLA* 46.1361 = *CPL* 204). Request for a guard by a woman, dated according to the Julian and Egyptian calendars: Παχών κς, πρὸ ιβ καλανδῶν Ἰουνίων. ‘On the 26th of Pachon, the 12th day before the calends of June.’
- 32)** Papyrus. Antinoupolis, Egypt, 249 CE (*CPL* 216 and 216 appendix = *SB* 6.9298). Inheritance matter, dated according to the Julian and Egyptian calendars. πρὸ δέκα ὀκτώ [καλ]ανδῶν Ὀκτωβρίων, Θῶθ ιη. ‘On the 18th day before the calends of October, 18th of Thoth.’ The equation is not in agreement with the *Hemerologia*. There is a discrepancy of one day: the 18th day before the calends of October = 14 September; 18 Thoth = 15 September.⁹⁵
- 33)** Papyrus. Oxyrhynchus, Egypt, 258 CE (*P.Oxy.* 9.1201). Succession to an inheritance, dated according to the Julian and Egyptian calendars: π[ρ]ὸ η καλ(ανδῶν) Ὀκτωβρίω[ν], Θῶθ κζ. ‘On the 8th day before the calends of October, 27 Thoth.’
- 34)** Papyrus. Karanis, Egypt, 302 CE (*P.Cairo Isid.* 41). Receipts for various taxes, dated according to the Julian and Egyptian calendars: α π[ρ]ὸ Καλενδῶν Ἰουνίων τοῦτ’ ἔστιν Παῦνι ς. ‘On the day before the calends of June, that is, the 6th of Pauni.’
- 35)** Papyrus. Karanis, Egypt, 309 CE (*P.Cairo Isid.* 9). Report of the *sitologoi*, dated according to the Julian and Egyptian calendars: εἰς τὴν περιδ(ιε) Καλ(ενδας) Δεκεμ(βρες), Χοι[ά]κ δ. ‘Until the day before the calends of December, the 4th of Choiak.’
- 36)** Papyrus. Theadelphia, Egypt, 310 CE (*P.Sakaon* 1 = *ChLA* 19.685). Declaration of persons, dated according to the Julian and Egyptian calendars: πρὸ γ καλανδῶν Μαρτίων, ἥτις ἔστιν Φαμενῶθ γ. ‘On the 3rd day before the calends of March, that is the 3rd of Phamenoth.’
- 37)** Papyrus. Kellis, Egypt, 310 CE (*P.Kellis* 1.40). Loan of money dated according to the Julian and Egyptian calendars: πρὸ δ Εἰδῶν Ἰουλίων ὃ ἔστιν Ἐφίφ ιη κατ’ Ἑλληνας. ‘On the 4th day before the ides of July, which is 18 Epiph according to the Greeks.’⁹⁶
- 38)** Papyrus. Theadelphia, Egypt, 312 CE (*P.Flor.* 1.36 = *ChLA* 25.778). Petition dated according to the Julian and Egyptian calendars: *XVI Kal(endas) Septembres*, Μεσορή κδ. ‘On the 16th day before the calends of September, the 24th of Mesore.’
- 39)** Papyrus. Karanis, Egypt, 315 CE (*P.Cairo Isid.* 74 = *P. Merton* 2.91). Petition dated according to the Julian and Egyptian calendars: *VI Kal(endas) Ianuari(as)*, Χοιὰκ λ. ‘On the 6th day before the calends of January, the 30th of Choiak.’ The equation is in agreement with the *Hemerologia*, as 315 CE was a leap year.

⁹⁵ Sijpensteijn (‘Some remarks’, pp. 236–37) attributes this incongruity to ‘the total equation of Roman and Egyptian months’, while De Romanis (‘Lysas e il tempo’, pp. 9–36, esp. 17) assumes that the one-day discrepancy between the Roman and the Egyptian date is due to the attribution of 31 days to a Roman month that had 30 days. According to Sacha Stern (personal communication), the error comes from assimilation of the two dates (18 for both). Cf. no. 49 below.

⁹⁶ The formula κατ’ Ἑλληνας refers to the Alexandrian calendar. Cf. Hagedorn and Worp, ‘Wandeljahr’, esp. p. 245; Jones, *Astronomical Papyri*, vol. 1, p. 12.

- 40) Papyrus. Ptolemais Euergetis, Arsinoites, Egypt, 318/320 CE (*P. Ryl.* 653). Judicial proceedings, dated according to the Julian and Egyptian calendars: *die III Nonas Iunias*, Παῦνι θ. ‘On the 3rd day before the nones of June, 9 Payni.’
- 41) Papyrus. Arsinoites, Egypt, 321 CE (*P.Thead.* 13 = *ChLA* 41.1204). Judicial proceedings, dated according to the Julian and Egyptian calendars: *die pridie Idus Dec[em]bres*, Χοιάκ ις. ‘On the day before the ides of December, the 16th of Choiak.’
- 42) Papyrus. Hermoupolis Magna, Egypt, probably 323 CE (*P.Herm.* 18). Record of official proceedings, dated according to the Julian and Egyptian calendars: πρὸ η εἰδῶν Δεκεμβρίων, Χοιάκ θ. ‘On the 8th day before the ides of December, the 9th of Choiak.’
- 43) Papyrus. Alexandria, Egypt, 350 CE (*P.Abinn.* 63 = *ChLA* 18.661). Legal text, dated according to the Julian and Egyptian calendars: *die Idus Novembr(es)* Ἀθῦρ ιζ. ‘On the ides of November, the 17th of Hathyr.’
- 44) Church Council, Ephesus, Province of Asia, 431 CE (*ACO* 1.1.3, p. 53, l.9; 1.1.3, p. 53, l.11; 1.1.3, p. 60, l. 7; 1.1.7, p. 84, l. 33). Four dates given according to the Julian and Egyptian calendars: τῆι πρὸ ἕξ Εἰδῶν Ἰουλίων, ἥτις ἐστὶ κατ’ Αἰγυπτίους Ἐπιφ <ις>. ‘On the sixth day before the ides of July, which is the 16th of Epeiph according to the Egyptians.’ τῆι πρὸ πέντε Εἰδῶν Ἰουλίων, ἥτις ἐστὶ κατ’ Αἰγυπτίους Ἐπιφ <ιζ>. ‘On the fifth day before the ides of July, which is the 17th of Epeiph according to the Egyptians.’ τῆι πρὸ δέκα Καλανδῶν Ἰουλίων, Παυνὶ εἰκάδι ὀγδόηι κατ’ Αἰγυπτίους. ‘On the tenth day before the calends of July, which is the 28th of Payni according to the Egyptians.’ τῆι πρὸ δεκαμῖα Καλανδῶν Αὐγούστων, ἥτις ἐστὶ κατ’ Αἰγυπτίους Ἐπιφὶ <κη>. ‘On the eleventh day before the calends of August, which is the 28th of Epeiph according to the Egyptians.’ The equations are in agreement with the *Hemerologia*.
- 45) Church Council, Chalcedon, Bithynia, 451 CE (*ACO* 2.1.1, p. 77, l. 13; 2.1.1, p. 189, l. 33). Two dates given according to the Julian and Egyptian calendars: τῆι πρὸ ἕξ Εἰδῶν Αὐγούστων, ἥτις ἐστὶν κατ’ Αἰγυπτίους Μεσορὶ <ιε>. ‘On the sixth day before the ides of August, which is the 15th of Mesore according to the Egyptians.’ τῆι πρὸ ἕνδεκα Καλανδῶν Αὐγούστων, ἥτις ἐστὶ κατ’ Αἰγυπτίους Ἐπιφὶ <κη>. ‘On the eleventh day before the calends of August, which is the 28th of Epeiph according to the Egyptians.’ The equations are in agreement with the *Hemerologia*.
- 46) Papyrus. Herakleopolis, Egypt, 461 CE (*P.Oxy.* 16.1878 = *ChLA* 47.1408). Report of proceedings, dated according to the Julian and Egyptian calendars: *die Kal(endas) Septembr(es)*, Θῶθ δ. ‘On the calends of September, the 4th of Thoth.’
- 47) Inscription on a marble slab. Atripalda, Italy, 465 CE (*AE* 2008, 338 = *SEG* 58, 1079). Epitaph dated according to the Julian and Egyptian calendars. The inscription is Latin, except for the final part of the dating formula (comprising of indiction and Egyptian month date), which is written in Greek. The equation is not in agreement with the *Hemerologia*. The date of death is noted solely as *IIII idus Februa<ria>s*, that is, 10 February. The date of deposition is given as *III idus Februarias*, μεχὶρ ιη’. ‘On the 3rd day before the ides of February, 18th of Mecheir.’ There is a discrepancy of one day, as the Julian date equals 11 February, while 18 Mecheir ought to correspond to 12 February.⁹⁷

