

Periodical notes, continued from p. 106

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Ancient fish-tanks at Lapithos, Cyprus

1. Introduction

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In the years 1957-1959 the Archaeological Survey Branch of the Department of Antiquities of Cyprus carried out a survey in a large area west of Kyrenia town on both sides of the Kyrenia mountains¹. In one place on the sea-shore at the east end of the ancient city of Lapithos a complex of fish-tanks were noticed; these were duly recorded, drawn and photographed. As far as I am aware these fish-tanks remain unpublished, but were briefly mentioned by Sakellarios, 1890: 142 and Boustron 1884: 19; *Bull. Corres. Hell.*, 84, 1960: 299, fig. 78.

Lapithos (also Lapethos) was one of the ancient kingdoms of Cyprus. It lies on the north coast of the island and occupies the site east and north-east of the monastery of Acheiropoietos, due north of the village of Karavas (Fig. 1). The site is better known as Lampousa, which is the well known place where the remarkable 'treasure of Lampousa' was found at the beginning of this century. It may be recalled that this treasure consisted of numerous silver trays and spoons and gold jewellery, often with precious stones, distributed today between the Metropolitan Museum of Art of New York, the British Museum and the Cyprus Museum. For a recent study see Stylianou & Charmanta, 1969. For other references see also *Real-Encyclopädie s.v. Lapithos*.

The ruins of Lapithos cover a large area along the sea-shore. Substantial remains of its harbour, in particular the breakwaters survive to the present day and the city-wall can be traced for most of its course (Fig. 1). The necropolis extends to the east. The city-site extends along the sea-shore for a considerable distance but also inland. A part on the inland side lies under cultivation, the rest is now a field of ruins overgrown with scrub, especially the caper plant. A rocky eminence about the centre of the city may have been its acropolis.

The site has been badly damaged by looters in search of stone and treasure.

It appears that there was originally a rocky ridge running parallel to, and at a short distance from the sea. It began at the rock-cut chapel, probably a tomb, now standing on its own, a good landmark to the east of Acheiropoietos monastery, and stretches east past the acropolis, about halfway, then eastwards again past the Troulli hill to reach the east circuit of the city-wall of Lapithos. In this mass of rock there were chamber tombs - a few are still visible - of an undetermined date but probably before the Hellenistic period. This indicates that the earlier city more likely occupied the eastern part extending from the acropolis down to the sea on the north and to the Troulli hill on the east. Much of the ridge especially to the west had been quarried, then inhabited, perhaps as a result of the expansion of the city in Hellenistic and later times.

Very little survives in the way of monuments and only minor excavations have been carried out on the city-site. In 1913 John Myers investigated part of the acropolis (Myers, 1940-45: 72-8). In 1915 Menelaos Markides (1915: 11-12) carried out a small excavation at Troulli hill, due east of the acropolis; the results in both cases were rather disappointing.

The upper part of the acropolis is of solid rock deeply dissected by house-basements with rock-cut doors and staircases; there are chamber tombs on the eastern face and deep quarries on the northern. There is no perceptible stratification anywhere for the later quarries have cut away everything earlier. From Myers' excavations, however, some very interesting results were obtained; in particular it was established that a coastal town was already in existence on this site during the Late Bronze Age.

