The International Journal of Nautical Archaeology and Underwater Exploration (1988) **17**.4: 311–329

The boat from Migdal Nunia and the anchorages of the Sea of Galilee from the time of Jesus

Avner Raban
Center for Maritime Studies, University of Haifa, Mount Carmel, Haifa, Israel 31 999

In the course of archaeological excavations undertaken by the Franciscan Institute at the ancient site of Migdal Nunia (Magdala), which is located on the shore of Lake Kinneret (Fig. 1), efforts were made during the 1977 season to expose a structure called by the excavator, Dr V. Corbo, the 'urban villa' (Villa Urbana; see Corbo, 1978: 232–40). The structure is a magnificent architectural assemblage, located in the centre of the Roman city, adjacent and east of the Cardo Maximus, opposite a public building, nicknamed 'the small synagogue' by the excavators and near the main aqueduct and the drainage channel which returned excess water to the lake (Corbo, 1978: tav. 71). This villa was built during the 1st century AD and was in use until the beginning of the Byzantine period (Corbo, 1976: 345–8). In the 1977 season, the remains of mosaic floors of later periods were removed from the building's northwestern vestibule (Room C6) and an earlier phase exposed, belonging to the 1st century AD. In this period, the room

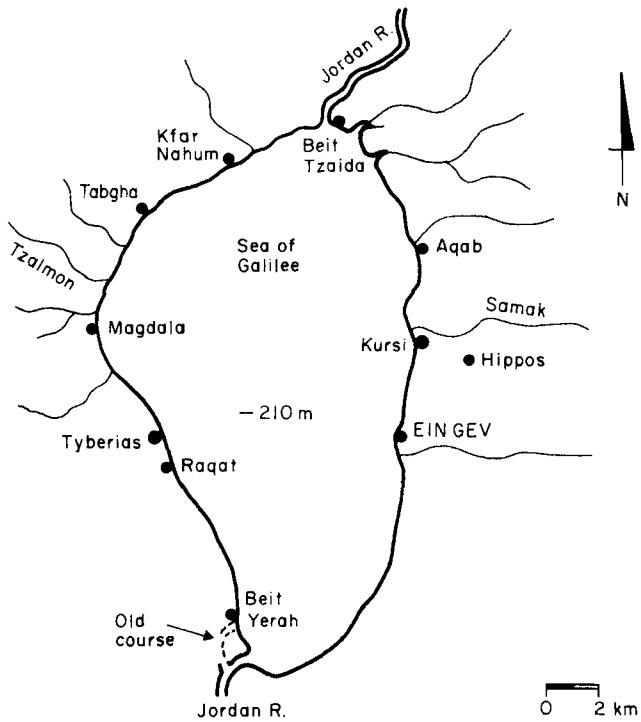

Figure 1. General map of the Sea of Galilee (Lake Kinneret) and some of the Roman towns along its shores.

0305–7445/88/040311 + 19 $03.00/0

Figure 2. The mosaic floor from Magdala (Migdal Nunia).

functioned as a direct entrance from the street east of the room and the alley to its north. The room led to a patio that had in its centre a plastered pool which received water from the aqueduct that entered the city from the south-west (Corbo, 1978: 237). According to the excavators, this building was a private villa of one of the wealthy residents of the city during that period. The dimensions and location of the structure support this assumption. At the level of the earliest phase of the villa a lower mosaic, which decorated the vestibule during the 1st century AD, was exposed. The dimensions of this partially preserved mosaic are as those of the room's floor, 2·80 × 2·60 m. In the area closest to the southern door step is an inscription in Greek which reads και σου *kai sou*, 'you too' (Fig. 2). Until now, no inscription of this kind has been found in Israel, but the phrase is known from private houses in Antioch and is associated with some sort of invocation against the evil eye. (Levy, 1971: 34; Goarducci, 1974: 324–5, fig. 109). The principal group of illustrations on the mosaic appears within a black frame 79 × 77 cm which is surrounded by a second frame of the same colour. The top of the internal border is oriented towards the east (the exit to the street). Within the border, six slightly stylized items are placed without any attention to a common direction or relative size. The items are depicted by using black tesserae with the addition of a light brown colour. The mosaic was recently placed on display within the archaeological site of Kefar Nahum (see Corbo, 1978: 238–9).

Figure 3. The boat from the mosaic floor of Magdala.

Illustrated in the upper left corner is perhaps a flower or bud lying on its left side, placed between two leaves. To the right is a black disc behind which are two containers (wicker vessels?) attached by a pole. Perhaps this is some sort of device for carrying loads on two sides of a pack animal's back (donkey or mule). In the centre, on the right is a large kantharos with two handles and a triangular base. Below it, there is a fish, of which only the head has survived. Out of its mouth juts a branch or piece of seaweed coloured light brown. Approximately one-quarter of the total space within the border of the mosaic is taken up by a ship that sails with the help of oars and which is the subject of this paper (Fig. 3).

The ship is depicted as sailing to the left, outside the border of the mosaic. The relative large empty space which is left under the hull of the ship and to its right gives the impression that the artist intended the ship to be the central motif in the mosaic, whereas the remaining elements were to be only secondary. This sort of pattern of ornamental motifs is common in mosaics of this period (Poinssot, 1965: 219–32).

The hull of the ship is wide and low at bow and rises towards the stern until it ends in a half crescent which curves inward over the stern, in the *stylus* fashion that was common among ships of the Classical world and even earlier (Casson, 1971: 66–8).

The wide bow ends sharply with its edge low beneath the surface of the water, resembling the head of a fish. Above, the bowsprit extends horizontally, with a forestay from its tip. A continuous line connects the bowsprit and the stern, below which there is a white space that presumably represents a screen running the length of the vessel. Four single black tessera above the line of the screen apparently represent four crew members—two on each side of the mast. The ends of oars are placed close to the first, second and fourth sailors. The two forward oars are cut off just below the line of the keel, while the rear oar has an elliptical blade. The mast rises from the forward third of the vessel, the upper yard of a square sail being attached to its masthead. A brown line running along the lower part of the yard probably represents a raised, rolled sail. From the aft edge of the yardarm to the deck hangs a rope. It is possible that this represents the brailing lines (Sperber, 1986: 46–9).

From the ship's form, there is no doubt that the intention was to depict a merchant sailing vessel and not a fishing boat or a warship. This is clear, not only from the form of the boat but from the absence of those components that would fit the other possibilities.

One would expect, *a priori*, that a vessel depicted as sailing on the Kinneret would be a fishing boat, as fishing has always been the principal reason for sailing on the Sea of Galilee. Likewise, the fish adjacent to the vessel and even

the pair of baskets in the upper right corner of the mosaic hint at this type of activity. The subject of fishing vessels was a very common central motif on mosaics in the sea or lakeside villas throughout the Roman Empire during the 1st–3rd centuries AD, primarily in the provinces of North Africa and Egypt (Foucher, 1957: figs 19–22; Belz, 1978).