⁹⁷ Perrin wonders whether the Egyptian date refers to the date on which the inscription was engraved; Perrin presumably assumes that the engraver only intended to record the date of deposition, in the Julian and Egyptian calendars, but when writing the Egyptian date, he mistakenly entered the date of engraving, which is a plausible explanation for the one-day discrepancy; M.Y. Perrin, *AE* 2008, 338. Solin notes that the whole text,

- 48) Papyrus. Oxyrhynchus, Egypt, c. 480 CE (*P.Oxy.* 16.1876 = *ChLA* 47.1406). Report of proceedings for debt, dated according to the Julian and Egyptian calendars: *ἡμέρη προδὶε Ἰδῶν Νομβρίου* Ἀθηρῶν. ‘On the day before the ides of November, the 16th of Hathyr.’
- 49) Papyrus. Oxyrhynchus, Egypt, 497 CE (*P.Oxy.* 16.1982). Receipt dated according to the Julian and Egyptian calendars: [Φα]ῶφι δ, *octombrio* δ. ‘On the 4th of Phaophi, the 4th of October.’ The equation is not in agreement with the *Hemerologia*. 4 Phaophi corresponds to 1 October.⁹⁸

b) CALENDAR OF PROVINCIA ARABIA

- 50) Papyrus. Maoza, Province of Arabia, 125 CE (*P.Yadin* 1.14). Summons dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ τεσσαρῶν εἰδῶν Ὀκτωβρίων [κατὰ] δὲ τὸν ἀριθμὸν τῆς [ἐπαρχείας Ἀραβίας ἔτους εἰκοστοῦ] μηνὸς Ὑπερβερεταίου λεγ[ομένου] Θεσρεὶ τετάρτη καὶ εἰκάς. ‘On the fourth day before the ides of October, and according to the compute of the province of Arabia year twentieth, on the twenty-fourth of the month Hyperberetaios called Thesrei’. The equation is not in agreement with the *Hemerologia*. There is a discrepancy of one day: the 4th day before the ides of October = 12 October; 24 Hyperberetaios = 11 October.⁹⁹
- 51) Papyrus. Maoza, Province of Arabia, 125 CE (*P.Yadin* 1.15). Deposition dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ τεσσ[άρων] εἰδῶν Ὀκτωβρίων, κατὰ δὲ τὸν ἀριθμὸν τῆς ἐπαρχείας Ἀραβίας ἔτους εἰκοστοῦ μηνὸς Ὑπερβερεταίου λεγομένου Θεσρεὶ τετάρτη καὶ εἰκάς. ‘On the fourth day before the ides of October, and according to the compute of the province of Arabia year twentieth, on the twenty-fourth of the month Hyperberetaios called Thesrei’. This document was written by the same scribe immediately after *P.Yadin* 1.14 (= no. 50), and presents the same date equation (4th day before the ides of October and 24 Hyperberetaios), which is not in agreement with the *Hemerologia*.

including the Egyptian date, was inscribed by the same letter-cutter. He also points out that there are no signs that the deceased had eastern origins; H. Solin, *San Modestino e l'Abellinum Cristiana* (Avellino: ISSR G. Moscati, 2013), p. 225. The Egyptian date remains elusive. Whatever the reason for the presence of the Egyptian date, the one-day discrepancy between the Julian and the Egyptian date is likely to be a simple error in the conversion of the dates.

⁹⁸ According to Sijpesteijn, this text represents ‘the best documentary evidence for the total equation of Roman months with Egyptian months’; Sijpesteijn, ‘Some remarks’, p. 236. *Contra* Sacha Stern (personal communication) who observes that there is far too little evidence to claim that there ever was a total equation between the two calendars. In his opinion, it is far more likely that this is an error due to assimilation. Cf. no. 32 above.

⁹⁹ Sijpesteijn and Lewis agree that the discrepancy in these dates may be ascribed to the scribes in the new province Arabia having difficulties with the relatively new computational system of the Romans; Sijpesteijn, ‘Some remarks’, p. 240; Lewis, *P.Yadin* 1.14.

- 52)** Papyrus. Rabbath Moaba, Province of Arabia, 127 CE (*PXHev/Se* 62). Land declaration, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ τριῶν ἐ[ι]δῶν Δεκεμβρίων, κατὰ δὲ τὸν τῆς ν[έας] ἐπαρχείας Ἀραβίας ἀριθμὸν ἔτους δευτέρου εἰκοστοῦ μηνὸς Ἀπελλαίου ὀκτοκαιδεκά[τη]. ‘On the third day before the ides of December, and according to the computation of the new province of Arabia year twenty-second, on the eighteenth day of the month Apellaios’. The equation is not in agreement with the *Hemerologia*. There is a discrepancy of seven days: the 3rd day before the ides of December = 11 December; 18 Appellaios = 4 December.¹⁰⁰
- 53)** Papyrus. Rabbath Moaba, Province of Arabia, 127 CE (*P.Yadin* 1.16). Registration of land, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ τεσσάρων νωνῶν Δεκεμβρίων, κατὰ δὲ τὸν τῆς νέας ἐπαρχείας Ἀραβίας ἀριθμὸν ἔτους δευτέρου εἰκοστοῦ μηνὸς Ἀπελλαίου ἑκκαιδεκάτη. ‘On the fourth day before the nones of December, and according to the computation of the province of Arabia year twenty-second, on the sixteenth of the month Apellaios.’
- 54)** Papyrus. Maoza, Province of Arabia, 128 CE (*P.Yadin* 1.17). Deposit dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ δέκα καλανδῶν Μαρτίων, ἀριθμῶ δὲ τῆς νέας ἐπαρχείας Ἀραβίας δευτέρου εἰκοστοῦ Δυστέρου ἕκτη. ‘On the tenth day before the calends of March, and by the compute of the new province of Arabia year twenty-second, on the sixth of Dystros.’
- 55)** Papyrus. Maoza, Province of Arabia, 128 CE (*P.Yadin* 1.19). Deposit dated according to the Julian calendar and the calendar of Provincia Arabia: πρ[ὸ ἐκ]καίδεκα καλανδῶν Μαίμων, κατὰ [τὸν] ἀρ[ιθμὸν] [τῆς] νέας ἐπαρχείας ἔτους τρίτου εἰκ[οστο]ῦ ἄνδικου ἕκ[τη] καὶ εἰκάδι[ι]. ‘On the sixteenth day before the calends of May, and by the compute of the new province of Arabia year twenty-third, on the twenty-sixth of Xanthikos.’
- 56)** Papyrus. Maoza, Province of Arabia, 129 CE (*PXHev/Se* 64). Deed of gift, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ πέντε εἰδῶν [Νοουεμβρίων κατὰ τὸν ἀριθμὸν τῆς νέας ἐπαρχείας Ἀραβίας] ἔτους τετάρτου καὶ εἰκοστοῦ Δεῖου κ. ‘On the fifth day before the ides of November, and according to the computation of the new province of Arabia year twenty-fourth, on the twentieth of Dios.’. The equation is not in agreement with the *Hemerologia*. There is a discrepancy of three days: the 5th day before the ides of November = 9 November; 20 Dios = 6 November.¹⁰¹
- 57)** Papyrus. Maoza, Province of Arabia, 130 CE (*P.Yadin* 1.20). Concession of rights, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ ιγ καλανδῶν Ἰουλίων, κα-τὰ τὸ<ν> ἀριθμὸν τῆς νέας ἐπαρχείας Ἀραβίας ἔτους πέμπτου καὶ εἰκοστοῦ Δαισίου