The results of the excavations on the Troulli

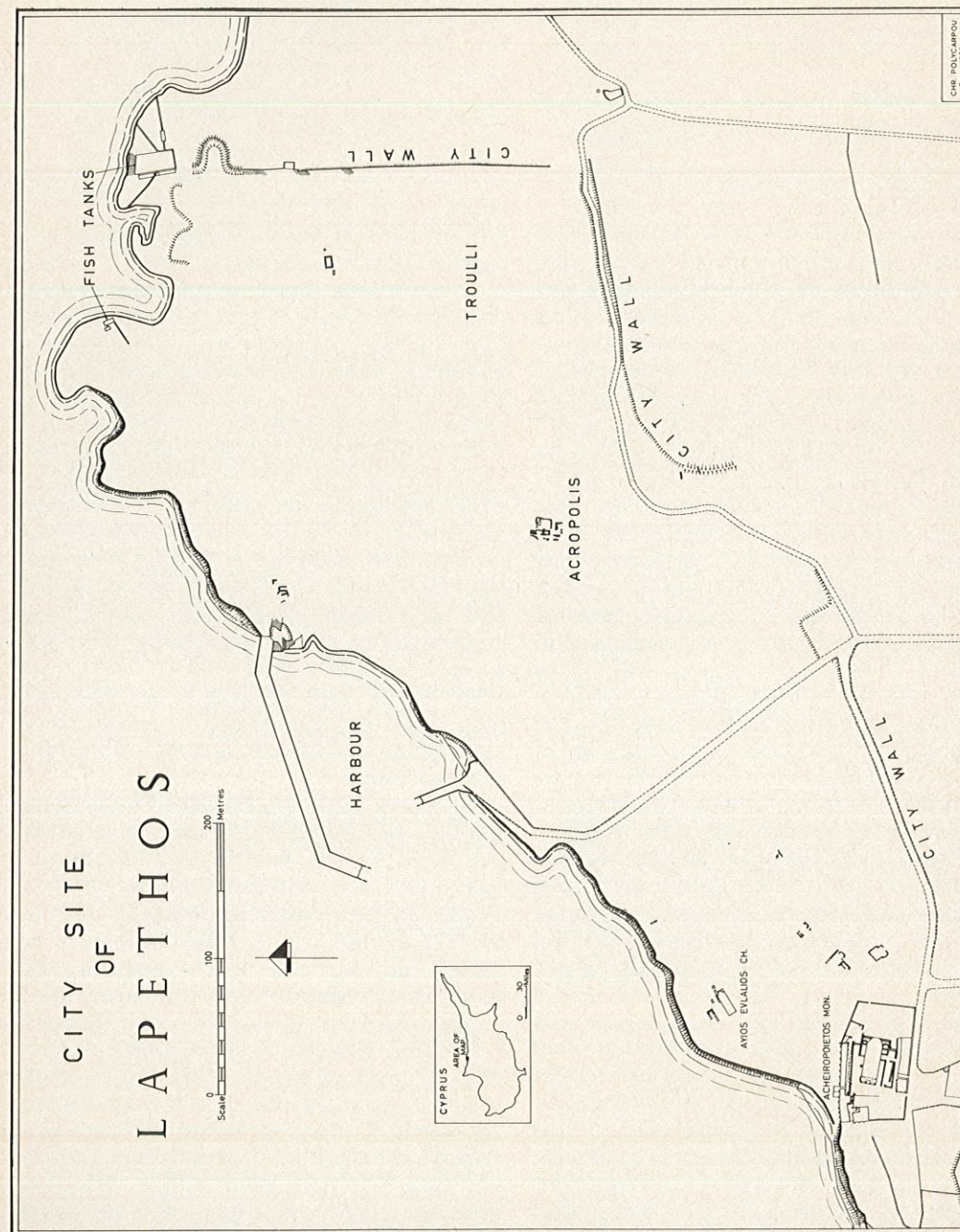


Figure 1. Map of the Lapithos site.

hill were much the same; chambers cut in the solid rock and rubble walls. One such chamber had a long, thick wall resting on solid rock. Opposite this wall, the rock, 11 m high, had its sides cut straight so as to form the parallel wall of a long and narrow chamber with the door at the broader side, opening on to a small anti-chamber.

Probably the best preserved remains of Lapithos are those of the harbour, where both the ancient breakwaters still survive to a considerable length (Fig. 1). The western arm measures about 155 m; it overlaps the northern one which is much shorter, measuring about 40 m. In this way a small but safe harbour was created, protected from the north and west winds. This is undoubtedly the anchorage for small craft mentioned by Strabo (14, 682, 6, 3). Both breakwaters were recently reinforced with new blocks of stone in order to make the ancient harbour a safe fishing shelter used by present day local fishermen.