It must be pointed out that in all the other examples, visual expression is given to fishing activity by way of one or more depictions of members of the crew at work, which is absent in the mosaic from Migdal Nunia. Moreover, the ships depicted in those mosaics differ from the one before us in at least one important point: each one has a hull with an arched profile without the low ending at the bow. Even if the proximity of the mosaic from Migdal Nunia to the plastered pool in the same urban villa suggests parallels from Roman villas in North Africa, in which the motifs on mosaic floors around ornamental pools are generally Nilotic landscapes and fishing scenes (Cintas, 1954: 147–54), there remain great differences in illustrative content, order of presentation, form of the ship and the nature of the pool. The dimensions, location and form of the pool at Migdal Nunia, the small room nearby and the nature of other adjoining rooms hint more at utilitarian use, perhaps for ritual immersion or temporary storage of fish (Corbo, 1974: 32–5).

There is no doubt that the ship depicted does not represent a warship. In all depictions of warships of the period, there is an emphasis on the great number of rowers, the ram and the battle tower at the bow of the vessel (Casson, 1971: 97–156).

In this context it is fitting to deal with the unique form of the ship's bow. The closest form of bow can be found on vessels depicted on mosaics of the 1st–2nd centuries AD from Ostia, primarily those from a site called 'Foro delle corporazioni' (see Basch, 1983: 395, fig. 1) (Fig. 4). The origin of this form of bow is a device intended to extend the longitudinal axis of the vessel by way of an horizontal addition to the keel at the bow or stern. With this addition, it is possible to improve the hydrodynamics of the vessel while it is in motion, ease steering and the holding of a straight course, and to minimize the stray off course, caused by side winds and waves. This element, which in ancient depictions has occasionally been interpreted as a ram, had its origin already in the 2nd millennium BC in the Mediterranean region (Basch, 1983: 398–407). Similar examples can be found on Minoan stone seals as far back as the end of the 3rd millennium BC (Casson, 1971: figs 34–6), and on a krater, dated to the 10th century BC, found recently near Bodrum in southwestern Turkey (Van-Doorninck, 1982: 278, figs 1–2).

This 'salient' component, which has already been dealt with in detail in studies by Lucien Basch (1983) and Patrice Pomey (1982), has been found on the hulls of several Roman merchant ships whose remains have been discovered on the sea floor off the coast of the western Mediterranean. The finest example is that of the wine amphora vessel from Madrague de Giens, east of Toulon on the Mediterranean coast of France (Tchernia *et al*, 1978). As to the typical stern ending, its frequency among Greek and Roman ship depictions has already been mentioned. It is important to note that the earliest examples of this type appear in our area already at the end of the Late Bronze Age, both in Israel and Cyprus (Artzy, 1984). Another close parallel, though somewhat later in date to our mosaic, was found on a tombstone from Ravenna, Italy. On the face of the stone is the depiction of the construction of a vessel whose bow and stern are very close in form to the type from Migdal Nunia (Casson, 1959: pl. 15a). With regard to the rope hanging from behind the sailyard, the best parallels can be found in later depictions (2nd–3rd century AD) from the Roman world of twin-sail merchant vessels (Casson, 1959: 220–2, 1971: fig. 147).

Less frequent among ship depictions from the Roman world is the horizontal bowsprit and the stay attached to its tip. On almost all the 1st century Roman depictions of merchant ships, the bowsprit is fashioned upright or folded over backwards (Casson, 1971: figs 139, 156). A closer parallel can be found on a tombstone from Pompeii, dated to the middle of the 1st century AD, which depicts a merchant vessel entering port (Casson, 1971: fig. 151). There, the bowsprit is horizontal, but the maststay is attached to its base and not the tip.

An important source of our knowledge about the types of ships that prevailed in the Roman world, and especially ships and boats used commercially, e.g. transport, fishing, transhipment and other vessel types powered by sail or oar, is

Figure 4. Part of the mosaic pavement from the Foro delle corporezioni at Ostia.

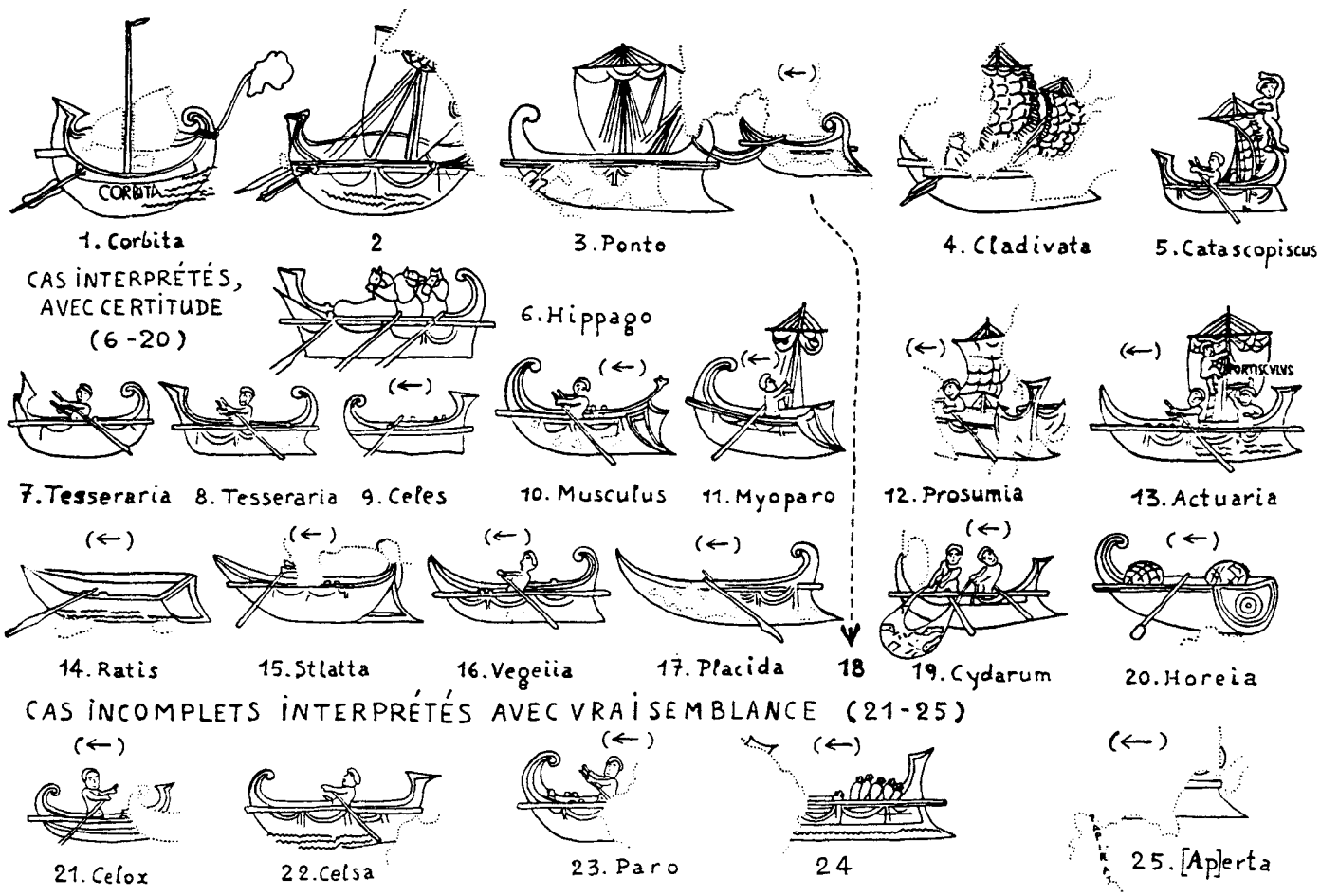

Figure 5. The Boats Mosaic from Altiboros, Tunisia (after L. Casson, 1971: fig. 137).

