

## THE PLACE THAT BEACHED A THOUSAND SHIPS\*

The aims and performance of Xerxes' fleet in the period before Thermopylai are mostly taken by students of the invasion as they are set out in Herodotus. A closer look reveals much of interest, as well as some puzzles. In this paper I address in particular the curious mooring which the fleet adopted at the end of its first day's voyage from Therma: *πρόκροσσαι ὄρμεον τὸ ἐς πόντον ἐπὶ ὀκτὼ νέας* ('they came to anchor, facing the sea, eight ships deep *prokrossai*': 7.188.1), their next intended port of call, and the attempt to circumnavigate Euboia. In offering an explanation of what was happening and why, I am conscious of the sobering advice given for such investigations by Whatley,<sup>1</sup> that ancient campaigns cannot necessarily be reconstructed as if those in charge saw what was best to do and got it done. That advice is now reinforced by Lazenby.<sup>2</sup> Both of them seem to me, however, to underrate the logistical competence of Xerxes' naval high command. Without good logistics no campaign with triremes was even possible.

Possibilities and probabilities necessarily abound in a study of this sort. Three things can be pressed for something firmer. One, as said, is Herodotus; I read his text on the basis that its factual information should be accepted until contradiction seems overwhelming. Second is the trireme: since the building of the 'floating hypothesis'<sup>3</sup> of *Olympias* we can go some way towards matching for Xerxes' ships what General Sir F. Maurice did for the passage of Xerxes' army into Europe:<sup>4</sup> trireme crews need food, fresh water, and rest at least once a day, and the place for that is ashore.<sup>5</sup> Third, controlling all, is the physical context of the fleet's advance: land, sea, and weather.

It would be unconvincing to use today's physical context in evidence unless adequate equivalence with that of Xerxes' time can be shown.<sup>6</sup> At Therma and

\* I am indebted for help with this study to various people and bodies. Some will be mentioned at the appropriate place; here I mention the British School of Archaeology at Athens and its staff; Dr R. A. Donkin of Jesus College and the Department of Geography, Cambridge, for help with the maps; Constantine and Sibylle Mano for help and hospitality on Skiathos; my sister Elizabeth Bowen who with Richard, Heather and Matthew Clay, Marie-Catherine Gauthier, and David Livermore made stimulating company in August 1992 on board a yacht hired to work the waters between Khalkis and the Peneios mouth; Professor W. K. Pritchett for very helpful comments on an earlier draft; and Dr Paul Millett, who with *CQ*'s referee has brought it into acceptable form and focus. I am grateful for financial help to the Faculty of Classics and to Jesus College, Cambridge, and especially to the Clay Foundation.

<sup>1</sup> N. Whatley, *JHS* 84 (1964), 119–39.

<sup>2</sup> J. F. Lazenby, *The Defence of Greece* (Warminster, 1993).

<sup>3</sup> See chs. 2 and 17 of T. Shaw (ed.), *The Trireme Project* (Oxbow monograph 31, Oxford, 1993).

<sup>4</sup> F. Maurice, *JHS* 50 (1930), 210–35. Maurice used his experience of campaigning in Gallipoli in the First World War to set an upper limit to the forces which could have passed through the area in seven days; water supply was the critical factor. A similar approach is adopted by T. Cuyler Young, '480–479 B.C.—A Persian Perspective', *Iranica Antiqua* 15 (1980), 213–19; he considers the size of both army and navy in terms of supplying it with food and water. G. L. Cawkwell (*Xenophon, The Persian Expedition* [Harmondsworth, 1972], pp. 36–8) analyses the battle of Cunaxa in order to establish a likely size for Persian armies.

<sup>5</sup> The essential points about food, water, and land are made in discussion of notable relevant texts in J. S. Morrison and J. F. Coates, *The Athenian Trireme* (Cambridge, 1986), pp. 95ff.

<sup>6</sup> I am grateful for help with this and the next paragraph to Professor T. H. Van Andel of the Department of Earth Sciences, Cambridge.

Thermopylai great changes of coastline have taken place: silt deposited by rivers of initially steep gradient and rapid flow has encroached on the sea faster than eustatic rise in the sea has gained on the land, and no sea currents have swept the deposits away. Changes of sea level have been measured in several parts of the Aegean. Three millennia ago, the level appears to have been, on average, about 2 m below present, but most of the rise since then occurred in the first 500 years; by Xerxes' time it was less than a metre lower than now.<sup>7</sup> This is not to deny the possibility of great change in particular places, especially in a region well known for earthquakes (Vólos suffered severely in 1954 and 1955); but the persistence of the Ovens as a coastal feature below Pelion (see below) suggests a basic continuity between then and now, and this study is concerned not with Therma and Thermopylai but rather with the coast between, where the underwater shelf off Pelion is slight, and novelties at the water's edge are soon abraded. Torrents still bring their burden to little beaches, and the beaches are still kept trimmed between their headlands by sea and storm.

Continuity of climate seems to be assured also,<sup>8</sup> so that the gale which hit the Persian fleet off Pelion on the second morning of the voyage can be safely considered in some detail. The summer wind in the area is the well-known Meltemi, called Etesian by the ancients because of its regularity,<sup>9</sup> in the north Aegean it blows from the north and north-east and increases in force during the day.<sup>10</sup> We can also assume for 480 B.C. the sea current of up to two knots which Admiralty Chart 1556 shows, or used to show,<sup>11</sup> running south along the Magnesian coast and turning into the straits of

<sup>7</sup> See İlhan Kaya, *Studia Troica* (Mainz, 1991), p. 90 for a useful diagram. I am grateful for this reference to Dr Sturt Manning of the Department of Classics, Reading. For Thermopylai see J. G. Kraft, G. Rapp Jr, G. J. Szemler, C. Tsiavos, and E. W. Kase, *Journal of Field Archaeology* 14 (1987), 181–98. But the great complexity of the larger scene, together with the chance of local anomalies, can be well seen in N. C. Flemming, 'Holocene eustatic changes and coastal tectonics in the north-east Mediterranean: implications for models of crustal consumption', *Philosophical Transactions of the Royal Society of London* 362 (1978). For a particular local feature, see F. J. Frost, *Plutarch's Themistocles* (Princeton, 1980), pp. 110–11, rebutting a suggestion of A. J. Podlecki, *Life of Themistocles* (Montreal, 1975), p. 176 that the coastline has receded at Artemision; he says 'a small headland, about eight kilometres to the south-west, now an island, was indisputably connected to the mainland in antiquity'. In correspondence he tells me 'There are sherds and tile fragments on the bottom between the little headland . . . and the shore but more definitely there is an Asklepieion with footings more than 2 m deep near the shore in Skopelos harbour.' While we were sailing in the area in August 1992 an underwater site of the second millennium B.C. was being investigated by the south shore of Peristeri off Halonnesos.

<sup>8</sup> A. Dascalakis (*Problèmes historiques autour de la bataille des Thermopyles* [Paris, 1962], p. 123, n. 1), summarizing earlier work of E. G. Mariopoulos (*Etude sur le climat de la Grèce* [Paris, 1925]) and of V. Eginitis (*Μετεωρολογικαὶ περίοδοι καὶ ἡ σταθερότης τοῦ κλίματος τῆς Ἑλλάδος* [Annuaire Scientifique d' Athènes 1946–7]), says 'le climat de la Grèce n'a subi aucun changement et . . . les conditions climatologiques d'aujourd'hui sont celles de l'ancienne Grèce'. V. McGeehan-Livritzis, citing more recent work (*Journal of Nautical Archaeology* 17 [1988], 237–56) quotes 'the present climate is similar to that of the 3rd millennium B.C., so our wind data are reliable', and 'sea currents will be essentially the same'. H. E. Wright (*Antiquity* 42 [1968], 123–7) reports virtually no change in the pollen record in the last 3,000 years.

<sup>9</sup> W. M. Murray ('Do modern winds equal ancient winds?', *Mediterranean Historical Review* 2.2 [1987], 139–67) says that the results of his study 'fully support the view that the winds of classical antiquity were essentially the same as they are today'. See also W. T. Loomis in *Historia* 39 (1990), 489–90, n. 18.

<sup>10</sup> See R. Heikell, *Greek Waters Pilot* (Huntingdon, 1990<sup>4</sup>), pp. 205 and 246.

<sup>11</sup> The most recent edition (1993) has gone coloured, with loss of many details from the previously engraved editions. The chart is to be read in conjunction with the *Mediterranean Pilot* vol. IV, now in its tenth edition (cited hereafter as MP IV).