The other interesting remains at Lapithos are the group of fish-tanks (Fig. 2) which lie immediately outside the city-wall on the east of the city right on the edge of the rocky coast. Cut in the solid rock they communicate directly with the sea or with one another by a system of channels. The larger one, Tank 1, had a superstructure of an elaborate construction, part of which survives (Fig. 5). There is no evidence for their date but they should date from Graeco-Roman times, when such sea-fish tanks were popular throughout the Roman Empire (Daremberg & Saglio, 1873, s.v. Vivarium; Pritchard, 1971).

From inscriptions we learn that there was a Gymnasium (Dittenberger 1903: 583) but nothing is known of its location; from literary sources we hear also of the existence of a theatre but again nothing is known of its site (Lipsius & Bonnet, 1903: 298). It seems very strange that, as yet, no archaeological evidence has been forthcoming about the existence of sanctuaries did exist^[2]; and we know very little of the worship there of a particular deity^[3]. Lapithos is one of the Cypriot cities where *theorodokoi* from Delphi were sent (early 2nd century BC, Robert, 1939: 154). According to epigraphical evidence quinquennial games were held at Lapithos; these were known as the

Actaeon games, held in celebration of the victory at Actium (Mitford, 1947: 229; No. 118).

Lapithos was traditionally founded by Praxandros from Laconia in the Peloponnese. We have already seen that the site was inhabited during the Late Bronze Age and this accords well with its traditional foundation. In historical times Lapithos was one of the kingdoms of Cyprus extending its power over a large area including the part south of the Kyrenia mountains, especially land at Larnaca *tis Lapithou*^[4]. Settlements dating from the Neolithic, the Early Bronze Age, the Middle Bronze Age and the Geometric period have been located higher up in the modern villages of Karavas and Lapithos (Gjerstad, 1934; Pieridou, 1964: 114–29) but the ancient city itself does not appear to date before the Late Bronze Age.

Very little indeed is known of the history of Lapithos. Its name appears for the first time in 312 BC, when its king Praxippos, suspected of being on the side of Antigonos, was arrested by Ptolemy. From coins, however, we know the names of some of its other kings of the 5th and 4th centuries BC, and the name of Lapithos is mentioned by Skylax, the geographer (mid-4th century BC). Thereafter the city is frequently mentioned by other authors (see in particular Hajjiioannou, 1971–75).

To Lapithos are attributed coins of the mid-4th century BC with Phoenician legends and heads of Athena. Some of them name a king Sidqmelek, thus indicating temporary Phoenician rule at Lapithos. This temporary Phoenician rule, however, does not prove the existence of Phoenician settlers in that city. It simply explains the many attempts made by the Persians to use the Phoenician minority in an effort to orientalize the island, an attempt that failed completely. One of its kings was Demonikos; this king previously attributed to Kition is now said to be king of Lapithos. (Schwabacher, 1947; Robinson, 1948; Mathiopolou-Tornaritou, 1972).

Lapithos seems to have flourished mainly from the Archaic period down to Graeco-Roman times. The two perennial springs, both called *kephalovryso* at Lapithos and Karavas, and the fertile strip of land below, are among the richest lands in the island. Today the whole area around is planted with lemon trees. The wealth

of ancient Lapithos may be due also to overseas trade to judge by its harbour. In early Christian times the city became the seat of a bishop but it was gradually abandoned after the first Arab

raids of 647 AD. After the final abandonment of the city the name has been transferred higher up the hill, to the modern village of Lapithos mentioned above.