the mosaic floor from Altiboros, Tunisia. This floor, dating to the end of the 3rd century–beginning of the 4th century AD, depicts 21 small sailing vessels with the name of the type of vessel beside each representation (Fig. 5). Among those most closely resembling the vessel depicted on the mosaic from Migdal Nunia is no. 11, called *myoparo*. The *myoparo* is a type of vessel known, from the literature of the Late Republican era at Rome, in the 1st century, BC as a fast and efficient pirate ship (Casson, 1971: 132). Earlier, it was known as an important component of the Carthaginian home fleet. The Roman fleet adopted this type which served, apparently at the end of the republican period, as an auxiliary vessel beside large warships of the trireme or quadrirem types (Casson, 1971: 132, n. 125). From these sources, it seems that the type was in most general use in the eastern part of the Mediterranean, and it seems that *myoparo* tradition was shared by the Phoenicians and the port cities of Asia Minor.

In the corpus of ships depicted on coins from the Greco-Roman world, there is no parallel really close in type to the vessel from Migdal Nunia. Examination of Joseph Ringel's book (1975) reveals one example of interest; the reverse side of a city coin of Tiberias from the reign of the Roman Emperor Caracalla (217–221, AD). Here the god of the sea Poseidon is depicted standing with his right leg resting on a sailing vessel, possessing some resemblance to the *myoparo* (Fig. 6). The author is surprised at the use of the god of the sea and a dolphin for decorating a coin whose origin is in city beside a small lake (Ringel, 1975: 68, no. 60).

For all that, it is only fair to assume that there developed in the Kinneret a 'seafaring' tradition which had to face dangers, particular to this lake, where sudden storms are common and the direction of the winds presents an interesting challenge to the designers of a suitable sailing vessel. The coin from Tiberias presents a unique combination of subjects which are supposed to mark maritime activity on the Sea of Galilee, through the use of decorative elements that stray from normal conventions, at least in what are related to the type of sailing vessel.

In Sperber's recent (1986) monograph, there is a Talmudic entry which might be relevant to the use of a special cutwater in the Sea of Galilee. In a case referring to the Sea of Galilee, people are described as sitting on a *gashush*, a device or beam of wood (Sperber, 1986: 64–7), though according to the traditional understanding of the word and the expression *sefina gosheshet*, it would be translated as a 'ship's keel touching the sea floor' or beaching (p. 35). It is tempting to adduce this Talmudic reference to the lake and dated to the 2nd century AD as another possible indication that the cutwater or horizontal appendage (Basch, 1983) had been adopted for the type of boat characteristic of the Sea of Galilee from the time of Jesus or even earlier.

Figure 6. The reverse of a city coin of Tiberias from the reign of Caracalla (courtesy of the National Maritime Museum in Haifa).

Comparison between this coin and that of the ship depicted on the mosaic from Migdal Nunia suggests that in both instances there is an attempt to characterize a distinct 'Kinneret' type of vessel. This type was probably copied from an original Mediterranean vessel, because of a comparability to the special sailing requirements of the lake. A feature of the *myoparo* is a hull possessing a cutwater at its bow—something essential for sailing where wind and wave conditions deflect the ship from its course. The small dimensions are likewise appropriate for the limits of draught, the limited size and shallow water of the available anchorages. The ability to vary and change movement, with the aid of sail and oar interchangeably, suits the sailing conditions on the lake, and the need to manoeuvre against the wind when approaching an anchorage or wharf in the harbour of Migdal Nunia.

The opinion of my friend, Mendel Nun, of Kibbutz Ein Gev, who first brought the existence of the mosaic to my attention, and with whom I

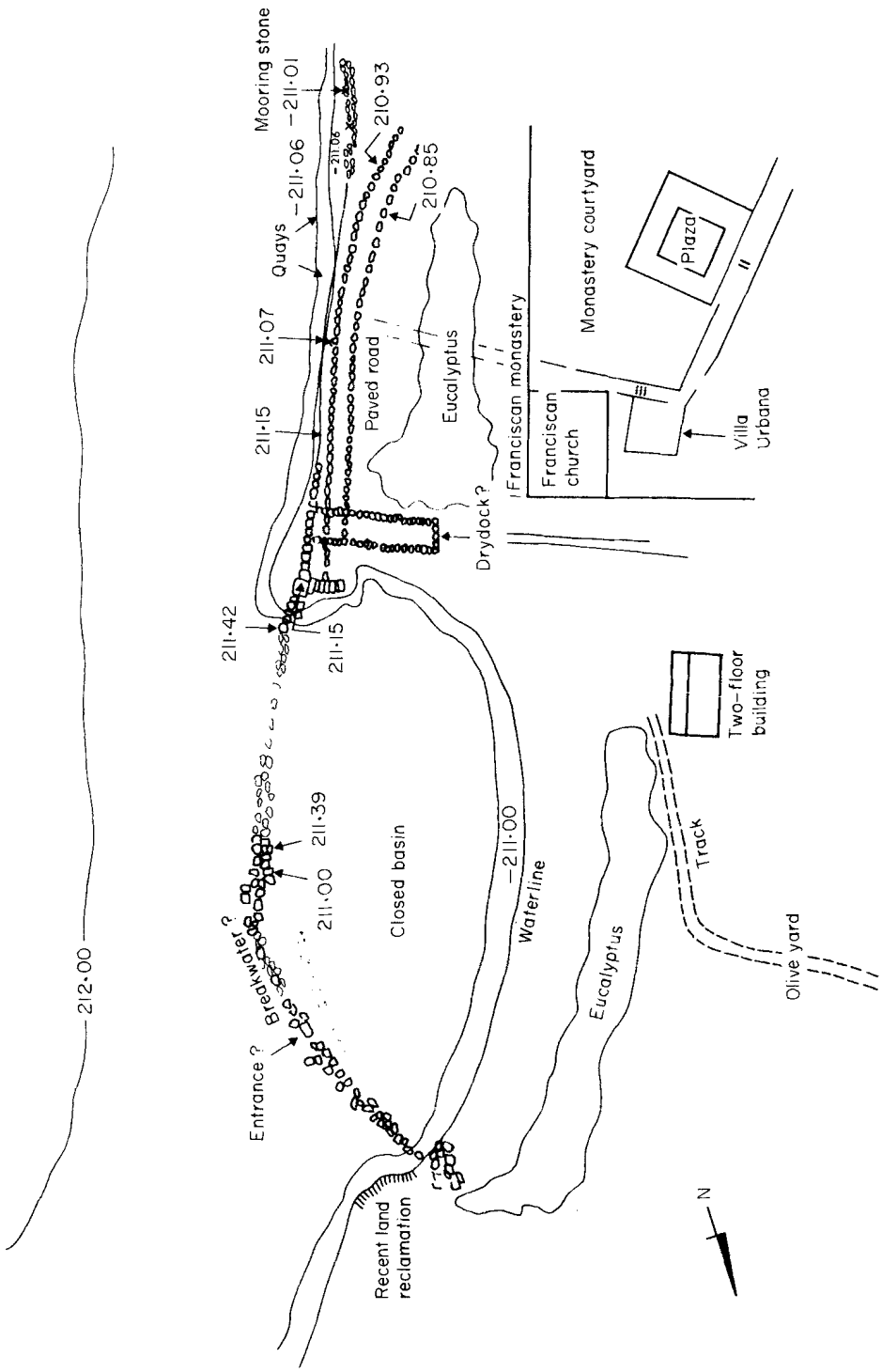

Figure 7. Schematic plan of the coastal structures, the anchorage and the quays at Magdala (Migdal Nunia), based on IUES survey 1971–1975.