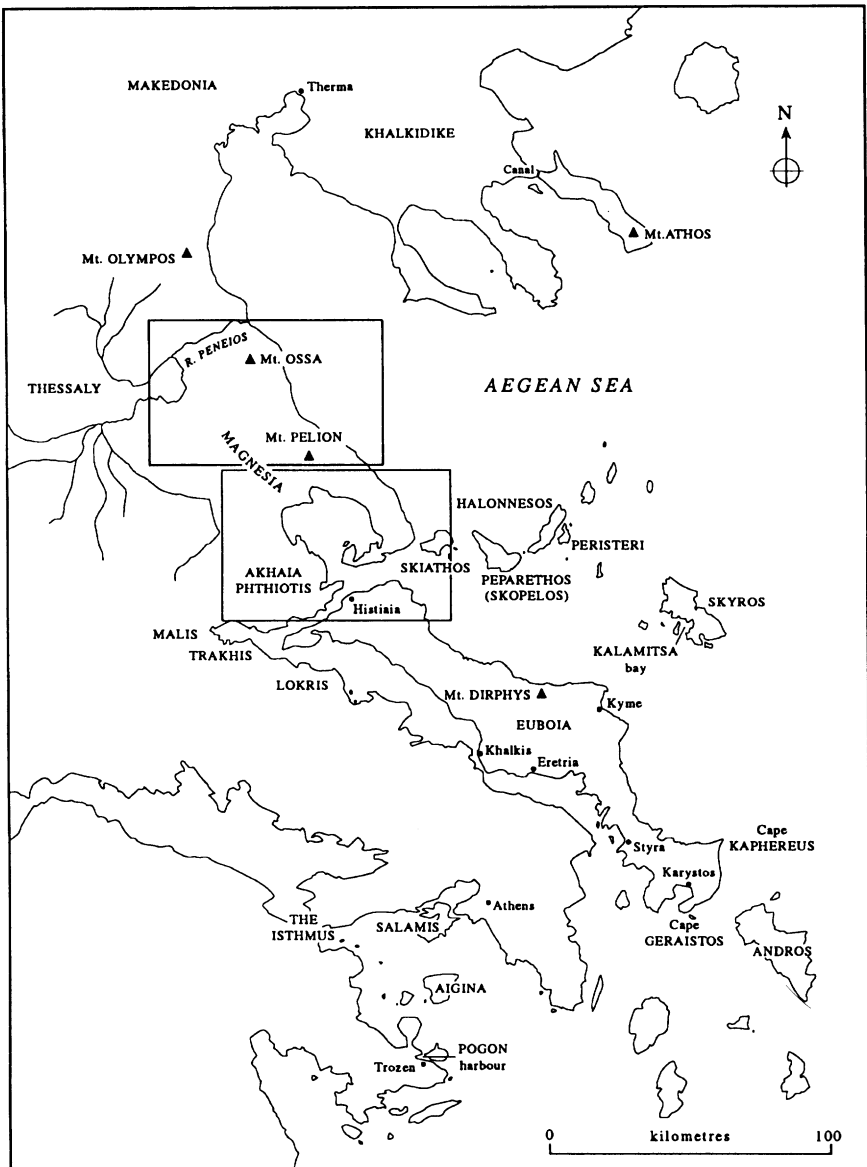


FIGURE 1

Trikeri.<sup>12</sup> We may thus take it that in the area under consideration land, sea, and weather were much the same in Xerxes' day as they are now, and I hope to show that Herodotus' account is consistent with such a state.

<sup>12</sup> Herodotus' report of the ebb and flow in the gulf of Malis (7.198.1) exposes a different phenomenon, caused by wind and barometric pressure operating on enclosed and shallow waters.

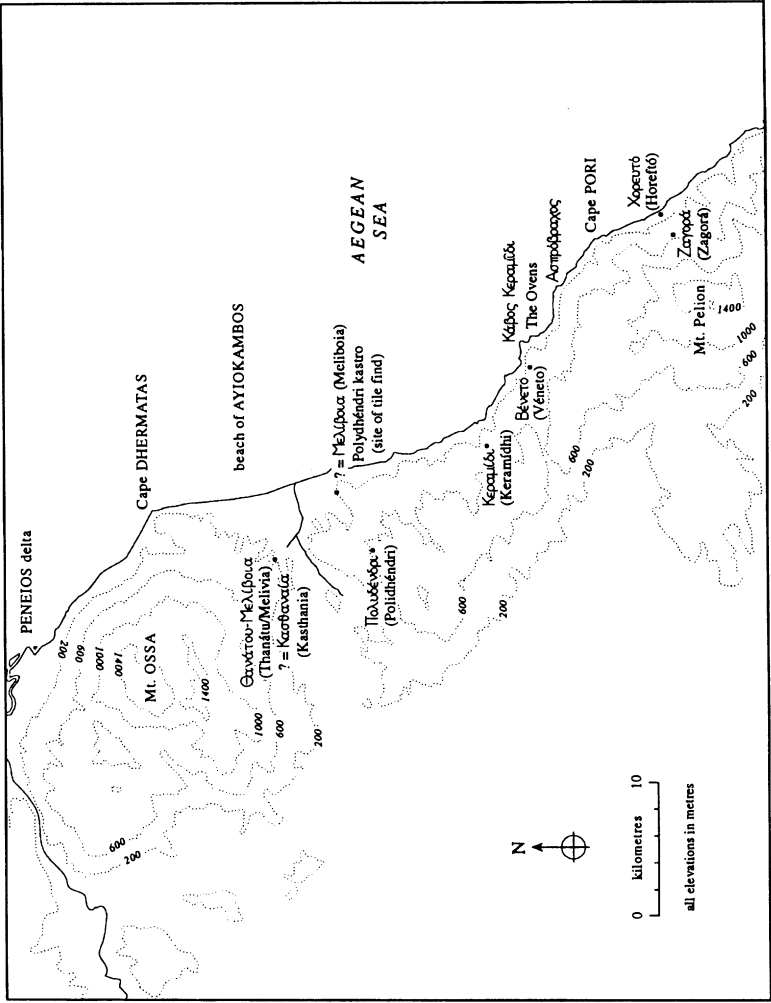


FIGURE 2

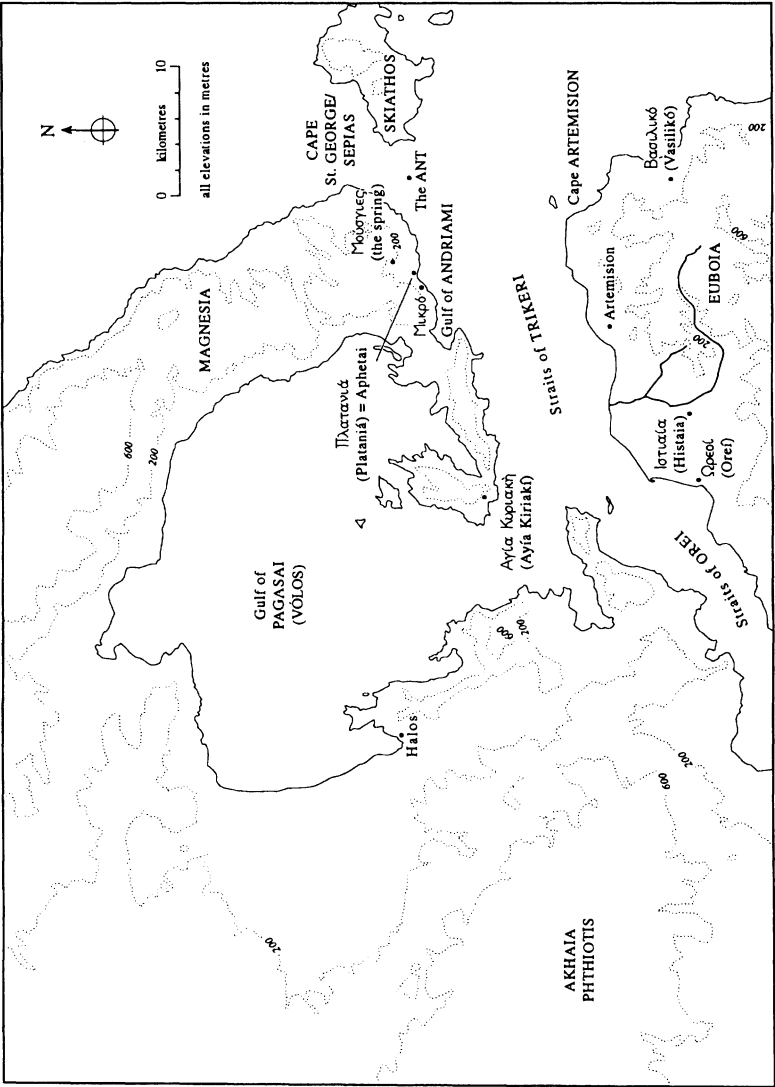


FIGURE 3

By the time the Persians reached Therma, the fleet had been working together for over three months. The everyday tasks, taken for granted by Herodotus and his audiences, of embarking, forming up, rowing and sailing in squadron, coming to shore and anchoring or beaching beside each other, disembarking, bivouacking, preparing food, and drawing water, would all be routine. We may note various things, both great and small, organized to keep the fleet effective: the canal and its breakwaters, prepared to avoid 20 miles of lee shore along Athos where Mardonios' fleet had come to grief in 492 (7.22.3); the food dumps for both army and fleet (7.25); the race which may point to more widespread competitive training (7.44); the provision on board ship of myrrh and bandages for first aid, which saved Pytheas (7.181.2); and the marking of the Ant (7.183.2). The mooring '*prokrossai*' will also be part of all this. These preparations in their variety point to great forethought and competence at staff officer level. The time at Therma both before and after Xerxes' departure for Thessaly could well have been used on exercises; there was also the chance to draw ships out of the water altogether and to dry them somewhat, as had been done at Doriskos (7.59.3).<sup>13</sup> It was also the last occasion that the fleet could be kept loosely at different anchorages (7.123.3): once in enemy waters, it would stay together as much as possible, for the sake of morale, safety, and control.

The first contact of Greek and Persian ships, the skirmish of scoutships recorded in 7.179–83, belongs naturally to the period before Xerxes and the army left Therma. In timing it seems to occur shortly before the fleet left Therma, which was eleven days after Xerxes' departure, but the scouting by sea needed to be done before the army left in case it exposed threats to the fleet's eventual reunion with the land forces, and its place in Herodotus' narrative is due to his treating events on land and on sea in distinct units. In the skirmish we may note three details: the Athenians who escaped Persian pursuit made for the Peneios delta, which suggests they were surprised north of it or very close to it;<sup>14</sup> they got away through Thessaly, which suggests that the area was not yet occupied (their pursuers could otherwise have landed and chased them towards their own forces); and they were conveyed to Athens rather than to Artemision or Khalkis, which suggests that at the time there was no Greek fleet on station in north Euboea or near it. Although the base for scouting was Skiathos, the Greek ships had probably been working from a mainland beach further north, bivouacking where they could. As both Greeks and Persians came to know, there was no good long-term anchorage off the coast of Thessaly between the Peneios delta and Skiathos.

