nulla ducis culpa... damna intulissent). Even Tiberius, urging Germanicus' return, allowed that his campaigns had not been insignificant (satis iam eventuum, satis casuum. prospera illi et magna proelia). Nevertheless, Germanicus' continued request for a year in which to clean up the German problem seemed to the emperor naive at best, and might have smacked of intended uprising at the head of a victorious army loyal to its general. Precante Germanico annum efficiendis coeptis, Tiberius remained firm and the campaign was at an end.

Indications are that to assert Tacitus' idealization of Germanicus is to assume an untenable position. A detailed study of the Tacitean Germanicus may yet decide for the naive and innocent youth or for the clever and dangerous image-maker. Whatever the final judgement on Germanicus' character as portrayed by Tacitus, it seems imperative that in formulating the final judgment one give appropriate weight to the evidence here presented.

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WHEN DID GUARD DUTY END? THE REGULATION OF THE NIGHT WATCH IN ANCIENT ARMIES

Very little information has come down to us on how the duration of night watches was regulated in ancient armies. The earliest evidence is that of Aeneas Tacticus, writing probably soon after 357 B.C. His Poliorcetica, though probably more useful to the besieged general than the Georgics are to the farmer in the field, provide scant instructions on keeping the watch. A further account of night watches, in the Roman army in the late fourth century A.D., is provided by Vegetius'). The difference in the

two accounts is that Aeneas gives more detail, but Vegetius tells us
how many watches there were in the Roman army, normally four;
the number may have been the same in the Greek practice, but
may have varied. Both writers say that a clepsydra was used to
measure the watches. Guard duty in daylight may have been timed
in some similar way, or perhaps some kind of sun marker, how­
ever crude, may have been used, but nothing has been handed
down on this topic 2). It is clear that night guard duty began at
sunset and ended at sunrise, with the resultant complication of
dividing the watches, which could be of varying length according
to the time of year. It is how the variation was coped with which
forms the issue at stake here.

The text of Aeneas on this subject presents some problems.
The Poliorcetica has been edited several times in the last century or
so, most recently by Alphonse Dain with notes by Anne-Marie
Bon 3). The passage on the regulation of the night watch is as
follows in the Laurentian manuscript 4):

'Ων δ’άν τρόπον ἵσως καὶ κοινῶς μαχοστέρων ἢ βραχυτέρων
νυκτῶν γιγνομένων καὶ πάοιν αἱ φυλακαὶ γίγνοντο πρὸς κλεψύδραν
χρῆ φυλάσσειν, ταυτὶν δὲ συμβάλλειν διαδοχῆ μερίδος. μάλλον δὲ
αὐτῆς κεκηρώσω τὰ ἐσοθέν καὶ μαχοστέρων μὲν γιγνομένων τῶν
νυκτῶν ἀραιείσθαι τοῦ κηροῦ, ἵνα πλέον ὕδωρ χωρῇ, βραχυτέρων
dὲ προσπλάσσεσθαι 5) ἵνα ἔλασσον δέχηται. περὶ μὲν οὖν φυλακῶν
ἰσότητος ἰκανῶς μοι δεδηλώσω. (Poliorc. XXII, 24–25)

In the third century A.D. Sextus Julius Africanus, the Chris­
tian chronographer, made excerpts from the Poliorcetica in his
Κειστοί. The relevant passage is below:

2) An interesting study of crude sundials on a fortified tower at Obernai in
Alsace, where they are marked into the stone and then many times redrawn and
much modified by soldiers on guard duty in the sixteenth century and later, might
be worth comparison: cf. R. R.-J. Rohr, Les CadranS SolaIes de la galerie du
Kappelturm à Obernai, Annuaire de la Société d’Histoire et d’Archéologie de
Dambach-La-Ville, Barr, Obernai, 14 (1980), pp. 71-76.