Figure 8. The mooring stone at the quay of Magdala, looking south (water level at −211·10 m).

Figure 9. The street over the quay at Magdala, looking northeast (water level at −210·90 m).

have discussed at length the significance of the picture and the form of the vessel, also seems plausible to me. In his letter of April 9, 1986, Mendel writes,

... with regard to the number of oars, to the best of my knowledge, an oar which functions only as a rudder is placed and operated in a different manner from other rowing oars. From my experience on the Kinneret, I know that in a large boat, when the number of rowers is more than two, there are pairs of rowers and the rear odd man is the helmsman. It seems to me that the number of rowers on the vessel depicted on the mosaic from Migdal Nunia is five and the rear oar (the third in the depiction) is used as a steering oar.

Recently, the remains of a number of fishing boats from the same period of the mosaic were

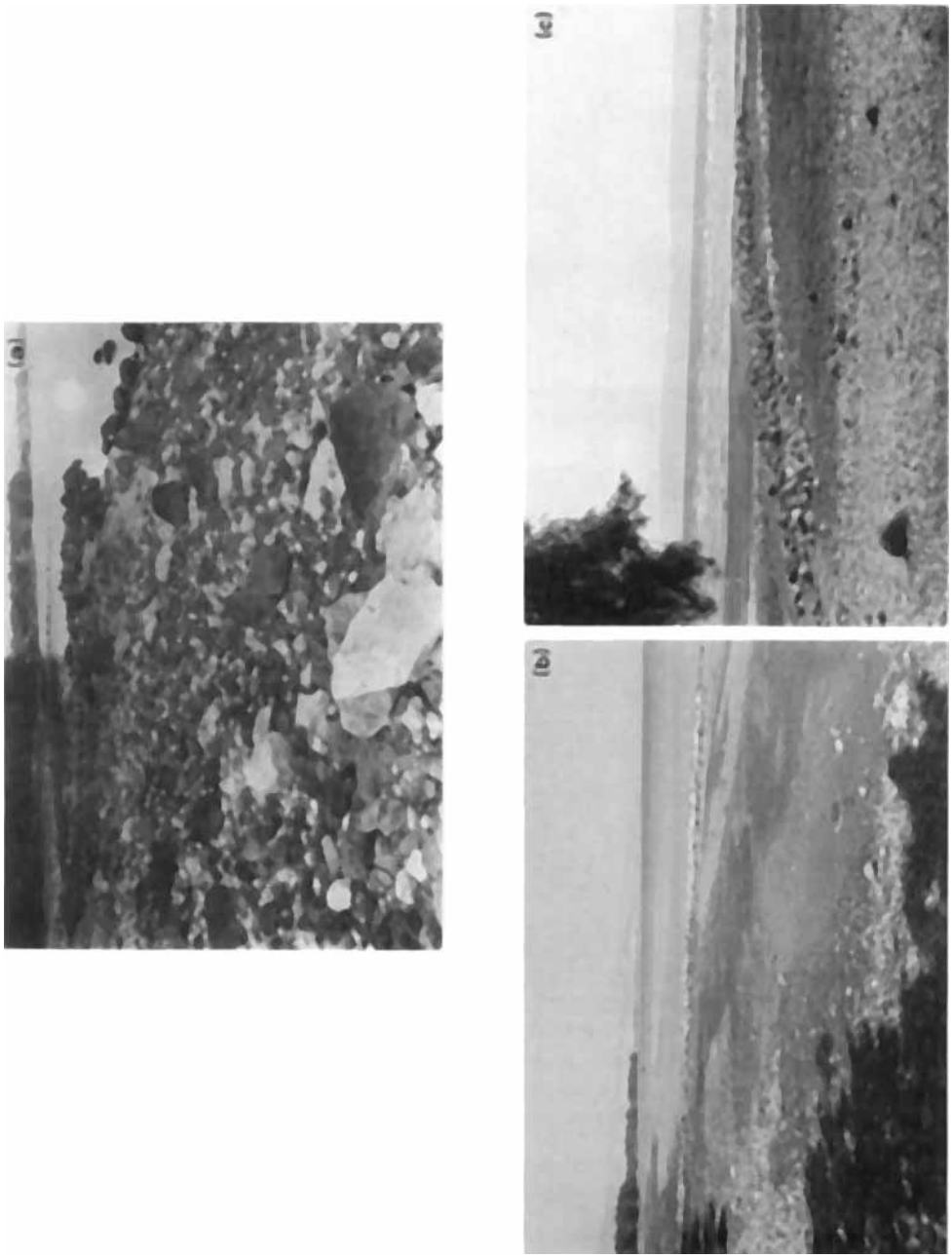

Figure 10. The anchorage at Magdala, looking northeast: (a) at water level of −210·60 m; (b) at water level of −211·30 m; (c) the north breakwater at water level of −211·80 m (note the smaller, white stones, of an older breakwater).

discovered approximately a mile north of Migdal Nunia. One of the boats, which was almost completely preserved, was found sunk in the mud and covered by the silt of winter storms that originated in Nahal Tzalmon. It was found at a level close to 212 m below MSL which indicates that at the time the shoreline at this site was 2–3 m higher. The boat was found with her bow tied to a sycamore tree and was in a process of being dismantled. In other words, it might have gone out of use in antiquity and become the source of spare parts for other boats. The boat seems to have had a low draught, an arched longitudinal section and pointed ends, without screen or superstructure. It was found without bowsprit, mast or steering oar, but it seems to have some resemblance to the large ship on the mosaic from Migdal Nunia, due to a groove at the base of the bowpost, which might indicate a stem for an horizontally projecting cutwater. There was also the conspicuous use of iron nails and a number of technological components that attest to a tradition of ship construction unique to the Kinneret. The boat was discovered in the winter of 1986 by members of Kibbutz Geinnosar and excavated by the Department of Antiquities team, headed by Mr Shelly Wachsmann (Wachsmann *et al*, 1986). Professor Richard Steffy, of the Institute of Nautical Archaeology, is studying the data relating to the construction of the ship and its original form. Miss Orna Cohen of the Department of Antiquities is attending to the preservation of the find, which is at Beit Alon in Kibbutz Geinnosar and is open to visits by the public. (The author would like to thank Mr Wachsmann and Professor Steffy for the information used above.)

