THE CALENDAR OF THE TWO DEATH-DATES OF ALEXANDER III

G. R. F. Assar
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The BM 45962 Diary fragment[1] records the death of Alexander III (336-323 BC) as:

….. 29 LUGAL NAM.MEŠ ….. (On the) 29th, the king died, …..

A later astronomical tablet, BM 34075, inaugurates the first year of the reign of Philip III Arrhidaeus (323-317 BC) on day 1 of the Babylonian lunar month III (Sīmānu).[2] Although both records refer to clouds that obscured the crescent moon at the beginning of month III, the second tablet provides sufficient data for dating Alexander's death accurately. For example, it places the last lunar visibility in day 28 of month III and gives the moonrise to sunrise time interval as 18º (1h 12m equinoctial). Modern computations show that on 9 July 323 BC, the thin moon had a phase of about 2%, rising at 00:33 UT while the sun rose at 01:54 UT in Babylon. The difference of 1h 21m between these two rise times is consistent with the Babylonian figure.

We also find that the crescent moon rose at 01:23 UT before sunrise at 01:54 UT on 10 July 323 BC. However, having a phase of roughly 0.26%, it remained invisible. This agrees with the Babylonian date of the last crescent visibility in July 323 BC.

Given the above lunar data, we may securely date 28.III.1 Philip III to 9 July 323 BC and thus get 1.III.1 Philip III = 11/12 June 323 BC. This confirms the Julian date of 29.II.14 Alexander III as 10/11 June 323 BC. It also shows that the Babylonian month II (Ayyāru) in that year was hollow. We may, therefore, combine the astronomical data in the BM 45962 and 34075 cuneiform fragments with the above reference to Alexander's demise and conclude that the Macedonian ruler died sometime between the sunrise and sunset (16:02 UT) of 11 June 323 BC.[3]

Unfortunately, the exact date of Alexander's death has not survived in the extant contemporary Greek and/or Macedonian material. In fact, of the classical authors, only a rather late one, Plutarch (*ca*. AD 45-120), registers both the month and day of Alexander's death.[4] Even so, he presents us with two discrepant dates, attributing the first to Aristobulos and claiming to have noted the second in the Macedonian court diaries. These are given as: *τριακάδι Δαισίου μηνός*, 30th of the month Daisios (*Alexander*, 75.4), and *τριτε φθίνοντος* , literally, three days before the 'dying' month, that is, on the 28th day of the month (*Alexander*, 76.4).

As presented by Plutarch, the above dates have little calendrical value for the following reasons. First, they offer nothing on the organisation of the corresponding calendars, presumably the Macedonian or ones with Macedonian month-names. Second, they provide no solar reference for the month Daisios nor any one of its preceding or subsequent counterparts in 323 BC. Thus, although both dates are generally considered to be correct, the arguments in their favour are only suggestive. Assuming that 28 Daisios is on a calendar with sunset day-epoch does not necessarily imply that the second date, 30 Daisios, refers to the last day (the 29th) of the same month in a parallel calendar with morning day-epoch.[5] To confirm this, one must first establish the sequence of full and hollow months in the Macedonian calendar and then show that Daisios was both a hollow month and aligned with the Babylonian Ayyāru in 323 BC. While the latter is beyond the scope of this brief excursus, it is possible to demonstrate, rather summarily, that the two discrepant dates in Plutarch could be according to a schematic civil calendar of Callippic type with Macedonian month-names. As shown below, this renders Daisios hollow and also synchronised with Ayyāru in 323 BC. However, before moving that far, we must determine whether or not Greeks and Macedonians ever utilised schematic calendars for civil purposes.

Unfortunately, we have, once again, no contemporary evidence of the application of calendars with predetermined month-lengths beyond certain astronomical schools in the

[1] Sachs and Hunger (1988), 206-207, Diary -322B.
[2] Hunger and Sachs (2001), 90.
[3] Depuydt (1997), 134-135.
[4] For example, Arrian (*Anabasis of Alexander*, 7.28.1) only records the year: 114th Olympiad, in the archonship of Hegesias at Athens.
[5] Beloch (1927), 27; Samuel (1972), 141. Cf. also Grzybek (1990), 32-35.

Hellenistic world. Yet there are at least three later references implying that the Greeks and Macedonians may have used such calendars for non-astronomical purposes.

The first is in Diodorus (12.36.2-3), regarding Meton and the inception and accuracy of his calendar. Diodorus remarks that:

> And we find that this man (Meton) was astonishingly fortunate in this prediction which he published; for the stars complete both their movement and the effects they produce in accordance with his reckoning. Consequently, even down to our own day, the larger number of the Greeks use the 19-year cycle and are not cheated of the truth.

Assuming that Diodorus' reference to "the larger number of Greeks" does not exclusively concern the Greek astronomers, the above passage suggests that Meton's calendar had civil applications too.