3) Editions: R. Hercher, Aeneae Commentarius Poliorceticus (Berlin 1870);
A. Hug, Aeneae Commentarius Poliorceticus (Leipzig 1874); R. Schöne, Aeneae
Tactici de obsidione toleranda commentarius (Leipzig 1911); The Illinois Greek
Club (text by W. A. Oldfather), Aeneas Tacticus, Asclepiodotus, Onasander
(L. C. L., 1923); L. W. Hunter and S. A. Handford, AINEIOY ΠΟΛΙΟΡΚΗΤΙ­
KA (Oxford 1927); A. Dain and A.-M. Bon, Enée le Tacticien Poliorcétique
(Budé, Paris 1967). All editions are referred to below by the editor’s name.

4) MS. Florentinus Mediceus-Laurentianus Plut. LV. 4 (circa 950–960),
ff. 159v – 181v = M (the source of all other extant mss. of the work).

5) προσπλάσσεσθαι M, emendatum ex J. Africano (vide infra). M has
γιγνομένων rather than γιγνομένων, both times.
Africanus has modified the first sentence and gratuitously added a fairly obvious point at the end – that the clepsydra must be made accurately. In the first extract a lacuna was (perhaps unnecessarily) posited between γ(γνοντο and πρός by H. Schöne?) and πάντως to fill it in part offered by R. Schöne. It is, however, the second part of the first sentence, after ταῦτην, which has caused the most embarrassment to editors. Several have not liked the phrase as it stands. The first emendation was that of Hercher, who would read ταῦτην δὲ μεταβάλλειν διὰ δὲγ’ ἡμερῶν, meaning something like ‘alter it in the course of ten days’. This seems to have inspired Diels to suggest as an improvement ταῦτην δὲ συμμεταβάλλειν διὰ δεχημερίδος – ‘change it simultaneously in the course of a ten-day period’. This reading has found acceptance in the editions of the Illinois Greek Club and Dain. We might notice, however, that Julius Africanus read συμμβάλλειν or something like it, and not μεταβάλλειν, and probably not συμμεταβάλλειν. The text was either συμβάλλειν or a corruption of (perhaps) one of the posited readings of Hercher or Diels, by the date of Julius Africanus. Whatever the text read in Aeneas, whose text, as given in the Laurentian manuscript, is in any case notoriously problematic, Julius seems to have had trouble with it from some cause, as he has understood συμβάλλειν to mean ‘put together, construct’.

Can the phrase in the Laurentian manuscript make sense? The words before the enigma mean:

7) See ed. R. Schöne, p. 55, app. ad 979.
8) Ibid.
9) Cf. Schöne, loc. cit.
'You must attend to the method by which the watches may be equal and the same for everyone, as the nights become longer or shorter, against a water-clock, and... and do something to it. Συμβάλλειν can mean 'to bring together', 'unite', 'compare' as a transitive verb, or 'fit' as an intransitive (LSJ) and thus might be understood as meaning 'adapt to'. Διαδοχή is a common military expression meaning a relief, relay, as of a guard. It is thus used by Xenophon (Cyr. 1.4.17; cf. LSJ, s.v. II, 1). But what does μεσίδος mean? Μεσίς basically means a 'part' or 'portion' (LSJ): Hunter thought that it meant "a division, or rather a section, of troops, for the more usual μέρος"; "it is found", he says, "of a faction of citizens in Plato and Demosthenes". Hunter was doing his best not to emend the text at all. However, this does not seem very convincing. Why say μεσίς when μέρος is meant? Equally it is difficult to corrupt μέρος into μεσίδος. Yet it may be that μεσίς refers not to the men but to the portion of the night which forms the watch. It is thus synonymous with the temporal aspect of φυλάχη, and perhaps Aeneas used μεσίς rather than φυλάχη to emphasise this time factor. We already have a word for 'relief, relay' in διαδοχή. The whole phrase could thus be translated '[you must] adapt the clepsydra to a relief period' (verb transitive) or 'the clepsydra [must] fit a relief period' (verb intransitive), the sense of which is 'start it when the period for the next watch begins.'

