

AMNISOS - HARBOUR-TOWN OF MINOS ? *

In 1928 Arthur Evans was of the opinion that the harbour serving Minoan Knossos was situated at the mouth of the river Kairatos (today Katsambas) about 5 km south of the Palace ¹. Excavations in the decades to follow have brought forward evidence for substantial settlement in the area ². Evans (1928) thought that a road along the western slopes of Kephala and Isopata connected the Palace with this so-called harbour-town ³. According to Evans near the Isopata-ridge this road was joined by another road, which led from the Palace towards Northwest along the line of the modern motor-road ⁴. These routes are not hampered by steep inclines and bends (cf. Pl. XXVIII, a).

The ancient literary texts relating to the port of Minoan and early archaic Knossos bring another site into focus: Amnisos, the region at the mouth of the homonymous river, that is called Karteros today.

Hom. Od. 19, 190:

στῆσε δ' ἐν Ἀμνισῶ, ὅθι τε σπέος Εἰλειθυίης,
ἐν λιμέσιν χαλεποῖσι, μόγις δ' ὑπάλυξεν ἀέλλας.
αὐτίκα δ' Ἴδομενῆα μέταλλα ἄστυδ' ἀνελθών.

Strab. X 4,7-8:

Ἔχει δ' ἐπίνειον τὸ Ἡράκλειον ἢ Κνωσσός. Μίνω δέ φασιν ἐπινείῳ χρήσασθαι τῷ Ἀμνισσῶ,
ὅπου τὸ τῆς Εἰλειθυίας ἱερόν. Ἐκαλεῖτο δὲ Κνωσσός Καίρατος πρότερον, ὁμώνυμος τῷ
παραρρέοντι ποταμῶ.

* Cf. the forthcoming volume by J. Schäfer *et al.*, *Amnisos*.

1 EVANS, *PM* II (1928), 229 ff. Cf. L. MARIANI, *MonAnt* 6 (1895), 222. Further J. CHATZIDAKIS, *ArchDelt* 2 (1916), 168.

2 S. EVANS, *PM* II (1928), 234 ff., 254 ff., Fig. 131 A after p. 230; Ch. PETROS, *Ἐπετερίς Κρητικῶν Σπουδῶν* 2 (1939), 535 f.; N. PLATON, *RA* 1948 (*Mélanges Charles Picard*), 835 ff.; *KretChron* 5 (1951), 385 ff.; 9 (1955), 565; 10 (1956), 416, 418; 11 (1957), 336, 118; 13 (1959), 385; N. PLATON-K. DAVARAS, *ArchDelt* 17 (1961/62), *Chron* 289; St. ALEXIOU, *PraktArchEt* 1955, 311 ff.; *KretChron* 18 (1964), 283; *ArchDelt* 20 (1965), *Chron* 552; 22 (1967), *Chron* 487; A. LEMBESI, *PraktArchEt* 1967, 195 ff.; St. ALEXIOU, *Ὑστερμινωικοὶ τάφοι λιμένος Κνωσοῦ (Κατσαμπᾶ)* [1967], *passim*; *PraktArchEt* 1969, 238; *KretChron* 22 (1970), 518; 24 (1972), 491; *ArchDelt* 25 (1970), *Chron* 455; 26 (1971), *Chron* 492; 27 (1972), *Chron* 621; *ArchEph* 1970, 1 ff.; A. PAPAETHYMIU, *KretChron* 25 (1973), 375 ff.; A. KANTA, *The Late Minoan III Period in Crete. A Survey of sites, pottery and their distribution* (SIMA LVIII, 1980), 26 ff.

3 EVANS, *PM* II (1928), 153 f., 230 fig. 131 A; S. HOOD - D. SMYTH, *An Archaeological Survey of the Knossos Area* ², *BSA-Suppl.* 14 (1981), 15.

4 EVANS *PM* II (1928) and map p. 546/547; HOOD - SMYTH, *loc. cit.*

(Herakleion was founded not before the 4th cent. BC. The second part of the passage derives from Ephoros and/or the passage in the Odyssey).

In 1932 already Spyridon Marinatos declared Amnisos to be the Epineion of Knossos⁵. After Marinatos' discovery of the 'Villa of the Lilies' and of other Minoan buildings at the shore of Amnisos (1932-1934) [cf. Pl. XXVIII, b: "A" = Villa of the Lilies, "B" = fountain-building, "C" = 'Megaron', "D" = 'Sanctuary of Zeus Thenatas']⁶, Evans conceded in 1935 to Amnisos the designation "Eastern Haven of Knossos"⁷. Later, in 1963 and in 1967, Stylianos Alexiou excavated at four different places at the shore of Amnisos west of the Paliochora-Hill remains of substantial Minoan buildings ranging from LM I A to LM III B (cf. Pl. XXVIII, b "E", "F", "G", "H")⁸. Then it became obvious that Amnisos, i. e. the stretch between the mouth of the Amnisos-river and the area at the Paliochora-Hill, had been a significant site from MM III B to LM III B. The importance of Amnisos during the Late Bronze Age, demonstrated by Greek literary texts and archaeological excavations, finds support in contemporary Late Bronze Age written testimonies:

"Amnisos" is mentioned thirty-seven times on the Linear B clay-tablets from the Knossos archives in a context pointing to Amnisos as a settlement closely linked with the administration of the LM III Palace of Knossos⁹. It is remarkable, however, that it is not mentioned in relation to maritime matters.

The Aegean sea, though more indirectly, appears on the inscription in the funeral temple of Amenophis III first published by Kitchen in 1965. On this inscription Amnisos represents a link in a chain of Cretan toponymes and is placed immediately after Knossos. Evidently, the sequence of the place-names is determined by an itinerary for trading-ships¹⁰.

What are the topographical, nautical and architectural aspects in favour of the theory that Amnisos was the main harbour site and consequently the Epineion for Bronze Age Knossos?

The bee-line distance from Knossos to Amnisos is the same as that from Knossos to the mouth of the Kairatos. But between the Amnisos-river and the Palace there rises the steep limestone ridge of the northern spur of the Profitis Ilias as an apparent obstacle to such a close connection. A route easy to travel on was projected by W.-D. Niemeier and others (1985) into the terrain leading to Knossos, but it is not quite as comfortable as the connection between Knossos and its so-called harbour-town at the mouth of the Kairatos. One branch of this route leads to the western part of the plain of Amnisos, another branch directly to its eastern part (cf. Pl. XXIX, a)¹¹. Were the advantages of Amnisos important enough to attract the interest of Minos to use it as his main port? The answer comes from a comparative examination of the natural structure of the shore at the two points (The observations I present here need complementation and precision from the field of science).

A reconstruction of the Late Bronze Age aspect of the coast at the mouth of the Kairatos has never been seriously tried. Today the shore east of the steep slope of the old town of Herakleion up to the rocky drop of Nea Halikarnassos is covered with modern structures and is probably artificially filled up in many places (cf. Pl. XXIX, b). The natural coastal line is undefinable. However, the legend "sabionara", i. e. sandy beach, is printed along this stretch

5 S. MARINATOS, *PraktArchEt* 1932, 76 ff., 94.

6 *PraktArchEt* 1933, 93 ff.; 1934, 128 ff.

7 EVANS, *PM* IV (1935), 1002.

8 St. ALEXIOU, *ArchDelt* 19 (1964), *Chron* 439 f.; 23 (1968), *Chron* 402 ff.

9 St. HILLER, *Kadmos* 21 (1982), 33 ff.

10 K.A. KITCHEN, *Orientalia* NS 34 (1965), 5 ff. W. HELCK, *Die Beziehungen Ägyptens und Vorderasiens zur Ägäis bis ins 7. Jahrhundert v. Chr.* (1979), 29 ff.

11 In J. SCHÄFER *et al.*, *Amnisos*.

of the shore on the map by F. Basilicata of 1614 (cf. Pl. XXIX, c) ¹². As to the character of the Late Minoan beach in this area one can only presume that it was relatively flat and sandy, at least west of the river mouth. The total length of this beach is approximately 800 m. The mouth itself may have been only a little wider than today. The rather steep lower course of the Kairatos valley and the deep water in front of the river mouth do not favour the theory of a comfortably wide funnel-shaped entrance in the time around 1600 BC. This sandy beach with a maximum length of 1 km was protected against the East wind by the rocky promontory of Nea Halikarnassos, but was completely unprotected against the northern and eastern gales prevailing by far in this region. All the same in the absence of a better choice a sandy beach like this could serve as a landing-place for flat-bottomed ships. In the classical and later epoques the technical means were of course more advanced and the building of breakwaters, piers and harbour-dams resulted in a completely different lay-out for landing manoeuvres as is demonstrated by the Venetian harbour below Candia, which doubtlessly had a hellenistic forerunner (Pl. XXIX, c).

In 1928 Evans characterizes the beach at the mouth of the Kairatos as follows: "As a whole, ..., the natural conveniences of the place as a seaport were not such as would have led us to expect such a flourishing community. The protection afforded by the headland to the East was not itself of great value, since the wind in this part of Crete blows rarely from that quarter. On the other hand, the Western horn of the bay gave but little shelter against the prevailing North-West gales" (cf. Pl. XXIX, b) ¹³.

Amnisos has a slightly concave sandy beach extending between two rocky headlands at a length of 1900 m, more than twice the length of the Venetian sandy beach at the mouth of the Kairatos near Herakleion (Pl. XXVIII, b and XXIX, b). The western headland is a rocky promontory vertically dropping into the sea. Its elevation is about 30 m above sea-level. To boats mooring or landing in the western part of the bay it offers effective protection against the North-West wind, as the Venetian map of Basilicata demonstrates (Pl. XXX, a-b). In his report (1630) on the beaches ("Relazione delle Spiagge") he refers to this beach: "The beach of Karteros ... one mile (miglio) long; there is water from the river, and one lands with the prow" ¹⁴.

In the later part of the Bronze Age the outlines of the shore were even more favourable for ships running up to the beach. At point E (Pl. XXVIII, b) an ashlar building erected in the LM I phase is now partly submerged ¹⁵. The surface of its foundation blocks lies 1 m below sea-level. This building - not a pier or some kind of marine construction - must have been set up in a place protected from the breakers at some distance from the shore. Simple calculations based on data for sea-level change are not sufficient for determining the minimum distance of this building from the coastal line at the time of its construction ¹⁶. One of several difficulties is that we have for this site no data at our disposal about the relief of the sea-bottom in the past. This has to be part of future research in the bay of Amnisos. Here we need the support of the geologist to analyze subsoils, sea currents, migrations of the river bed and the formation of depositional platforms at the river mouth. Of course, even at this early stage of research a shift of the coastal line is out of question. In our century the Karteros (Amnisos) has still been a dynamic river driving water-mills. Venetian texts, especially F. Basilicata (1630), indicate this

12 F. BASILICATA, *Città, Fortezze, Castelli, Siti forti, Spiagge, Porti e Redoti del Regno di Candia* (1630 ?), in S. SPANAKIS, *Μνημεία τῆς κρητικῆς ιστορίας* V (1969), 321 ff., Pl. 20.

13 EVANS, *PM* II (1928), 238.

14 F. BASILICATA, *Relazione* (1630), in SPANAKIS, *op. cit.*, 144, 2-4.

15 St. ALEXIOU, *ArchDelt* 23 (1968), *Chron*, 402 ff., Pl. 363.

16 V. on the problems: N.C. FLEMMING - P. PIRAZZOLI, "Archéologie des côtes de la Crète", in *Histoire et Archéologie, Les Dossiers* 50 (fév. 1981), 56 ff., 74 ff.; D. KELLETAT, "Eine eustatische Kurve etc.", in *N. Jb. f. Geologie u. Paläontologie* (1975), Heft 6, 360 ff. Cf. J.W. SHAW, *Hesperia* 55 (1986), 267 incl. n. 106, on the situation at Kommos.

for the past centuries very clearly¹⁷. The river has created a large floodplain, discernible at least until 400 m south of its present mouth. Empirical data from the Eastern Mediterranean show that floodplains and depositional platforms are capable to push the shore forward into the sea. This happens despite the gradual rise of the sea-level provided the river flows turbulently enough. We can observe this at a larger scale on the West coast of Asia Minor.

Therefore we draw the conclusion that about 1600 BC, when the recent rise of the sea-level began, the mouth of the Amnisos was situated further inland. However, at point E - the site of the submerged Minoan building - the shore was definitely further to the North than today (Pl. XXVIII, b). On the other hand, it is unlikely that in the Late Bronze Age the islet of Monocharako was connected with the mainland, because the immediately adjacent sea-bottom lies 5-6 m below today's sea-level. All the same its function as a breakwater situated not too far from the Bronze Age beach should be taken into consideration. It is doubtful whether the short ravines East of the Paliochora-Hill had any effect on the formation of the beach-line. At least one of them was still carrying water in the last century and appears on the Venetian maps as a rivulet¹⁸.

Even without exact data for the reconstruction of the Bronze Age beach we can be sure that the outlines of the bay during the Late Minoan period were more irregular than they are now. This is indicated in the topographical map by the hypothetical ancient shore-line marked by the dotted line (Pl. XXVIII, b).

Centuries after the fall of Mycenaean Knossos two factors still favoured the landing of "geometric" ships at Amnisos: firstly, the existence of at least one bay protected against the prevailing winds; secondly, a shallow long shore apparently unhampered by cliffs or rocks. In addition to this the bay of Amnisos was easily identifiable from afar for ancient navigation. The eye caught easily the island of Dia, the Kakon Oros, the headland East of Nea Halikarnassos, then the islet of Monocharako and Paliochora.

What, then, stands for the homeric "χαλεποὶ λιμένες" (difficult harbours) ?

In Homer it is a hapax legomenon. Consequently it requires a specific interpretation and cannot be regarded as a rhapsodic formula. Reading the passage in its context it becomes conceivable that the poet describes the generally unfavourable harbour situation in this part of the Cretan coast where Odysseus was driven to by the gales from Cap Malea. Another possible interpretation of the "χαλεποὶ λιμένες" may be the intention to contrast them with the idyllic harbours of the Phaeacians at Scheria (Od. 6, 262). The characterization conveys a dramatic tint to the arrival of the hero in Crete whichever way one explains it, and it serves the epic style. In any case the bay of Amnisos remains the least dangerous harbour site in the proximity of Knossos.

We may compare the Minoan harbour at Kommos¹⁹ in southern Crete with the harbour at Amnisos. Indeed, the location of the "New Palace"-style building at point D in Amnisos (Pl. XXVIII, b) and the location of the contemporary building J/T at Kommos betray a certain similarity. Both buildings are situated at the base of a steep slope on the flat shore. Both buildings are alike in quality. In both cases a small rocky islet lies about 350 m offshore, Monocharako at Amnisos, Papadoplaka at Kommos. J. W. Shaw thinks it possible that in the Late Minoan period Papadoplaka was linked by a partly submerged sandy stretch with the coast²⁰. At Amnisos we are not at all sure whether such a link with Monocharako existed.

17 Cf. BASILICATA (*supra* n. 14), 34, 3-6; 144, 2-4.

18 Cf. BASILICATA (*supra* n. 14), Pl. 23.

19 V. already EVANS, *PM* II (1928), 86 ff., Fig. 41 and 42. New extensive excavations by J.W. SHAW, *Hesperia* 55 (1986), 219 ff., with ref. to earlier reports *loc. cit.*, n. 2. Cf. J.W. and M.C. SHAW *et al.*, in *Scripta Mediterranea* 6 (1985) (Special issue, ed. A. PERCIVAL - J.W. and M.C. SHAW).

20 V. J.W. SHAW, *Hesperia* 51 (1982), esp. 193 ff.

A minimum number of buildings is needed even for a Minoan harbour. Of course we do not expect piers and dams enclosing or protecting a port. But a Minoan harbour of some importance - as Amnisos seems to have been - could not dispense with shipsheds for the winter, store-houses for merchandise, some kind of courtyard and an edifice for official use. This has been demonstrated by the excavations at Kommos, which was a harbour open to trade with the Levant and served Agia Triada and Phaistos. We should grant Amnisos equally far reaching connections and a similar engagement. I only have to remind you of the testimony of the New Kingdom inscription from Thebes.

Sooner or later excavation ought to be resumed at Amnisos. We are eager to learn whether the building in Area D will show more elements comparable to the Minoan architecture at Kommos.

At Kommos new activity begins in the post-minoan period around 900 BC with a protogeometric temple and goes on for centuries. The temple was built on top and within the Minoan remains ²¹. At Amnisos the ashlar building in Area D was deserted after approximately 1200 BC, and at some date not long before 800 BC a cult was installed in its ruins and a large quantity of offerings, animals and objects, were burnt at a place, which looks like an ash altar. The cultic life comes to an end in the first century BC. Either from the beginning or from some later date on this cult was associated with Zeus. Hellenistic inscriptions from this area testify Knossian tutelage over the sanctuary. One wonders whether there is some specific pattern behind the analogies between Kommos and Amnisos and whether the sanctuaries at these opposite coasts indicate for the 9th century BC renewed harbour activities under divine protection.

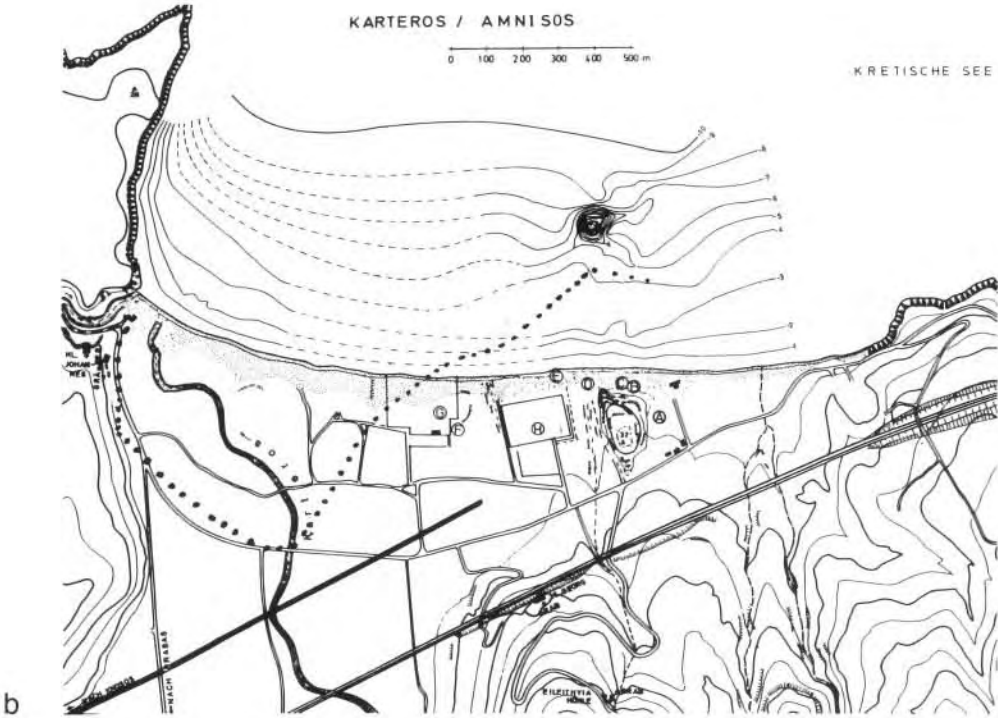
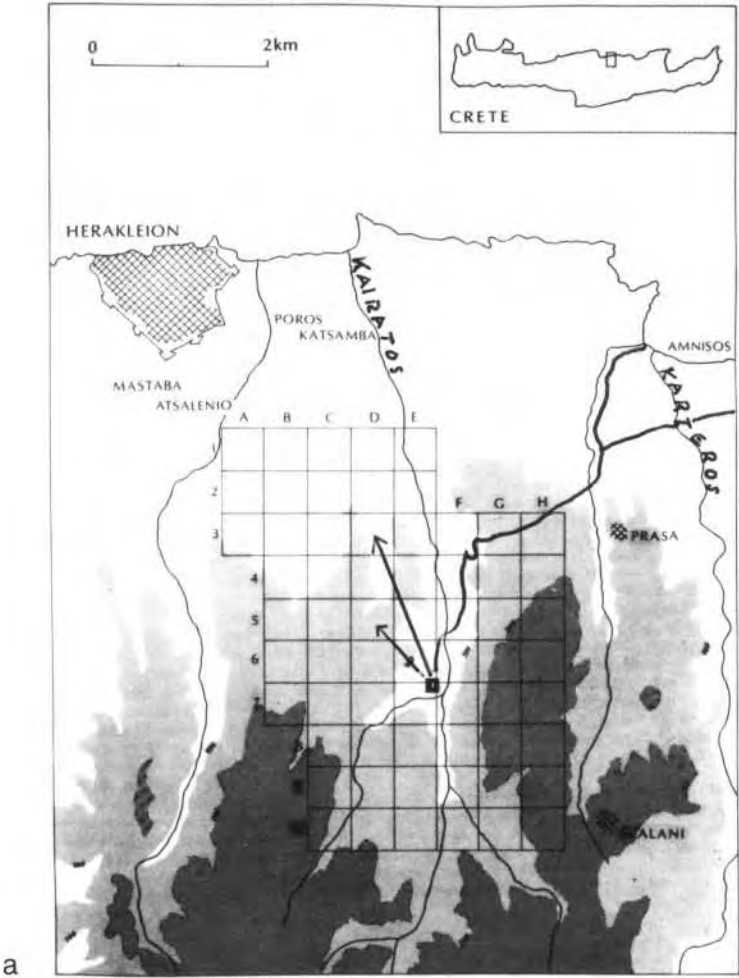
In this paper I have presented to you arguments in favour of Amnisos being the main harbour of Minoan and Mycenaean Knossos. I only touched the problem of the ideal topography for prehistoric Aegean harbours. The reconstruction of the ancient coastal line is a prerequisite in this field. Research of this kind requires the combination of archaeological with geomorphological, subsoil and oceanographic studies.

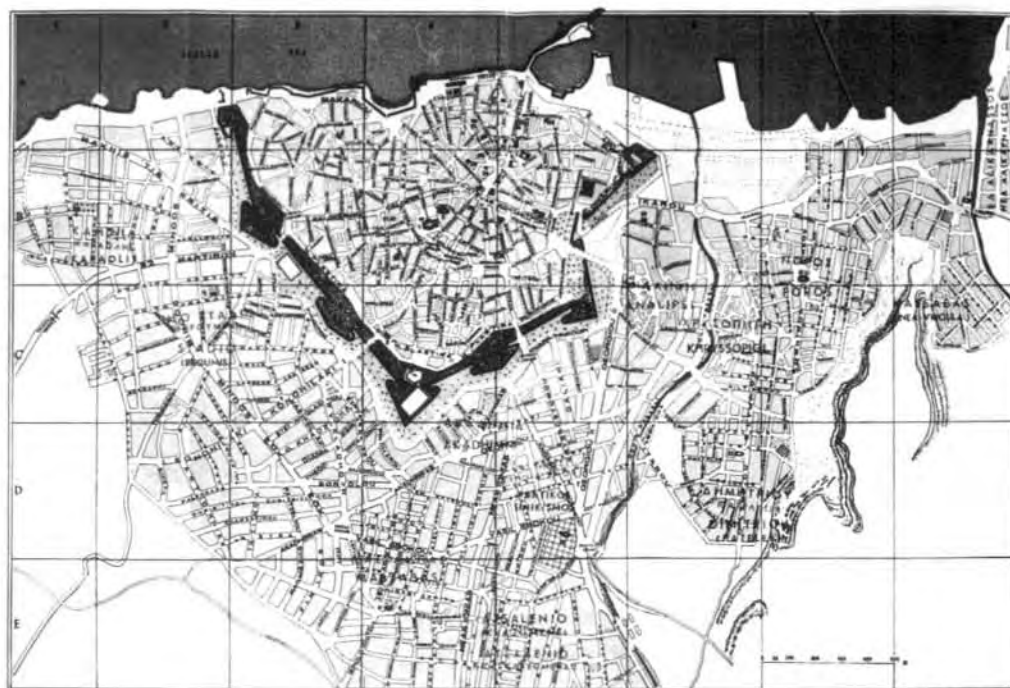
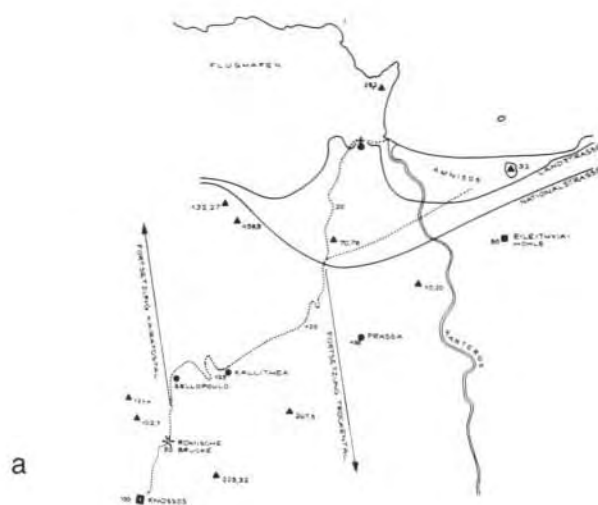
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21 Cf. esp. J.W. SHAW, *Hesperia* 55 (1986), 222 ff., fig. 2; *AJA* 93 (1989), 165 ff.

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- Pl. XXVIII, b : Amnisos (Karteros) 1985. Dotted line : Hypothetical coast-line in the 2nd millennium BC. Broken and solid black lines : Possible routes to Knossos, cf. Pl. XXIX, a.
- Pl. XXIX, a : Sketch-map showing possible routes Amnisos - Knossos.
- Pl. XXIX, b : Modern Herakleion (after S. SPANAKIS, *Crete* [1964], p. 120).
- Pl. XXIX, c : Candia by F. Basilicata, 1614 (after S. SPANAKIS [*supra* n. 12], Pl. 20). Arrow : "Sabionara".
- Pl. XXX, a : Karteros (Amnisos) by F. Basilicata, ca. 1630 (after S. SPANAKIS [*supra* n. 12], Pl. 23).
- Pl. XXX, b : Western part of the bay of Karteros (Amnisos), detail of Pl. XXX, a.

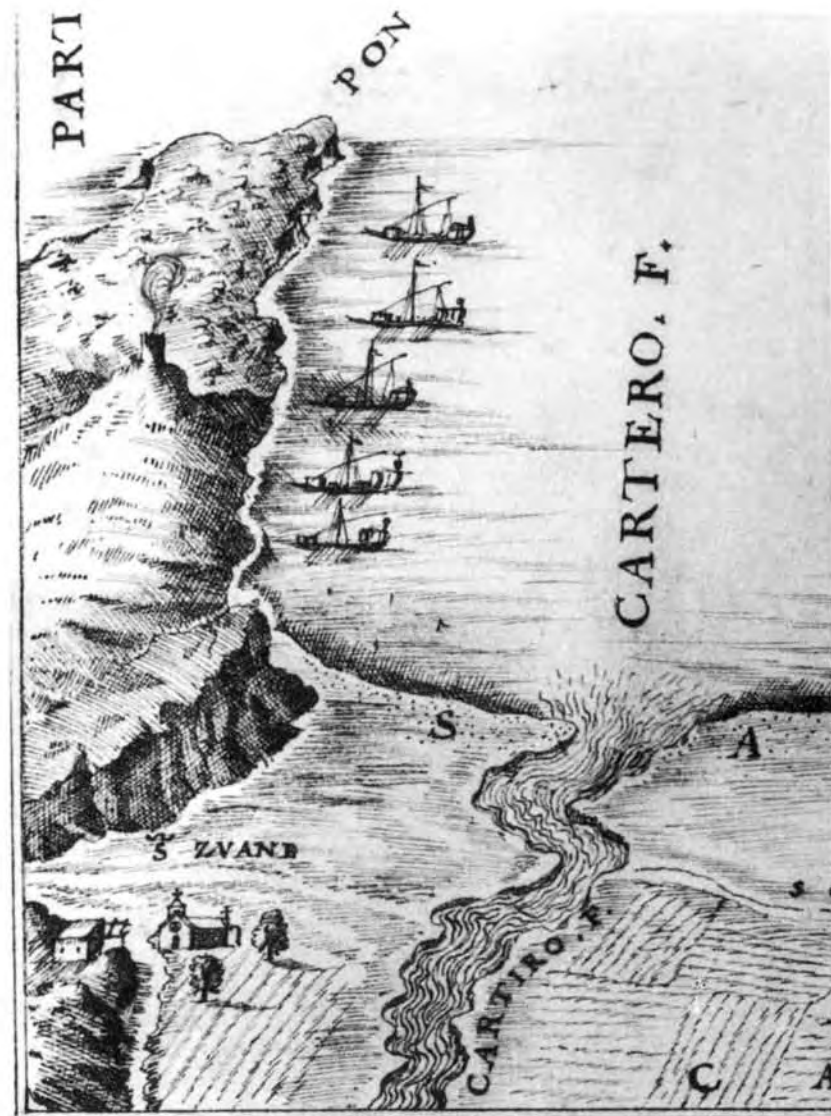




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