¹⁰⁰ According to Lewis, the only conclusion that can be drawn from the date inconsistency here and in a few further documents from the same dossier is that ‘more than twenty years after Rome’s annexation of the province of Arabia local scribes were still having trouble equating the months and days of the old (Macedonian) and the new (Roman) calendar’; N. Lewis, ‘A Jewish landowner from the Province of Arabia’, *Scripta Classica Israelica* 8–9 (1985–8), pp. 132–37. Sacha Stern (personal communication) suggests that 18 Appellaios could very well be a lunar date. The pre-106 CE Nabatean calendar was lunar; if this lunar calendar was still in use in 127 CE, the scribe might have confused it with the new calendar of Provincia Arabia.

¹⁰¹ Regarding the reading Δεῖου κ, Cotton points out ‘there may not be enough room after the kappa for another letter’, which confirms that we have to assume that there is a discrepancy of three days between the Julian and the local calendars; Cotton, *PXHev/Se* 64.

λ. 'On the 13th day before the calends of July, and by the compute of the new province of Arabia year twenty-fifth, on the 30th of Daisios.'

- 58) Papyrus. Maoza, Province of Arabia, 130 CE (*P.Yadin* 1.21). Purchase of a date crop, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ τριῶν εἰδῶν Σεπτεμβρίων, κατὰ τὸ<ν> ἀριθμὸν τῆς νέας ἐπαρχίας Ἀραβίας ἔτους πέμτου καὶ εἰκοστοῦ Γορπιαίου τετάρτη καὶ εἰκάς. 'On the third day before the ides of September, and by the compute of the new province of Arabia year twenty-fifth, on twenty-fourth of Gorpiaios.'
- 59) Papyrus. Maoza, Province of Arabia, 130 CE (*P.Yadin* 1.22). Sale of a date crop, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ τριῶν εἰδῶν Σεπτεμβρίων, κατὰ τὸ<ν> ἀριθμὸν τῆς νέας ἐπαρχίας Ἀ[ρ]αβ[ί]ας [ἔτους πέμ<π>του] καὶ εἰκοστοῦ Γορπιαίου τετάρτη καὶ κας. 'On the third day before the ides of September, and by the compute of the new province of Arabia year twenty-fifth, on twenty-fourth of Gorpiaios.'
- 60) Papyrus. Maoza, Province of Arabia, 130 CE (*P.Yadin* 1.23). Summons dated according to the Julian calendar and the calendar of Provincia Arabia: π]ρὸ δεκαπέντε καλανδῶν Δεκεμβρίων Δ[ί]ου πρώτη. 'On the fifteenth day before the calends of December, on the first of Dios.' The equation is not in agreement with the *Hemerologia*: the 15th day before the calends of December (17 November) does not correspond to 1 Dios but to the 1st of the next month, Apellaios.¹⁰²
- 61) Papyrus. Maoza, Province of Arabia, 131 CE (*PXHev/Se* 65 = *P.Yadin* 1.37). Marriage contract, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ ἑπτὰ εἰδῶν Αὐγούστων, κατὰ δὲ τὸν τῆς [νέ]ας ἐπαρχίας Ἀραβίας ἀριθμὸν ἔτους ἕκτου καὶ εἰκοστοῦ μηνὸς Λῶ[ο]υ ἐννεακαιδεκάτῃ. 'On the seventh day before the ides of August, and according to the computation of the new province of Arabia year twenty-sixth, on the nineteenth of the month Loos'.
- 62) Papyrus. Maoza, Province of Arabia, 132 CE (*P.Yadin* 1.27). Receipt dated according to the Julian calendar and the calendar of Provincia Arabia: [π]ρὸ δεκατεσσάρων καλανδῶν Σεπτεμ[β]ρίων, κατὰ τὸν τῆς νέας ἐ[πα]ρχίας Ἀραβίας ἀριθμὸν ἔτους ἐβδόμου εἰκοστο[ῦ] μηνὸς Γορπιαίου πρώτ[η]. 'On the fourteenth day before the calends of September, and by the compute of the new province of Arabia year twenty-seventh, on the first of the month Gorpiaios.'
- 63) Papyrus. Maoza, Province of Arabia (written), 132 CE (*P.Yadin* 35). Summons dated according to the Julian calendar and the calendar of Provincia Arabia. The equation is not in agreement with the *Hemerologia*. The text is fragmentary but there are legible traces of the Roman month September (which can also indicate a date in August) and of the month Panemos of the

¹⁰² Lewis is certain that this is a *lapsus calami* or *memoriae*; Lewis, *P.Yadin* 1.23. Cf. nos. 23, 29, 63, 67, 83.

calendar of Provincia Arabia. However, neither August nor September coincide with Panemos, which ran from 20 June to 19 July.¹⁰³