The second is in Plutarch (*Alexander*, 24.2-8 and 25.1-3). It begins with the siege of the coastal city of Tyre in Syria in the first seven months of 332 BC and culminates in the following:

> While Alexander was giving the greater of his forces a rest from the many struggles which they had undergone, and was leading up only a few men to attack the walls, in order that the enemy might have no respite, Aristander the seer made a sacrifice, and after taking the omens, declared very confidently to the bystanders that the city would certainly be captured during that month. His words produced laughter and jesting, since it was then the last day of the month, and the king, seeing that he was perplexed, and being always eager to support his prophecies, gave orders to reckon that day, not as the thirtieth (*τριακάδα*) of the month, but as the twenty eight (*τρίτην φθίνοντος*); and then, after the trumpet had sounded the signal, he attacked the walls with greater vigour than he had at first intended. The assault became fierce, and even those troops which had been left in camp could not restrain themselves, but ran in throngs to help the assailants, and the Tyrians gave up the fight. So Alexander took the city on that day.

If the month in question were lunar, its end would have been known on the 30th day because irrespective of the sighting of the first crescent, the next month would have automatically started after the sunset on day 30 of the current month. If, on the other hand, it were a hollow month, its final day could not have been predicted before the appearance of the thin moon at dusk on the 29th day with no knowledge of the precise length of the earlier months in the same year and the mathematical skills for computing the end of the current month.[6] Since the above passage implies that Alexander intercalated a single day to complete his capture of Tyre, the month of victory must have been hollow. It must, therefore, have been a schematic month whose length had already been decided by the rules of the corresponding calendar and thus known to Aristander.

The third reference is given by Geminus (*Eisagoge*, 8.3):[7]

> *Ἔστι δὲ ὁ μὲν ἀκριβὴς μηνιαῖος χρόνος, καθάπερ εἴρηται, ἡμερῶν κθ΄ ∟΄ λγ΄, οἱ δὲ πρὸς τὴν πολιτκὴν ἀγωγὴν ὁλοσχερέστερον λαμβανόμενοι ἡμερῶν κθ΄ ∟΄, ὥστε τὴν δίμηνον γενέσθαι ἡμερῶν νθ΄. Ὅθεν διὰ ταύτην τὴν αἰτίαν οἱ κατὰ πόλιν μῆνες ἐναλλὰξ ἄγονται πλήρεις καὶ κοῖλοι διὰ τὸ τὴν <κατὰ> σελήνην δίμηνον ἡμερῶν εἶναι νθ΄.*

> The precise length of the lunar month is therefore, as I have just mentioned, 29, 1/2, 1/33 days; but this is commonly rounded to 29, 1/2 days, so two months make up 59 days. This explains why the civil months are alternately full and hollow because two lunar months add up to 59 days.

Geminus' allusion to civil months (*κατὰ πόλιν μῆνες*) in the above passage suggests that non-astronomical calendars with alternating months of 29-30 days may well have had civil and administrative functions in the Hellenistic world. It is, therefore, not impossible that these followed both the intercalary cycles that regulated the astronomical calendars and the disposition of their full and hollow months. The occasional 30-30 sequence instead of 29-30 would have kept

[6] Neugebauer (1955), 28-86; Neugebauer (1957), 110-113.
[7] Manitius (1898), 100-101; Aujac (1975), 47-48.

the schematic calendar months and year in approximate accord with the lunar months and the solar year respectively.

Accepting Geminus' statement to be authentic and considering the following points, we may proceed with identifying the calendar of the two death-dates of Alexander:

(a)- Because the epoch of a civil calendar is not expected to have an astronomical significance, we could begin a Metonic version not with the summer solstice on 13 Skirophorion 432 BC, but with the first day of the following Attic month, Hecatombaion.

(b)- The technical 1st day of a non-astronomical calendar is not always determined by the sighting of the first lunar crescent. Judging from Thucydides (2.28.1), a lunar month could have started with new moon (when a solar eclipse is likely). It is, therefore, possible that the beginning of the first month of a schematic calendar may have been placed a day or two before or after that of its lunar counterpart.

(c)- Unlike astronomical months that may have any one of their days eliminated to yield the desired number of hollow months throughout the regulating cycle, the civil months could only have their last day dropped. This means that having computed the current day-number for a given number of elapsed days, we must check the results against the nearest eliminated day. If they both fall in the same month, the current day-number may have to be adjusted accordingly.

Considering the above points, we get the following results for two civil calendars modelled on their Metonic and Callippic equivalents.

First, in agreement with Thucydides and starting off the Metonic version with 1 Hecatombaion on 15 July 432 BC, that is, the day of new moon,[8] we find:

(1)- The number of days D from sunset 15 July 432 BC (JDN = 1563831) to sunset 11 June 323 BC (JDN = 1603609), covering the death of Alexander = 39778.