To summarize, according to the context the

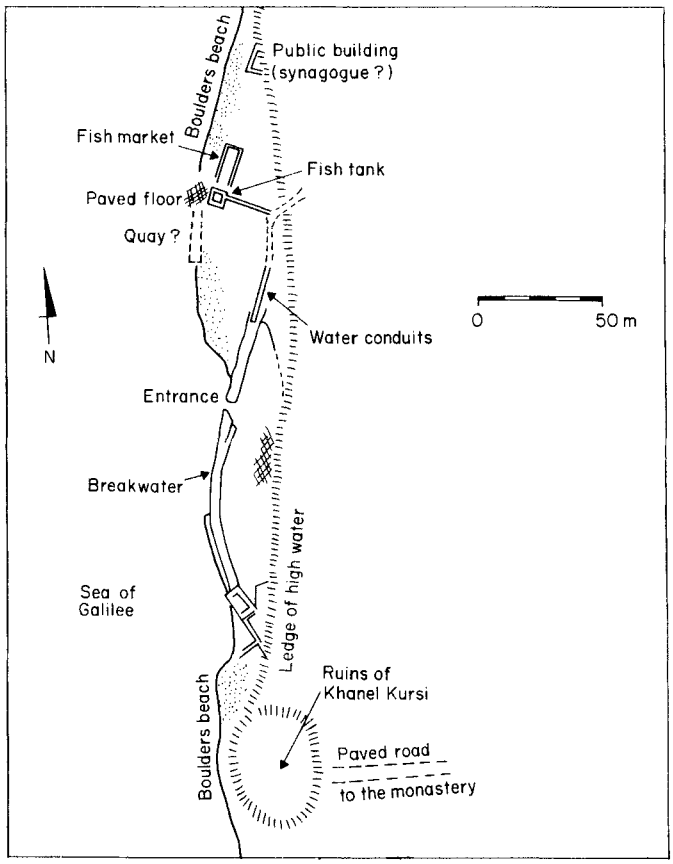

Figure 11. General schematic plan of the coastal structures at Kursi (after IUES survey 1970–1974).

historical background and the typological parallels to the vessel, depicted on the mosaic from Migdal Nunia, it seems to this author that we have here an attempt to depict a vessel of a type that was in use on the Kinneret. This use was of a commercial transportation nature, i.e. it was a type of vessel that was used for crossing the lake carrying a cargo of merchandise. Most likely, this merchandise consisted of anything which was transported along a route between the eastern and western sides of the Jordan rift. All together—the settlement's renown in antiquity, the fish which appears on the mosaic, the measuring tools, the kantharos and the pair of baskets pictured above it—may have been chosen to indicate the production and trade in salted fish by way of the lake to distant customers. It is important to mention that similar combinations of motifs can be found on mosaic floors in commercial structures at Ostia (cf. Clarke, 1979: fig. 45) and even in Spain and England (Blanco Fregeiro, 1978: Cookson, 1984: pl. 13).

Examination of the city plan of Migdal Nunia and of buildings near the lake (Fig. 7) indicates that these structures included a wharf constructed of basalt, from which protrudes a mooring stone for ships (Fig. 8). The wharf extends along the shore for approximately 100 m; its southern end is destroyed and covered with an overburden. The northern end is combined with a rectangular ashlar structure that was destroyed in 1978, in the wake of land reclamation works along the shore. Beyond the structure is situated a breakwater which in an arc closes off a wide, shallow cove. The northern part of the breakwater can still be identified on the opposite side of the bay when the water level of the lake drops under 211·50 m below MSL. The breakwaters close off an area of over one acre. This is the largest of the ancient anchorages of the lake hitherto to be surveyed (Nun, 1977: 79–81). Near the destroyed rectangular structure, during the removal of the overburden, large concentrations of pottery sherds were exposed, principally storage jars and cooking vessels from the Herodian period (late 1st century BC) to about 100 AD. Similar cooking vessels were discovered in 1960 by divers of the Link Expedition. They were here when the level of the lake was approximately 209 m below MSL and the area was covered by 2–3 m of water. The expedition report notes the discovery of a plastered surface—a road or

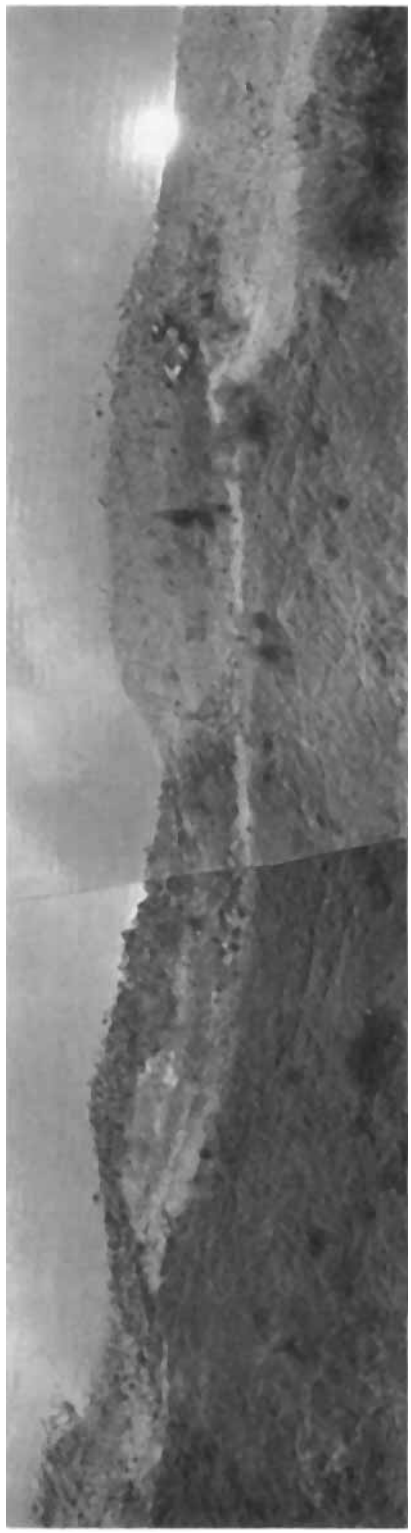

Figure 12. Aerial photo of the anchorage at Kursi (water level at −210·20 m).

Figure 13. The breakwater of the anchorage of Kursi, looking from the lake's shore at water level of −211·20 m.

floor—at a depth of 3 m, along which were found a number of complete cooking vessels from the 1st century AD (Fritsch & Ben-Dor, 1960: 57–9) and apparently associated with the same destroyed rectangular structure. There is no doubt that this is the street that was constructed upon the wharf and whose margin was delineated by white ashlar blocks (travertine limestone) with a maximum width of 3·5 m (Fig. 9). The elevation of the street is −211·20 and an adjacent section of a road is half a metre higher, so the complex of the wharves and anchorage are consistent with a water level at least 2 m below the average recorded level of the lake during the spring months, and is thus not compatible with the anchorage discovered at Kursi (see below, and Fig. 10). Considering that this shore is at the foot of an active fault line on the margin of the Jordan rift, and sits on a foundation of muddy silt, it is reasonable to assume that this portion of the coast has sunk somewhat since antiquity (Nun, 1974). The author accepts the view of Mendel Nun, who argues that on account of the location of Migdal Nunia, east of the mouth of the Arbel rift, there was no need to provide protection from waves in the lake for most of the year. So, it was possible to moor ships along the wharf built south of the anchorage, opposite the open water.