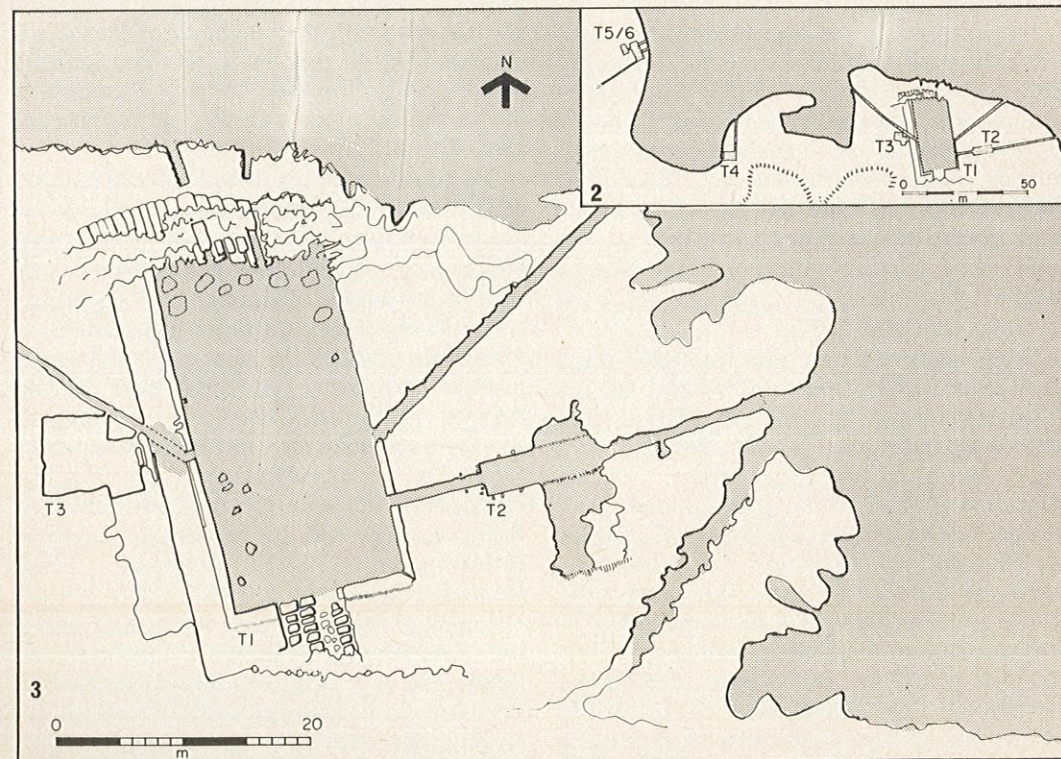
2. The fish-tanks

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The complex of fish-tanks (piscinae) at Lapithos lies on the beach to the east of the harbour remains of the ancient city. These are in three separate groups (Fig. 2). The largest group

(Fig. 3) comprising T 1, T 2 and T 3 are to the east. To the west is T 4, and further still to the west on the other side of a small bay is the linked pair of tanks T 5 and T 6. Between



Figures 2 and 3. 2. Plan of area. 3. Plan of east group.



Figure 4. T 1 looking north.

T 1-2-3 and T 4 there is an area of stone quarrying and possibly some additional partially completed tanks.

T 1 (Figs 3 and 4) is rectangular measuring 27 x 14 m. It is wholly rock cut, except for a small part of the south-east corner, a platform

on the south, and an elaborately constructed superstructure around the inlets from the sea on the north. Its average depth is 0.85 m and in addition to the northern inlets, the tank is linked to the sea by three long straight feeder channels, two on the east and one on the west.