<sup>13</sup> The drier the ship, the faster through the water; dryness of ship is basic to winning a seafight. The training and experience of the crew matter of course, as said by Lazenby (n. 2), pp. 139 and 250, and see Shaw (n. 3), ch. 17; but the evidence of Th. 7.12.3–4 is prime: see Morrison and Coates (n. 5), pp. 64, n. 4, 152–3, and 230–3.

<sup>14</sup> If they were south of it, they would be trying to escape 'best sailing' ships by working upstream, possibly upwind, and in the direction of the enemy base, which would be odd; downstream and downwind they would get ever nearer their own base and might even evade capture long enough to deter their pursuers from risking further chase. The suggestion (J. A. R. Munro, *JHS* 22 [1902], 308 and J. F. Lazenby *Hermes* 92 [1964], 275) that the pursuers were returning from a trip to Skyros seems unlikely: it ignores the risk to the Persians in going so far forward before they had cleared any enemy out of Skiathos or its neighbouring islands. From the Peneios delta to Skiathos is over 60 miles, and Skyros is 60 miles beyond that. Herodotus' words *ὁρμώμενος ἐκ Θέρμης . . . παρέβαλε . . . ἰθὺ Σκιάθου* ('based on Therma they worked the coast in a line to Skiathos') imply exactly the sort of Persian interest to be expected. H. Hörhager ('Zu den Flottenoperationen am Kap Artemision', *Chiron* 3 [1973], 43–59) overlooks their need to check the coast of Magnesia for anchorages and obstacles. A small Greek presence at sea so far north is not, at this stage of the campaign, surprising: some spy work was needed.

With the Greeks out of the way,<sup>15</sup> the Persians proceeded to mark the reef called the Ant,<sup>16</sup> another task to be done before the fleet left Therma, and not practicable without fair weather and freedom from interruption. But marking the Ant was one item in the larger task of determining and preparing the places where the whole Persian fleet could safely and comfortably pass the nights once they set sail to join Xerxes. The plan of the voyage had been made long before; it was implemented in detail from Therma.

From Therma to Trakhis by sea is about 170 miles. The first 70 are in the comparatively shallow waters of the Thermaic gulf, as far as Cape Dhermatás under Ossa. There is a fair supply of usable beaches in those 70 miles, but none would bring the fleet far enough on for the second day's voyage, as will be seen, and on the first day the ships sailed *πανημερόν*.<sup>17</sup> The next 50 miles, to Skiathos and the corner of Magnesia, are the dangerous ones, for this is a lee shore like that of Athos: the prevailing wind blows ships towards the coast, and almost all the coast is rocky and steep-to; with one exception beaches are small and separate<sup>18</sup> and have little or no land behind them for bivouac, though they do mostly have some water; the largest of them, at Horeftó below the village of Zagorá, is about 1,000 m long. Once round the corner of Magnesia, the final 50 miles are in the ever more sheltered waters of the straits of Trikeri, the straits of Oreí, and the gulf of Malis. In this stretch there are two good beaches, both on north Euboia, one soon after turning the corner, at Artemision (the Ant gives a good line for sailing across to it), and the other half way down, at Histiaia; the beach at Histiaia is better protected from a meltemi wind funnelled down the straits.<sup>19</sup>

Two things mentioned earlier would assist the Persian progress south. The sea current, both down Magnesia and to a lesser extent in the straits, ran with them, and the prevailing wind was first on their port quarter and then largely behind. The supply ships might even not need to be towed. But there were return journeys to consider,<sup>20</sup> not only for supply ships but also for the triremes needed to tow them, and the trireme crews would need their nightly rest and refreshment. The return journey would be

<sup>15</sup> Herodotus' words in 7.183.1 appear to place the Greek fleet at Artemision at this stage, but I think no more than an advance force is to be understood, preparing the encampment: such a force might well have retired as described.

<sup>16</sup> I accept the proposal of J. N. O'Sullivan, *CQ* 27 (1977), 92–4, to read *ἐστάλησαν* for *ἐπήλασαν*. The subject of *ἐπέθηκαν* in 183.2 is by implication the same three Persian ships.

<sup>17</sup> The word is very rare, and unique both in Herodotus and as an adverb. I take it to mean a full day's worth of travel, from before dawn to before dusk. It seems to have been standard practice to start before dawn (see below and nn. 46 and 47), and it was clearly sensible to anchor and disembark with daylight still remaining for the last ships in.

<sup>18</sup> It is often said (first in Diodorus 11.12.5–6) that the fleet anchored at several beaches, both on the first night under Pelion (note, however, the discomfort of W. K. Pritchett, *AJA* 67 [1963], 1–6 in suggesting that Koulouri below the village of Keramidhi was the fleet's headquarters) and at the second anchorage on the south coast of Magnesia or even partly in Akhaia Phthiotis (see P. W. Wallace, *GRBS* Monograph 10 [1984], 305–10); but the notion gets no support from Herodotus (or from Euripides: *ἀκτῶν ἀλίμενον Πηλίου*, *Alc.* 595–6) and overlooks the question of contact, control, and security within the fleet as a whole. Herodotus' only mention of separate anchorages is at 7.123.3, in a very different context. The beaches under Pelion are in any case too far from Therma for a reasonable day's voyage for the whole fleet and none can properly be called *αἰγιαλός* (see n. 24).

<sup>19</sup> See Heikell (n. 10), p. 223.

<sup>20</sup> The canal through the neck of Athos was allegedly built for two-way traffic (7.24), like Nekos' canal in Egypt (2.158.1). Investigation of the canal is in hand; soundings suggest a top width of 30 m, just enough (see below) for two triremes to pass with care if the canal was full to the brim. See B. J. Isserlin (to whom I am grateful for correspondence on the matter) *et al.* in *BSA* 86 (1991), 83–91, 89 (1994), 277–84 and 91 (1996), 329–40.

against both current and the likely wind.<sup>21</sup> It would be prudent to have bases at the north and south ends of the Pelion ridge, so that its length could reasonably be negotiated in one haul either way, triremes assisting as required. Thus between Therma and Trakhis two intermediate anchorages were needed. The middle passage would always be risky, along a rocky lee shore twice as long as Athos; on the first voyage there was an extra peril to consider, a Greek fleet awaiting them just as they would be most weary, at the end of the day.

Immediately south of Cape Dhermatás, as the southern slopes of Ossa drop away behind the coast before the rise to Pelion starts, a beach of shingle begins. This is the beach excepted above. It continues south for over six miles;<sup>22</sup> sea depth increases evenly and slowly (at 150 m out the depth all along is about two and a half fathoms, not more than 5 m); there are no offshore hazards like rocks or reefs; behind the beach the land stretches flatly back for a mile or more before higher ground begins; six streams water it, though in summer nowadays none of the water reaches the sea.<sup>23</sup> This is the beach of Ayiókambos. At the south end of the beach the flat land stops and the cliffs start, and for over 40 miles they do not cease except for the occasional beach like Horeftó, with very little flat land behind it. For the first night's stop Ayiókambos was as good as could be hoped, in size and in position.<sup>24</sup>

Herodotus has done his best, as usual, to identify the beach for us; but names change.<sup>25</sup> When the fleet set out,<sup>26</sup> eleven days after Xerxes, knowing by then that the Greek fleet would be on station in the straits of Trikeri, they sailed all day τῆς Μαγνησίας χώρας ἐπὶ Σηπιάδα τε καὶ τὸν αἰγιαλὸν τὸν μεταξὺ Κασθαναίης τε πόλιος ἔοντα καὶ Σηπιάδος ἀκτῆς, ('as far as Sepias in the territory of Magnesia and the beach which lies between the township of Kasthanaia and the Sepiad *akte*': 183.3). First comes the general direction, ἐπὶ Σηπιάδα (*sc. γῆν*, as in 'Ελλάς, Φωκίς, Ἀττική, etc., or ἀκτὴ in anticipation), and then the destination more precisely.<sup>27</sup>

Plainly the beach had no name of its own: for something local to delimit it Herodotus turned to Κασθαναία πόλις and Σηπιὰς ἀκτὴ. These will be the two nameable features nearest to the two ends of the beach. Since Herodotus is working with the Persians from north to south, Κασθαναία is likely to be the community (πόλις

<sup>21</sup> L. Casson, *TAPA* 82 (1951), 136–48, reckons that two and a half knots was the best speed possible for a sailing vessel working against a moderate wind and current; in favourable conditions four knots was reached in coastal waters and up to six on the open sea. The word *ὀλκάς* (see 7.25.2 and 191.1) indicates that towing was a recognized practice, but we do not know what speed could be achieved by triremes doing it.

<sup>22</sup> Over 10 km measured on a car odometer. The beach is backed by a parallel road the whole way. Pritchett (n. 18) estimated it from a map at 6 km.

<sup>23</sup> Two of the streams had water in them in spring 1995; these are the two streams marked on the map in D. Müller, *Topographischer Bildkommentar zu den Historien Herodots* (Tübingen, 1987), p. 360. More important than rivers are springs and wells, rivers being very seasonal in flow in Greece and often dry in summer, whereas springs and wells may serve the year round.