The wharf and anchorage comprise a port assemblage that differs in dimension and in quality from what has been discovered so far of archaeological remains of maritime activity in antiquity on the Kinneret and is evidence of the reputation which the settlement possessed in antiquity. The very essence of the name indicates the sources of its living: fishing and the processing of fish (salting, pickling in sauce). This is the meaning of its name in Greek: Taricheae and in Aramaic: Migdal Nunia, i.e. Tower of the Fish. In the 1st century AD, Strabo notes that: in 'In Taricheae the sea provides the finest fish for pickling' (Strabo, XVI, 2, 45). At the time of the Great Revolt, many of the Jews of Tiberias who refused to be handed over to the Romans fled to Migdal Nunia. There, they prepared 'many ships on the sea' (Josephus, *The Jewish War*, Book III, Chapter 5, 1). In another place, he mentions that the men of the city were on his side when he was commander in Galilee and his supporters numbered 40 000 men. From these he was able, on the eve of the Sabbath, to mobilize no less than 230 vessels against the city of Tiberias (II, 21, 4). Likewise, he notes that there was a theatre and a hippodrome in the city which indicates the extent of its foreign population.

Another anchorage to be dated to the Roman period is on the other side of the lake at a site called by the Arabs Kursi and was identified as the place where Jesus performed the miracle of 'healing the man with an unclean spirit', also known as the 'miracle of Gergesene (or Gadarene) swine' (Matthew 8: 28–34; Mark 5:

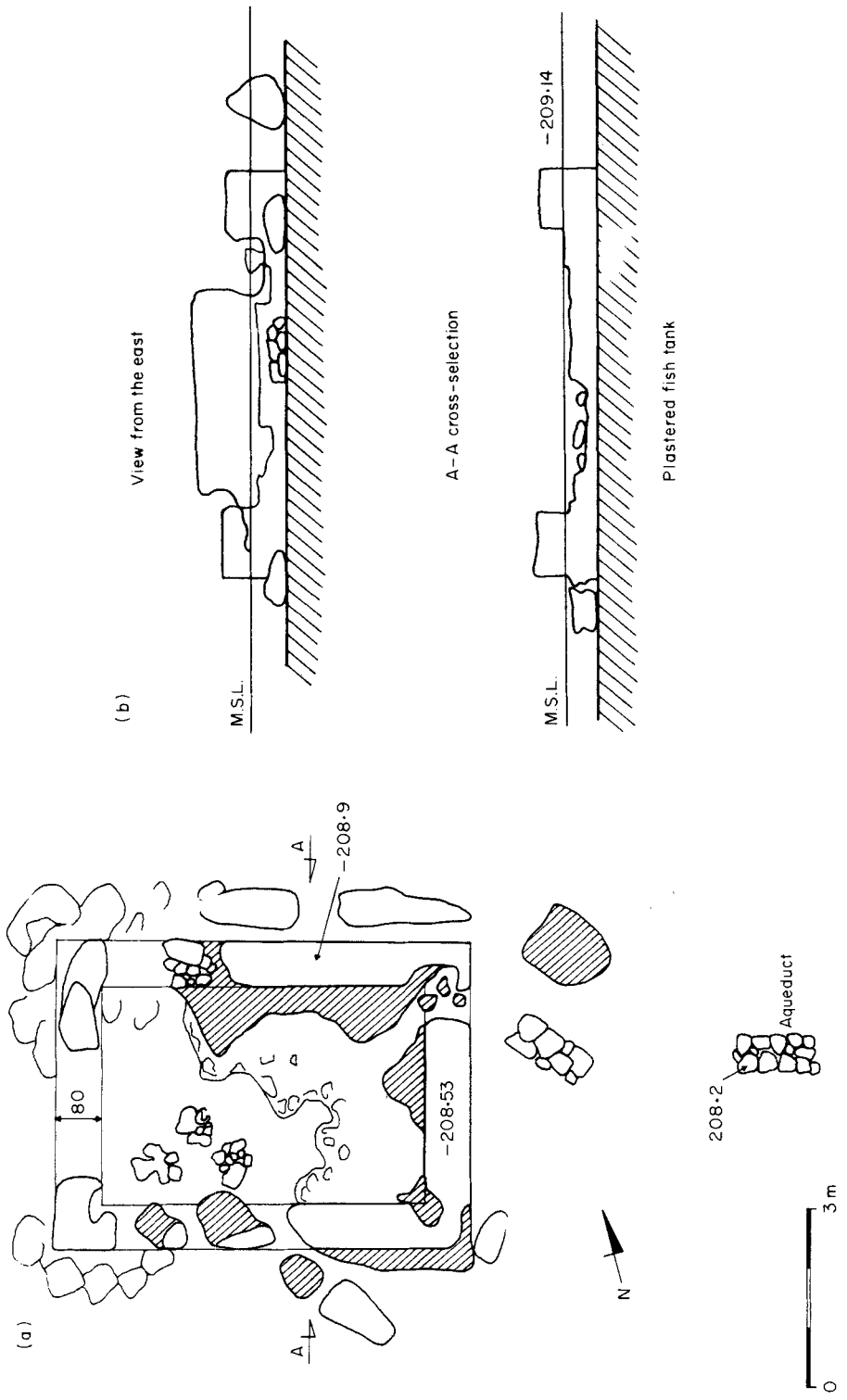

Figure 14. (a) Plan and (b) sections of the fish tank next to the anchorage at Kursi.

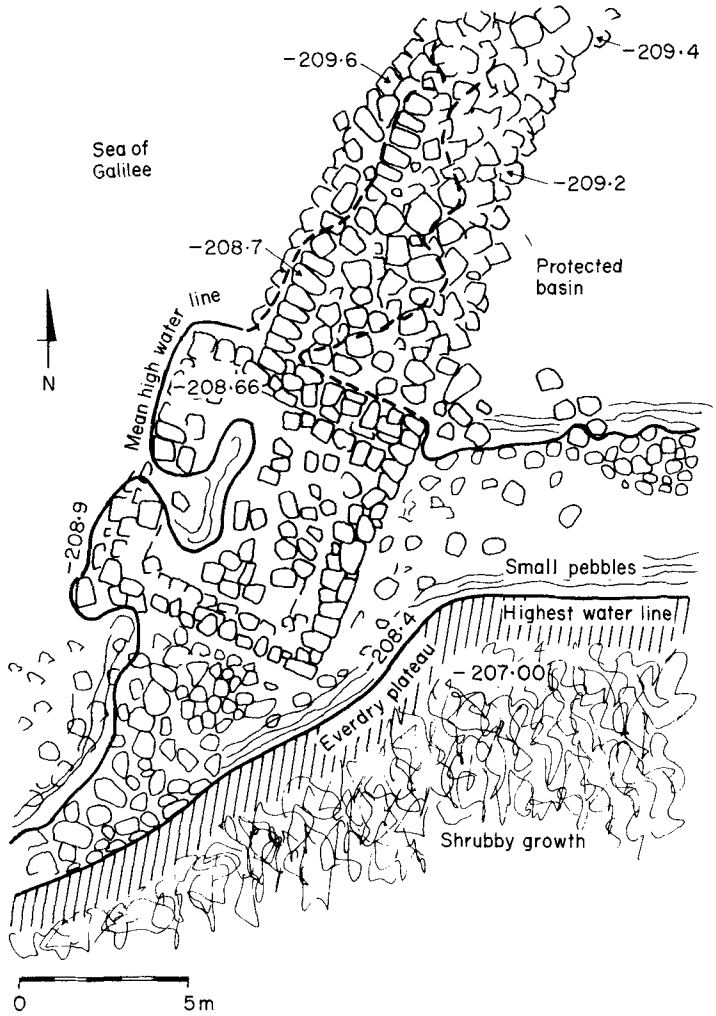

Figure 15. Plan of the southern part of the anchorage at Kursi.