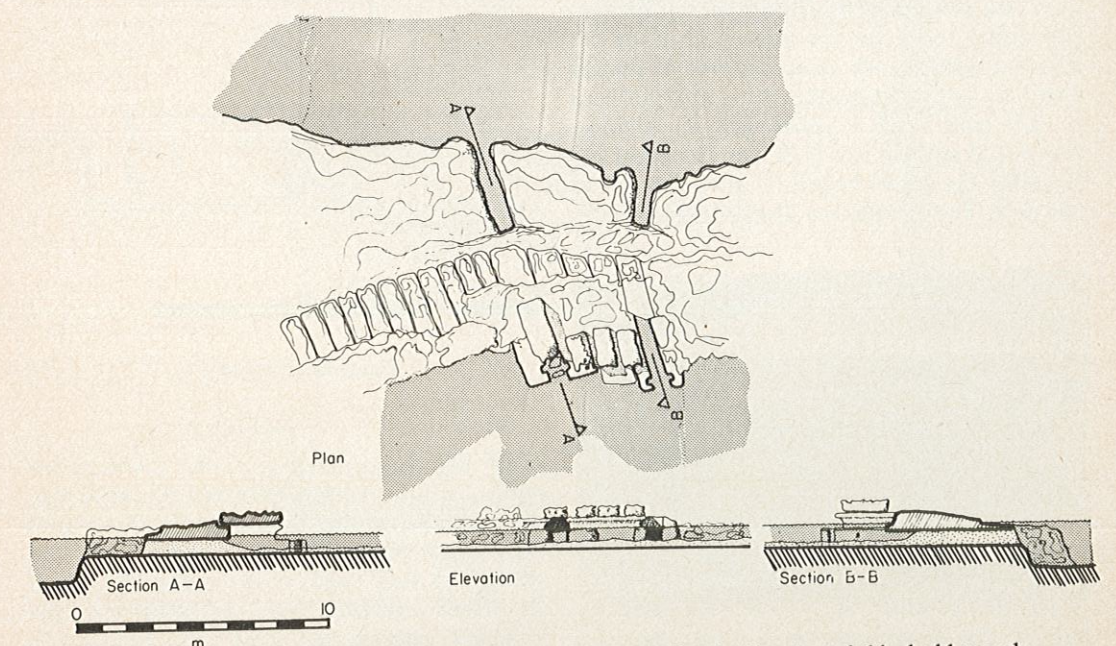


Figure 5. T 1 - detail of tunnelled channels at north end of tank. Note tunnels blocked by sand.

The south-east feeder is interrupted midway along its length by T 2, and T 3 is connected to the west feeder. A characteristic of all the feeder channels is that they contain sluice gates for the control of water flow. These sluice gates are formed by sliding stone slabs held in position by slots cut into the sides of the channels. Some of the stone slabs still remain.



Figure 6. One of the two tunnelled feeder channels at the north end of T 1. The sluice stone can be seen slightly dislodged.

The perimeter of T 1 has an elevated plinth or walkway, and the whole length of the west side is flanked by a shallow ditched cutting with a rock cut plinth on the other side. The north inlets from the sea and their associated structures, are well preserved (Figs 5 and 6). The two inlets start from the sea as deep channels cut into the vertical rock face; continue as tunnels under the masonry superstructure, and terminate in the tank with a sluice gate in each. A substantial sea wall was built over the inlets and extended the whole length of the north side of the tank. The foundation blocks laid in header

fashion still remain in position. This architectural detail relates well with Varro's account (iii 17) of one Hortensius who 'would run a tunnel from his ponds into the sea, and throw up a mole, so that the tide might run into the pond and back to the sea twice a day – and cool off the ponds'. The tank is planned on a