<sup>24</sup> Herodotus' word αἰγιαλός for beach is worth note. He uses it elsewhere only of Doriskos, Argilos, Artemision, and Mykale. I have not seen Mykale; the others are like Ayiókambos, long, gently shelving, and unobstructed. Pritchett (n. 18) has a good discussion of the word.

<sup>25</sup> The battlefield of Plataiai is a good example of features carefully named then but now causing much discussion or resisting identification altogether. See A. R. Burn, *Persia and the Greeks* (London, 1984), p. 522.

<sup>26</sup> ὁρμώμενος ἐκ Θέρμης at 7.179 means 'using Therma as their base' as the present participle shows; departure of the fleet as a whole is marked by the aorist ὁρμηθέντες (183.2).

<sup>27</sup> Connecting the two with τε καὶ is in Herodotean idiom; so too would be a change of preposition to mark the change of focus. After καὶ I suspect that ἐς has been lost: see 1.2.2, 1.27.3, 2.7.1, 8.7.1, 8.66.1, and perhaps 7.123.3; also 7.188.1.



implies an extent of territory rather than a precise spot) near the north end of the beach; Σηπιάς ἀκτὴ then serves to mark the south end.

At the north end, some three miles inland, is a village which earlier this century was called Thanátu but is now called Melívia (Μελίβοια: see 188.3). Elsewhere in Greece names from antiquity have been resurrected and applied to existing settlements, with varying degrees of justification; there are many in Boiotia, and Lazenby notes the usurpation of Kriekúki by Erythrai;<sup>28</sup> to rename Thanátu Melívia does not of itself identify the place as ancient Μελίβοια. I shall return to the question of *Κασθαναία* when I look at Herodotus' determination of where ships were wrecked.

As for Σηπιάς ἀκτὴ, most (but not all<sup>29</sup>) students translate 'Cape' Sepias and then look for the cape. Rawlinson's dictum that 'ἀκτὴ in Herodotus is not "shore" but "promontory"' may have something to answer for;<sup>30</sup> in his own translation he several times ignores his dictum, rightly, and Powell<sup>31</sup> allows ἀκτὴ to mean 'shore' three times out of twenty-two. Close examination of all the contexts reveals, however, that in every case ἀκτὴ has one and the same meaning, which I clumsily express as 'projection of land seen in terms of its flank rather than its leading edge, the flank being long and pretty straight'. For instance, Thanet could be called ἀκτὴ as seen from Reculver, or Attica from Marathon.<sup>32</sup> The translation 'shore' or 'coast' will always do; 'cape' seldom or never. No one heeding the epithet ἅπασα at 7.191.2 should have been misled. 'Cape' Sepias is a chimera.<sup>33</sup> Σηπιάς ἀκτὴ in Herodotus means the Sepiad coast. Herodotus thus defines the beach in the north by the neighbouring πόλις and in the south by the coast's transition from beach to cliff.

Two questions now press for attention. If this first night's beach was over six miles long, why does Herodotus say of it (7.188.1) οὐ μέγαλον, and why are the Persians reported to have moored their ships as if short of space? Triremes side by side, oars out, needed a lateral space of at least 14 m. If the first boat rowed in shipping its oars in time for the next boat, then they could be moored at 10 m intervals. If they were hauled in from the beach with oars already shipped so as to lie very close to each other, at 7 m intervals, then at Ayiókambos there was space for all Herodotus' 1207 ships (not to mention the extra 120 from 7.185.1) to lie side by side.

Response to the first question is difficult. αἰγιαλὸς οὐ μέγας is, given Herodotus' use of the word (see n. 24), virtually a contradiction in terms. If he saw the beach at some time, as he may have done, from the sea,<sup>34</sup> perhaps he later persuaded himself that if the anchorage was cramped then the beach must have been short. If he did not see it for himself, then he accepted αἰγιαλὸς from others and qualified it to suit his information. That would accord with the prevailing Greek assumption that the

<sup>28</sup> Lazenby (n. 2), p. 221.

<sup>29</sup> See E. Kirsten editing A. Philippson, *Die Griechische Landschaften* vol. 1.i (Frankfurt am Main, 1950), p. 161, n. 1.

<sup>30</sup> *History of Herodotus*<sup>4</sup> vol. 4 (London, 1880), p. 149.

<sup>31</sup> J. E. Powell, *Lexicon to Herodotus* (Cambridge, 1937), s.v. I add to his list Καλὴ Ἀκτὴ in 6.22 and 23 and Λευκὴ Ἀκτὴ in 7.25.2, both of which he lists under their adjectives.

<sup>32</sup> For Attica as an ἀκτὴ see E. *Hel.* 1673. See Appendix.

<sup>33</sup> There is an unfortunate extra distraction in it. Nowadays it is the name for what Herodotus at 7.193.1 calls simply τὴν ἄκρην τῆς Μαγνησίας. The earliest Royal Navy surveyor, Cdr. R. Copeland in 1831, labels that headland Cape St George, after a nearby church; subsequent surveys (by Cdr. Brookes in 1846 and Lt. Drew in 1862) say Cape Sepias, which has established itself. I am grateful to the Hydrographer of the Navy for permission to inspect these surveys in the archives at Taunton.

<sup>34</sup> See W. K. Pritchett, *Studies in Ancient Greek Topography* vol. 2 (Berkeley, 1969), p. 18, n. 29, and Müller (n. 23), p. 286.

Persian host was enormous: even an αἰγιαλός was inadequate.<sup>35</sup> No one who knew better put him right, and there were those in Athens at least who did know better, men bringing timber from Macedon, for instance.

The mooring pattern, called by Ian Whitehead the Mediterranean moor,<sup>36</sup> is another matter. At Ayiókambos, even for a huge number of ships, not forgetting the supply ships and others of various sizes (7.191.2), there was no need to moor as described. But the next night the Persian fleet would not be at Ayiókambos: it would be round Cape Sepias<sup>37</sup> and, as we shall see, at a beach of slightly lesser extent than Horeftó. The Mediterranean moor is a complicated manoeuvre. I suggest that at Ayiókambos it was being practised in anticipation of need, and it stuck in the minds of Herodotus' informants because of its incongruity in context.

It is worth amplifying what Whitehead says of it by reconstructing it in detail. The first ships to arrive moor normally, side by side, to the desired number, dropping anchor from the bows as they come in stern first; a line or two secured ashore holds each one steady. The next ships come in likewise, bringing their sterns between the prows of the first row, and attaching their sternlines to those prows; to allow the crews off and on and to add stability to the whole assembly, the ladders for disembarkation would be lashed from ship to ship. Perhaps some oars were used as lateral ties,<sup>38</sup> since if ships bumped, their most fragile parts—the outriggers of the uppermost tier of oars—would be at risk. Every next row would have at least one ship fewer than the row before it; every next row would drop anchor in deeper water: the more cable out, the less steady the moor. Eight rows of triremes would extend about 300 m out to sea. The crews of the outermost ships would leave and regain their ships by way of seven other ships. This is a manoeuvre needing time and practice. Getting under way next morning would need equal care and control, with crews embarking in fixed order and ships peeling off the moor in sequence.

Herodotus' mysterious word πρόκροσσαι now makes sense. He uses it twice, here (as a three-termination adjective) and at 4.152.4 (as a two-termination adjective). At 4.152.4 he describes a decorative arrangement of griffins' heads round a bronze vessel of mixing-bowl type. Homer also uses the word, once, as a three-termination adjective, at *Il.* 14.35, to describe an arrangement of ships drawn up in a confined space on shore. His use of πρόκροσσαι has been variously interpreted. To take two recent editors, M. M. Willcock (London, 1984) says "'in lines", "row behind row"' and R. Janko (Cambridge, 1992) says 'prokrossai clearly means "in rows" when Herodotus describes ships moored eight deep at Artemision (*sic*); it is from κρόσσαι, whose original sense must be "echelon" or "zigzag" (see 12.258–260n.)'. On 12.258 Willcock observes 'κρόσσας: The meaning of the word is uncertain. In 444, the Trojans mount the κρόσσαι in their attack upon the wall. The most likely explanation is that they are

<sup>35</sup> The beach at Phaleron, which he doubtless knew well, was apparently adequate for the fleet which came together after the losses off Pelion, Euboia, and Artemision; it is, or rather, seems to have been before encroachments this century, about two miles long. If Herodotus is essentially right that the Persian fleet was not much reduced in numbers for Salamis (not because its losses had been made good, as he says at 8.66, but because rather few had been lost), then at Phaleron too, for anything much more than 300 ships, a Mediterranean moor was needed.

<sup>36</sup> See his article in *The Mariner's Mirror* 74 (1988), 283ff. For the probable origin of the phrase see J. S. Morrison and R. T. Williams, *Greek Oared Ships* (Cambridge, 1968), p. 56n. See also Shaw (n. 3), ch. 18.

<sup>37</sup> By Cape Sepias here and henceforward I mean the cape referred to by Herodotus as ἄκρη τῆς Μαγνητίας. See n. 36.