1–17; Luke 8: 26–37). The site was a well known centre of Christian pilgrimage during the Byzantine period (Urman, 1976: 459–60), but was forgotten until it was rediscovered late in the 19th century. The monastery and some adjacent features of the Byzantine and Roman town were surveyed and have since 1970 been excavated, first by D. Urman and then by Dr V. Tzaferis for the Israel Department of Antiquities (Tzaferis, 1983).

The following information is based on data collected during a preliminary survey that was carried out by the writer, Y. Shapira and R. Livneh, on behalf of the Israel Underwater Exploration Society during June–July 1969. A further survey was carried out by the same group in the following year for D. Urman and the Israel Department of Antiquities. In later years, there were more studies by M. Nun and Y. Lulav (Nun, 1977: 79–81, 1987). The coastal settlement occupies a stretch of some 600 m to the south of the land spit (built of coarse alluvial sediments) at the southernmost outlet of River Samak. At the southern end of this area, there is a small tel. Its top is about 5–6 m above the surroundings, and it covers an area of less than 1/4 acre. The site was used as a military outpost by the Syrian army until 1967. The trenches dug by the soldiers

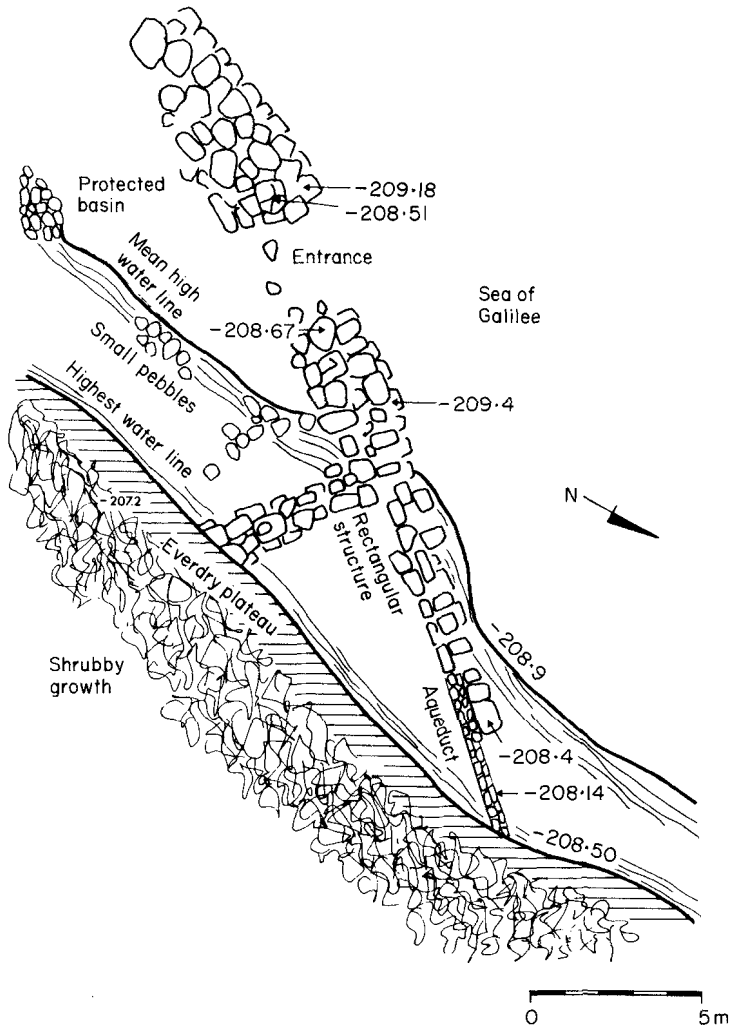

Figure 16. Plan of the northern part of the anchorage at Kursi.

revealed ashlar walls and pottery sherds of the Roman and Byzantine periods. The old name of the site—Khan el Kursi—indicates its function in recent times as a caravan station for those who travelled from the east on their way to cross the lake to Tiberias. It seems as if this was the basic function of the place in earlier periods as well. Along the coastline, from the tel to the north, there is a ledge, about 1 m high. On top is the alluvial plain covered by a thick growth of reeds and bushes. From its foot to the waterline, there is a broad strip of large pebbles and rounded boulders. The width of this strip depends on the ever-changing water level of the lake. The base of the ledge is at an MSL level of $-209 \pm 0{\cdot}30$ m. Some 100 m north of the tel, there are thick walls of rectangular structures protruding from the ledge and incorporated with the base of a semi-circular breakwater. The breakwater was built of dressed basalt blocks which were carefully laid in courses of headers, recessed on the outside, at its external circumference. It ends near the northern corner of the protected basin where the entrance is located (Figs 11–13).

The other northern breakwater is much shorter, and on top of it there are remains of a rubble-built plastered wall channel, coming from the northeast. Its continuation inland is

Figure 17. The flagstone pavement west of the fishtank at Kursi, looking northeast.

hidden by vegetation growth, but it seems as if it was carrying water from the river along the same aqueduct that brought the water to the fishtank, which was located some 20 m north of the harbour (Fig. 14). The floor of the fishtank is at −209·2, so it was possible to fill it directly from the lake only when the water level was at maximum height. The channel was used for this purpose for most of the year. The elevation of the harbour is 1·0–1·5 m higher than all other ancient harbours and anchorages around the lake (Figs 15, 16). It is of a better structural quality, and higher sea walls may indicate a greater change of water level (between −208·5 and −211·0). Comparing present elevations and those of the ancient harbour structures at Migdal Nunia, Kefar Aqavia and Tabgha, the harbour at Kursi was made for a higher water level in the lake, probably indicating an era of more rainy winters. Typologically, the structure of the breakwater resembles Phoenico-Hellenistic harbours along the Levantine coast (Akko, Tyre, Strato's tower, etc.). West of the fishtank towards the lake, there is a sloping rectangular floor, 5 × 8 m made of flat stones (Fig. 17). This was most probably a landing stage for the fishing boats unloading their catch into the tank. It could be used when the water level was at −209·30–210·20. North of the tank there was a large rectangular building, of which only the foundations of two ashlar walls and a few remnants of mosaic floor have survived. M. Nun's assumption that this was the administration building for the fishmarket seems to be logical. The elevation of this floor is 209·30 m, so it seems that at the time it was built and was functioning, the water level of the lake was considerably lower than at the time the nearby harbour was built. At the same elevation are the foundations of a public building which incorporated many architectural members such as decorated basalt blocks and columns of white limestone (Fig. 18). Only the southwest corner of this building, which is situated some 100 m north of the fishmarket, on the coastal ledge with thick growth on top of it is exposed. Trial excavation on this ledge revealed part of two mosaic floors one on top of the other. The building is orientated towards south-southwest, and it can be presumed to be the synagogue of the settlement of fishermen that was located along the shore, north of the tel. The outlines of town houses can be seen from the air (especially on aerial photos taken 10–20 years ago) and on the lower coastal strip exposed during the period of low water level. We suggest that the harbour was first built during the Hellenistic period for the use of the Jewish town of Gerasa. In later times, when the average water level of the lake had subsided and the weather had become somewhat drier, the Jewish fishermen shifted their residence nearer to the shore. The fishmarket, the fishtank and the