It is worth noticing that in 1675 Gronovius13) suggested taking συμβάλλειν in the sense 'conicere', 'suscipere' (cf. LSJ, s.v. III.3). He then interpreted the passage as "pro anni tempore cognita habitent noctium spatia auguremur et conjecturemus ex aquae perlapae mensura, quartam partem noctis, hoc est vigiliam unam praeterisse, ac differentiam longitudinis vigiliorum accommodemus et adequemus ad divisionem in clepsydra". This method is perhaps possible, though difficult to conjecture accurately. It does not account for διαδοχή μεσίδος but does help with μᾶλλον δὲ... 'but rather have the inside waxed...'.

This remaining part of the passage, from μᾶλλον, must be examined in detail if we are to offer any interpretation of what Aeneas is saying. The first words, μᾶλλον δὲ, seem to imply a course of action preferable to that involved in ταύτην..., namely to regulate the clock by the use of wax. Perhaps, however, μᾶλλον

13) The note of Jacobus Gronovius is conveniently set out in Supplementum Editionis Polybii Schweighaeuseranae... ed. I.C. Orellius (Leipzig 1818), pp. 195-6. Gronov was the first person to make use of the Medicean manuscript.
only implies a recommended course of action. This business of the wax seems not to have been understood or at least not clearly explained previously. The words μάλλον to δέχται must mean:

‘But rather you should have the inside waxed and when the nights get longer you should take some of the wax away so that (the clepsydra) holds more water, but when they get shorter apply more so that it takes less.’

It is also possible to take χωρῆ as intransitive with πλέω [i.e., πλέω as its subject, in which case we read it as ‘so that more water runs’, but it is not possible to take δέχται as a passive.

One thing is immediately clear: Aeneas is not describing one of the pot-type clepsydrae used to regulate speeches or plays and other entertainments at Athens. The forensic type was a terracotta jar with a hole near the bottom. One example of this type of clepsydra has been excavated and dates to c. 400 B.C.; after filling it runs for six minutes. Apart from the fact that certain modifications would be necessary to make such a device run for several hours, we may ask what the function of the wax was in regulating such a device. The only way of controlling the flow of water is by blocking up the outlet, and to do this with any accuracy to a varying degree according to the brevity or length of the nights would be well nigh impossible.

A clepsydra of the type which Aeneas means is described by Aristotle in one of the Problemata (XVI, 8) with reference to a statement by Anaxagoras. This sort of clepsydra consisted of a κυδία (a bulbous head, like a poppy head or garlic bulb) from which rose an αὐλός or tube which could be blocked (ἐπιλαβεῖν). In the side of the κυδία opposite to the αὐλός were perforations (τρυπήματα) forming an ἕθμος or strainer. Aristotle’s description involves two experiments with this clepsydra. In the first case the water clock is set on the surface of water (in another vessel) and the water percolates into it via the perforations. This is quite clear because he says that if the tube is blocked no water will enter, the

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14) E.g. the prostitute, star of the play the Clepsydra by Eubulus, got her name because she timed her consultations by the water-clock (Athenaeus, Deipn. 13, 567 c–d); cf. Athenaeus, Deipn. 11, 497b – elephants perform to the tune of the water clock (πρὸς καλεψ˝δραν). See references in S. Young (article cited in next note), pp. 275–6, no. 6.


16) There is an illustration in Diels, op. cit., p. 192, Abb. 66.
reason being, of course, that no air can escape the bulb to be replaced by water. However, if the clepsydra – with its tube still blocked – is tipped sideways, the water enters. This will be because some of the perforations have become exposed and allow passage for the air which is displaced by the water entering from below.

In the second experiment the clock is taken out of the water and its bulb filled with water. The device is then inverted and the tube unblocked. After a short lapse (while the air in the tube moves round the water in the bulb and out of the base holes, now at the top of the inverted instrument) the water flows out down the tube. If the clock (bulb and tube) is filled completely and inverted, the water runs straight out when the tube is opened. This is because there is no air below the body of water. We need not consider here [Aristotle]'s detailed explanation of this phenomenon: we are only concerned with the form of the instrument. The Problemata are sometimes held to be a work not of Aristotle himself but of his school, perhaps even a composition of late antiquity\(^{17}\). However, the same instrument is alluded to earlier in the Problemata (II, 1, 26) and in the Physica (213a) and is described in a citation from Empedocles in the De Respiratione (7.473b–474a)\(^{18}\).