<sup>38</sup> See Th. 2.84.3 for poles on board triremes.

projecting stones or beams on which the parapet or breastwork (ἐπάλξεις) rested.' Herodotus' use of the word has also caused trouble; 'in rows' or 'with prows pointing out to sea' are the two commonest of various translations. But in context each of these meanings is redundant, since mooring stern to the beach was normal for triremes,<sup>39</sup> and 'in rows' is implicit in ἐπὶ ὀκτὼ νέας. Willcock's comment on κρόσσαι, however, is helpful: Herodotus uses that word himself, of a pyramid (2.125.1); LSJ offers 'courses, steps' as a translation, and A. B. Lloyd (Leiden, 1988) ad loc. confirms that sense in detail. The adjective should mean 'coursed' and 'stepped' both together. In describing the pyramid Herodotus is working in an essentially vertical plane, but in describing the arrangement of the ships he is working in a horizontal plane. προ- works in either plane, as the mind's eye reaches for the apex (imaginary in the case of the ships). In each case, the decreasing length of the succeeding row, whether of ships or stones, produces a stepped edge. Herodotus surely had Homer's line in mind, as the feminine ending suggests (τὸ ἐς πόντον marks the difference from Homer); how precise a meaning πρόκροσσαι carried ('trapezoidal' for the ships?) is impossible to tell, since apart from a few much later authors the only other user of the word roughly contemporary with Herodotus is Demokritos (ap. Theophrastus *de sensibus* 79): καὶ τὰς συνδέσεις (sc. τῶν στοιχείων) οὐ περιφέρεις ἀλλὰ προκρόσσας. 'Jagged' seems an adequate sense there. In Herodotus, the combination of sophistic use with Homeric resonance makes the word peculiarly apt.<sup>40</sup>

Next morning when the Persians prepared to move they were both lucky and unlucky. They were unlucky in that a gale blew up at all; the mooring they had made would hardly have been attempted unless they expected a period of calm. They were lucky in that it hit them precisely when it did.

The gales are a recognized phenomenon; they usually last twenty-four hours, but Dascalakis reports one of three days' duration in August 1956, and Hörhager tells of once being delayed more than a week.<sup>41</sup> Burn attributes them to the temperature differential which develops when air over land gets hotter during the day than air over adjacent sea.<sup>42</sup> Over landlocked Thessaly in high summer (μέσον θέρος: 8.12.1) the air can get very hot; it may suddenly lift off and draw in colder air beneath it. But dawn, the time of Herodotus' gale, is exactly the wrong time for this to be happening: the land would then be at its coolest. It seems rather that Xerxes' fleet was truly unlucky: weather that was not due in the ordinary course of events for another fortnight or more (35)<sup>43,44</sup> came early. A depression, probably of central Mediterranean origin, passing eastwards to the south of Greece (33), would draw in the prevailing meltemi behind it, with acceleration (78–9 and 92). Local conditions may also have contributed

<sup>39</sup> They could not be hauled up the beach unless they were lying stern to, because of the rams at the prow. For prow to shore see 7.100.3, where the abnormality of the mooring (for a royal inspection) is described with care.

<sup>40</sup> What it means at 4.152.4 is a further question; probably each griffin's head in the upper row was set over the gap between two in the lower row.

<sup>41</sup> Dascalakis (n. 8), p. 123, n. 2; Hörhager (n. 14), pp. 49–50.

<sup>42</sup> Burn (n. 25), p. 389.

<sup>43</sup> This and all further such numerical references in this paragraph are to the pages of *Weather in the Mediterranean* vol. 1, Air Ministry, Meteorological Office (London, 1962), 2 vols (2nd edn). Volume 2 has climatic tables: those for Skiros (Skyros) are the most relevant to this study. I am grateful to Professor R. J. Chorley, lately of the Department of Geography, Cambridge, for his help in preparing this paragraph.

<sup>44</sup> Dascalakis (n. 8), esp. pp. 120–7

something: for instance, an offshore wind from the relatively cool land might have been spilling eastwards over the col of the Ossa–Pelion ridge and helping to get the ships away from the shore. Such a breeze (Herodotus' *νηνεμία* may have a comparative rather than an absolute sense, but complete calm before the storm is possible) would meet and briefly check the colder, dry meltemi out at sea. Hence both the clarity of the air (78) which Herodotus records and the boiling of the sea under the meeting of the two air currents, but the stronger wind would immediately prevail and sweep the ships back towards the coast. After the wind had died down, its work on the sea would remain as a swell (183–4): hence, in part, the three days' wait until it was safe for the whole fleet to venture forth again. The storm four days later which troubled the Persians at Aphetai and destroyed the ships sent round Euboea was different, though just as clearly etched on the memories of Herodotus' informants. It was a storm marked by fierce rain and thunder (8.12–13),<sup>45</sup> and could be caused by a second depression moving in the path of the first, a thing which tends to happen; the rain would occur on its warm front (179); but other causes are possible (181–2 and 42).

The wind struck *ἄμα ὄρθρω* (7.188.2), in the period before the first light of dawn.<sup>46</sup> Had the Persians started earlier, they would all have been caught at sea, and all swept on to Pelion. Had they risen an hour later, their ships would still have been at their moorings, lashed together, and would have been dashed to pieces on each other and on the beach, but with little loss of life. To the extent that they were up betimes, they were lucky.<sup>47</sup> When the wind struck we may reckon that all the ships were unmoored, almost all were crewed and paddling into formation, the vanguard was already under way, but most were still by the beach. The evidence for this lies in the naming of the places where the ships were wrecked.

*ὅσας δὲ τῶν νεῶν μεταρσίας ἔλαβε, τὰς μὲν ἐξέφερε πρὸς Ἰπνους καλεομένους τοὺς ἐν Πηλίῳ, τὰς δὲ ἐς τὸν αἰγιαλόν· αἱ δὲ περὶ αὐτὴν τὴν Σηπιάδα περιέπιπτον, αἱ δὲ ἐς Μελίβοιαν πόλιν, αἱ δὲ ἐς Κασθαναίην ἐξεβράσσοντο* ('the ships which were caught out at sea were cast up some of them in the direction of the Pelion Ovens as they are called, and some on the beach; some came to ruin in the area of Sepias itself, while some were washed up on Meliboian territory and some on Kasthanaian'). Five places are named, two and one and two (188.3): the Ovens and the beach, Sepias itself, and Meliboia and Kasthanaia. The two–one–two split is marked by changes of case, preposition, and verb in the relevant sentences.<sup>48</sup> Given the direction of their voyage, the direction of the sea current and the direction of the wind, no ship should be wrecked north of its starting point. The position of the Ovens was first identified in modern times by N. Georgiadhis, a local doctor,<sup>49</sup> and was re-established by Pritchett.<sup>50</sup> They are (I quote Pritchett) 'deep, oval caves at water

<sup>45</sup> As Dascalakis shows ([n. 8], p. 127), Herodotus' 'thunder from Pelion' is not an indication of wind direction; it marks rather how those there were impressed by it. Thunder is associated with mountains; Pelion was likely to be prominent in Persian consciousness.

<sup>46</sup> See R. W. Wallace, *TAPA* 119 (1989), 201–7, for a good study of the word. Although he does not cite this instance, it fits his analysis perfectly.

<sup>47</sup> About 3.30 a.m., I suggest (*experto crede* and see Hörhager [n. 14], p. 50). They would want to use the cool of the dawn and to conserve themselves for what might be a difficult end to the day.

<sup>48</sup> *περὶ αὐτὴν τὴν Σηπιάδα* (in the area of Sepias itself): some MSS have *ἐς*. For *περὶ*, probably *lectio difficilior*, see 8.16.2; these two instances of *περιέπιπτεν περὶ* are the only two in Herodotus or, apparently, anywhere. If *ἐς* is preferred, the argument is hardly affected: the change of verb is more important.

<sup>49</sup> N. Georgiadhis, *Thessalia, Vólos* (1894, 2nd edn), pp. 19 and 142.

<sup>50</sup> Pritchett (n 18).

level . . . eighteen . . . in a stretch of about 1,000 m north of Veneto between ridges of Pelion named *Κάβος Κότσομπου* on the north and *Ἀσπρόβραχος* on the south. With their black, elliptical mouths they resemble nothing so much as the Greek peasant ovens that one sees in all the villages.' They are best seen as Pritchett saw them, from the sea.<sup>51</sup> Ships wrecked near here (*πρός* is directional, not local) would be those that led the fleet; any efforts they made to stay out at sea would be unavailing, and every single one would be wrecked. Ships wrecked on the beach would include those that got back to it, but not in time to be hauled out to safety.

Herodotus' placenames take us first from vanguard to rearguard, from furthest south, the Ovens, to furthest north, Kasthanaia. Then comes the Sepiad coast in between, named here for its length. Then he returns to the beach in more detail, defining its extent again but from south to north this time and with one difference. Kasthanaia is then where we wanted it earlier, near the northern end of the beach, and Meliboia takes position south of Kasthanaia as the township nearest the beach's southern end.<sup>52</sup> That position is confirmed by a fragment of a tile bearing the inscription *ΔΗΜΑΙΑ* (sc. *ΔΗΜΟΣΙΑ*) *ΜΕΛΙΒΟΙΕΩΝ*, found at the kastro of Polidhéndri (at latitude 39° 40' north and longitude 22° 54' east).<sup>53</sup> Polidhéndri is a settlement close above the south end of the beach of Ayiókambos, a little way inland; the usurpation of its ancient name, *Μελίβοια*, by Thanátu is unfortunate; Georgiadhis seems to have been the first to identify *Μελίβοια* with Thanátu, and that identification may have been helped by an inscription found at Thanátu reading *ΠΑΡΜΕΝΙΣΚΑ ΜΕΝΑΝΔΡΟΥ ΜΕΛΙΒΟΙΣΣΑ*.<sup>54</sup> Parmeniska the Meliboian may have died in Meliboia, but it seems likelier that her place of origin was commemorated in a community not her own. Hence my conclusion that the township by the south end of Ayiókambos was Meliboia, and the township by the northern end was Kasthanaia. No evidence yet fixes Kasthanaia, but the conclusion that it lay roughly where Thanátu/Melívia now is, overlooking the north end of the beach, is consistent with what Herodotus says at 183.3, repeated at 188.1.

How many ships were lost? In giving the lowest Greek estimate as 400 (7.190) Herodotus noticeably fails to adopt it himself,<sup>55</sup> and his record of the Greek alarm when the survivors of the storm sailed in to Aphetai (8.4.1) fits an assumption that few were lost. The advance of the Persian ships had not been stopped but merely delayed;

<sup>51</sup> See Pritchett (n. 18), plate 2, fig. 2, and Müller (n. 23), pp. 330–1. Müller includes for good measure a picture of a peasant oven.

<sup>52</sup> The word *ἐξεβράσσοντο*, used of the ships wrecked on the great beach, may add a little strength to the identification offered. Herodotus repeats the word in 190 for the objects obtained by Ameinokles' beachcombing; he uses it nowhere else (Plutarch noted it: see *Moralia* 864C). The repetition suggests that Ayiókambos was the place of that beachcombing.

<sup>53</sup> For the inscription see A. M. Woodward, *Liverpool Annals of Archaeology and Anthropology* vol. 3 (1910), p. 158. This series, long defunct, may be found in the Liverpool City Record Office, and I am grateful to the archivist, Miss J. Smith, for a photocopy of the relevant pages. For the coordinates see R. Stilwell (ed.), *The Princeton Encyclopedia of Classical Sites* (Princeton, 1976). Its articles on the sites at issue in this study are mostly cautious.

<sup>54</sup> This inscription is cited by A. J. B. Wace, 'The topography of Pelion and Magnesia', *JHS* 26 (1906), 145, n. 10, referring to *Ἀρχαιολογικὸν Δελτίον* 5 (1889) 92. W. W. Tarn in *JHS* 28 (1908), 210, says firmly 'Meliboia is Thanátu; epigraphic evidence fortunately renders this certain.' He should have waited two years for Woodward. I am grateful to *CQ*'s referee for alerting me to this inscription.

<sup>55</sup> Lazenby ([n. 2], p. 126) calls 400 Herodotus' estimate, and appears happy to accept the figure anyway, as others have. Burn ([n. 25], p. 390) observes more cautiously, and in my view more soundly, 'The estimate was exaggerated in proportion to the original exaggeration of the size of the fleet.'

they had not been forced back to Therma despite the violence of the storm, which Greeks had witnessed (7.192.1: *ἡμεροσκόποι ἀπὸ τῶν ἄκρων τῶν Εὐβοϊκῶν*); the whole fleet might have been destroyed. But the Persians, as said, had been lucky as well as unlucky.

How many ships were left? If it is right to see the mooring pattern adopted at Ayiókambos as preparation for a more cramped mooring the next night, investigation of the second anchorage may even suggest a plausible upper limit for the size of Xerxes' fleet.

If the Greek fleet had been nearer Thermopylai, then the Persians could have gone for the beaches of north Euboia, which offer the best anchorages within the straits of Trikeri.<sup>56</sup> The best protected is that at Histiaia, now Orei, but nearer for arrival from Ayiókambos is that at Péfki, now a holiday resort with a small artificial harbour.<sup>57</sup> Behind and a little east of Péfki beach Lolling<sup>58</sup> identified fragmentary remains of a Doric temple as the one mentioned by Herodotus at 7.176.1 which has given its name to the Greek anchorage, to the fights in the straits, and also to the cape at Euboia's north-east corner. A chapel of St George is on the site now.<sup>59</sup> Not only is the anchorage quite good; so is the present water supply. The Greek Ministry of Agriculture has done a thorough analysis of the water resources of the Histiaia basin, extended in the matter of springs both to east and to west.<sup>60</sup> In August river flow, though much diminished, still exists,<sup>61</sup> but private wells, which are plentiful, mostly reach water within a few metres of the surface. The Persians cannot have been surprised to find the Greeks in occupation at Artemision. They went perforce to Aphetai.

ἔστι δὲ χώρος ἐν τῷ κόλπῳ τούτῳ τῆς Μαγνησίας (7.193.2). 'It is a place<sup>62</sup> in Magnesia, on these straits' (the straits of Trikeri, that is), its name being due to Jason's use of it as the last watering place before setting out into the Aegean.<sup>63</sup> At Aphetai the Persians were about 80 stades, or 10 miles, away from the Greeks at Artemision (8.8.2); Aphetai and Artemision are within sight of each other (8.4.1 and 6.1). These four facts, nearness to the Aegean, availability of fresh water, the distance from Artemision, and the intervisibility, make the identification of Aphetai with modern Plataniá

<sup>56</sup> The error of Sandokes (7.194–5) deserves note. He must have lost contact with the preceding squadron (perhaps he was charged with picking up any survivors on the Magnesian coast; perhaps he had damaged ships to nurse), but why should he have thought that ships halfway across the straits to the south were part of the Persian fleet unless the original plan had been to go to Euboia if possible?

<sup>57</sup> Pritchett (n. 34), ch. 2, has a useful map; see too plates 9 and 10.

<sup>58</sup> H. G. Lolling, *AM* 8 (1883), 7–23 and 200–10.

<sup>59</sup> Pritchett (n. 34), ch. 2 expresses some worry about the identification: Lolling's road to the south of the site now runs to the north of it. But Dr E. B. French tells me in correspondence, mentioning her father's map of 1895 which has the road to the south still, that it has been common for roads to migrate closer to the shore since then.

<sup>60</sup> *Οριστική Υδρογεωλογική μελέτη Βόριας Εύβοιας*, 5 vols. and maps, (Athens, 1987: survey conducted between October 1979 and March 1981). I am grateful to Messrs Pergaliótis, Drósos, and Bános for permission to study it in their office in Athens.

<sup>61</sup> In August 1980 47,000 cubic metres flowed in the Xeropotamós, the main river of the plain, as measured under the bridge on the east side of Istiaia.

<sup>62</sup> *χώρος* suggests that it was not significantly inhabited, and so could have been prepared in fair safety even before Xerxes entered Thessaly.

<sup>63</sup> Tim Severin also seems to have used it (*The Jason Voyage* [London, 1985]): though neither text (p. 80) nor map (p. 58) mentions Plataniá by name, the map makes it plain.

certain.<sup>64</sup> Some have proposed Ayía Kiriakí,<sup>65</sup> on the west end of the Trikeri peninsula, but it will not do: we had difficulty finding a good hold for our anchor when moored to the quayside, so steeply does the bottom drop away, and the harbour, such as it is, is tiny. Fresh water is the crucial issue. The Royal Navy's surveyors<sup>66</sup> in the early and mid-nineteenth century all noted the water at Plataniá and marked it; they marked no other for miles, especially to the west: west of Plataniá the peninsula becomes treeless and barren and virtually without beaches for more than a fishing boat or two.<sup>67</sup> The gulf of Andriami, or Hondri Ammos, anciently Olizon, looks promising on a map, but it is deep, rocky, and steep-to nearly all round, exposed to the meltemi, and has only one tiny beach fit for disembarkation.

The present water resources of the Plataniá valley are not as thoroughly known as those of the Histiaia basin.<sup>68</sup> The stream, the Halórrhema, is dry in summer, and three boreholes dug in its lower valley since 1986 have shown that there is no great store of water below the surface. Tree clearance in the upper reaches has probably reduced supply compared with antiquity; the southern end of the Pelion ridge is not as well wooded as its western flank. But a spring called *Μούσγιες*, about a mile and a half upstream from Plataniá, produces between 15 and 20 cubic metres per hour at all seasons. This is between a third and a quarter of what the Xeropotamós supplies in August (see n. 61). As Maurice observed, however,<sup>69</sup> only one third of a river's flow can be used before fouling occurs; but damming increases the usable quantity.

How much water does an oarsman need per August day in the Aegean? Tim Severin speaks of his crew rationing themselves in an emergency to about one and a half litres per day per man ('2–3 pints').<sup>70</sup> But they were in the Black Sea under sail at the time, not rowing. A member of the Hellenic Navy who rows in *Olympias* told me that on a tough row<sup>71</sup> each man likes to have two litres available; Dr B. Rankov in a lecture at the Institute of Classical Studies, London (29 January 1994) said that for a two-hour row his trireme crews might take up to four litres; John Coates and John Morrison observe, 'In hot weather each member of the oarcrew needs about one litre of water per hour while working hard.'<sup>72</sup> An ancient oarsman would take his gourd or skin just as his modern counterpart takes a plastic bottle,<sup>73</sup> but ancient use of water may have been more restrained than nowadays, especially among people accustomed to less of it,<sup>74</sup> and the dimensions of *Olympias* show that ancient oarsmen were not as large as today's largest. If the *Μούσγιες* spring flowed then as now, undammed it could supply per hour at least 5,000 litres, or two litres each to the crew of about twelve triremes.

There are too many incommensurables here to do much more than point at them. At minimum undammed flow, *Μούσγιες* would give per day four litres each to 30,000

<sup>64</sup> The case is thoroughly presented by Pritchett (see n. 59). I am grateful for the help of Professor C. J. Tuplin of Liverpool University in correspondence on the topic.

<sup>65</sup> For example, Burn (n. 25), p. 391 and map 340.

<sup>66</sup> See n. 33.

<sup>67</sup> See also E. Fabricius, *Gnomon* 2 (1926) 11–15, reviewing F. Stählin, *Das hellenische Thessalien* (Stuttgart, 1924). Fabricius is rightly cited by Pritchett (n. 34), vol. 5, p. 95, n. 5.

<sup>68</sup> I am grateful for the information that does exist to Mr Apóstolos Dhimoulás of the Geological section in the Ministry of Agriculture's office in Vólos.

<sup>69</sup> Maurice (n. 4), p. 221.