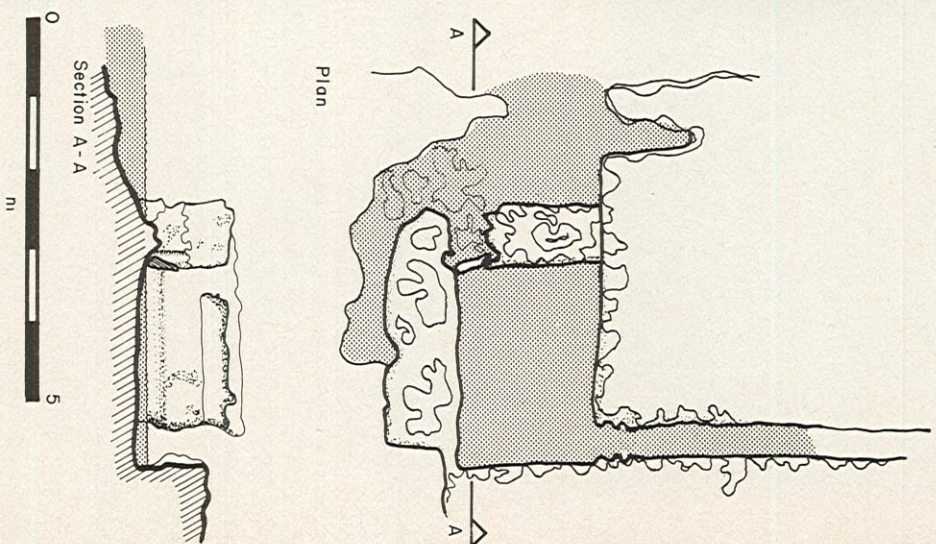


Figure 8. Details of T 4.

NNW axis corresponding to the predominant wind. One of the inlets maintains this direction, whereas the other has been angled more towards the north. This variation, together with the strong sea wall, suggests the system by which the tanks operated. The angles of the inlet channels indicate that these were intended to face the waves from whichever angle they were



Figure 7. One of the many clefts cut into the stone surround of T 2.

likely to come, varying from NNW to due north. The high sea-wall would protect the tank and workers from the surge of the waves. The sea rushing through the inlets would be impelled towards the furthest parts of the tank. The three other channels are likely to act as outlets and sometimes as supplementary feeders. A constant change of water would be maintained by the systematic damming and undamming of the different sluice gates related to varying winds, and small tidal changes. During the time of the survey, the water level in the tank was observed to vary never more than 0.12 m in the course of 24 hours.



Figure 9. T 4 showing short outlet and sluice stone in position.