What then of Aeneas and his wax? Is the wax solid and to be used as a space-filler and so reduce the internal volume of the clepsydra? If so why not use stones or some other accessible substance? Why wax and how was it used?

Surely one of the essential properties of wax is that it is light in weight and plastic when warm, especially if it is beeswax or the sort of wax used on writing tablets. In view of its lightness its use must have something to do with not affecting the weight of the vessel into which it was placed, otherwise a decrease in capacity would be outbalanced by an increase in load. That would be the case with stones. Hunter in his commentary on the Poliorcetica sees the clepsydra as hung up so that the water drains out; of course if this were so, something placed inside the bulb would affect the volume of water to be lost before the device ran out and time was up. However stones might just as easily, and in fact more readily, be used. On the other hand in [Aristotle]'s experiments it

\(^{18}\) = Empedocles Fr. 100 DK (= 453 Kirk & Raven).
is fairly clear that the customary way to use this type of clock was as a sinking measure. In the second experiment he describes it in a perverted, or rather inverted, reversed use merely to demonstrate what happens when water is held in the clock. If we accept that the clock is made to sink it is not hard to see why wax was a suitable regulating medium, or how to employ it as such.

It could prove difficult to adjust the volume of wax put inside the bulb to retain an equal distribution of the time over the several watches of the night. However, if the wax were used merely to block off some of the perforations or unblock them as the nights grew shorter or longer, we might make some sense of what Aeneas is telling us. Every so often an adjustment would be needed, and perhaps a clepsydra for this purpose might have had a fixed number of holes and one was blocked or unblocked with wax after a known period of days to keep pace with the change in length of night. In the latitude of central Greece, say 19) about latitude 40° North, if there were as in the Roman army four watches, then at midsummer, when the night is nine hours long, a watch would be of duration two-and-a-quarter (equinoctial) hours; in midwinter, when the period of darkness was fifteen hours long, a watch would last three-and-three-quarter (equinoctial) hours, an hour and a half longer. Sufficient holes would be needed to provide this differential in a graduated way.

There is, however, an irrefutable drawback to this theory. In the winter nights the time of a watch would be longer and so the clepsydra would need to sink more slowly, and vice versa in the summer. We should therefore need to add more wax in the winter an remove some in the summer, yet the reverse is what the text bids us do. Besides which a carefully calibrated sieve and its correct modification seems to be asking a lot of the instrument maker and the soldier even without improper conduct. It would be awkward to make sure that the watches were all the same and fairly apportioned, as Aeneas says the object of our exercise is, if the keeper of the clepsydra has to regulate single portions of the night to end up equal. If the watches are marked by the end of the sinking process of the clepsydra the opportunities for interfering

19) I choose this example on the assumption that Aeneas was Aeneas of Stymphalus in Arcadia, general of the Arcadian League in 367 B.C. (cf. Xenophon Hell. 7, 3, 1; L. C. L. ed. of Aeneas, p. 7), but the difference in latitude, and hence of the duration of night, over Greece is not great enough to have a significant effect on the argument whenever we choose. In this reckoning δ is taken as 24°.
with the timing of individual watches clearly exist, but such a system can hardly be ‘soldier-proof’.

Surely the most natural and obvious aspect of the night watch is that it begins at sunset and ends at sunrise, both moments which are determinable from observation with reasonable accuracy much of the time in Mediterranean countries. If the clepsydra were to run not for one watch at a time, but for the whole night, it would be an easy matter for the operator to see each day whether it was running too fast or too slow and hence modify its working by the empirical adjustment of the wax. We should therefore envisage the wax as placed within the instrument, which must have been in two parts to enable it to be opened up for the purpose. Wax, having little weight, would not affect the sinking of the vessel but only influence how soon the water level inside it was sufficient to sink it and hence mark the end of the period to be measured.

This being so, how were the watches measured and what are we to make of the text of Aeneas just after τάυτην? If the clepsydra were to run all night it would have to be marked off into parts for the watches, and when it had sunk to each level the clock keeper would have to give the signal to change the guard. If, for want of other evidence, we assume that the watches were four in number\(^{20}\), some interesting implications may arise from the text.

If we consider the phrase from τάυτητες there is nothing to be said about τάυτητες itself, for, unless there is a lacuna just before it, which there is no reason to posit, it must refer to ἀλεξύδρα. The next word, συμπάλλειν, we shall leave as it is, since it is quite evident that Africanus read it or something like it, even if he did not clearly understand what followed and hence modified it, omitting its concomitants. It is, of course, still possible that he was mistaken or that Hercher or Diels may have offered the correct reading for this word. We then come down to διαδοχὴ μεγίδος as crucial to the meaning. It could be that Hercher and Diels were right in their conjectures, though they do not seem to have appreciated, or at any rate adequately explained, the use of the wax. Regulation by addition or subtraction of wax was, according to them, to occur every ten days. Why they think Aeneas should have said ten days, other than from textual arguments, is not

\(^{20}\) In Homer II. 10, 251–2, Odysseus may be speaking of thirds of the night or of watches (cf. Od. 12, 312). See generally W. Kubitschek, Grundriss der antiken Zeitrechnung (Munich 1928), p. 188.
clarified: perhaps it is to be taken as a merely arbitrary amount. Hercher’s change of διαδόχη to διὰ δέχ’ ἥ – is palaeographically very plausible, but ἡμερῶν into μερίδος is less likely – why not just μερῶν? Diels’ ingenious conjecture is open to objection in that δεχήμερος is apparently not found in any classical (or even Byzantine) author.

Yet presume there were four watches and that μερίς represents the temporal aspect of the watch. Should we not expect Aeneas to say here something like ‘construct the clepsydra marked into four divisions’? Suppose that Aeneas, or a copyist, wrote ‘four’ as a cipher rather than as a word – perhaps not what is found in every literary papyrus, but this is a practical handbook text. Suppose also that he used μερίς for ‘division’. We might then expect to have seen Δ ΜΕΡΙΔΕΣ in some grammatical case after a preposition. Any conjecture must take the place of the words διαδόχη μερίδος. In the first instance we might therefore retain the διὰ of διαδόχη. The text could thus have been, in uncials, ΔΙΑ Δ ΜΕΡΙΔΩΝ, meaning ‘through, by, by means of, four parts’. However if ΜΕΡΙΔΩΝ had actually been the original reading, as we have already seen, this would not readily have been corrupted into ΜΕΡΙΔΟΣ. An accusative plural ΜΕΡΙΔΑΣ might more plausibly allow alpha to be read as omicron. The preposition διὰ, on the other hand, requires a genitive, not an accusative, in this sense. In papyri, ΔΙΑ can be abbreviated by delta with a stroke above it: equally ’ΑΝΑ, frequently used distributively with numerals, was represented by alpha plus a stroke. This preposition, of course, governs the accusative. What if the text of Aeneas had originally read ἀνά τέσσαρας μερίδας, abbreviated in uncial to Α Δ ΜΕΡΙΔΑΣ?

The alpha for ἀνά is easily misread as delta, since if the horizontal bar is drawn low the distinction in uncial script between these two three-sided letters can be slight. If this corruption of ἀνά is concealed, but this seems unlikely.

21) Possibly a reference to άρημερος, the general’s journal of campaign, as of Alexander the Great and later Caesar’s Commentarii (cf. LSJ s.v.), is concealed, but this seems unlikely.

22) Cf. e.g., F. G. Kenyon, Abbreviations and Symbols in Greek Papyri, The Palaeography of Greek Papyri (London 1899), p. 153 = A. N. Oikonomides, Abbreviations in Greek... (Chicago 1974), p. 128; P.W. II A (1923) s.v. Siglae (Papyri), coll. 2294–6 [Bilabel], and K. McNamee, Abbreviations in Greek Literary Papyri and Ostraca.