<sup>70</sup> Severin (n. 63), p. 181.

<sup>71</sup> See for instance J. F. Coates, S. K. Platis and T. Shaw, *The Trireme Trials 1988* (Chippenhams, 1990), p. 43. My Greek informant, Mr Xypolitidis, may have been referring to the voyage mentioned there, but I omitted to ask.

<sup>72</sup> Shaw (n. 3), p. 108.

<sup>73</sup> I have a photograph taken in London in 1993 when *Olympias* graced the Thames which shows a 2 litre bottle in position beside a zygian porthole.

<sup>74</sup> See Maurice (n. 4), p. 221, who seems to assume a lesser need on the part of orientals.

men (150 triremes). At maximum dammed flow it could give the same to 80,000 men (400 triremes). How the Persians made estimates of such things we do not know, but they needed to, and Maurice's analysis of the march through Gallipoli has shown the great probability of it being done.

There are two beaches at Plataniá, east and west, separated by a short stretch of cliff which can be walked across easily enough. The east beach is itself cut into two pieces by a small low bluff.<sup>75</sup> The east beach, where modern Plataniá is built, is the longer, something over 600 m in length; the Halórrhema enters the sea near its eastern end, at which there is a jetty. Behind the beach flat land for bivouacs is not extensive: the valley soon narrows. The west beach is some 400 m long and has its own little settlement called Mikró on the flat land behind it. But at its west end there are rocks just under water which might have prevented the full length of the beach from being used. On the west beach, at 10 m intervals, a first row of about thirty ships could be established, and on the east beach up to sixty, unless the little bluff forced a gap in the base line. The west beach is fairly straight: moored *πρόκροσσαι* as interpreted earlier, in seven more rows a further 182 ships could be accommodated. The east beach curves at its eastern end; if it were straight, on an inner row of sixty a further 392 could be moored: a maximum, with no allowance for supply boats, of 664 triremes. The eighth row of ships would lie some 300 m out; at that distance, a depth of more than 15 fathoms occurs only at the extreme west end:<sup>76</sup> many of the ships could have anchored with some stability, but it is likely that the outer rows of ships would depend for position largely on their horizontal hold on the other ships. Any extent of Mediterranean moor, as previously said, needs fair weather to be safe: if the Persians had even 100 triremes at Aphetai, they took that risk.

Water supply and beach length thus combine to set a limit, but it cannot be calculated much more precisely now than it probably could have been then: limit, however, there was. If the ships selected to sail round Euboia were to leave Aphetai as soon after their arrival as they could, more ships could have been brought to the beach than it could accommodate; for those who stayed, the position had been fortuitously eased by the losses off Pelion, but it is not a well-sheltered anchorage, despite being round the corner from the open sea and somewhat indented. The jetty, despite its recent extension, does not prevent a certain swell from entering the bay;<sup>77</sup> we spent a slightly restless night moored to it in fair weather. The meltemi is to some extent funnelled down the straits of Trikeri by their conformation.<sup>78</sup> A detail in Herodotus (8.12.1) helps to make the point: in the night flotsam came in on the current and troubled the Persian ships. It is usually assumed that this is the flotsam of the fight earlier that evening, and a hypothesis has been developed that the second storm blew from the south-west, so as to be able to push the flotsam right into Aphetai.<sup>79</sup> But the second storm also blew from the north-east, as we shall see, and the debris probably came from the previous storm, floating in on the prevailing current.<sup>80</sup> Herodotus records a further detail about the flotsam: it wrapped itself round ships' prows and

<sup>75</sup> This bluff does not appear on the otherwise useful map of Fabricius (see n. 67).

<sup>76</sup> I am grateful to Mr A. Potamiános for a trip on his yacht *Thelginos* (built in Glasgow in 1926) specially to check these depths in July 1993; also to Stuart Mann, Thásos Ecónomou, and Dimitri Méllios who helped me to do it.

<sup>77</sup> See Heikell (n. 10), p. 227.

<sup>78</sup> Ibid., p. 205.

<sup>79</sup> See E. Köster, *Studien zur Geschichte des antiken Seewesens*, *Klio Beiheft* 32 (Leipzig, 1934), 73; Lazenby (n. 2), p. 130 says 'perhaps'.

<sup>80</sup> See MP IV 10.87: 'Drift seaweed, wood and other debris may be encountered in the strait [between Skiathos and Magnesia] during NE winds'. See also *ibid.* 10.79 and Heikell (n. 10), p.



tangled with oarblades. But ships at anchor would have their oars inboard; the blades would still project, but above water.<sup>81</sup> He adds (12.2) that the noise of the tangling and bumping was heard by soldiers. I conclude that the moored ships were being guarded through the night by others on patrol, with their marines aboard.<sup>82</sup> Aphetai was indeed a disquieting anchorage. But it was Hobson's choice.

The circumnavigation of Euboia seems to have been ill-considered as well as unlucky. Such are the difficulties that Hignett concluded it never took place;<sup>83</sup> but this disallows the Greek reaction to news of it which Herodotus reports (8.9), and the strategy was sound enough, being consistent with what was done at Thermopylai and probably at Salamis,<sup>84</sup> not to mention the proposal of Demaratos (7.235) to seize Kythera. Unfortunately, Herodotus gives us no detail about the ships, apart from a number for them, 200. Were they all triremes? For speed and coherence they probably had to be, and so they carried their own food.<sup>85</sup> Did they carry soldiers beyond the usual number?<sup>86</sup> Where were they planning to put in? For water they would have to, some time.

The ships chosen for the task got away in mid to late afternoon. They had covered fifty miles of sea already that day. Whether the Greeks saw them depart, north round Skiathos, we cannot say: summer haze may have helped to disguise their passage; so too perhaps the other Persian ships, not yet moored and masking them. They were moving into waters probably known to very few apart from locals like Pammon of Skyros (7.183.3).<sup>87</sup> Few use them now. The Aegean coast of Euboia stretches a good 100 miles from Cape Artemision in the north-east to Cape Kaphereus in the south-east; it is not wholly without beaches and havens, especially close to Cape Artemision: just along from the Cape is Vasilikó and a dozen miles further on is the beach below Ayía Anna, Ormos Peléki.<sup>88</sup> But soon come the cliffs, even more prolonged than those of Pelion, and set more athwart the wind and current,<sup>89</sup> and after 90 miles of them comes the Cabo Doro gap between Euboia and Andros, one of the most dangerous pieces of water in the Aegean.<sup>90</sup> From Kaphereus south-west to Geraistos there is another 20 miles of cliff before the turn north-west for Karystos

227, and in particular Hörhager (n 14), p. 53, n. 32: 'Ein im Wasser triebender Gegenstand folgt jedoch in erster Linie der Strömung, und nicht dem Wind'.

<sup>81</sup> Of several photographs in F. Welsh, *Building the Trireme* (London, 1988), that on p. 205 shows the inboard position of thalamian oars most clearly, but that on p. 275 is more relevant because it shows the ship without its burden of crew aboard.

<sup>82</sup> Nearly the same point was made by Köster (n. 79), pp. 73f. We may reckon that on the second evening when the Greeks in their raid disabled some Cilician ships, the Cilicians were on patrol duty.

<sup>83</sup> C. Hignett, *Xerxes' Invasion of Greece* (Oxford, 1963), app. VI, following K. J. Beloch, *Griechische Geschichte* II.2 (Berlin, 1931), pp. 87–90.

<sup>84</sup> Pace Lazenby (n. 2), pp. 174–5.

<sup>85</sup> Th. 1.48.1 and 3.49.3 show that triremes could carry food in a particular situation; but such moments seem to be very rare.

<sup>86</sup> See 7.184.2.

<sup>87</sup> Pammon is otherwise recorded only as the name of a son of Priam (*Iliad* 24.250). It may not be Greek (I am grateful to Dr D. J. Thompson for this observation), which would bear out what Thucydides says (1.98.2) about the Skyrians. That Pammon was only one of several who helped the invaders is marked by μάλισσα; Powell's (n. 31) classifications of μάλισσα are not satisfactory: for μάλισσα preceding a proper name and modifying it see 2.49.3, 2.50.1, 5.120, and 8.136.2.

<sup>88</sup> See MP IV 10.50 and 51.

<sup>89</sup> See MP IV 10.16.

<sup>90</sup> See MP IV 7.522–5.

bay.<sup>91</sup> From Aphetai to Karystos round Skiathos is at least 130 miles, well over twice the distance from Ayiókambos to Aphetai.<sup>92</sup>

When the storm struck, says Herodotus (8.13), the ships were sailing by the hollows of Euboia; he uses the phrase as if it were a known title. There is no agreement among the ancient authorities, however (they are all at least 400 years later than Herodotus), about where the hollows are. Full details of both ancient and modern theories are given by Mason and Wallace,<sup>93</sup> but without solving the question for Herodotus. Hence the need to ask the other question: how long had the Persians been sailing? If they started in mid afternoon and proceeded at a steady 8 knots<sup>94</sup> in fair weather, and if the storm hit them about midnight (it struck at Aphetai soon after nightfall), they would be halfway down Euboia at the most, with no prospect of a beach for another ten hours. Halfway down Euboia is not far enough for any of its coasts later called the hollows: has Herodotus got the storm on the right night?