(2)- From 39778 ÷ 6940 we get $Q_1 = 5$ and hence $39778 - 5 \times 6940 = 5078$ days in the current cycle.

(3)- We get $Q_2 = 80$ from 5078 ÷ 63 and hence $T = 5078 + 80 = 5158$.

(4)- Finally, 5158 ÷ 30 gives $Q_3 = 171$ and $R = 28$. Since the 5078 days include the moment of Alexander's death, the current day-number $D_c = R = 28$ and month-number $M_c = Q_3 + 1 = 172$.

(5)- Counting from the sunrise of 15 July 432 BC, we must continue up to the sunrise of 12 June 323 BC (JDN = 1603910) to include Alexander's death. This would give $T = 5079$, $D_c = 29$ and $M_c = 172$.

(6)- Checking for the eliminated day, we get $Q_4 = 80$ from 5078 ÷ 63 and so $80 \times 63 = 5040$. Since the beginning of the current month (172nd) was the 5051st day of the current cycle, the 5078th or 5079th day will not be affected by the elimination of the 5040th day. It is, therefore, possible to take 1 Hecatombaion = 15 July 432 (new moon's day) as the epoch of the Metonic civil calendar.

Assuming that the date 28 Daisios too is on a sunrise day-epoch, we may take 16 July 432 BC as the epoch of the corresponding calendar, i.e. the day of the first crescent visibility. The thin moon would have been observable at Athens after the sunset at 17:47 UT. It would have had a phase of about 1.4% and set at 18:43 UT on that day.

As for the Callippic version, we may initially start with 1 Hecatombaion = 28 June 330 BC (JDN = 1601069) as the astronomical epoch of the cycle, i.e. the day of the summer solstice (01:22-01:23 UT) as well as the new moon (01:39 UT). This would entail the following:

(1)- Number of days from the sunset of 28 June 330 BC to sunset of 11 June 323 BC = 2540, in the first Callippic cycle.

(2)- Dividing by 63 gives $Q_2 = 40$ and hence $T = 2580$. Subsequent division by 30 gives $Q_3 = 86$ and $R = 0$, that is, $D_c = 30$th day of the month.

(3)- Checking for day elimination, we get $Q_4 = 40$ from 2540 ÷ 63 and hence the position of the eliminated day in the cycle would be $40 \times 63 = 2520$, that is, 20 days before the 2540th day that equates with 11 June 323 BC. Since the latter relates to the 30th day of the 86th Callippic month, day 1 of that month is the 2511th day of the cycle and so the eliminated day coincides with the 2520th day of the calendar. This means that the day-numbers after the latter through to the end

[8] NASA's site gives the time of new moon as 17:16 UT. According to NASA's JPL HORIZONS Web-Interface http://ssd.jpl.nasa.gov/horizons.cgi#top we have, for Athens (38º N, 23º 38´ E and 90 meters altitude): moonrise = 01:13 UT, lunar phase = 3.3%, sunrise = 03:04 UT on 14 July 432 BC. For 15 July 432 BC we get: moonrise = 02:16 UT, lunar phase = 0.5% (no visibility), sunrise = 03:05 UT.

of the current month would be one more than that obtained from a manual count that begins with the epoch of the cycle. Since we assumed earlier that civil calendars would only drop the last day of a month to render it hollow, we must amend the above current day-number as $D_c = 30 - 1 = 29$ in the 86th month.

(4)- Obviously, counting from the sunrise of 28 June 330 BC to sunrise of 12 June 323 BC would entail $D_c = 1$ in the 87th Callippic month.

Now, by moving forward the astronomical epoch of the Callippic cycle to 29 June 330 BC to match it with the beginning of the lunar month (phase = 3.4%) and repeating the above steps, we get $M_c = 86$, and $D_c = 28$ on a sunset day-epoch followed by $D_c = 29$ in the same Callippic month according to a sunrise day-epoch. These are consistent with the two discrepant dates in Plutarch. We may, therefore, take 29 June 330 BC (1st day of lunar month) as the epoch of the Callippic civil calendar. However, there is no evidence that Macedonian civil months began with the sighting of the first lunar crescent. Assuming that they started a day earlier or later, as this frequently occurs in a schematic calendar, 28 Daisios could be on a Callippic civil calendar that began with the sunrise of 30 June 330 BC. In any case, we may proceed with identifying the two Attic months 172nd Metonic and 86th Callippic to ascertain their quality and that of the Macedonian equivalents.

This is not a straightforward exercise since we have insufficient solar references for the Macedonian months in the period June 432 BC – June 323 BC. Yet several Attic-Babylonian and one Attic-Macedonian month synchronisms may provide the required data.