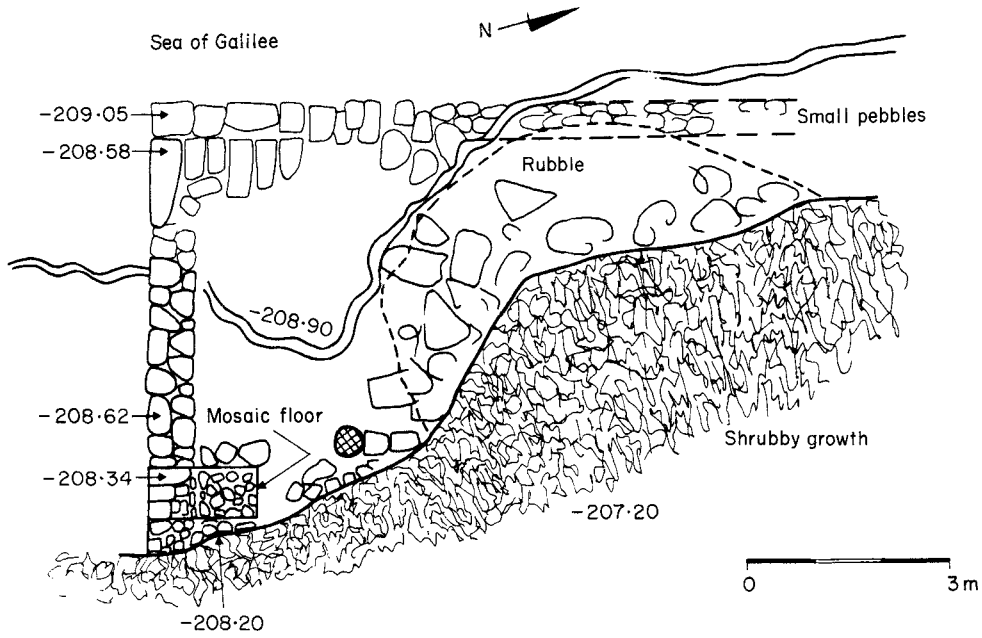

Figure 18. Plan of the public building north of the fishtank and the anchorage, on the lake's shore at Kursi.

synagogue were probably built at this stage (Byzantine Period) while the old harbour was still functioning.

Summary

A picture of a sailing boat on a mosaic floor, found in a private building of the early Roman era at the site of Magdala (Migdal Nunia) on the northwest coast of the Sea of Galilee, may be of some significance in the context of other recent archaeological finds relating to ancient nautical activities in this Biblical lake. A careful examination of the mosaic suggests a modified type of Mediterranean vessel known as *myoparo* that went through a series of technical adaptations in order to meet the special nautical needs of the lake. This type, with its characteristic horizontal bowsprit, has a good parallel in a coin of the neighbouring town of Tyberias, also on the shore of the Sea of Galilee (Lake Kinneret). The shape of the hull and the additional cutwater resembles the features of the recently discovered boat from Geinosar, about 1 mile to the north. In the same context, a survey of the architectural features of the early Roman anchorages at Magdala and at Kursi (the Biblical Gergasa) on the other side of the lake can give a more complete picture of the nautical scene on the lake during the days Jesus lived and acted there.

References

Artzy, M., 1984, Unusual Late Bronze Age ship representations from Tel Akko. *Mariner's Mirror*, **70:** 39–64.
Basch, L., 1983, Bows and stern appendages in the ancient Mediterranean. *Mariner's Mirror*, **69:** 395–412.
Belz, C., 1978, *Marine genre mosaic pavements of Roman North Africa*. Unpublished Ph.D. dissertation, UCLA.
Blanco Freijeiro, A., 1978, *Mosaicos Romanos de Merida*. Madrid.
Casson, L., 1959, *The Ancient Mariners*. Minerva Press.
Casson, L., 1971, *Ships and Seamanship in the Ancient World*. Princeton.
Cintas, P., 1954, Nouvelles recherches à Utique, *Karthago*, **5:** 89–202.
Clarke, Y. R., 1979, *Roman Black and White Figural Mosaics*. New York.
Cookson, N. A., 1984, *Romano-British Mosaics*. B.A.R. British series 135, Oxford.
Corbo, V., 1974, Scavi archeologici a Magdala (1971–1973). *Liber Annuus*, **24:** 5–37.
Corbo, V., 1978, Piazza e villa urbana a Magdala. *Liber Annuus*, **28:** 232–40.

Corbo, V., 1986, La citta romana di Magdala, repporto pre-liminare dopo la IV campagna del 1975 *Studia Hierosolymitana*, I. Jerusalem, pp. 355–78.
Foucher, L., 1957, Navires et barques figurés sur des mosaiques de sousse et ses environs. *Notes et Documents* XV (Tunisie), Imprimerie officielle.
Fritsch, C. T. & Ben-Dor, I., 1960, The 'Link' expedition to Israel. *The Biblical Archaeologist*, **23:** 50–9.
Goarducci, M., 1974, Epigrafi di cratter privato, *Epigrafia Greca*, III. Roma, pp. 323–26.
Lavin, I., 1963, Hunting mosaics of Antioch and their sources. *D.O.P.*, **17:** 181–286.
Levi, D., 1971, *Antioch Mosaic Pavements*. Rome.
Nun, M., 1974, The ancient water levels of the sea of Galilee. *Teva Va'aretz*, **17.1:** 13–8 (in Hebrew).
Nun, M., 1977, *Sea of Kinneret*. Tel Aviv (in Hebrew).
Nun, M., 1987, Kursi: Christian monastery next to a Jewish fisherman village, *Sefer Vilnai*, II. Jerusalem (in Hebrew).
Poinssot, C., 1965, Quelques remarques sur les mosaiques de la Maison de Dionysos et d'Ulysse à Thugga (Tunisia). In Picard, M. G. & Stern, M. H. (Eds), *La Mosaique Greco Romain, I.* Paris, pp. 219–32.
Pomey, P., 1982, Le navire Romain de la Madrague de Giens. *Comptes Rendus*. Académie des Inscriptions et Belles lettres, Janvier-Mars, pp. 133–54.
Ringel, J., 1975, In Ben-Eli, A. L. (Ed.), *Ships and Parts of Ships on Ancient Coins, I.* National Maritime Museum, Haifa.
Sperber, D., 1986, *Nautical Talmudica*. Ramat Gan, Leiden.
Strabo, 1960, *The Geography* (edited by Loeb). London.
Tchernia, A., Pomey, P. & Hesnard, A., 1978, *L'Epave Romain de la Modrague de Giens*. 34e Supplément à *Gallia*, Paris.
Tzaferis, V., 1983, *The Excavations of Kursi-Geresa*. Atiqot, English series, Vol. XVI, Jerusalem.
Urman, D., 1976, