

# THE CALENDAR OF THE ATHENIAN CIVIC ADMINISTRATION

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THERE IS A SERIES of lunar dates in the prescripts of Athenian decrees to which the terms *kat' archonta* and *kata theon* are applied. Scholars are, I believe, generally agreed that the phrase *kat' archonta* is to be translated literally "according to the archon" and was used to designate dates in the Athenian festival calendar. About the meaning of *kata theon*, however, there has not been concord. One school of thought, represented by Pritchett and Neugebauer, Pouilloux, Bickerman, and others, is that the phrase means *kata selenen* and is to be translated "according to the deity," that is Selene, the moon.<sup>1</sup> Another school of thought, represented chiefly by Meritt,<sup>2</sup> believes that the phrase means "according to Meton" or "according to the Metonic cycle."

In 1968<sup>3</sup> a new twist was given to this second theory. The idea was then advanced that the beginning of the *kata theon* year marked the entrance into office of the prytaneis and the civic political machinery, even to the extent of a different initial date and of a different count of days from those of the archon's calendar.

In this article the second theory will be examined in an effort, first, to disprove the idea that the purpose of the *kata theon* system was to serve as a "Metonic regulatory calendar" of the prytanies,<sup>4</sup> and, secondly, to show that the prytany calendar had nothing to do with the Metonic calendar. In the process, it will be seen that there is no philological basis for the translation of *kata theon* as "according to Meton," and we can thus remove one of the stumbling blocks to a better understanding of Athenian calendric procedures.

In the 1968 article, the author writes such sentences as the following: "The conciliar year of the twelve prytanies was scaled to the Metonic year" (p. 99), "The year . . . was intercalary in the festival calendar and ordinary in the conciliar calendar" (p. 93), "This calendar to which the prytany dates were equated was the calendar *kata theon*" (p. 93), "The Council ended with the last day of Thargelion" (p. 93), etc. The advocate of this theory, then, seems to be saying that the length of the prytany (= conciliar) year was regulated by the Metonic cycle, which he says was

<sup>1</sup>Cf. E. J. Bickerman, *Chronology of the Ancient World* (London 1968) 38.

<sup>2</sup>Also accepted by D. M. Lewis, *JHS* 83 (1963) 195 and M. F. McGregor, *Phoenix* 20 (1966) 220.

<sup>3</sup>*ArchEph* 1968, 92-105.

<sup>4</sup>*ArchEph* 1968, 102.

called *kata theon*. If this is so, prytany years falling in ordinary years of the cycle would have 354 ( $\pm 1$ ) days; intercalary years 384 ( $\pm 1$ ) days. The festival (or archon's) years did not follow the Metonic cycle, so there would be months of overlap between prytany years and festival years.<sup>5</sup>

Let us turn from theory to general application. Meton's nineteen-year cycle, according to Meritt,<sup>6</sup> is the following:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
O	I	O	O	I	O	O	I	O	I	O	O	I	O	O	I	O	I	O

The epoch date of this calendar, he says, was 432/1; so Meritt's archon lists are divided into groups of nineteen years: 432/1, 413/2, . . . 337/6, 318/7, . . . 166/5, 147/6 . . . and so on. Through 408/7 B.C., the Athenian prytany calendar, so far as we have evidence (particularly in *IG* 1<sup>2</sup>.324), was one of 366 days. In 407/6, Hekatombaion (I) 1 was equated with Prytany I 1 and prytany years thereafter were of 354 ( $\pm 1$ ) or 384 ( $\pm 1$ ) days.

Let us turn now to the prescripts of inscriptions which give dates in terms of the festival calendar and of the prytany calendar; to use one of Meritt's favorite phrases, "we must allow the inscriptions to speak for themselves."<sup>7</sup>

I follow Meritt's own dates for archons as presented in *Year* 231–238, although I am aware that every new discovery seems to cause some displacement.<sup>8</sup> Choosing at random, we find that in 260/59, we have the

<sup>5</sup> Parenthetically, this theory marks one noteworthy advance in Meritt's thinking: the festival, or archon's, calendar had nothing to do with the Metonic cycle. Unfortunately much of his recent research contradicts this candid admission by trying to tie the festival calendar of other periods to the Metonic cycle.

<sup>6</sup> *ArchEph* 1968, 98: cf. *TAPA* 95 (1964) 236. For other theories about the order of intercalary years in the "Metonic" cycle, see *CP* 42 (1947) 241.

<sup>7</sup> *The Athenian Year* (Berkeley 1961) [hereafter cited as *Year*] 136.

<sup>8</sup> I cannot commend too highly the method of presenting the Athenian archon list adopted by A. E. Samuel in *Greek and Roman Chronology* (Munich 1972) 210–237. I take Meritt's table rather than Samuel's only because the former indicates the character of the year as determined by Meritt himself. A poorly informed reviewer (*CR* 89 [1975] 71) has recently termed Samuel's archon list as "already considerably out-of-date." This is to misjudge the problem completely. What we first require, as has been shown in the case of Agora I 6731 (wrongly assigned to the archonship of Pytharatos throughout three editions), are reliable texts based on detailed study of the stones, rather than cursory inspections of photographs. What we have witnessed in the past decade on the part of some Agora epigraphists is an effort to position archons in accordance with an *a priori* theory of "partial Metonic cycles." This work has involved the wholesale assumption of scribal errors, of years beginning as ordinary and changing to intercalary without known reason, of unlikely restorations, and of a count of days which is proved wrong. The virtue of Samuel's table is that he groups the archons according to three categories of probability.

following equation: Maimakterion (V) 21 = Prytany V 23.<sup>9</sup> Using the table of Metonic years in Pritchett, *The Choiseul Marble* (Berkeley 1970; hereafter cited as *Marble*) 60, we find that 260/59 was the second year in a Metonic cycle and therefore intercalary according to Meritt. The prytany calendar in intercalary years of this period was made up of twelve prytanies of 32 days each. If the prytany calendar marched *pari passu* with the Metonic calendar, the date V 23 should be the 151st day ( $4 \times 32 + 23$ ) and should be equated with Poseideon (VI) 3 ( $5 \times 29/30 + 3$ ), approximately, which it clearly is not. On the other hand, Maimakterion (V) 21 ( $30 + 29 + 30 + 29 + 21 = 139$ ) ought to be equated with Prytany V 11 ( $4 \times 32 + 11 = 139$ ), which it clearly is not. Furthermore, we have another equation from this year in which Elaphebolion (IX) 26 is to be equated with Prytany IX 26.<sup>10</sup> The prytany calendar is not marching *pari passu* with the Metonic cycle, but with the festival calendar for an ordinary year. Again, about a century later, we have in the year 175/4 (Meritt),<sup>11</sup> the eleventh in the Metonic cycle and hence ordinary, the following equation: Mounichion (X) 11 = Prytany X 18, which, however, is for the 306th day of an intercalary year in which all of the prytanies had 32 days apiece.<sup>12</sup> Again, the prytany calendar was not marching *pari passu* with the Metonic cycle. Yet again, to take a year in which we have the same equation preserved intact in two different decrees, as follows: Elaphebolion (IX) 21 = Prytany X 4.<sup>13</sup> The year is 186/5 (Meritt) which is the nineteenth of a Metonic cycle and hence ordinary. Elaphebolion (IX) 21 should be equated with Prytany X 21 and, conversely, Prytany X 4 with Mounichion (X) 4; but they are not. The prytany calendar is not marching *pari passu* with the Metonic cycle, but with the archon's calendar. Meritt himself offers equations for his year 160/59 with prytanies and festival calendars as for intercalary years; but in Meritt's Metonic cycle this was the seventh year and hence ordinary.<sup>14</sup> Finally, as recently as 1969, Meritt, commenting on two new and completely preserved equations from the year 220/19 B.C., writes (*Hesperia* 38, 436), "In the period of the thirteen phylai to which these texts belong the one-to-one correspondence in dates between months and prytanies indicates an intercalary year in the festival calendar." But 220/19 is the fourth year of a Metonic cycle and hence ordinary.

These are but samplings. It is incontestable that in the fourth, third,

<sup>9</sup>Year 137. Cf. Pritchett and Neugebauer, *Calendars of Athens* (Cambridge, Mass. 1947) [hereafter cited as *Calendars of Athens*] 81.

<sup>10</sup>See *Calendars of Athens* 81.

<sup>11</sup>Pritchett and Meritt, *Chronology of Hellenistic Athens* (Cambridge, Mass. 1940) 121; Meritt, *Year* 236.

<sup>12</sup>See Pritchett and Meritt, (above, note 11) 121.

<sup>13</sup>*IG* 2<sup>2</sup>. 896. Meritt, *Year* 236.

<sup>14</sup>*Year* 162-163.

and second centuries, the Athenian prytany calendar was tied, at least at the beginning and end of the year, to the festival, or archon's calendar, and not to the Metonic calendar. Each civic year began with Prytany I 1, equated with Hekatombaion (I) 1.

Let us now return to the quotations given above in our second paragraph from Meritt's *ArchEph* 1968 article, and inquire into the meaning of his various statements to the effect that the prytany calendar was regulated by the Metonic calendar, with terminal dates different from those of the archon's calendar. From the examples studied, it is clear that Meritt is advancing the theory that *in those years for which kata theon dates are preserved* the prytany calendar was regulated by the Metonic, not the festival, calendar. The *ArchEph* 1968 article is a *tour de force* to justify his rendition of *kata theon* as "according to Meton." That is to say, in this article Meritt concerns himself with years for which *kata theon* dates are preserved, with the addition of the years 222–220.<sup>15</sup> This clearly means that we have what may fairly be termed a leap-frog theory. The years 196/5, 166/5, etc.<sup>16</sup> have *kat' archonta*—*kata theon* equations in their prescripts; so in these years the prytany calendar would be regulated by the Metonic calendar. In intervening years, or at least in some of them, the prytany calendar had terminal dates which agreed, not with the Metonic calendar, but with the archon's; and so throughout the century. Meritt nowhere states this; but there can be no doubt as to his practice. Nor does he account for this leap-frog theory, nor offer any explanation as to why, for example, in 196/5, the civic officials invoked the calendar of Meton, then after a time ignored it for a number of years, only to invoke it again in 166/5, but soon changed their minds and followed the festival calendar for another stretch of an indeterminate number of years.

This theory that the Athenians at times operated with two separate calendars having the names of lunar months, with months of overlap for successive archons, is made to seem tenable only because of Meritt's isolation of two examples of the twenty or twenty-one *kat' archonta*—*kata theon* dates. The examples are presented in *Stone* 337, to which *Hesperia* 33 (1964) 183 and possibly *Hesperia* 34 (1965) 90 should be added. The *kata theon* dates are always later than the dates *kat' archonta*. The differences are as follows:

- 1 day in Nos. 11, 12, 14
- 2 days in Nos. 10 and 17
- 3 days in Nos. 6 and 9
- 5 days in Nos. 4 and 5

<sup>15</sup>The calendar of these two years, which can be shown to have nothing to do with the *kat' archonta* – *kata theon* dates, will be studied in an appendix below.

<sup>16</sup>I pick these years at random from the table in Pritchett, *Ancient Athenian Calendars on Stone* (Berkeley 1963) [hereafter cited as *Stone*] 337. Cf. Meritt, *TAPA* 95 (1964) 237.

- 7 days in *Hesp.* 33,183
- 11 days in No. 7
- 14 days in *Hesp.* 34,90 (?)
- 19/20 days in No. 8
- 28 days in No. 1
- 29/30 days in No. 2

These dates occur in at least fourteen different archonships. If we assume, as Meritt does in the case of No. 2 from the archonship of Achaïos and No. 11 from the archonship of Nikodemos, that the *kai' archonta* dates represent dates in a lunar calendar, one will search in vain for any cyclic calendar (Metonic or other) in the astronomical literature which will always precede lunar dates in this fashion. Conversely, if we assume that the later dates (*kata theon*) are those of an astronomical calendar, Metonic or other, one will seek in vain to position the earlier dates in any true lunar calendar. We cannot take one example in which the *kata theon* date is exactly one month later than the *kai' archonta* date and use this as evidence for an astronomical (i.e., Metonic) calendar. We must seek rather for a theory which will account for *all* of the *kai' archonta—kata theon* dates. Moreover, the *kai' archonta—kata theon* dates must be interpreted together with a large body of evidence relating to *embolimoi* ("intercalated") and *exairesimoi* days. The *embolimoi* days are assembled in *Stone* 341, to which add *Hesperia* 32 (1963) 17 and possibly many recent examples restored by Meritt. The *exairesimoi* days will be discussed in another article. The intercalated days now run as high as eight for the same designated date of the calendar (e.g., ἔκτῃ μετ' εἰκάδας ὀγδόει ἐμβολίμῳ). Thus, at least nine days separate the 24th day [ἑβδόμῃ μετ' εἰκάδας] of this particular month (Hekatombaion) from the 26th day [πέμπτῃ μετ' εἰκάδας]. The simple theory which will account for all *kai' archonta—kata theon* dates and all *embolimoi* dates is that the *kata theon* calendar represented the "untampered" calendar of the archon which would be in effect if days had not been intercalated. The difference in number also served to indicate the number of dates which would have to be suppressed before Skirophorion (XII) *ultimo*, when the archon went out of office.<sup>17</sup> It is faulty method to offer a calendric theory which does not account for all of the phenomena to be explained.

<sup>17</sup>This explanation accounts also for the fact that the *kata theon* dates run *pari passu* with the prytany calendar, which was a schematic calendar not subject to tampering. No two lunar calendars, schematic or otherwise, were recorded in prescripts; and no two archons were ever in office at the same time. The festivals of one archon were never celebrated while the boule of another archon was functioning. After 407/6 B.C., the limits of the archon's year and the prytany year were the same. The *kata theon* date was recorded in prescripts only when the archon had previously intercalated days into his calendar, and not always even then. All of this was set forth in brief compass in the first chapter of Pritchett-Neugebauer, *Calendars of Athens*.

Let us turn from purely calendric matters and consider the implications of Meritt's theory for the practical workings of the religious and political life of the city. Festivals were celebrated according to each archon's calendar. This means, to use Meritt's prime example of 166/5 (Achaïos)—165/4 (Pelops), that in Achaïos' Skirophorion, some Athenians celebrated with him the Skira and other festivals of that month, while Pelops and his followers were holding meetings of the *boule* and *ekklesia* in a month designated as Hekatombaion of Pelops' prytany year. For the Athenian who was more festival-minded, the date might be Skirophorion 12, while to one who was more civic-minded, Hekatombaion 12. If the *boule* of Pelops' year called for a meeting of the *ekklesia* on Hekatombaion 12, some confused demesman might object that he was observing a holiday since Achaïos was celebrating the Kronia on Skirophorion 12. In the following lunar month, while some Athenians were celebrating the great Panathenaic festival on Hekatombaion (I) 28 of Pelops' festival calendar, the *ekklesia* might be called to a meeting since this day was designated Metageitnion (II) 28 in Pelops' prytany calendar, and was not a holiday. This is very confusing. There is almost no limit to the practical complications of Meritt's theory of two operative lunar calendars, and the reason for the prytanies invoking Meton's astronomical calendar is shrouded in mystery. Aristophanes, referring to "tampered" days, wrote of the Athenians confusing the days up and down; but there is no hint of any ridicule of such a calendar in New Comedy, obviously because it did not exist.

Using another *kat' archonta*—*kata theon* equation in which Boedromion 9 *kata theon* is equated with Boedromion 8 *kat' archonta*, Meritt (*ArchEph* 1968, 103) further develops his theory of two simultaneous lunar calendars by proposing that the calendar with names of lunar months which ran *pari passu* with the prytany calendar (= *kata theon*) had a count of days distinct from that which regulated the festivals. In the former calendar, he says, all months were of thirty days save that every 64th day was omitted,<sup>18</sup> while in the festival calendar there was a sequence of full and hollow months, as commonly understood. Thus, in some archon's year, the *boule* would be meeting on Metageitnion (II) *ultimo*, which was the equivalent in that same archon's calendar (*kat' archonta*) of Boedromion (III) 1. Meritt offers the situation in the fifth century as a parallel when the prytany year (366 days) and the festival year ( $354 \pm 1$ ;  $384 \pm 1$ ) always began at different times before 407/6 B.C. The parallel

<sup>18</sup>This calendar is based on the passage in Geminus (8.50–56) which is commonly interpreted as being descriptive of the count of days in Meton's calendar, although Meton is not mentioned. By 166/5 B.C., of course, many astronomical calendars had been published which improved on that of Meton. It is not clear why the Athenians would revert to the outmoded one of Meton, but this difficulty is insignificant in comparison with other objections.

breaks down because the prytany year was named after its first secretary, the festival year after its archon. There was never any overlap of lunar months, no second lunar calendar distinct from the archon's calendar tied to the prytany calendar. Obviously, then, in no period was there a second lunar calendar.

There are other difficulties with this theory of two lunar calendars, which may be taken up *seriatim*. Meritt devotes great attention to the one and only example of the triple dates in which the archon's calendar had fallen behind the *kata theon* calendar by the interval of one month to the day: IG 2<sup>2</sup>.947 (archon Achaïos): X 12 (*kat' archonta*) = XI [12] (*kata theon*) = Prytany XI 12. Standing alone without any other evidence or calendric consideration, the theory of two lunar calendars could be maintained. But there is another equation from this same year of Achaïos which gives the following triple equation: VIII 29 (*kat' archonta*) = IX 27 (*kata theon*) = Prytany [IX 27]. The difference here is not one month (29/30) to the day, but two days short of one month (27/28). To explain the second equation, some other factor than lunar considerations must be invoked. It is apparent that in accordance with all of the other *kat' archonta*—*kata theon* dates, the sole factor involved is retardation in the festival calendar.

The successor to Achaïos was the archon Pelops (165/4) from whose year we have one equation which is completely preserved on the stone: Skirophorion (XII) 16 = Prytany XII 16. The decree was passed on a day thirteen or fourteen days from the end of the month, depending on whether the month was hollow or full. If we let the inscription "speak for itself," this equation can only be taken as evidence for an ordinary year. On the other hand, if the year were intercalary, with the prytanies having 32 days each, there would still be sixteen days to go at the date of the equation, which is impossible. Clearly, Pelops' year, both by the prytany and the festival calendars, was ordinary. But the year 165/4 is intercalary in Meritt's Metonic calendar; so his theory will not work for the year immediately following his test case. Pelops' year did not begin on a date coinciding with Achaïos' Skirophorion 1, as Meritt has it, but on Hekatombaion 1, prytany and festival calendars alike.<sup>19</sup>

<sup>19</sup>Of course Meritt's solution of the difficulty is to postulate scribal error in transcribing the date of the equation for Pelops' year (*ArchEph* 1968, 100), and he theorizes that the prytany date was "really ἐνάτει καὶ δεκάτει, though written under the psychological pressure of the date by month." (And there is always at hand a parallel; see Table 14 in *Stone*, where assumed scribal irregularities in Meritt's interpretations of equations in his *Athenian Year* are catalogued. Using Meritt's recent calendric publications, this list could be more than doubled.) What Meritt nowhere acknowledges is that if we assume that "scribal error" is responsible for the date, not in the equation of Pelops' year, but in the triple date of Achaïos' year, and that Mounichion (X) 12 *kat' archonta* was written by error for Mounichion (X) 22, we have removed the mainstay of his

For the year 196/5 (archon: Charikles) there are three equations, given in Pritchett-Neugebauer, *Calendars of Athens* 75. Taken separately or together, all are for an intercalary year with an intercalary Posideon (VI) recorded on the stone in IG 2<sup>2</sup>.785. Two of the equations are straightforward for an intercalary year. The third (*Hesperia* 5 [1936] 422) has a festival date which shows a retardation of five days in that calendar. The phrase *κατὰ θεόν* is on the stone, but the text reads as follows: 'Ελαφβολιῶνος τρίτει ἐπὶ δέκα, κατὰ θεὸν δὲ ὀγδόει καὶ εἰκοστῇ τῆς πρυτανείας. The correct solution was recognized by Meritt (*Hesperia* 5 [1936] 425): "I suspect a haplography which may be resolved by the addition of the words ἐπὶ δέκα ὀγδόει after the word ὀγδόει now preserved in line 3. The emended text thus reads: 'Ελαφβολιῶνος τρίτει ἐπὶ δέκα (κατ' ἄρχοντα), κατὰ θεὸν δὲ ὀγδόει (ἐπὶ δέκα, ὀγδόει) καὶ εἰκοστῇ τῆς πρυτανείας." It is too much of a coincidence that ὀγδόει should occur on the stone and that the eighteenth day should correspond exactly with the date in the prytany calendar, to suppose anything else. In any case, *κατὰ θεόν* is on the stone, and the year hence must be regarded as a *κατὰ θεόν* year in our investigation of Meritt's theory; for the secretary's copy clearly had a date, whatever the error of the stonemason may have been. Now the year 196/5, as the ninth in the Metonic cycle, must be ordinary for Meritt; but from the evidence of three equations the prytany calendar is clearly intercalary. I may add that it carries no conviction, as Meritt (*Hesperia* 37 [1968] 235) has more recently done, to print the *κατὰ θεόν δέ* phrase within that type of brackets termed braces, as if the words were added by error. The words *kata theon* are on the stone; so we have a *kata theon* year, the character of which does not fit Meritt's theory.

No interpretation of the phrase *kata theon* can be accepted which does not account for the meaning of the words. This fact cannot be emphasized too strongly. Who is the *theos*, the deity? The phrase *kata theon* was used in the astronomical literature as a synonym for *kata selenen*, "according to the moon": "We [Pritchett-Neugebauer, *Calendars of Athens* 16] assume that dates *kata theon* indicate dates in accordance with the lunar months and we base this assumption on the two following arguments: (a) that the agreement between dates *kata theon* and prytany dates suggests that the dates *kata theon* do not seriously deviate from a lunar calendar; (b) that the name *kata theon* can be translated 'according to the moon.' This is shown, e.g., by the expression *κατὰ θεὸν νομηνία* in *P. Mag. Par.* I<sup>41</sup> and similar instances in the astronomical literature, e.g., Cleomedes where sun and moon are frequently called *θεοί*. Compare also Plutarch (*Moralia*, 349 f): *ἐπέλαμψεν ἡ θεὸς πανσέληνος*," etc. This position need have

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theory. And the latter is palaeographically an easier error to explain and requires no assumption of "psychological pressure."



occasioned no surprise since we know that Athenian and indeed Greek terminology used such phrases as *noumenia*, "waxing" and "waning" to designate days in the months, reflecting early practice.<sup>20</sup> We know, too, that other Mediterranean peoples, including the Phoenicians, Hebrews, Neo-Babylonians, Celts, Germans, *et al.*, lived with lunar calendars determined by observation. E. G. Turner and O. Neugebauer, commenting on the phrase *κατὰ σελήνην* in a papyrus (*Bulletin of the John Rylands Library* 32, no. 1 [1949] 9) write: "The addition of *kata selenen* obviously means that we are dealing here with phenomena of the real lunar calendar." In Josephus (*Ant.* 2.318, 3.248) dates were given by lunar reckoning (*κατὰ σελήνην*). V. Grumel, "Notations chronologiques de plusieurs inscriptions chrétiennes," *Byzantion* 35 (1965) 83–88, shows that in Greek documents in Egypt, days according to the lunar calendar were designated *Σελήνη* and recorded along with the dates in the civil calendar, the same practice we find in Athens. In any case, the matter seems to have been placed beyond reasonable doubt by Pouilloux's demonstration that *kata theon* and *kata selenen* were synonymous in Philo.<sup>21</sup>

The key passage for the length of the prytany year is contained in Aristotle, *Ath. Pol.* 43; we could not ask for a better source. After explaining the distribution of prytanies within the year, he adds with respect to the same prytany year: *κατὰ σελήνην γὰρ ἄγουσιν τὸν ἐνιαυτόν*. If the year were regulated by the Metonic cycles, as Meritt's theory has it, Aristotle might be expected to have written, instead of *κατὰ σελήνην*, *κατὰ Μέτωνα* or *κατὰ τὸν τοῦ Μέτωνος κύκλον*. (Parenthetically, it is inexplicable to me that Meritt, in offering a new theory for the regulation of the prytany year in the *ArchEph* 1968 article, nowhere refers to this passage of Aristotle, nor attempts to reconcile his theory with such excellent evidence.) Other passages testifying that the Athenians regulated their calendar *kata selenen* are collected in *Marble* 66–69.<sup>22</sup> A considerable body of literary

<sup>20</sup>A. E. Samuel (*TAPA* 97 [1966] 428) maintains that Hesiod's month was regulated by observation.

<sup>21</sup>*REA* 66 (1964) 211–213. See J. and L. Robert, *REG* 78 (1965) 94.

<sup>22</sup>I am indebted to G. Huxley for drawing my attention to the note of A. S. F. Gow (*Maehon* [Cambridge 1965] 86) which concludes, "it is safe to infer (what seems not directly attested) that official proclamations of the *νουμηνία* were a common if not universal practice." There is also the valuable evidence from Theophrastos as noted in F. K. Ginzel, *Handbuch der mathematischen und technischen Chronologie* 2 (Leipzig 1911) 374–375 that Mt Lykabettos was used at Athens for making observations. Finally, A. E. Samuel ([above, note 8] 57) has written: "Aratus' generalization *ὀλίγη μὲν ὅταν κεράεσσι σελήνη ἐσεπρόδεν φαίνεται, ἀεξομένοιο διδάσκει μηνός* that the month begins with the appearance of the crescent probably applies to Athens as well as other Greek cities." I may add that the scholia to Aratos, which are said to derive from Theon and are highly reliable, leave no doubt but that the calendars of the Greek city-states were lunar: see on lines 735 and 740. G. Grote (*History of Greece*, ch. 36) long ago observed in a note on Marathon that Plutarch (*Mor.* 862) did not conceive of any other possibility

evidence, then, must be interpreted before we apply our theories to the epigraphical equations, which in any case Meritt maintains are replete with errors.

The only substantive paragraph which to my knowledge Meritt has written against the theory that the phrase *kata theon* is compatible with a theory of observation is to be found in *TAPA* 95 (1964) 234. He cites a passage from *IG* 12.9.207, a text regulating the appearance of a troupe of theatrical artists in four Euboian cities.<sup>23</sup> A messenger is to be sent to the theatrical performers so that those who wish to sign contracts may present themselves in Chalcis during the month Apatourion, as the Chalcidians reckon time,  $\pi[\rho\acute{o} \epsilon\iota\kappa\acute{\alpha}\delta\omega\nu \tau]\acute{\omega}\nu \kappa\alpha\tau\grave{\alpha} \theta\epsilon\acute{o}\nu$  (lines 60–61). Meritt translates the Greek phrase “before the twentieth day *kata theon*” and argues that the three other cities would not have known when the Chalcidians observed the moon. Incidentally, using his theory, he must maintain that the Euboians were following the Metonic calendar, which is contradicted by the fact that their calendars had intercalated days and months at different times.<sup>24</sup> This to my mind is conclusive proof that the Euboians did not use the Metonic cycle. But in any case, Meritt mistranslates the Greek phrase. The twentieth day is designated in line 11 of the inscription by the singular number, whereas our passage has the plural. At a time when a phrase with *εἰκάδας* had replaced *φθίνοντος* to designate the “waning” days of the month, the text prescribes that the artists are to appear “before the waning days of the moon.” The four Euboian cities span the 41st and 42nd meridians within a range of three hundred kilometers. It would be no more difficult in these four cities to know when the moon was in its “waning” phase than, for example, for observers in Berkeley, San Francisco, Monterey, and Marin county to determine the same lunar phenomenon in modern times.<sup>25</sup> It may be noted that

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except true lunar months for Athens; cf. *Solon* 25. As Samuel cogently notes on p. 58, the famous passage in Aristophanes, *Clouds* 615 ff. bears testimony to the fact that the festival calendar was seriously out of accord with the *moon*, and that the Athenians were aware of that fact. Elsewhere (p. 95), Samuel lists an inscription from Stymphalus (*IG* 5.2.357 [3rd cent. B.C.]) which contains the phrase *δεκάται κατὰ σελ[ήναν]*.

<sup>23</sup>Pritchett-Neugebauer (*Calendars of Athens* 20–21) studied this inscription, which prescribes that the calendars of the four cities may be adjusted by intercalation of up to three days (lines 28–29) to accommodate the appearance of the troupe of artists in the respective cities.

<sup>24</sup>Lines 49–51. A. E. Samuel ([above, note 8] 98) writes, “it is clear that there was not a common calendar among the [Euboian] cities,” which we may infer that there would have been if they had all been using the Metonic calendar.

<sup>25</sup>See the excellent remarks by Samuel (above, n. 8) 14–15, on the subject of months determined by observation. Some idea of the extent to which observation played a part in ancient life can be gleaned from the meteorological writings of Aristotle, as summarized in D. R. Dicks, *Early Greek Astronomy* (Ithaca 1970) 208–211. Cf. Dicks, *JHS* 86 (1968) 34–35; *CR* 84 (1970) 330. Astronomical observations of a diverse nature were

Meritt himself has assumed that the time recorded in Thucydides 8.58 for the signing of a treaty in the valley of the Maeander reflects the reckoning of time according to the observation calendar of Babylon,<sup>26</sup> and he has frequently applied dates from the Parker-Dubberstein tables of Babylonian visibility to Athens, two places separated by much more than one meridian.<sup>27</sup> We know that the *noumenia* of each civil month was sacred to the moon and was regarded as a holiday on which no meetings of the assembly were held. In contrast with this mass of evidence that the *theos* in the calendar equations was Selene, the supporters of the theory that *theos* means Meton have yet to produce any philological evidence to justify their rendition of the word. Calendar equations containing numerous alleged scribal errors, retarded dates, debated texts, can be manipulated to yield partial cycles; but the same material in the hands of another interpreter can yield a highly irregular (i.e., empirical) system of intercalation.

We may summarize the results of this investigation as supporting Aristotle's statement that the calendar of Athenian civic life was regulated "according to the moon," that *kata theon* is synonymous with *kata selenen*, and that the theory which will account for *all kata theon*—*kat' archonta* dates is that the *kata theon* dates are those of a true lunar calendar, whereas the *kat' archonta* dates reflect retardation on the part of the archon in any given year. The leap-frog theory that the civil administration followed, now the Metonic cycle, now the archon's year, can be safely laid aside. The major advance, then, is the determination that the phrase *kata theon* does not apply to dates in the Metonic cycle, whether for Athens, Euboea, or any other part of Greece.

With the problem of *kata theon* dates completely separated from the problem of cyclic calendars, a word is in order about the principle to be applied in determining whether early people, including the Athenians, used any astronomical system of intercalation. The subject has been

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common throughout the Greek world. Many of the astronomical phenomena reported in Athenian writers had their perigee far removed from Athens; but we do not question but that experienced observers saw them. It would be a strange argument *ex silentio* to say that, because our sources do not report detailed observation such as that contained in Maimonides for the Jewish calendar, observation did not take place. Just as no one would seriously maintain that if Maimonides' writings had not been preserved, the Jewish people could not have had an observation calendar. It seems to require a vigorous effort of the imagination to conceive the state of things implied in the absence of modern calendars, clocks, and watches. Euripides describes the military night-watches as determined by the stars: *Rhesus* 527. On the other hand, the idea that the Dionysiac artists mentioned in *IG* 12.9.207 travelled with copies of Meton's calendar at hand strains credulity.

<sup>26</sup>See *CP* 60 (1965) 259–260.

<sup>27</sup>See *Stone* 320–322, 352.

treated by van de Waerden in *JHS* 80 (1960) 177–179; Pritchett in *Marble* 57–66; and Samuel, *Greek and Roman Chronology* (Munich 1972) 52–55. The guiding principle, as accepted by all students of Mediterranean chronology, including Parker, Neugebauer, Bickerman, Samuel, *et al.*, is a rigid intercalation cycle with a designated intercalary month for the purpose of maintaining the calendar in a fixed relationship to some astronomical phenomenon, such as the summer solstice or the rising of Sirius (Babylonians).<sup>28</sup> In Athens, there is sparse epigraphical information for the years before 337/6; but the results of Meritt's research through 1967 show the following position of his intercalary years for the alleged nineteen-year cycle:<sup>29</sup>

4   6   4   3   9   1   5   7   1   6   2   4   7   3   3   9   2   6   3

By this arrangement it is clear that intercalation at Athens did not conform to any cyclic pattern. Furthermore, intercalated months, recorded on the stone without need of restoration or manipulation of calendric equations, are Hekatombaion (I), Metageitnion (II), Posideon (VI), Gamelion (VII), and Anthesterion (VIII).<sup>30</sup> Bickerman has commented on the absence in the literature of any reference to the civil use of Meton's cycle.<sup>31</sup>

More recently, in an effort to make his archon tables conform more nearly to a nineteen-year cycle, Meritt in one article alone has advocated a change in the position of four archons.<sup>32</sup> Moreover, in a continuing

<sup>28</sup>The nature of these Greek astronomical calendars has been explained by van der Waerden (*JHS* 80 [1960] 168–180). These calendars used the names of Athenian archons and months to make clear what months were meant. Their months, in turn, began on days of mean conjunctions. Their years were calculated to begin on the mean conjunction after the summer solstice, whereas the archon's year at Athens might begin before the solstice or on the second new moon after it: see *Marble* 90–97. The year of a given archon in the astronomical calendar might include no more than ten months of that same archon's year at Athens, and the names of the months might not coincide at all in any given year, when, for example, the archon's year at Athens began before the solstice. These considerations are often overlooked in interpreting the Milesian *parapegma*. No one would now maintain that the date Skirophorion 14 of the archonship of Polykleitos represents necessarily either in the name of the month or the day thereof an actual Athenian date. So, for the upper date given on the *parapegma*, there is no justification to infer that the date Skirophorion 13 reflects the state of the Athenian calendar in 432 B.C. If the archonship of Apseudes, for example, actually ended before the solstice, it was nonetheless the practice with astronomers to regard the days starting with the mean conjunction preceding the solstice as Skirophorion of Apseudes' year. See E. J. Bickerman (above, note 1) 37. The miscalculations which result from positing an Athenian date from those given in the astronomical literature can be seen, for example, in K. J. Dover, *Historical Commentary on Thucydides* 4 (Oxford 1970) 267.

<sup>29</sup>See *Marble* 58.

<sup>30</sup>See *Marble* 63.

<sup>31</sup>*Chronology* 29.

<sup>32</sup>*Hesperia* 38 (1969) 112. There are others in *Hesperia* 38 (1969) 432–441.

series, he has proposed wholesale changes in the restorations of calendar equations. Some introduce faulty readings.<sup>33</sup> Meritt's changes result in part from his realization that by proposing "tampered" dates, where formerly he had offered restorations for a "regular" calendar, his interpretation of the character of a year may be changed to accord with the cycles. Thus, in a text which he dates in 298/7,<sup>34</sup> he now assumes retardation in the archon's calendar of seven days and obtains an equation for an intercalary year instead of an ordinary one, as formerly restored. For his year 223/2, where he formerly interpreted the year as intercalary and the equations as straightforward, he now offers restorations which call for intercalation of sixteen days.<sup>35</sup> Retardations of the calendar as recently assumed by Meritt are presented in the table below (350).<sup>36</sup>

In the same article Meritt writes, "intercalations of extra days are known, with attendant irregularities in the festival calendar, and one must be prepared to cope with them,"<sup>37</sup> and "The temptation, I think, should be resisted to 'see an Indian behind every tree',"<sup>38</sup> the second statement about my proposed retardation of *one* day. If the archon of one year could retard his calendar by twenty days, the possibility exists that the archons of other years could do the same thing; and the equations of Achaïos' year prove that retardation could be maintained over three months of the year. Since Meritt believes that the prytany calendar was irregular and has now come to regard the festival calendar as subject to wholesale tampering, the character of many years will doubtless be changed by him as the alterations of his own restorations of calendar equations continue. However, these new restorations *prove* nothing about the nature of the years in question, as Meritt repeatedly claims;

<sup>33</sup>Elsewhere, I shall demonstrate that his text of Agora I 6731 (*Year* 194) has several errors.

<sup>34</sup>*Hesperia* 38 (1969) 107.

<sup>35</sup>*Hesperia* 38 (1969) 439-440.

<sup>36</sup>This table presents only recent examples and includes in some cases a simple reference. The list could probably be doubled by citing all examples before 1968. As Meritt (*TAPA* 95 [1964] 247) maintains, if an archon could intercalate six days, he could just as easily be assumed to have intercalated thirteen. Similarly, Meritt (*Agora: Inscriptions* 15 [1974] 114) calculates that the maintenance of retardation in one archon's calendar "can be reduced to about six weeks." To which we would add, if six weeks it could just as easily be three months or six months. The archon clearly did not seize the first opportunity to correct his calendar. This contradicts Meritt's earlier claim, which has been voiced in several forms: "It is a matter of common sense that even without a 'law' the archon will have at his early pleasure brought even the festival calendar back into harmony with the moon when the occasion for the dislocation was past and done" (*TAPA* 95 [1964] 246-247). In one of the two cases where we have two *kat' archonta - kata theon* equations for one year, the evidence shows that retardation occurring before the ninth lunar month had not been corrected early in the eleventh lunar month.

<sup>37</sup>*ArchEph* 1968, 111.

<sup>38</sup>*ArchEph* 1968, 80.

No. of Days	Month	Source
"one or two"	Boedromion (III)	<i>Hesperia</i> 38 (1969) 437
2 ( <i>quater</i> )	Pyanopsion (IV)	<i>AJP</i> 93 (1972) 162
	Gamelion (VII)	<i>ArchEph</i> 1968, 113
	Anthesterion (VIII)	<i>ArchEph</i> 1968, 114
	Thargelion (XI)	<i>Mélanges . . . Daux</i> 265
3 ( <i>bis</i> )	Metageitnion (II)	<i>Agora: Inscriptions</i> 15.114
	Elaphebolion (IX)	<i>Klio</i> 52 281
4	Elaphebolion (IX)	<i>Hesperia</i> 38, 440
"four or five"	Maimakterion (V)	<i>TAPA</i> 95 (1964) 254
5	Anthesterion (VIII)	<i>ArchEph</i> 1968, 114
"five or six"	Hekatombaion (I)	<i>Agora: Inscriptions</i> 15.114
6 ( <i>bis</i> )	Elaphebolion (IX)	<i>Hesperia</i> 38, 108
	Elaphebolion (IX)	<i>AJP</i> 93, 168
7 ( <i>bis</i> )	Elaphebolion (IX)	<i>Hesperia</i> 38, 108
8 ( <i>bis</i> )	Hekatombaion (I)	<i>Agora: Inscriptions</i> 15.157
	Pyanopsion (IV)	<i>Agora: Inscriptions</i> 15.164
11	Elaphebolion (IX)	<i>ArchEph.</i> 1968, 114
13	Pyanopsion (IV)	<i>Hesperia</i> 38, 440
16	Posideon (VI)	<i>Hesperia</i> 38, 440
19 or 20	Mounichion (X)	<i>Hesperia</i> 38, 440
20	Elaphebolion (IX)	<i>Agora: Inscriptions</i> 15.192
one month plus one day	Hekatombaion (I)	<i>Agora: Inscriptions</i> 15.113

they only demonstrate that the evidence is ambivalent and that the restoration of calendar equations is for the most part a fruitless game. Epigraphists of the world would welcome a practice of publishing in boldface type only that part of a calendar equation which is preserved and the removal of restorations from the text when there are obviously many possibilities.<sup>39</sup> This practice would have the added advantage of focusing attention on texts which are preserved; but many such texts, as indicated in the early part of this article, cannot be made to conform to any astronomical system of intercalation.

With the downgrading of claims based on the evidence of fragmentary calendar equations where restoration is a factor, the evidence of the *nu*

<sup>39</sup>It is unfortunate that in the publication of a *corpus* of *Agora* texts (*Athenian Agora: Inscriptions* 15 [1974]) there are wholesale restorations of calendar equations which are quite unprovable.

years of New Style coinage assumes greater significance. Neugebauer and I pointed out the importance of this numismatic evidence at a time when only the publications of Kambanis were available.<sup>40</sup> Miss M. Thompson has now dated this coinage within the limits of 196–86 B.C.<sup>41</sup> By her tables, intercalary (or *nu*) years do not accord with any nineteen-year cycle.<sup>42</sup> Her chronology, accepted by Meritt,<sup>43</sup> has been questioned by D. M. Lewis,<sup>44</sup> and, building upon Lewis' lower chronology, H. B. Mattingly has arranged the *nu* years so that they do accord with a cycle.<sup>45</sup> It seems that Miss Thompson's rebuttal has now delivered the *coup de grace* to Lewis' position,<sup>46</sup> and we are told that more is to come. But even if Mattingly were correct, we can only draw the conclusion that such an intercalary cycle must have been similar to the Babylonian calendar with the year composed of lunar months which began with the thin crescent of the new moon.<sup>47</sup> As noted above, other Mediterranean peoples used such a calendar and its adoption in Greece at the close of the second century before Christ would not be surprising. The *kata theon* dates establish the use of a lunar calendar, and mark the correct progression of

<sup>40</sup>*Calendars of Athens* (1947) 109–110.

<sup>41</sup>*The New Style Silver Coinage of Athens* (New York 1961).

<sup>42</sup>One significant fact to bear in mind is that the coinage reflects the archon's calendar. See the cogent note of A. E. Samuel (above, n. 8) 59 n. 3. Any alleged calendar with different intercalary years must, therefore, be a different calendar. This important fact escapes Meritt when, for example, he wants to make 196/5, the ninth in a Metonic cycle and hence ordinary, intercalary in the archon's calendar.

<sup>43</sup>In order to make the epigraphical material accord with the numismatic, Meritt resorts to manipulations of the calendar which will not be acceptable to many scholars. Thus, for the year 137/6 B.C., we have one calendar equation normal for an ordinary year (*IG* 2<sup>2</sup>.974: Prytany VII 27 = Gamelion [VII] 28). Meritt assigns 137/6 to a *nu* year and posits that after Gamelion the year was changed to intercalary (*ArchEph* 1973 243–244). He cites 307/6 B.C. as a parallel; but this breaks down because we are elsewhere told by him that in the latter year, when the two Macedonian tribes were created, the incumbent administration was removed from office and the council reconstituted with shortened prytanies. Meritt says, "All apparent problems of the year 137/6 are thus resolved," but if we are going to take years for which there is acceptable epigraphical evidence that they were ordinary and say that late in the year they were altered to intercalary with attendant disruption in the length of the prytanies, we can posit almost any sequence of intercalary years we wish. In any case, I am sure that scholars will reject the representation of the epigraphical evidence as *positive* for an intercalary year in 137/6 (Meritt, *Year* 237). There are other examples too numerous to list.

<sup>44</sup>*Numismatic Chronicle* (Series 7) 2 (1962) 275–300.

<sup>45</sup>*Historia* 20 (1971) 26–46, esp. 46. Mattingly does not discuss the all-important problem of the position of the intercalary month. If some astronomical cycle was adopted, there could be only one month used as the intercalary one. Otherwise, the purpose of using such a calendar is defeated.

<sup>46</sup>*Revue Numismatique* (Series 6) 15 (1973) 54–65, esp. note 33. For a recent comment on the problem, see K. Herbert, *CW* 68 (1975) 449–450.

<sup>47</sup>Cf. R. A. Parker and W. H. Dubberstein, *Babylonian Chronology* (Providence 1956) 1.

days within the lunar year; the *nu* years constitute a different problem and can show only the position of intercalary years. This present study should serve, therefore, to keep the two groups of evidence distinct from one another in future discussions, at least to the extent of recognizing that months within the year were determined *kata selenen*.

#### APPENDIX: THE YEARS 222/1 AND 221/0 B.C.

As indicated in note 15 above, Meritt reconstructs separate *kat' archonta* and *kata theon* calendars for these two years, in accordance with his theory that the calendar of the civil administration was at times separate from that of the archon. However, no *kat' archonta*—*kata theon* dates are specified on the stones, and when Meritt writes such phrases as the "attested *kat' archonta* Anthesterion" of 222/1, he is misstating the evidence. Moreover, Meritt focuses so on the calendar equations that he nowhere explains why in these two years of the third century the *boule* decided to adopt a separate lunar calendar. Actually, the matter is very simple and the equations do not relate to our problem of *kata theon* years. First, however, it is well to note that when a new Agora text was discovered in 1968 with two prescripts showing that the year 220/19 was intercalary, Meritt realized that according to his previous interpretation of the years 223–220, there now came three intercalary years within a sequence of four and this, he says, presented him with a "dilemma." He resolved the difficulty (*Hesperia* 38 [1969] 439–440) by proposing that in the year 223/2, sixteen days had been intercalated into the archon's calendar before the date of the first equation for Posideon 2,<sup>48</sup> and that

<sup>48</sup>Meritt's generalization about retarded dates is clearly incorrect (*Klio* 52 [1970] 281): "The most usual, one might say almost the most nearly normal, months for intercalating extra days into the festival calendar were Elaphebolion, and, to a lesser extent, Hekatombaion, the purpose being to postpone either the Dionysia or the Panathenaic festival." Clearly, Meritt feels free to posit "tampered" dates whenever he wishes. According to the table presented above, Meritt assumes a retarded calendar in ten months, in short throughout the course of the year, and on dates unconnected with any festival of which we know. For most years in Athenian history, we have only one equation and we cannot know whether the retardation was more or less, either before or after the given date. The chance of archaeological discovery has given us *embolimoi* dates for six months of the year, and *kat' archonta* dates for nine (*Marble* 29); cf. *BCH* 81 (1957) 281. We call the archon's calendar the festival one, but considerations political, judicial and military were factors in determining how each archon operated his calendar: see *BCH* 81 (1957) 269–301, esp. 298–299; and *The Greek State at War* 1 (Berkeley 1971) 116–126, esp. 124–125. In view of the occurrence of *embolimoi* and *exairesimoi* dates throughout the course of the year, no one could now maintain that the exclusive, or main, purpose of tampering was the postponement or adjustment of the dates of festivals. It is paradoxical that the more we know about the Athenian calendar the less we understand its vagaries. Restorations of Athenian calendar equations should be offered with utmost caution and always with the warning that they have never proved to be correct when new evidence has come to light.



the calendar had been rectified eleven "days" later by the removal of sixteen corresponding dates of Posideon, thereby giving the following equations:<sup>49</sup>

$$\begin{aligned} & \text{(Intercalation 16 days)} \\ & \text{Posideon (VI) 2} = \text{Prytany VII 2} \\ & 27-16 \text{ days} = 11 \text{ days} \\ & \text{Posideon (VI) [29/30]} = \text{Prytany VII 1[3]} \end{aligned}$$

Meritt might assign one more day to the prytany calendar before the first equation, and weigh the possibility of Posideon being full, thus making the retardation one of eighteen days; but this is of little importance. The important fact is that it is Meritt, the one scholar since 1947 who has protested vigorously against such treatment of the calendar, who is now resolving his "dilemma" by the assumption of sixteen intercalated days.

There is no difficulty about interpreting the year 221/0 as ordinary in the period of thirteen tribes, with retardation in the archon's calendar of four days before Maimakterion *ultimo*, adopting the text of the one equation of the year as given in the *Corpus* (IG 2<sup>2</sup>.839: Prytany VI 16 = Maimakterion [V] [29/30]).<sup>50</sup> Meritt (*Year* 174; *ArchEph* 1968, 92 n. 3) changes the restoration to Maimakterion [16], then creates utter confusion by making the first month of the prytany year of 221/0 correspond to Skirophorion of the previous archon's year. All of this is needless and depends on a restoration which has no probative value. In conclusion, this one equation of 221/0 does not prove, as Meritt claims, that the prytanies were regulated by an astronomical calendar which had begun on Skirophorion (XII) 1 of the previous archon's year.

As to the preceding year 222/1 B.C., we have one completely preserved equation in IG 2<sup>2</sup>.848B (= Dow, *Prytaneis* no. 36): Boedromion (III) 24 = Prytany IV 3. Furthermore, IG 2<sup>2</sup>.844B contains a phrase for an intercalated Anthesterion (VIII) in this year.<sup>51</sup> The latter text was a copy

<sup>49</sup>My objection to Meritt's treatment of these equations is that he offers his solution as being proved. Clearly, the scholar who wishes to regard the two equations as normal for an intercalary year is free to do so, as Meritt has previously done. On the other hand, one who notes that 223/2 is the first year of a Metonic cycle and wishes to regard the Athenian calendar as Metonic and the year as ordinary, may believe this by assuming a retarded calendar of sixteen (or eighteen) days in the first half of the year. Two years later, in 1971, in *Proceedings of the American Philosophical Society* 115.2 (1971) 114, Meritt assumes four intercalary years within five and eight ordinary years within nine, although on the same page he posits that the Athenians were following his Metonic calendar for *five* years.

<sup>50</sup>For the progression of days for an ordinary year in the period of thirteen tribes, see Pritchett and Neugebauer, *Calendars of Athens* 89.

<sup>51</sup>It is perhaps symptomatic that another non-stoichedon prescript of this year (IG 2<sup>2</sup>.848A), which has a large lacuna and tells us only that some day in the twenties of the third prytany is equated with an unknown date in Boedromion (III), is now restored in

of a decree passed several years earlier than the decree inscribed above it on the stone and the calendar equation was omitted by the later scribe. Clearly, the equation of *IG* 2<sup>2</sup>.848B can be interpreted as for an intercalary year of the period of thirteen tribes with retardation in the archon's calendar of eight or nine days, depending on whether Boedromion was made full or hollow. No objection can be raised to this and it all seems straightforward, particularly in the light of what Meritt has done with the previous year where he retards the calendar by sixteen days.

But Meritt, instead of adopting this simple solution, has used this one equation of 222/1 B.C. to construct a calendric monstrosity.<sup>52</sup> He theorizes that the archon's year began as ordinary but in Anthesterion (VIII) was changed to intercalary with the prytanies, however, continuing to function as for an ordinary year. Returning to our one completely preserved text (*IG* 2<sup>2</sup>.848B) for this year, we can then make the following equation for an ordinary year of the period of thirteen tribes: Prytany IV 3 (28 + 28 + 28 + 3, see *Calendars of Athens* 89) = Boedromion 24 = 87th day. But even for an ordinary year we must assume retardation of six days (30 + 29 + 24 = 93 days: 93 - 87 = 6).<sup>53</sup> The advantage of six for

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bold-face type as for an *ordinary* year in what purports to be a *corpus*-like publication: *The Athenian Agora: Inscriptions* 15 (1974) 120. As Koehler noted in the *Corpus* (*IG* 2.431): "Titulus satis neglegenter incisus et litterarum numerus in singulis versibus valde diversus fuit." Moreover, the mason did not observe syllabic division. Kirchner gives the height of the letters as only 0.005 m. We can restore any numeral we want for the early part of Boedromion, and any numeral in the twenties for the prytany date, as for an intercalary year. Given the nature of the Athenian festival calendar, as Meritt now believes (see the table on p.350) it to be, Meritt's 1974 restoration of *IG* 2<sup>2</sup>.848A, clearly, is only one of many possibilities and, having no probative value, should be excluded from a *corpus* text. We know from the one preserved equation of this year (*IG* 2<sup>2</sup>.848B) that the archon had retarded his calendar before that date. Whether earlier retardation was more or less than that at the time of the passage of the earlier decree, and when the retardation occurred, is pure speculation. We must not pretend that we can set up day-by-day correspondences for the early days of this year, 222/1.

<sup>52</sup>Tables for Meritt's alleged correspondences in two lunar calendars are published in *Year* 175, and *Hesperia* 38 (1969) 438 and the results maintained in *Athenian Agora: Inscriptions* 15 (1974) 122.

<sup>53</sup>When Meritt first advanced his theory (*Year* 173) that the year 222/1 began as ordinary, he believed that forward count with *mei' eikadas* in the equation of *IG* 2<sup>2</sup>.848B, resulted in an equation in which he could assume, without retardation in the calendar and with irregular prytanies, that the festival date was regular for an ordinary year. Meritt has now abandoned this theory of forward count. He does so in a footnote (*TAPA* 95 [1964] 225 n. 86), which he recently (*AJP* 95 [1974] 278-279) chided A. E. Samuel for neglecting. I shall discuss Meritt's theory of the Athenian count of days in another context. In any case, with backward count for *IG* 2<sup>2</sup>.848B, we must assume retardation in the festival calendar and Meritt's interpretation as for an ordinary year has no advantage over one for an intercalary year. It is very strange that when Meritt published a full-page table of correspondences between the two calendars in *Hesperia* 38 (1969) 438, he omitted all mention of the equation in *IG* 2<sup>2</sup>.848B, failing to interpret the equation in

an ordinary year over eight or nine for an intercalary year is slight. This equation of *IG* 2<sup>2</sup>.848B, therefore, does not prove that the year began as ordinary. Since we know that there was an intercalary Anthesterion, we may assume that 222–1 B.C. was intercalary in its entirety, prytany and festival calendars alike.

Meritt's calendric researches during the past decade or so have centered around an attempt to show that the Athenians followed an astronomical system of intercalation. Since many years refuse to yield, as we have seen above, he supports a theory of *broken cycles*. The new twist is that the prytany calendar was regulated by an astronomical system, whereas the archon's calendar was otherwise determined; how, he does not say. The fact that even in his theoretical prytany calendar he can find no regularity in the position of the intercalary month, that, for example, he assumes (*Year* 175) an intercalary Hekatombaion II for the calendar regulating the prytanies of 221/0 B.C., does not disturb him.<sup>54</sup> Meritt has apparently gone through the equations in Athenian prescripts seeking for examples where he could assume, by new restorations or otherwise, that the festival and prytany calendars of a given year could be interpreted as of different types with the prytany calendar being regulated by an assumed astronomical system. As we have seen in the main part of this article above, he did find one equation (but not the other) of the archonship of Achaïos (166/5) which has the required interval, in this case thirty days, between the archon's calendar and the calendar *kata theon*. His theory, however, would not explain the other triple date of the year nor the calendar of the following year, that is without the assumption of scribal error. Nor would it account for all the rest of the *kai' archonta—kata theon* dates. Similarly, for the two years 222/1 and 221/0 B.C., we see that there is no difficulty in interpreting the year 222/1 as intercalary and 221/0 as ordinary, both throughout their course and with Hekatombaion (I) 1 = Prytany I 1.

If a scholar wants to advance a new theory that one calendar of a given archon, whether prytany or festival, was regulated by a year of thirteen months and another calendar of the same archon by a year of

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the light of his abandonment of forward count. Yet, if one follows the argument in *Year* 173 ff., the claim that *IG* 2<sup>2</sup>.848B with forward count gave a normal equation for an ordinary year constituted the mainstay for his theory that the archon's year was changed from ordinary to intercalary during its course.

<sup>54</sup>In all of Meritt's writings, he never refers to any of the writings of Neugebauer, Parker, Dubberstein, Bickerman, Samuel, *et al.* on the principles to be followed in positing astronomical systems of intercalation. A scholar in any discipline purporting to be scientific should be willing to present his researches in accordance with established principles, or demonstrate why these principles are incorrect. Meritt chooses to ignore the whole literature on astronomical systems, although such scholars as Neugebauer, Bickerman, and Samuel have commented unfavorably on his methods.

twelve months, he should present in support of his theory a considerable number of examples in which the intervals between the two dates given in the prescripts accord exactly with the intervals between the two hypothetical lunar calendars. And of course the examples on which the theory is to rest should be *without benefit of restoration* or assumption of scribal error. Clearly, according to any interpretation of the Athenian calendar, more than half of the equations yield true lunar dates, or approximations thereof, without benefit of tampering. Using the equations of the second century, where we have the *kal' archonta*—*kata theon* dates, I once estimated that in 64% of the years studied, the calendar was normal.<sup>55</sup> Meritt's numerous assumptions of retardation in his recent publications would reduce the percentage, but not, I believe, bring it below 50%. Now, in advancing his new theory of two lunar calendars, Meritt did find one equation (but not the other) of the archonship of Achaïos (166/5) which has the required interval, in that case thirty days. But to my knowledge, the equation of 222/1 (*IG* 2<sup>2</sup>.848B) was the only other one where *without benefit of restoration* Meritt found an interval which would accord with his theory. Two examples are too few to build a theory on; but the interval in 222/1 was obtained by forward count. By backward count, tampering has to be assumed. All the rest is restoration; and of course selected equations can be restored to accord with almost any theory,<sup>56</sup> but this procedure no longer carries conviction. If there had been a large number of preserved equations which without benefit of restoration exhibited intervals between the two dates in the equations as for two separate lunar calendars, students of the calendar would have worked out this theory long ago. If one wants to examine the table of approximately three hundred calendar equations presented in Pritchett-Neugebauer, *Calendars of Athens*, where the degree of restoration is indicated, for the purpose of discovering a significant number of unrestored prytany and festival dates exhibiting intervals for two separate lunar calendars, I can assure him that he will search in vain.

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<sup>55</sup>*BCH* 81 (1957) 281.

<sup>56</sup>See the table in *Marble* 80, showing thirty-six changes in the assumed character of years, whether intercalary or ordinary.