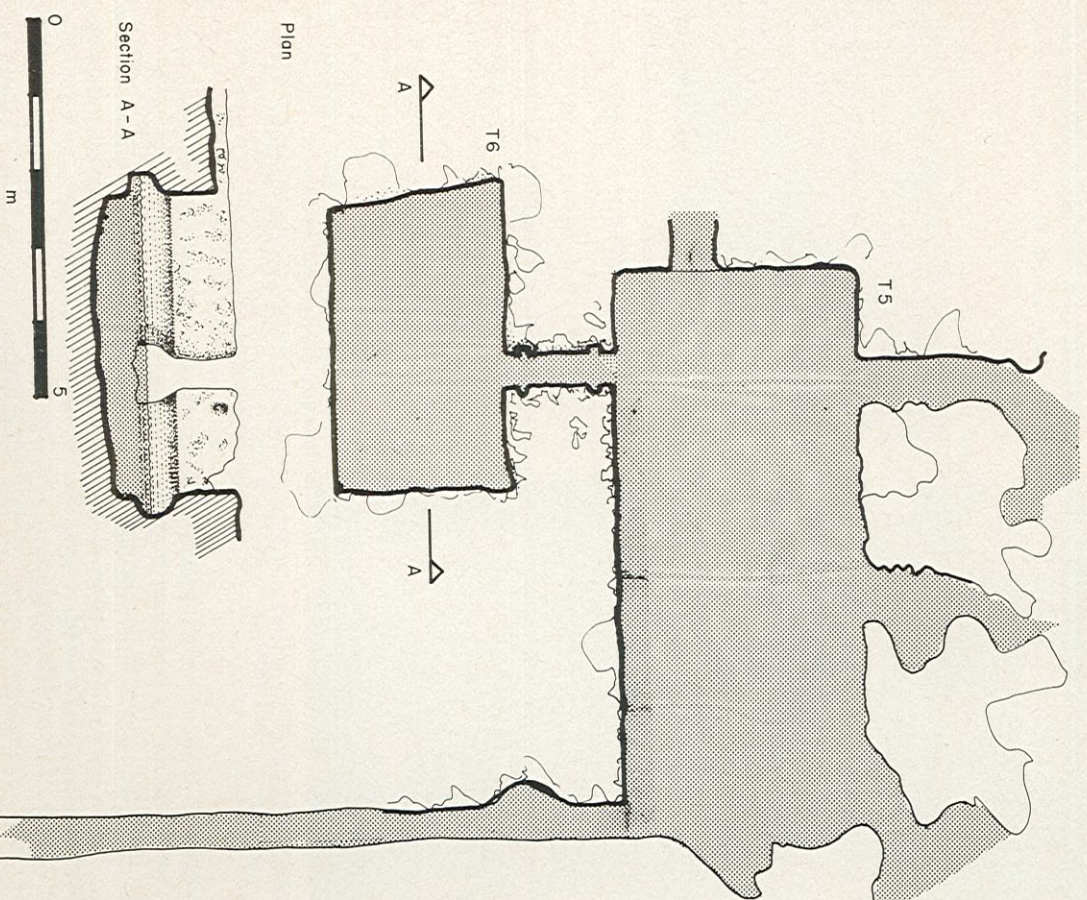


Figure 10. Details of T 5-T 6.

One of the long channels entering the east of T 1 does so at right-angles, and in its length it contains a small tank, T 2 (Fig. 3). This tank is well defined at its west end, but less so at its opposite end and has the appearance of being linked at right-angles to yet a further tank, although this is not very clear. A feature of T 2 is the series of cleats which have been cut into its surrounds (Fig. 7). These were possibly used for suspending nets in the tank. Curiously these do not appear in any other of the tanks.

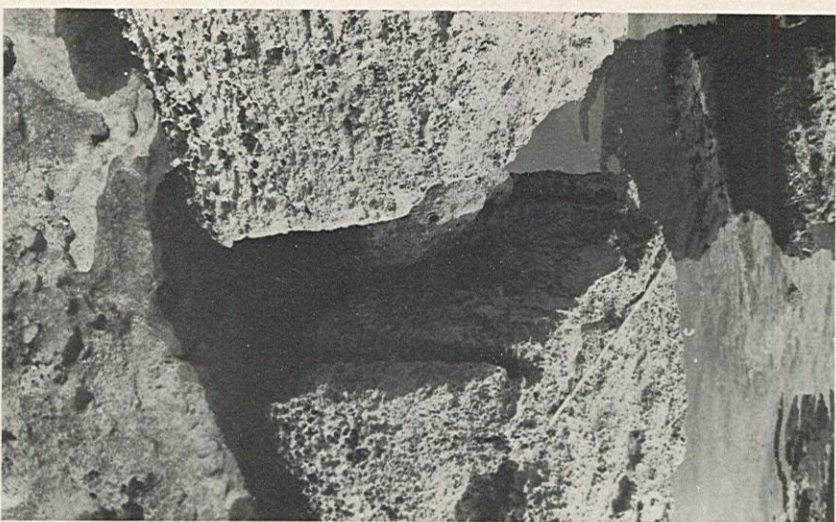


Figure 11. Channel linking T 5 and T 6 with a double sluice gate.

The purpose of the long dished shallow pan along the west flank of T 1 is obscure. It might have had something to do with the handling of the fish, or it could have served as a promenade, a fish market in fact. The dishing turns at its south end and connects to a paved platform or possibly a road. Immediately west of the dishing, and connected to the west channel by

two short links, is a regularly shaped tank, T 3 (Fig. 3).

T 4 (Figs 8 and 9) is entirely unconnected to the T 1–3 group, and whereas the latter has the look of a communal, possibly commercial enterprise, T 3 is small and distinctly private. It measures 2.6 x 1.9 m and is an average of 1 m deep. It has two connections to the sea, one perfectly straight and long running due north, and the other in the SW corner joining directly to a small bay. The long feeder channel routed directly north was intended to catch waves propelled by the predominant wind. Both the inlet and the outlet are controlled by double sluice gates, i.e. two pairs of slots close together. One of the stones to the outlet remains and is only slightly dislodged.



Figure 12. T 6 with double sluice gate channel to T 5.

T 5 and 6 are again an entirely separate group, quite isolated from the others (Fig. 10). Here, we have a pair of tanks closely linked by a very finely cut channel with two sluice gates (Fig. 11). The larger, T 5, is connected to the sea by two or possibly three short channels, but these are now very indistinct. T 6 is extremely well formed and is distinctive in that it lacks an obvious circulatory system. Its only outlet is via the double sluice to T 5. It is likely that this group was intended to be extended because we see that T 5 has an additional channel cut from its SW corner leading inland and stopping abruptly.

A comparison of the Lapidus fish tanks with other recorded examples is rewarding. The group at Cherchel (Yorke & Davidson, 1968) appear quite different both in construction and system. Chersonisos and Mochlos (Leatham & Hood, 1958–59) resemble the smaller tanks in size

and channels, although no mention is made of sluices except for a stone perforated slab which acted as a grating and allowed a circulation of water through the channel whilst preventing the fish from escaping. The large complex of tanks at Apollonia (Flemming, 1972) repeats the channel feeders and the grooved sluice rebates. Frost (1963) gives an example at Sidon of a slotted sluice with the damming stone intact and in position in connection with the harbour's de-silting system. Evidently this method of water control by slotted sluice gates was used in various differing installations.

feeder channels with sluice gates and secondary tanks. Other sites described by Schmittet, principally Ponza, feature slotted single and double sluice gates. The fish tanks at Caesarea Maritima, Israel, surveyed by the author (soon to be published in the *Israel Exploration Journal*) bear an even closer resemblance. Again, a principal oblong tank of similar proportion, feeder channels, straddled by secondary tanks, slotted sluice gates, and smaller tanks unconnected to the main tank. Both sites also possess similar traditional names: Caesarea, *The pool of Cleopatra*, and Laphthos, *The pool of the queen*.

Among the many fish tanks recorded by *the queen*, G. Schmiedt (1972), Torre Valdaliga resembles Lapithos in its oblong principal tank, long for permission to survey this site. I should like to record my thanks to K. Nicolaou

Notes

- [1] This survey was carried out by the writer. Previously, in an area extending further west, especially the land round Myrtou, the survey was carried out by Dr H. W. Catling. I take this opportunity to express my thanks to A. H. S. Megaw, then Director of Antiquities in Cyprus, and to Dr P. Dikaios, his successor, for their moral and other support which they accorded me in carrying out the survey on behalf of the Department.
- [2] For instance, we learn from the above mentioned inscription, that there was a temple of the Emperor Tiberius.
- [3] From the same inscription, we learn of the worship of Herakles and of Hermes, patrons of the gymnasium, whose priest is attested.
- [4] Lapithos remained an important city into Graeco-Roman times for we know from Ptolemy, the geographer (5.14.5) that in the middle of the 2nd century AD, Lapithos was one of the four districts of Cyprus, the others being Salamis, Paphos and Amathus.

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- Brief report on ship with cargo of pottery found by Peter Throckmorton.

Recording techniques used during the excavation of the *Batavia*

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Introduction

During three seasons of excavation on the wreck site of the *Batavia* (Fig. 1), a variety of recording techniques have been developed to deal with

the recording of the structure of the ship, and the progress and problems encountered in using them.

the particular problems and conditions encountered on the site. Some of these problems have already been described (Green, 1975). It is the purpose of this article to describe the recording techniques, particularly those relating

At present, the *Batavia* timbers raised during the 1973, 1974 and 1975 seasons are being treated in the W. A. Museum Conservation Laboratory, so that it is not possible to discuss reconstruction problems. However a 1:10 scale, wooden model has been made to test the



Figure 1 (410/19). *Batavia* site, showing timbers of stern post, fashion-piece, transom beams, and outer strakes. Ceiling planking and frames have been removed.

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