23) Cf. the well-known confusion of ἕξεταία into ἐκσεταία at Plato, Gorg. 467b: see M. L. West, Textual Criticism and Editorial Technique (Stuttgart 1973), p. 29.
Δ(NA) into Δ(IA) occurred, the accusative of the noun could very probably have slipped by misreading into the usual prose-style genitive to make better sense. We thus have Δ Δ ΜΕΡΙΔΟΣ, where Δ was perhaps read as an ordinal: διὰ τετάρτης μερίδος. There were two systems of numeration in use in Classical Greece, the alphabetic and the acrophonic. Delta in the former means four, but in the latter ten. Perhaps a copyist has transcribed the delta as ten, Δ(ε-κα), in the mistaken belief that Aeneas had been using the acrophonic system of the Athenian Tribute Lists 24). This error might have been induced by a later scribe’s consciousness that he had an old manuscript, since Aeneas was probably not the subject of any Alexandrian scholarship 25), and a consequent assumption that the numeral would be in the old Athenian style. Perhaps more likely is that the cipher was used at a time later than the fourth century B.C., but that a subsequent scribe, assuming it went back to Aeneas, understood it as an acrophonic numeral sign and wrote it out in full as ΔΕΚΑ. It is equally possible that a copy of the work was at some stage made in a documentary hand, where acrophonic numerals have been known from other examples 26) to creep into the text; Aeneas’ book may at some time have been treated not as a work of literature, but as a document.

At all events our theory requires that some later scribe read Δ as ΔΕΚΑ. The juxtaposition of ΔΙΑ/ΔΕΚΑ/ΜΕΡΙΔΟΣ, making no sense in itself, can then easily give rise to a rationalisation, ΔΙΑΔΟΧΗ ΜΕΡΙΔΟΣ. We might then wonder if the text had orig-

24) Cf. the famous problem of the duration of the siege of Ithome in Thucydides 1, 103, 1, where Krüger proposed reading τετάρτῳ for δεκατῳ (Δ = 4 later style misread by very early copyists and Ephorus as the contemporary Δ = 10). On this see A.W. Gomme, A Historical Commentary on Thucydides, I (Oxford 1945), pp. 302–303, 401–411, esp. 404 and 410–411. However, the development of the two systems was, it seems, as follows. The acrophonic system was in use at Athens from the mid-fifth to the first century B.C. The alphabetic system, first invented in Asia Minor in the eighth or seventh century B.C., is first found in Athens in the third quarter of the fifth century (IG I². 760) and at Halicarnassus about the same date (SIG ³ 46 – where, however, both systems are used): it did not become general until the third century B.C. See G. De Ste Croix, Greek and Roman Accounting (London 1956), pp. 50 ff., esp. 52–4. Thucydides probably wrote Δ = 10, but if he did write Δ = 4 Ephorus may well have read it as Δ = 10. A similar error is said to occur in Demosthenes 6, 22; but note the caveat of K.J. Dover in CR, n.s. 7 (1957), pp. 24–5.


inally read (in full) χρῆ ... ταύτην συμβάλλειν ἀνὰ τέσσαρας μερίδας, meaning ‘you must put the clepsydra together with four divisions in each case’. Ανὰ was a preposition which, except for its distributive sense, where κατὰ came to replace it, became obsolete in the Κοινή and was already infrequent in Attic Greek. The use of it in the sense suggested is paralleled in Polybius and nearly so in Xenophon. Employment of the word in this way by a writer such as Aeneas, whose Greek is considered to be less literary than the Attic models and to shew the beginnings of the Κοινή dialect, is quite feasible. To summarise: the text may have passed through the following forms and corruptions:

1. ΑΝΑ ΤΕΣΣΑΡΑΣ ΜΕΡΙΔΑΣ
2. Α Δ ΜΕΡΙΔΑΣ
3. Δ Δ ΜΕΡΙΔΟΣ
4. ΔΙΑ ΔΕΚΑ ΜΕΡΙΔΟΣ
5. διαδοξή μερίδος

Perhaps, however, Aeneas is only giving the bare bones of a description of the clepsydra for the sake of completeness. He may never have used one to regulate the night watch himself. If his comrades-in-arms could see what he seems to have written in the received text, they would probably not have trusted him to do so.

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