- 64)** Papyrus. Oxyrhynchus, Egypt, c. 265 CE (*P.Oxy.* 42.3054). Registration of sale of a slave, dated according to the Egyptian calendar and the calendar of Provincia Arabia. While the month-days are missing, the concordance between the ‘Arabian’ (Loos) and the Egyptian (Payni) months is not in agreement with the *Hemerologia*.
- 65)** Papyrus. Petra, Palaestina Tertia, 538 CE (*P.Petra* 1.3). Request for transfer of taxation, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ ἑννέα Καλανδῶν Σεπτεμβρίων, μηνὸς Γορπιαίου ἕκτη. ‘On the ninth day before the calends of September, the sixth of Gorpaios.’
- 66)** Papyrus. Petra, Palaestina Tertia, 544 CE (*P.Petra* 3.23). Request for transfer of taxation, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ δεκαῆς καλανδῶν Σεπτεμβρίων, μηνὸς Λῶου εἰκ[ο]στῆ ἑνάτη. ‘On the sixteenth day before the calends of September, the twenty-ninth of the month Loos.’
- 67)** Papyrus. Petra, Palaestina Tertia, 559 CE (*P.Petra* 3.25). Request for transfer of taxation, dated according to the Julian calendar and the calendar of Provincia Arabia: πρὸ τριῶν καλανδῶν Ἰανουαρίων, [μ]ηνὸς Περιτίου πε[ν]τεκαιδεκάτη. ‘On the third day before the calends of January, the fifteenth of the month Peritios.’ The equation is not in agreement with the *Hemerologia*: the 3rd day before the calends of January = 30 December; 15 Peritios = 30 January. As in a few other cases,¹⁰⁴ there is a one-month discrepancy. It is plausible to assume that the scribe confused the Roman months January and February: in this case, the correct Julian date would be the 3rd day before the calends of February.
- 68)** Inscription on a marble slab. Abda, Province of Palaestina Tertia, 576 CE (*SEG* 28, 1395 = *SEG* 31, 1400). Epitaph dated according to the calendars of Gaza and Elousa (= calendar of Provincia Arabia): τῆ κατὰ Γάζ(αν) μην(ὶ) Ἀπελλαίω κδ’, κατὰ δὲ Ἐλούσην Αὐδοναίω δ’. ‘According to (the calendar of) Gaza, on the 24th of the month Appellaios, while according to (the calendar of) Elousa, on the 4th of Audynaios’.¹⁰⁵
- 69)** Papyrus. Elusa, Palaestina/Judaea, 590 CE (*P.Ness.* 3.29) Summons dated according to the Julian calendar and the calendar of Bostra (= the calendar of Provincia Arabia): πρὸ δέκα καλανδῶν Ἰανουαρίων, μηνὸς Αὐδναίου ἑβδόμη. ‘On the tenth day before the calends of January, the seventh of Aynaios.’
- 70)** Papyrus. Nessana, Palaestina/Judaea, 596 CE (*P.Ness.* 3.30). Inheritance dated according to the Julian calendar and the calendar of Provincia Arabia: Εἵδαις Σεπτεμβρίας μηνὸς Γορπιαίου εἰκάδι ἕκτη. ‘On the ides of September, the twenty-sixth of Gorpaios.’

¹⁰³ Cf. nos. 23, 29, 60, 67, 83: an explanation similar to the one suggested in those cases might apply to this one as well.

¹⁰⁴ See previous note.

¹⁰⁵ On the dates see Meimaris, *Chronological Systems*, p. 254 n. 352.

c) CALENDAR OF THE PROVINCE OF ASIA

- 71)** Inscription on a marble cinerary chest. Sardis, Lydia, early first century CE?¹⁰⁶ (*AE* 1995, 1455 = *SEG* 45, 1652). Epitaph dated according to the calendar of Asia and the Julian calendar: μη(νός) Ξανδικοῦ ἡ' Καλ(άνδαις) Μαρτί(αις). 'On the 8th of the month Xandikos, on the calends of March.'
- 72)** Inscription on a marble stele. Metropolis, Lydia, 14–37 CE (*AE* 1999, 1538 = *SEG* 49, 1523). Epigraphic '*hemerologion*' equating dates of the Julian calendar and of the calendar of Asia (cf. the full discussion of this document above, pp. 9–10). The surviving equivalences are as follows: 7 October = 14 (Dios), 5 November = 13 (Apellaios), 5 December = 12 (Audynaios), 5 January = 12 (Peritios).¹⁰⁷
- 73)** Inscription on a marble block. Acmonia, Phrygia, 64 CE (*AE* 2006, 1427 = *SEG* 56, 1489). Honorific decree dated according to the Julian calendar and the calendar of Asia: πρὸ δεκάπεντε Καλάνδων Ὀκτοβρείων, μηνὸς Ὑπερβερεταίου ς' ἀπίοντος. 'On the fifteenth day before the calends of October, on day 6 ἀπίοντος of the month Hyperberetaios.'¹⁰⁸
- 74)** Inscription on a marble block. Acmonia, Phrygia, 68 CE (*AE* 2006, 1426 = *SEG* 56, 1490). Honorific decree dated according to the Julian calendar and the calendar of Asia: πρὸ ἕξι εἰδῶν Ἀπριλιῶν, μηνὸς Ἀρτεμεισίου ἑπτακαιδεκάτη. 'On the sixth day before the ides of April, the seventeenth of the month Artemisios.' The equation is not in agreement with the *Hemerologia*. There is a discrepancy of one day: the 6th day before the ides of April = 8 April; 17 Artemisios = 9 April.¹⁰⁹
- 75)** Inscription on a marble block. Acmonia, Phrygia, 85 CE (*IGRR* 4.661; *SEG* 13, 542 = *MAMA VI* List 148, 159). Decree concerning a testament, dated according to the Julian calendar and the calendar of Asia: πρὸ τριῶν Νωνῶν Μαρτίων, μηνὸς Ξανδικοῦ τρισκαι[δεκάτου]. 'On the third day before the nones of March, the thirteenth of the month Xandikos.' The equation is not in

¹⁰⁶ In the *editio princeps*, P. Herrmann dates the inscription to 9 BCE or slightly later on palaeographical grounds and on the basis of the alleged date of introduction of the calendar of Asia in the province. This dating, however, is problematic, not only because, as established above, the calendar of Asia was most likely instituted in 8 BCE, but also because the Julian calendar at this point in time was still in a state of disruption. The Julian calendar as we know it only begins from 1 CE, following Augustus' reforms starting in 8 BCE (cf. Stern, *Calendars in Antiquity*, table 5.4). On the basis of these circumstances, and given that palaeography is in itself an uncertain criterion, it appears more likely that the inscription was engraved in the early first century CE. This supposed dating makes the epitaph from Sardis the earliest extant case of a double date equating the Julian and the newly established Asian calendar.

¹⁰⁷ The names of the months in the local calendar do not appear on the stone; they are presumably implicit.

¹⁰⁸ It must be observed that the *ed.pr.* gives an incorrect reading of a part of the dating formula. This has been rectified by G. Petzl in *SEG*. Cf. Thonemann, 'Calendar', p. 127 n. 22.

¹⁰⁹ Even if this was simply an error by the letter-cutter or by whoever drafted the text to be inscribed on the marble block, which might well be the case, there is no reason to emend the text of the inscription, as G. Petzl suggests in *SEG* 56, 1490. Cf. Thonemann, 'Calendar', p. 127 n. 23.

agreement with the *Hemerologia*. There is a discrepancy of one day: the third day before the nones of March = 5 March; 13 Xandikos = 6 March.¹¹⁰

- 76)** Inscription on a limestone stele. Kaunos, Caria, 111 CE (*I.Kaunos* 34). Approval of a private foundation, dated according to the Julian and Kaunian calendars (= calendar of Asia): [πρὸ...|κα]λ(ανδῶν) Σεβάστου ἢ δ' ἀπίοντος Κορύμ[βου].¹¹¹ 'On the [...] day before the calends of Sebastos or the 4th day of waning Korymbos'. As observed by Thonemann,¹¹² Sebastos here must be a literal translation into Greek of the Roman month-name Augustus; on this basis, if we assume that Korymbos corresponded to Loos in the calendar of Asia, the Kaunian date (the 4th day of waning Korymbos) ought to correspond to the 13th day before the calends of August, i.e., according to the *Hemerologia*, 20 July.¹¹³
- 77)** Inscription on a marble slab. Pergamon, Mysia, 129/138 CE (*IGRR* 4.353 = *IvP* 2.374). Calendar of rituals to be performed by the *hymnodoi* of Augustus and Roma. The following correspondences between the calendar of Asia and the Julian calendar/Roman festivities are given: 'first day of the month Kaisar = birthday of Augustus (= 23 September); month Peritios = calends of January; penultimate day of the month Hyperberetaios = birthday of the *Augusta* (i.e. Livia, 21 September).'¹¹⁴
- 78)** Inscription on a marble base. Amastris, Province of Bithynia-Pontos, 155 CE (*SEG* 35, 1327 = *SEG* 40, 1163).¹¹⁵ Funerary epigram, dated according to the Julian and the Amastrian calendar (= calendar of Asia):¹¹⁶ πρὸ α' καλ(ανδῶν) Σεπτεμβρίων, Λώου ζι'. 'On the day before the calends of September, on 17th Loos.' The equation is not in agreement with the *Hemerologia*. There seems to be a discrepancy of seven weeks: the day before the calends of September = 31 August; 17 Loos = 10 July.¹¹⁷
- 79)** Inscription on a marble sarcophagus. Metropolis, Lydia, 168 CE (*AE* 1995, 1469 = *SEG* 45, 1598). Instructions for a burial place, dated according to the Julian calendar and the calendar of Smyrna (= calendar of Asia):¹¹⁸ πρὸ ἕξ εἰδῶν Ἰουνίων, μη(νός) Στρατον[ικ]εῶνος ἑκκαδεκάτη. 'On the sixth day before the ides of June, on the sixteenth of the month Stratonikeon.'
- 80)** Inscription on a marble slab. Laodikeia on the Lykos, Phrygia, third century CE (*MAMA* 6.18 = *IK Laodikeia am Lykos* 85). Epitaph, in which the annual crowning of the tomb is set to occur