The Attic-Babylonian aligned months may be summarised as follows:

(1)- 13 Skirophorion = 27 June 432 BC. This leads to Skirophorion ≈ Sīmānu and Hecatombaion ≈ Du'ūzu in years 432 – 19n where n = 1 to 5 in our case.[9]

(2)- Almagest (IV.11): no day-number, Poseideon in the archonship of Phanostratos, 26/27 Thoth, year 366 of Nabunassar = 22/23 Dec. 383 BC. This corresponds with 12/13 Kislīmu and yields Poseideon ≈ Kislīmu in years 383 ± 19n.

(3)- Almagest (IV.11): no day-number, Skirophorion in the archonship of Phanostratos, 24/25 Phamenoth, year 366 of Nabunassar = 18/19 June 382 BC. This falls in 14/15 Sīmānu and thus gives Skirophorion ≈ Sīmānu in years 382 ± 19n.

(4)- Almagest (IV.11): no day number, Poseideon I (normal) in the archonship of Euandros, 16/17 Thoth, year 367 of Nabunassar = 12/13 Dec. 382 BC. This leads to Poseideon I ≈ Kislīmu in years 382 ± 19n.

(5)- Almagest (VII.3): 25 Poseideon, year 36 of the 1st Callippic cycle = 16/17 Phaophi, year 454 of Nabunassar = 20/21 Dec. 295 BC. This gives Poseideon ≈ Kislīmu in years 314 – 19n, where n = 0 to 3 in our case.

(6)- Almagest (VII.3): 15 Elaphebolion, year 36 of the 1st Callippic cycle = 5/6 Tybi, year 454 of Nabunassar = 9/10 Mar. 294 BC. This yields Elaphebolion ≈ Addāru in years 313 – 19n.

(7)- Almagest (VII.3): 8 Anthesterion, year 47 of the 1st Callippic cycle = 29/30 Hathyr, year 465 of Nabunassar = 29/30 Jan. 283 BC. This leads to Anthesterion ≈ Šabāṭu in years 321 – 19n.

(8)- Almagest (VII.3): 25 Pyanepsion, year 48 of the 1st Callippic cycle = 7/8 Thoth, year 466 of Nabunassar = 8/9 Nov. 283 BC. This gives Pyanepsion ≈ Tašrītu in years 321 – 19n.

Observations 5 and 6 above confirm that a second Poseideon was not intercalated in year 36 of the Callippic cycle in spite of an anticipated embolismic month. Otherwise we would have had Elaphebolion ≈ Nīsānu instead of Addāru.[10] The same holds for year 47 of the Callippic cycle with an intercalary month after Anthesterion. Although unattested, it is possible that the Callippic calendar intercalated a second Skirophorion rather than Poseideon[11] in six of its seven intercalary years (given here as years 1, 3, 9, 12, 14, and 17) with a Poseideon embolimos in year 6 of the cycle.[12]

In spite of their limitations, when combined with the attested intercalations from Babylonia, the above examples act as anchors to ensure a reliable link between the Attic and Babylonian months.

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[9] The calendar switches from Metonic to Callippic after 330 BC. Furthermore, the sign ≈ implies that the first days of the two months do not necessarily coincide and may be several days apart.

[10] Overlooked by Samuel (1972), 47.

[11] Van der Waerden (1960), 176; Samuel (1972), 47.

[12] Jones (2000), 146-147 and 152, adduces evidence that suggests intercalation before Thargelion.

As for the relationship between the Macedonian and both the Attic and Babylonian months, we have only the following attested cases:

(1)- Plutarch (*Alexander*, 2.3): …. Alexander was born early in the month Hecatombaion, the Macedonian name for which is Loios, on the sixth day of the month, and on this day the temple of the Ephesian Artemis was burnt.

Although Alexander's birth-date was probably moved back by two to three months to tie it with a portentous moment,[13] that may not affect the equation Hecatombaion ≈ Loios in 356 BC.

(2)- Plutarch (*Timoleon*, 27.1), the battle at the river Crimesus in 339 BC took place in Thargelion which was drawing to a close and the summer solstice was near. Since the latter was at 21:05-21:06 (UT) on 27 June 339 BC and that Ayyāru covered 10/11 May – 8/9 June in that year, we would have Thargelion ≈ Ayyāru in years 339 BC – 19n, e.g. 320/19 BC = 18 Metonic and 11 Callippic.

(3)- Plutarch (*Alexander*, 16.1-2) and Plutarch (*Camillus*, 19.4) yield Thargelion ≈ Daisios in 334 BC at Granicus.

(4)- Daisios ≈ Ayyāru in 323 BC, concerning the Babylonian version of Alexander's death.

Assuming that the Macedonian civil calendar intercalated simultaneously with the Metonic and/or Callippic calendars, it would be possible to construct the following two tables. Table 1 gives the correlation of the Athenian, Macedonian and Babylonian months, modelled on the calendar of Meton. Table 2 is based on the Callippic calendar, representing only the first 19 years of the intercalary cycle.

I should add that the proposed Macedonian intercalations in these tables agree with a handful of references to embolismic years in several contemporary and later texts as well as coins. These are:

(1)- *P. Oxy.* 2082, with excerpts from an Olympian chronicle, placing the death of the Macedonian king, Cassander, in the 21st(?) day (δ[εκάτηι (?)] φθίνοντος) of the month Artemisios embolimos.[14] According to Eusebius,[15] Cassander reigned for 19 years from Ol. 116.1 (316/5 BC) to Ol. 120.3 (298/7 BC). This renders 298/7 + 2 × 19 = 336/5 BC in the Macedonian calendar intercalary.

As for the intercalation taking place after the 7th not the 6th calendar month, Plutarch (*Alexander*, 16.1-2) intimates that in 334 BC at Granicus, Alexander ordered the month Daisios to be regarded as a second Artemisios. It is possible that from that date on, the Macedonians began intercalating a second Artemisios rather than Xandikos.

(2)- An inscription from Dion in Macedonia is dated to the 12th day of an intercalary month, year 16, with no royal name. Although incompletely published, the date line of the text gives: ΕΤΟΥΣ ⊏ ΚΑΙ Ι ΕΜΒΟΛΙΜΟΥ ΙΒ.[16] This was originally attributed to Demetrius I Poliorcetes (294-288 BC), son of Antigonus Monophthalmus.[17] If so, Demetrius counted the first year of his kingship from his naval victory over the Egyptian forces of Ptolemy I at Salamis. This must have taken place before Dios 306 BC, making 307/6 BC year 1 of Demetrius' assumption of the royal epithet in association with his father.

According to Plutarch (*Demetrius*, 7.2-3), Demetrius raided Babylonia while Seleucus I was campaigning in India. However, having ravaged the county, he returned to the sea-coast for another battle against Ptolemy. Whatever the motives behind Demetrius' incursion into Mesopotamia might have been, we find, after a gap of over two years since Seleucus I effectively expelled Antigonus from Babylonia, that the colophon titles of an unpublished contract text from Larsa (BM 105211) in southern Mesopotamia mention Antigonus:

> 8: ……. UD.UNUG.KI
> 9: ITU.NE UD-22-KÁM MU-9-KÁM [1]*An-tu-gu-nu-su*
>
> 8-9: Larsa. Month V, day 22, year 9 of Antigonus

[13] Perrin (1919), 229, n. 4. Cf. Grafton and Swerdlow (1988), 24-25, on Plutarch's rearrangement of certain day-dates. Cf. also Unger (1882), 82-83 and Meyer (1899), 445-448 on the age of Alexander.
[14] Jacoby (1929), 1195; Jacoby (1930), 850-851; Burstein (1985), 6.
[15] Schoene II (1866), 118; Schoene I (1875), 231.
[16] SEG 27 (1977), 77, no. 279.
[17] SEG 48 (1998), 240, no. 782; Hatzopoulos (1999), 634, no. 332; Hatzopoulos (2000), 520-521, no. 453.

This was compiled on 26/27 Aug. 309 BC and thus agrees with Plutarch on Demetrius' passing raid into Mesopotamia. It may therefore be used in fixing the date of the naval battle at Salamis.

Plutarch (*Demetrius*, X.2) relates that Demetrius wrested Athens from Cassander 14 years after the Lamian war and the battle at Crannon in 323/2 BC, that is, in 309/8 BC. Plutarch (*Demetrius*, XV.1-XIX.2) then recounts Demetrius' victory at Salamis in some detail. Given the date of the above Babylonian record, Demetrius' sea battle against Ptolemy is likely to have taken place before Dios 306 BC. The Macedonian inscription from Dion may, therefore, be dated to 292/1 BC.[18] This renders year 330/29 of the Metonic and Callippic calendars intercalary.

However, placing the first regnal year of Demetrius in 307/6 creates difficulties elsewhere. An inscription from Beroia in Macedonia records manumission of slaves and certain domestic issues.[19] Although incompletely published, its preserved date-line gives: In the reign of King Demetrius, year 27, month Peritios". This is now shown to have been dated on the "Antigonid era", beginning with 1 Dios 317 BC, and therefore placed in 291/0 BC.[20] It is, nevertheless, possible that Antigonus I counted his years from 1 Dios 318 BC and that this inscription is from 292/1 BC instead.

According to Diodorus (17.117.5), Alexander III (336-323 BC) of Macedon reigned for 12 years and 7 month. Diodorus (19.11.5) further reports that Philip III Arrhidaeus (323-317 BC) was on the throne for 6 years and 4 months. On the other hand, Arrian (*Anabasis of Alexander*, 7.28.1) assigns to Alexander a reign of 12 years and 8 months. Since Alexander died (in his 14th regnal year) on 11 June 323 BC, that is, 28 or 29/30 Daisios according to Plutarch, it would be possible to determine the month of the death of Philip III. This would, in its turn, decide the first year of Antigonus' reign.

As in the case of Alexander's death-dates, we have two different figures concerning the length of his reign. This suggests that Diodorus and Arrian (or their sources) used two different methods of counting regnal years and months. However, these could not have been more than two, allocating the month of the death of a king either to him or to his successor. Accordingly, starting with the death of Alexander's father, Philip II (365-336 BC), it is possible to show that Philip III died before 1 Dios 317 BC. This would have enabled Antigonus to backdate his first year to 1 Dios 318 BC.

We begin with assigning the month of death to the deceased ruler. Philip II died either in Hyperberetaios or Dios 336 BC.[21] If the former, Alexander would have reigned 12 years and 8 months: Dios 336 BC to Daisios 323 BC inclusive. If, on the other hand, Philip II died in Dios 336 BC, Alexander could only have reigned 12 years and 7 months: Apellaios 336 BC to Daisios 323 BC inclusive. This means that in both cases, Philip III must have died in Hyperberetaios 317 BC to have reigned 6 years and 4 months: Panemos 323 BC to Hyperberetaios 317 BC inclusive. Had Philip III died after 1 Dios 317 BC, he would have reigned 6 years and 5 months.

We may now repeat the above by assigning the month of death to the successor of the dead king. Philip II died either in Hyperberetaios or Dios 336 BC. If the former, Alexander would have reigned 12 years and 8 months: Hyperberetaios 336 BC to Artemisios 323 BC inclusive. If, on the other hand, Philip II died in Dios 336 BC, Alexander could only have reigned 12 years and 7 months: Dios 336 BC to Artemisios 323 BC inclusive. Once again, in both case Philip III must have died in Hyperberetaios 317 BC to have had a reign of 6 years and 4 months: Daisios 323 BC to Gorpiaios 317 BC inclusive. Consequently, the month of his death, Hyperberetaios 317 BC, could have been claimed by Antigonus and so given him the occasion to backdate his reign to 1 Dios 318 BC. Counting from the latter date, the inscription from Beroia could be placed in 292/1 BC. Similarly, the earlier inscription from Dion, year 16, month embolimos, could be dated to 303/2 BC, that is, 16 Metonic and 9 Callippic. However, this has to be ruled out since it is about a decade before Demetrius I Poliorcetes was recognised in Macedonia. According to Plutarch (*Demetrius*, 37.2), Demetrius was hailed king of Macedonia in 294 BC. This leaves Antigonus II Gonatas (283-239 BC) and Philip V (221-179 BC) both of whom reigned more than 16 years. However, since Philip V has been eliminated,[22] the most likely ruler under whom the inscription

[18] Cf. Errington (1977), 115-116 and 122 on the Julian date of Demetrius' first regnal year.
[19] SEG 12 (1955), 87-88, no. 314; Burstein (1985), 73-74.
[20] Grzybek (1993), 526-527; Hatzopoulos (2006), 673-674.
[21] Cf. Badian (1963), 244-250 and Hatzopoulos (1982), 21-42, on the reign of Philip II.
[22] SEG 48 (1998), 240, no. 782; Hatzopoulos (1999), 634, no. 332; Hatzopoulos (2000), 520-523 no. 453.

from Dios was complied is Antigonus Gonatas. This then places his year 16 in 268/7 BC, that is 13 Metonic and 6 Callippic.

(3)- An inscription from "Eriza", dated year 19, month enbolimos (*sic.*),[23] is now considered to be on the Sullan era (epoch = 87/6 BC) and so from 67/6 BC.[24] This agrees with the two Metonic and Callippic intercalations in 333/2 BC (= 67/6 + 14 × 19) and 314/3 BC respectively.

(4)- We have a tetradrachm of Mithradates VI Eupator of Pontus (120-63 BC), dated year ΖΣ (207), month ΙΓ (13).[25] According to the Pontic era (epoch = 297/6 BC),[26] this dates to 91/0 BC and thus confirms the intercalation in 319/8 BC, that is, the 19th and 12th years of the two calendars respectively.

Fotheringham concluded that the Metonic cycle probably intercalated a month in its 18th year.[27] Yet Van der Waerden has shown that it is possible for this particular intercalation to have taken place in the 19th year of Meton's cycle.[28] The Pontic evidence agrees with the latter.

(5)- We also have a second tetradrachm of Mithradates VI, dated year ΘΣ (209), month ΙΓ (13).[29] This is from 89/8 BC and so agrees with the intercalations in years 2 (336/5 BC) and 14 (317/6 BC) of the Metonic and Callippic cycles respectively.

(6)- Lastly, we have a third tetradrachm of Mithradates VI, dated year ΓΚΣ (223), month ΙΓ (13), that is, 75/4 BC.[30] This coincides with the intercalation in 322/1 BC, i.e. years 16 and 9 of the Metonic and Callippic calendars.

Turning now to the above computed dates of Alexander's death, the advantage of those on the Callippic calendar becomes apparent: While the 172nd Metonic month is full, the 86th Callippic is hollow. The latter agrees with the Babylonian hollow month Ayyāru in 323 BC. It also suggests that, as pointed out by Diodorus and Geminus, the Greeks and perhaps even the Macedonians may have exploited the benefits of the schematic astronomical calendars and used them in civil time-reckoning. In that case, it is possible that the two discordant dates of Alexander's death are on the Metonic calendar which, according to Diodorus, was used by "the larger number of the Greeks", rather than the Callippic. The latter appears to have been designed for astronomical purposes alone.

As pointed out above, this note is not intended to include a full analysis of the Macedonian calendrical issues. It therefore suffices to end with the possibility that the calendar of Alexander's court may have had a slightly different disposition of embolismic years in its regulatory Metonic or Callippic cycle. For example, intercalation of an additional Xandikos or Artemisios in years 2, 5, 8, 11, 16, and 19 and a Hyperberetaios in year 14 of the Metonic version, or six Artemisios embolimoi in years 1, 4, 9, 12, 14, and 17 with an extra Hyperberetaios in year 7 of the Callippic style of the cycle would have disturbed the correlation of the Macedonian and Babylonian months as given in the below tables. Consequently, to retain the same correspondence of months would have required an extra intercalation before Daisios 323 BC to keep the latter aligned with the Babylonian Ayyāru in the same year. One candidate for this additional month would be the second Artemisios ordered by Alexander in 334 BC at Granicus. However, the calendrical implications of that move and the organisations of both the pre and post Granicus Macedonian calendars are set aside for discussion in a future note.

[23] Cousin and Diehl (1889), 334-342.
[24] Leschhorn (1993), 367-371.
[25] De Callataÿ (1987), 62.
[26] Price (1968), 1-12.
[27] Fotheringham (1924), 387.
[28] Van der Waerden (1960), 175-177.
[29] Kleiner (1974), 25.
[30] Reinach (1887), 230; Reinach (1888), 451; Kleiner (1974), 25.

Table 1 – Correlation of Attic and Macedonian Months in a Metonic Civil Calendar with those in the Babylonian Lunisolar Calendar

Date	A	B	Calendar Months													C
337/6	1	**Ath**	He	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		355
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
336/5	2*	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma	Po$_{I}^{h}$	Po$_{II}$	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk	739
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa$_{I}$	Xa$_{II}$	Ar	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
335/4	3	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El	Mo^{h}	Th	Sk^{h}		1093
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si		
334/3	4	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk		1448
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
333/2	5*	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po$_{I}$	Po$_{II}^{h}$	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}	1831
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
332/1	6	**Ath**	He	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		2186
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Ab	Ul$_{I}$	Ul$_{II}$	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
331/0	7	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		2540
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
330/29	8*	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po$_{I}^{h}$	Po$_{II}$	Ga^{h}	An	El^{h}	Mo	Th	Sk^{h}	2924
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si	
329/8	9	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		3278
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
328/7	10*	**Ath**	He	Me	Bo^{h}	Py	Ma^{h}	Po$_{I}$	Po$_{II}^{h}$	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}	3662
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
327/6	11	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		4017
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si		
326/5	12	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El	Mo^{h}	Th	Sk^{h}		4371
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
325/4	13*	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po$_{I}^{h}$	Po$_{II}$	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk	4755
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
324/3	14	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		5109
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay^{h}	Si		
323/2	15	**Ath**	He	Me^{h}	Bo	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		5464
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
322/1	16*	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po$_{I}$	Po$_{II}^{h}$	Ga	An	El^{h}	Mo	Th^{h}	Sk	5848
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si	
321/0	17	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th	Sk^{h}		6202
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
320/19	18	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		6556
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
319/8	19*	**Ath**	He	Me^{h}	Bo	Py	Ma^{h}	Po$_{I}$	Po$_{II}^{h}$	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}	6940
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si	

Table 2 – Correlation of Attic and Macedonian Months in a Callippic Civil Calendar with those in the Babylonian Lunisolar Calendar

Date	A	B	Calendar Months													C
330/29	1*	**Ath**	He	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk$_{I}$	Sk$_{II}^{h}$	384
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si	
329/8	2	**Ath**	He	Me^{h}	Bo	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		739
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
328/7	3*	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El	Mo^{h}	Th	Sk$_{I}^{h}$	Sk$_{II}$	1123
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
327/6	4	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th	Sk^{h}		1477
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si		
326/5	5	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		1831
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
325/4	6*	**Ath**	He	Me^{h}	Bo	Py	Ma^{h}	Po$_{I}$	Po$_{II}^{h}$	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}	2215
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
324/3	7	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		2570
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da^{h}	Pa		
		Bab	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay^{h}	Si		
323/2	8	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th	Sk^{h}		2924
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
322/1	9*	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk$_{I}^{h}$	Sk$_{II}$	3308
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si	
321/0	10	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		3662
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
320/19	11	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		4017
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
319/8	12*	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El	Mo^{h}	Th	Sk$_{I}^{h}$	Sk$_{II}$	4401
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Ša	Te	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si	
318/7	13	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		4755
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
317/6	14*	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk$_{I}^{h}$	Sk$_{II}$	5139
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
316/5	15	**Ath**	He^{h}	Me	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		5493
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad$_{I}$	Ad$_{II}$	Ni	Ay	Si		
315/4	16	**Ath**	He	Me^{h}	Bo	Py^{h}	Ma	Po^{h}	Ga	A	El^{h}	Mo	Th^{h}	Sk		5848
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
314/3	17*	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th	Sk$_{I}^{h}$	Sk$_{II}$	6232
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar$_{I}$	Ar$_{II}$	Da	Pa	
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si	Du	
313/2	18	**Ath**	He^{h}	Me	Bo^{h}	Py	Ma^{h}	Po	Ga^{h}	An	El^{h}	Mo	Th^{h}	Sk		6586
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Ab	Ul$_{I}$	Ul$_{II}$	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		
312/1	19	**Ath**	He^{h}	Me	Bo	Py^{h}	Ma	Po^{h}	Ga	An^{h}	El	Mo^{h}	Th	Sk^{h}		6940
		Mac	Lo	Go	Hy	Di	Ap	Au	Pe	Dy	Xa	Ar	Da	Pa		
		Bab	Du	Ab	Ul	Ta	Ar	Ki	Te	Ša	Ad	Ni	Ay	Si		

Key to Tables 1 and 2:
A = year of the cycle
B = Ath = Athenian or Attic; Mac = Macedonian; Bab = Babylonian
The Athenian months are: *Hecatombaion, Metageitnion, Boedromion, Pyanepsion, Maimakterion, Poseideon, Gamelion, Anthesterion, Elaphebolion, Mounychion, Thargelion, Shirophorion*.
The Macedonian months are: *Dios, Apellaios, Audnaios, Peritios, Dystros, Xandikos, Artemisios, Daisios, Panemos, Loios, Gorpiaios, Hyperberetaios.*
The Babylonian months are: *Nīsānu, Ayyāru, Sīmānu, Du'ūzu, Ābu, Ulūlu, Tašrītu, Araḫsamnu, Kislīmu, Ṭebētu, Šabāṭu, Addāru*.
C = cumulative number of days
* indicates embolismic year
[h] indicates hollow month

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غلامرضا (فرهاد) آثار

1- Corrected typos on 3 Oct. 2008.
2- Added footnote 10 on 3 Oct. 2008.
3- Amended on 4 Oct. 2008: 1.III.1 Philip III = 11/12 June 323 BC (thanks to Dr. C. Bennett).
4- Added footnote 18 on 4 Oct. 2008.
5- Updated Bibliography on 4 Oct. 2008.
6- Added on 5 Oct. 2008: Plutarch (*Timoleon*, 27.1) re Thargelion ≈ Ayyāru in 339 BC.
7- Added on 5 Oct. 2008: Plutarch (*Alexander*, 16.1-2) and Plutarch (*Camillus*, 19.4) re Thargelion ≈ Daisios in 334 BC.
8- Added on 5 Oct. 2008: Plutarch (*Aratus*, 53.4) re "Daisios ≈ Anthesterion" in 229 BC.
9- 9 Oct. 2008: Removed "Daisios ≈ Anthesterion" in 229 BC, since it the Macedonian month is not from Macedonia.
10- 9 Oct. 2008: Added on page 2, Diodorus (12.36.2-3) on the application of the Metonic calendar.
11- 9 Oct. 2008: Added on pages 3-4, a couple of paragraphs concerning the sunrise epoch of the two dates of Alexander's death.
12- 9 Oct. 2008: Added on page 6, brief discussion of the date of year 1 of Antigonus I
13- 9 Oct. 2008: Added on page 6, brief discussion of the date of the text from Dion (year 16, embolimos).
14- Updated the Bibliography.
15- 9 Oct. 2008: Added two references on the reign of Philip II of Macedon.