Analysis of events since Xerxes left Therma shows a discrepancy in Herodotus' diary of two days between actions on land and actions at sea,<sup>95</sup> most scholars find it convenient to insert some or all of the compensating forty-eight hours before the first Greek attack, giving the circumnavigators time to reach those parts of Euboia variously claimed to be the hollows, and at a more sensible speed and without proceeding all night;<sup>96</sup> but if so, where did they stop over? This is in defiance, however, of Herodotus' record at several points. If the diary is to be adjusted, I would go back to 7.196 and καὶ δὴ τριταῖος, where all scholars agree that there is a problem.<sup>97</sup> The sequence of events at Aphetai, tight as it is, is possible; Herodotus even admits some

<sup>91</sup> The Greek ships at Pogon (8.42.1) and those presumed to be on Aigina (46.1) which did not join Eurybiades at Artemision were not posted to prevent a circumnavigation, nor could the Athenian reserves have done that job had they stayed by Attica, as appointed in the Trozen inscription.

<sup>92</sup> The total length of voyage is not a problem in itself: the famous non-stop voyage from the Piraeus to Mytilene (Thuc. 3.49) was longer. See Morrison and Coates (n. 5), pp. 95–6. But the weariness of these crews would be a huge problem during the final miles under Kaphereus and Geraistos.

<sup>93</sup> H. J. Mason and M. B. Wallace, *Hesperia* 41 (1972), 128–40.

<sup>94</sup> See Morrison and Coates (n. 5), pp. 103–4.

<sup>95</sup> The facts are set out clearly in W. W. How and J. Wells, *A Commentary on Herodotus*, 2 vols (Oxford, 1928), vol. 2, pp. 372–3.

<sup>96</sup> Herodotus points explicitly to only two occasions when triremes were at sea in the night, the night before Salamis (8.70.1) and here; implicitly there is the Greek plan, unfulfilled, to meet the ships circumnavigating Euboia. Sailing at night, especially in a trireme, would not be undertaken lightly.

<sup>97</sup> For τριταῖος see Lazenby (n. 2), p. 123. But the force of καὶ δὴ is relevant, and the phrase needs to be considered as a whole. Powell (n. 31) records the instances of καὶ δὴ under both καὶ and δὴ. Unfortunately, his two lists do not tally, his count is incomplete (he misses 5.67.5), and his classification unsatisfactory. In total (but omitting the disputed 7.10β1) there are 51 instances, of which 39 are both initial and connective in sense, and a 40th, 4.11.2, probably is (see H. Stein, *Herodotos* [Berlin, 1868], ad loc.). That at 7.14, introducing a question in direct speech, stands on its own. The other ten (4.102.1, 7.196, 8.94.3, 9.6, 7β1, 11.2, 48.2, 66.3, 89.1, 102.1: the number of instances from Book 9 is noteworthy) are either non-connective or ambiguous, to adopt the cautious initial classification of J. D. Denniston (*Greek Particles*<sup>2</sup> [Oxford, 1954], p. 248). 7.196 is best paralleled by 9.6 and 102.1. Denniston says (p. 252) of this καὶ δὴ that it 'frequently approximates in sense (particularly in the historians) to ἤδη, though it is always more vivid and dramatic in tone'. I observe that in Herodotus this καὶ δὴ quite often occurs in direct or quoted speech, with a sort of challenge: Xerxes was there within—yes!—two days! I think that Herodotus found no peg on which to hang Xerxes' arrival in Malis and used τριταῖος as it was used to him. If the journey had been planned to take four days, however, then the diaries would tally and surprise at Xerxes' speed would make sense.

pressure (8.12.2). For the ships to be driven on to Eubolia soon after they had set sail, the storm would have to be another north-easter; a south-westerly would have pushed them into open sea.

On the assumption that the circumnavigation was planned seriously, what was the ships' intended first stop? I owe to David Livermore, one of my companions on the voyage of August 1992, the suggestion that they were bound for Skyros.<sup>98</sup> Skyros lies very roughly midway between two options for stopping, which are each, for different reasons, more unlikely than Skyros: either the fleet would stop quite close to its starting point at Ormos Peléki (in which case the storm would not have destroyed them), or they were meant to go on and on to Karystos, arriving well into the next day. Skyros lies about 80 miles from Aphetai round Skiathos; leaving in mid-afternoon and making something less than 8 knots, the ships would reach the good anchorage in the north-east head of Kalamitsa bay<sup>99</sup> just as dawn was breaking; light as they neared land again would be useful.<sup>100</sup> If this is what they were trying to do, and I cannot think of a more sensible course (which is not to say they were taking it), then the storm caught them some time after they came out of the lee of Skopelos, and nothing could save them from foundering at sea or being smashed on the cliffs below Mt Dirphys. As MP IV puts it (10.46), 'Mariners navigating the NE coast of Nisos Évvoia should pay great attention to the probability of being set onshore, especially during NE winds.' Greeks returning from Troy were wrecked on Eubolia's Aegean coast; Herodotus established a theme of reciprocity in the first few paragraphs of his history.

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## APPENDIX

I have examined the instances of ἀκτὴ not only in Herodotus but also in Homer, Pindar, and the tragedians (omitting the fragments in order to avoid inadequacies of context). Herodotus apart, the word scarcely occurs in classical prose: in Th. 4.109.1 it is a proper name for the Athos peninsula, the word marking the length rather than the termination of Khalkidike's eastern prong.

In Euripides the translation 'shore' or 'coast' is always possible and sometimes necessary, while 'headland' or 'cape' is never necessary but sometimes possible. So too in Pindar (over half his instances refer to riverbanks rather than sea coasts); so too in Aeschylus, except that once (*Cho.* 722: ἀκτὴ χώματος) he uses it to distinguish land not from water but from other land. That sense is plainly echoed by Sophocles at *O.T.* 183 (ἀκτὰν παρὰ βώμιον, where Dawe [ed. Cambridge, 1982] says crisply 'ἀκτάν "edge" here, "shore" at 178'), and perhaps at *O.C.* 1049, where the poet's geography is a little vague; but otherwise 'shore' remains always possible and 'cape' never necessary, even at *Ant.* 591 (δυσάνεμοι στόνῳ βρέμουσιν ἀντιπλήγες ἀκταί) and *O.C.* 1240

<sup>98</sup> Curiously, a route via Skyros is scouted by N. G. L. Hammond (*CAH* IV<sup>2</sup>, 550), but in a different context.

<sup>99</sup> MP 10.30 calls it Ormos Aragma, Arazo Road, and Ormos Araxo; Admiralty Chart 2048 uses the two latter names. The bay is guarded by several small islands, whose negotiation in the dark would be perilous. I estimate that up to sixty triremes could lie side by side at the beach's north-west end; there are reefs further east. There is abundant fresh water at the sea's edge a little further east along the beach, as marked on the chart.

<sup>100</sup> Did they have Pammon to thank for it all? If so, Herodotus might have treated him as he did Ephialtes, the traitor at Thermopylai (7.213–4); but perhaps Poseidon and Boreas took him.

(*βόρειος ὥς τις ἀκτὰ κυματοπλήξ χειμερία κλονεῖται*, where Jebb [ed. Cambridge, 1886] translates 'cape' but in his note says 'a shore').

Herodotus' use is thus wholly similar to that of his contemporaries who used the word. In *Iliad* there are six instances (2.395, 12.284, 18.68, 20.50, 23.125, 24.97). All can be translated 'coast' or 'shore' without difficulty, even 2.395 (*ὡς ὅτε κύμα ἀκτῇ ἐφ' ὑψηλῇ . . . προβλήτι σκοπέλω*), where *ὑψηλῇ* adds the vertical dimension ('cliff' or 'scarp' would translate both dimensions at once) and the second phrase does not repeat the first but picks out a feature of it, much as Cape Pori has been picked out<sup>101</sup> on the steep coast of Magnesia in the search for Cape Sepias. Homer's syntactical technique here recalls that common for wounds: *Κύπριδα . . . οὔτασε χεῖρα* (5.458).

In *Odyssey* there are thirteen instances, nine of which (5.82, 151 and 425, 10.140 and 509, 13.234, 15.36 and 24.82 and 378) can be comfortably translated 'coast' or 'shore'. The other four are at 5.405, 10.89, 12.11 and 13.98. At 5.405 we have *οὐ γὰρ ἔσαν λιμένες . . . ἀλλ' ἀκταὶ προβλήτες ἔσαν σπιλάδες τε πάγοι τε*. Here I suggest that the essential contrast is between protected and unprotected anchorages (the Piraeus, for instance, as against Phaleron), and if *σπιλάδες τε πάγοι τε* is taken as a phrase not extra to, but exemplifying, *ἀκταὶ προβλήτες*, all is well: the reefs and spits are the projecting shingle of the beach. This interpretation will then serve for 10.89 (*ἀκταὶ δὲ προβλήτες ἐναντίαι ἀλλήλησιν ἐν στόματι προύχουσιν*) and 13.98 (*δύο δὲ προβλήτες ἐν αὐτῷ ἀκταὶ ἀπορρώγες, λιμένος πότι πεπτηνῖαι*): in the second, height is marked as additional to the horizontal measure by *ἀπορρώγες* (see above on *Il.* 2.395). This leaves 12.11: Elpenor is buried *ὅθ' ἀκρότατος πρόεχ' ἀκτῇ*. Here the adjective has the same function as in the previous example.

I conclude that *ἀκτῇ* is used for an extent of land which is edged by water on at least one side; Aesch. *Cho.* 722 and Soph. *O.T.* 183 (and perhaps *O.C.* 1049) are metaphorical uses. LSJ's selection of *Od.* 24.82, 5.405, and 10.89 with which to start their entry is unfortunate; in effect they incorporate the sense of the accompanying adjectives (*προύχουσα, προβλήτες*) into the sense of *ἀκτῇ* itself. Only under 2. is the adjectival sense stripped out, and the meaning 'tract of land running out into the sea' offered.

<sup>101</sup> See Wace (n. 54), p. 146.