¹¹⁰ Laffi, 'Le iscrizioni', p. 80, and Thonemann, 'Calendar', p. 127 (T8) suggest that this discrepancy can be explained by assuming that at Acmonia 31-day months were counted 'Sebaste, Day 2, Day 3, etc.', instead of 'Sebaste, Day 1, Day 2, etc.', as is the case in other places of the province of Asia.

¹¹¹ Though the date equation is fragmentary, it is included in this list in view of the significance of this source, given the scarcity of evidence relating to the Kaunian calendar.

¹¹² Thonemann, 'Calendar', p. 127 (T10).

¹¹³ It is unclear why Thonemann (*ibid.*) gives 19 July as the corresponding date.

¹¹⁴ Cf. Laffi, 'Le iscrizioni', p. 76; Thonemann, 'Calendar', p. 127 (T11), and 130–31. According to the *Hemerologia*, the calends of January fell on 8 Peritios in the calendar of Asia, and not on the 9th of that month, as Thonemann states.

¹¹⁵ = C. Marek, *Stadt, Ära und Territorium in Pontus-Bithynia und Nord-Galatia* (Tübingen: Wasmuth, 1993), pp. 168–69, Kat. Amastris no. 44.

¹¹⁶ One wonders why the calendar used here is that of the province of Asia rather than the calendar of Bithynia. On the calendar in use in the Province of Bithynia-Pontos, see Kubitschek, *Kalenderbücher*, pp. 97–99.

¹¹⁷ Thonemann assumes that this incongruity is due to the fact that in the mid-second century CE the Amastrians employed a lunisolar calendar; 'Calendar', p. 130. According to Sacha Stern (personal communication), 17 is really excessive for a lunar date. The latest possible lunar date on 31 August 155 CE would be 16, and earlier dates (15 or 14) would be more likely.

¹¹⁸ This is a copy of a document that was deposited in the Museion of Smyrna.

on a date given according to the Julian and Laodikean (= Asiatic) calendars: τῆ πρὸ α' καλανδῶν Νοεμβρίων, μη(νὸς) γ' ιη'. 'On the day before the calends of November, the 18th of the 3rd month.' The equation is not in agreement with the *Hemerologia*, where 31 October corresponds to 8 Apellaios or the 8th of month 2 in Asian calendars.¹¹⁹

81) Anonymous, *In sanctum pascha*, 387 CE.¹²⁰ The date of the Epiphany (6 January) is given according to the calendar of Asia: ἡμέρα ὠρισμένη τρισκαιδεκάτη τετάρτου μηνὸς κατὰ Ἀσιανούς. 'On the thirteenth day of the fourth month according to the Asians.' Easter falls: μηνὸς ἑβδόμου κατὰ Ἀσιανούς. 'In the seventh month [= Artemision] according to the Asians.'¹²¹

82) Alexander Monachus, *Laudatio Barnabae*, second half of the sixth century CE.¹²² The alleged date on which Barnabas was martyred is given according to the Julian, eastern Cypriot (of Salamis), and Asian/Paphian calendars: κατὰ μὲν Ῥωμαίους τῆ πρὸ τριῶν εἰδῶν Ἰουνίων, κατὰ δὲ Κυπρίου Κωνσταντιεῖς μηνὶ Μεσῶρι τοῦ καὶ δεκάτου ἑνδεκάτη, κατὰ δὲ Ἀσιανούς ἦτοι κατὰ Παφίους μηνὶ Πληθυπάτω τοῦ καὶ ἑνάτου ἑνεακαιδεκάτη. 'According to the Romans on the third day before the ides of June, according to the Cyprians from Constantia [= Salamis], on the eleventh day of the tenth month Mesore, and according to the Asians or the Paphians, on the nineteenth of the ninth month Plethypatos.'¹²³

83) *Martyrium prius Andreae*, eighth century CE.¹²⁴ The date on which Andrew was martyred is given according to the calendar of Asia and the Julian calendar: κατὰ Ἀσιανούς μηνὸς Περιτίου ἕκτη, κατὰ δὲ Ῥωμαίους μηνὶ Νοεμβρίῳ λ'. 'According to the Asians, on the sixth of the month Peritios, according to the Romans, on the 30th of November.' The equation is not in agreement with the *Hemerologia*, which equal 6 Peritios to 30 December, rather than 30 November.¹²⁵

d) CALENDAR OF ANTIOCH

¹¹⁹ Perhaps ιη (18) is a scribal error for η (8). Thonemann's idea that the calendar used at Laodikeia in the third century CE was lunar or lunisolar does not fit with the fact that the correspondence of 31 October with 18 Month 3 was expected to recur on an annual basis, which implies that the local calendar was solar and in synch with the Julian calendar; Thonemann, 'Calendar', p. 130. Cf. also Laffi, 'Le iscrizioni', pp. 79–80.

¹²⁰ F. Floëri and P. Nautin, *Homélies pascales* (Sources Chrétiennes 27, 36, 48; Paris: Editions du Cerf, 1950–1957), p. 113 ch. 3; p. 119 ch. 9.

¹²¹ Cf. Laffi, 'Le iscrizioni', p. 78; Thonemann, 'Calendar', p. 128 (T16).

¹²² P. van Deun, *Hagiographica Cypria* (Turnhout: Brepols, 1993), p. 120 lines 846–50.

¹²³ Cf. Laffi, 'Le iscrizioni', p. 78; S. Stern, 'A "Jewish" birth record, sambat-, and the calendar of Salamis'. *Zeitschrift für Papyrologie und Epigraphik* 172 (2010), pp. 105–14; Thonemann, 'Calendar', p. 129 (T22).

¹²⁴ J.-M. Prieur, *Acta Andreae*, 2 vols (Turnhout: Brepols, 1989), II, p. 703, ch. 19.

¹²⁵ Thonemann, 'Calendar', p. 129 (T24) observed that there is some confusion in the manuscript tradition of the *Martyrium prius Andreae*, with a manuscript indicating more generically the month of Audynaïos instead of 6 Peritios as the equivalent of 30 November. The Asian month Audynaïos did partly overlap with the Julian November. Cf. sources nos. 23, 29, 60, 63, 67.

- 84)** Papyrus. Dura Europos, Syria, 232 CE (*P.Dura* 30). Marriage contract, dated according to the Julian calendar and the calendar of Antioch: Καλάνδαι Ὀκτώβριαι, μηνὸς [Υ]περ[β]ερεταίου νομηνία. ‘On the calends of October, on the first day of the month Hyperberetaios.’
- 85)** Leather strip. Appadana, Syria Mesopotamia (found), Markopolis, Osrhoene (written), 249 CE (*SB* 24 16167 = *P.Euphr.* 6). Sale of a slave, dated according to the Julian calendar and the calendar of Antioch: πρὸ ὀκτῶ Εἰδῶν Νοεμ[βρ]ίων ἥτις ἐστὶν μηνὸς Δ[ί]ου ἕκτη. ‘On the eighth day before the ides of November, that is, on the sixth of the month Dios.’
- 86)** Papyrus. Dura Europos, Syria, 251 CE (*P.Dura* 29). Contract dated according to the Julian calendar and the calendar of Antioch: πρὸ ς΄ Νωνῶν Ὀκτωβρ[ί]ων, μηνὸς Ὑπερβερεταίου δευτέρῳ. ‘On the 6th day before the nones of October, on the second day of the month Hyperberetaios.’
- 87)** Papyrus. Dura Europos, Syria, 254 CE (*P.Dura* 32).¹²⁶ Divorce dated according to the Julian calendar and the calendar of Antioch: μηνὸς Ξα[ν]θικοῦ εἰκασενά[τη], [πρὸ] δύο Καλανδῶν [Μ]αείω. ‘On the 29th of the month Xanthikos, the day before the calends of May.’ The equation is not in agreement with the *Hemerologia*. There is a discrepancy of one day: 29 Xanthikos = 29 April; the day before the calends of May = 30 April.¹²⁷

e) CALENDAR OF GAZA

- 88)** Papyrus. Petra, Palaestina Tertia (found), Gaza, Palaestina Prima (written), 538 CE (*P.Petra* 1.2). Agreement concerning inherited property, dated according to the Julian and Gaza calendars.¹²⁸ πρὸ ἕξ εἰδῶν Μαειων, μηνὸς [Ἀ]ρτεμισίου πεν[τ]εκαδέκατ[η]. ‘On the sixth day before the ides of May, the fifteenth of the month Artemisios.’

¹²⁶ Cf. D. Feissel, J. Gascoü, and J. Teixidor, ‘Documents d’archives romains inédits du Moyen Euphrate (IIIe s. après J.-C.)’, *Journal des savants* (1997), pp. 3–57, esp. 54.

¹²⁷ The formula πρὸ δύο is odd (its only other occurrence is in *P.Cairo Isid.* 87, also dated πρὸ δύο Καλανδῶν Μαίω); the Greek formula normally used to translate the Roman *pridie*, ‘the day before’, is πρὸ μιᾶς. In the *Hemerologia*, the last day of the month as well as the day before a fixed date in the Julian calendar are consistently expressed as α; β is in fact omitted throughout, the penultimate day of the month being expressed as γ. Sijpesteijn suggests that πρὸ δύο in *P.Dura* 32 could in fact refer to 29 April; Sijpesteijn, ‘Some remarks’, p. 235. It is indeed plausible to assume some disagreement or confusion on the part of the scribes on how to translate into Greek this particular Julian date. If we follow this argument, the double date appearing on this document is in agreement with the *Hemerologia*.

¹²⁸ On the calendar of Gaza, see Meimaris, *Chronological Systems*, p. 119.

f) CALENDAR USED IN PROVINCIA JUDAEA

- 89)** Papyrus. Murabba'at, province of Judaea, 124 CE (*SB* 12.10305 = *P.Murabba'at* 2.115). Marriage agreement, dated according to the Julian calendar and the calendar in use in the province of Judaea/Palaestina: πρὸ ἰδ κ(αλανδῶν) Νοενβρίων, Δύστρου ιε. 'On the 14th day before the calends of November, the 15th of Dystros.' The equation is not in agreement with the *Hemerologia*: the Julian date corresponds to 19 October; the Macedonian month of Dystros normally corresponded to February/March. Even if we take into consideration the different placement of months in different calendars, whereby Dystros could fall on December/January (in Egypt), May (Sidon), February or March, it does not seem possible to make it coincide with October.¹²⁹

ii. MONTH CORRESPONDANCES AND MONTH-NAME LISTS

- 90)** *Scholia vetera in Aratum*, second/third century CE.¹³⁰ Concordances among Egyptian and Julian months.
- 91)** Inscription on a stone tablet. Nineveh? Seleukia? Third century CE (*IK Estremo oriente* 68). It lists the Macedonian months in the following order: Aydunaios, Peritios, Dystros, Xanthikos, Artemisios, Daisios, Panemos, Loos, Gorpiaios, Apellaios, Dios, Hyperberetaios. The list seems to follow the order of months in the calendar of Antioch (starting with Aydunaios = January); however, the order of the last three months does not match that sequence: Gorpiaios should be followed by Hyperberetaios, Dios, and Apellaios.¹³¹ Interestingly, the same, 'incorrect' order of months appears in another source (see below, no. 93).
- 92)** Inscription on marble wall of public building (*Bouleuterion*). Stratonikeia, Caria, Imperial period (*IStratonikeia* 1044 = *Stratonikeia* 103).¹³² Verse inscription meant to act as an aid to memorise the lengths of the Julian months.¹³³ The sequence begins with Dios (= approx.

¹²⁹ Even assuming that Δύστρου is an error for Δίου, which in the calendar of Asia overlaps partly with the Julian month of October, the date equation would be incorrect (19 October = 26 Dios).

¹³⁰ J. Martin, *Scholia in Aratum vetera* (Stuttgart: Teubner, 1974), *Schol.* 265, 287, 300, 315, 332, 409, 443, 462, 513.

¹³¹ In *IK Estremo oriente*, Canali De Rossi assumes that the letter-cutter may have got confused by the omission of Hyperberetaios, which he added on the left hand margin. Canali De Rossi refers to no. 13 in *IK Estremo oriente*, a rock-cut inscription from Armaouira (Armenia) dating to the early second century BCE. In this case the Macedonian months are listed in the order of the original Macedonian calendar (beginning the year with Dios = October).

¹³² = R. Merkelbach and J. Stauber, *Steinepigramme aus dem griechischen Osten. Band I: Die Westküste Kleinasiens von Knidos bis Ilion* (Stuttgart: Teubner, 1998), no. 02/06/20.

¹³³ Each line has as many letters as the number of days of each of the twelve months of the Julian year.

October) and thus appears to correspond to the months order in the calendar of the province of Asia.¹³⁴

- 93)** Inscription on a bronze tessera. Provenance unknown, now in Hungary, third/fourth century CE (*JGPannonia* 152). Curse tablet showing a series of names and magical formulae, which are followed by a list of Macedonian month-names; the order is the same as in no. 91, i.e. it seems to correspond to the months sequence in the calendar of Antioch, except for Hyperberetaios and Apellaios, which are swapped. Should we conclude that these two sources attest to the existence of a calendar that presented this particular order of the Macedonian month-names, instead of assuming an error in the sequence?
- 94)** Papyrus. Fayum, Egypt, fourth century CE (*Fay.* 135 V = *C. Gloss. Biling.* 1 11) Concordance of Julian and Egyptian month-names.
- 95)** Athanasius of Alexandria, *De synodis Arimini in Italia et Seleucia in Isauria*, 359 CE.¹³⁵ Concordance of Julian (September), Egyptian (Thoth), and Macedonian (Gorpieus) months.
- 96)** Inscription on a copper sphere. Chevroches, France, second half of the fourth century CE (*AE* 2006, 822 = *SEG* 56, 1168). Astrological inscription including Egyptian months, zodiac signs, and Julian months. The order followed is that of the Egyptian year, from Thoth (September) to Mesore (August).
- 97)** Ostrakon. Provenance unknown, fourth/fifth century CE (*SB* 26 16521). Concordance of Julian and Egyptian month-names.
- 98)** *Fasti* or *Laterculus Polemii Silvii* (written in Gaul), 448/9 CE (*Inscr.It.* 13.2.43).¹³⁶ Preserved in a single, 12th-century manuscript, the calendar offers useful information on every month, including festivity days, the due ephemerids, and the weather forecast. Each month is preceded by an introduction that provides the etymology of that month's name and the denominations of the month in different calendars: Julian, Hebrew, Egyptian, Athenian, and Greek (= Macedonian month-names).¹³⁷

¹³⁴ Cf. Thonemann, 'Calendar', p. 126 (T1).

¹³⁵ G.H. Opitz, *Athanasius Werke* (Berlin: Walter de Gruyter, 1940), vol. 2.1, pp. 231–78, ch. 12.1.

¹³⁶ Cf. M. Salzman, *On Roman Time. The Codex-Calendar of 354* (Berkeley: University of California Press, 1990), pp. 242–46; D. Lehoux, *Astronomy, Weather, and Calendars in the Ancient World: Parapegmata and Related Texts in Classical and Near Eastern Societies* (Cambridge: Cambridge University Press, 2007), pp. 161–62, 311, 324; D. Paniagua, 'New perspectives for the Laterculus of Polemius Silvius', in D. Hernández de la Fuente (ed.), *New Perspectives on Late Antiquity* (Newcastle: Cambridge Scholars Publishing), pp. 393–406; idem, *Polemii Silvii Laterculvs* (Rome: Sede dell'Istituto Palazzo Borromini, 2018); K. Weidemann and M. Weidemann, *Römische Staatskalender aus der Spätantike: die von Furius Dionisius Filocalus und Polemius Silvius überlieferten römischen Staatskalender und deren historische Einordnung* (Mainz: Verlag des Römisch-Germanischen Zentralmuseums, 2016).

¹³⁷ The order of the Macedonian months corresponds to that of the calendar of Antioch.

- 99)** Papyrus. Lycopolis, Lower Egypt, fifth century CE (*P.Acad. inv. 1 r^o*). Concordance of Egyptian, Julian, and Macedonian month-names. As argued above (pp. 10–13), the calendar labelled as ‘according to the Asians’ (κατὰ Ἀσιανούς) probably corresponds to the calendar marked as ‘of the Hellenes’ (Ἑλλήνων) on the *Hemerologia*, which identifies with the calendar of Antioch. If that were the case, the month concordances would be in agreement with the *Hemerologia*.
- 100)** Papyrus. Provenance unknown, sixth/seventh century CE (*P. land. inv. 654*). Concordance of Julian and Egyptian month-names (cf. p. 10 note 46).
- 101)** Parchment. Provenance unknown, sixth/seventh century CE.¹³⁸ Concordance of Egyptian and Bithynian month-names. The order of the Bithynian months corresponds roughly to the order of the Roman months (January to December). The missing months after Aphrodisios are, according to the *Hemerologia*: Demetrios, Heraios, Hermaios, Metroos. The order of the Egyptian months, however, does not match that of the Bithynian months, and begins with Pharmouthi.
- 102)** Papyrus. Provenance unknown, late seventh/early eighth century CE (*P. Rain. Cent. 31*) Concordance of Julian, Cappadocian, and Egyptian month-names (cf. pp. 10 note 48).
- 103)** Mosaic inscription. Khirbat Dariya (church of SS. Kosmas and Damianos), Province of Arabia or Palaestina Secunda, date unknown (*SEG 57, 1845*). It lists the Macedonian month-names. The order of the months is in agreement with that shown by the *Hemerologia* for the calendar of the *Hellenes*, corresponding to the so-called calendar of Antioch (cf. p. 2 note 5).¹³⁹
- 104)** Astrological manuscript. Date unknown (*CCAG 9.1, pp. 128–37*). Equation of Julian, Macedonian (= calendar of Antioch), and Egyptian months.

Abbreviations

ACO = E. Schwartz, J. Straub, and R. Schieffer (eds), *Acta conciliorum oecumenicorum* (Berlin: Walter de Gruyter, 1914–1984).

AE = *L'Année Épigraphique* (Paris: Presses Universitaires de France, 1888–).

¹³⁸ D. Montserrat, ‘A Fragment of a Monastic Duty Roster?’, *The Bulletin of the American Society of Papyrologists* 27 (1990), pp. 163–68.

¹³⁹ Other (fragmentary) mosaic inscriptions listing the Macedonian month-names in the order of the calendar of Antioch are *IGLSyr* 3.1.808 (Antioch – 1st half of the second century CE), *Gerasa* 295 (Gerasa – sixth century CE) and 307 (Gerasa – 531 CE).

- BASP* = *Bulletin of the American Society of Papyrologists* (1963—).
- BGU* = *Aegyptische Urkunden aus den Königlichen (later Staatlichen) Museen zu Berlin, Griechische Urkunden* (Berlin: Weidmann, 1895–2014).
- CCAG* = *Catalogus Codicum Astrologorum Graecorum*, 12 vols (Brussels: Lamertin, 1899–1953).
- CEL* = P. Cugusi, *Corpus epistularum Latinarum papyris tabulis ostracis servatarum*, 3 vols (Florence: Gonnelli, 1992–2002).
- C. Gloss. Biling.* = J. Kramer (ed.), *Glossaria bilingua in papyris et membranis reperta* (Bonn: Habelt, 1983).
- ChLA* = *Chartae Latinae Antiquiores*, 49 vols (Basel: Dietikon, 1954—1998).
- CIL* = *Corpus Inscriptionum Latinarum* (Berlin: Walter de Gruyter, 1862—).
- CPL* = R. Cavenaile (ed.), *Corpus Papyrorum Latinarum* (Wiesbaden: O. Harrassowitz, 1958).
- DNP* = *Der Neue Pauly: Enzyklopaedie der Antike* (Stuttgart: J.B. Metzler, 1996—).
- Gerasa* = C.B. Welles, in: C.H. Kraeling, *Gerasa: City of the Decapolis. An Account Embodying the Record of a Joint Excavation Conducted by Yale University and the British School of Archaeology in Jerusalem (1928-1930), and Yale University and the American Schools of Oriental Research (1930-1931, 1933-1934)* (New Haven: American Schools of Oriental Research, 1938).
- IG* = *Inscriptiones Graecae* (Berlin: Walter de Gruyter, 1873—).
- IGLSyr 3,1* = L. Jalabert and R. Mouterde, *Inscriptions grecques et latines de la Syrie*, vol. III.1: *Région de l'Amanus. Antioche* (Paris: Geuthner, 1950).
- IGPannonia* = P. Kovács, *Corpus inscriptionum Graecarum Pannonicarum* (Hungarian Polis Studies 8; Debrecen: University of Debrecen, 2001).
- IGRR* = E. Leroux (ed.), *Inscriptiones graecae ad res romanas pertinentes* (Paris: E. Leroux, 1906–1927).
- IGUR* = L. Moretti, *Inscriptiones graecae urbis Romae*, 4 vols (Rome: Istituto italiano per la Storia antica, 1968–1990).
- I.Kaunos* = C. Marek, *Die Inschriften von Kaunos* (Vestigia. Beiträge zur Alten Geschichte 55; Munich: C.H. Beck, 2006).
- IK Estremo oriente* = F. Canali De Rossi, *Iscrizioni dello estremo oriente greco. Un repertorio* (Inschriften griechischer Städte aus Kleinasien 65; Bonn: Habelt, 2004).
- IK Laodikeia am Lykos* = T. Corsten, *Die Inschriften von Laodikeia am Lykos* (Inschriften griechischer Städte aus Kleinasien 49; Bonn: Habelt, 1997).
- ILS* = H. Dessau, *Inscriptiones Latinae Selectae*, 3 vols (Berlin: Berolini Apud Weidmannos, 1892–1916).

- Inscr.It.* = *Inscriptiones Italiae* (Rome: Libreria dello stato, 1931–).
- IosPE I²* = V. Latyshev, *Inscriptiones antiquae orae septentrionalis Ponti Euxini graecae et latinae*, 3 vols (St. Petersburg, 1885–1901).
- I.Priene (2014)* = W. Blümel and R. Merkelbach, *Die Inschriften von Priene* (Inschriften griechischer Städte aus Kleinasien 69; Bonn: Habelt, 2014).
- IStratonikeia* = M. Sahin, *Die Inschriften von Stratonikeia*, 2.1 (Bonn: Habelt, 1982).
- IvP 2* = M. Fränkel, *Die Inschriften von Pergamon* (Altertümer von Pergamon 8,1-2; Berlin: W. Speman, 1890–1895), vol. 2, nos. 251–1334, 'Römische Zeit'.
- MAMA VI List* = W.H. Buckler and W.M. Calder, *Monuments and Documents from Phrygia and Caria* (Monumenta Asiae Minoris Antiqua 6; Manchester: Manchester University Press, 1939).
- P.Abinn.* = H.I. Bell, V. Martin, E.G. Turner, and D. van Berchem (eds), *The Abinnaeus Archive: Papers of a Roman Officer in the Reign of Constantius II* (Oxford: Clarendon Press, 1962).
- P.Acad.* = J.-L. Fournet, J. Gascoü, et al., *P. Acad.* (in preparation)
- P.Cairo Isid.* = A.E.R. Boak and H.C. Youtie (eds), *The Archive of Aurelius Isidorus in the Egyptian Museum, Cairo, and the University of Michigan* (Ann Arbor: University of Michigan Press, 1960).
- P.Dura* = C.B. Welles, R.O. Fink, and J.F. Gilliam (eds), *The Excavations at Dura-Europos conducted by Yale University and the French Academy of Inscriptions and Letters, Final Report V, Part I, The Parchments and Papyri* (New Haven: Yale University Press, 1959).
- P.Euphr.* = D. Feissel, J. Gascoü, and J. Teixidor, 'Documents d'archives romains inédits du Moyen Euphrate (IIIe s. après J.-C.)', *Journal des savants* (1997), pp. 3–57.
- P.Fay.* = B.P. Grenfell, A.S. Hunt and D.G. Hogarth (eds), *Fayum Towns and their Papyri* (Egypt Exploration Society, Graeco-Roman Memoirs 3; London: Offices of the Egypt exploration fund, 1900).
- P.Flor.* = *Papiri greco-egizii, Papiri Fiorentini* (Supplementi Filologico-Storici ai Monumenti Antichi; Milan: Hoepli, 1906–1915).
- P.Giss.* = O. Eger, E. Kornemann, and P.M. Meyer (eds), *Griechische Papyri im Museum des oberhessischen Geschichtsvereins zu Giessen* (Leipzig: Teubner, 1910–1912).
- P.Herm.* = B.R. Rees (ed.), *Papyri from Hermopolis and Other Documents of the Byzantine Period* (Graeco-Roman Memoirs 42; London: Egypt Exploration Society, 1964).
- PXHev/Se* = H.M. Cotton and A. Yardeni (eds), *Aramaic, Hebrew and Greek Documentary Texts from Nahal Hever and Other Sites, with an Appendix containing Alleged Qumran Texts (The Seiyâl Collection II)* (Discoveries in the Judaean Desert 27; Oxford: Clarendon Press, 1997).
- P.land.* = C. Kalbfleisch et al. (ed.), *Papyri landanae* (Leipzig: Teubner, 1912–1938).
- PIR²* = *Prosopographia Imperii Romani* (Berlin: Walter de Gruyter, 2nd ed., 1933–).

- P.Kellis* = *Papyri from Kellis* (Oxford: Oxbow Books, 1995–2014).
- P.Lond.* = *Greek Papyri in the British Museum* (London: British Museum, 1893–1974).
- P.Merton* = *A Descriptive Catalogue of the Greek Papyri in the Collection of Wilfred Merton* (London: Institute of Classical Studies, 1948–1967).
- P.Murabba'ât* = P. Benoit, J.T. Milik and R. de Vaux (eds), *Les grottes de Murabba'ât* (Discoveries in the Judaean Desert of Jordan 2; Oxford: Clarendon Press, 1961).
- P.Ness.* = *Excavations at Nessana* (London: British School of Archaeology in Jerusalem, 1950–1962).
- P.Oxy.* = *The Oxyrhynchus Papyri* (Graeco-Roman Memoirs; London: Egypt Exploration Society, 1898).
- P.Petra* = *The Petra Papyri* (Amman: ACOR, 2002–2013).
- P. Rain. Cent.* = *Festschrift zum 100-jährigen Bestehen der Papyrussammlung der Österreichischen Nationalbibliothek, Papyrus Erzherzog Rainer* (Vienna: Hollinek, 1983).
- P.Ross. Georg.* = *Papyri russischer und georgischer Sammlungen* (Tiflis: Universitätslithographie, 1925–1935).
- P.Ryl.* = *Catalogue of the Greek and Latin Papyri in the John Rylands Library, Manchester* (Manchester: Manchester University Press, 1911–1952).
- P.Sakaon* = G.M. Parássoglou (ed.), *The Archive of Aurelius Sakaon: Papers of an Egyptian Farmer in the last Century of Theadelphia* (Bonn: Habelt, 1978).
- P.Strasb.* = F. Preisigke (ed.), *Griechische Papyrus der Kaiserlichen Universitäts- und Landesbibliothek zu Strassburg* (Leipzig: J.C. Hinrichs, 1912–2014).
- P.Thead.* = P. Jouguet (ed.), *Papyrus de Théadelphie* (Paris: Fontemoing, 1911).
- P.Yadin* = *The Documents from the Bar Kochba Period in the Cave of Letters* (Jerusalem: Israel Exploration Society, 1989–2002).
- SB* = *Sammelbuch griechischer Urkunden aus Ägypten* (Strassburg: K.J. Trübner, 1915–).
- SEG* = *Supplementum Epigraphicum Graecum* (Leiden: Brill, 1923–).
- Stratonikeia* = D.F. McCabe, *Stratonikeia Inscriptions. Texts and List* (The Princeton Project on the Inscriptions of Anatolia, The Institute for Advanced Study, Princeton. Packard Humanities Institute CD #6, 1991). — Includes: M.C. Şahin, *Die Inschriften von Stratonikeia*. Vol. II.1. *Lagina, Stratonikeia und Umgebung*, with II.2. *Neue Inschriften und Indices* (Inschriften griechischer Städte aus Kleinasien) 22.1-2 (Bonn: Habelt, 1982, 1990).

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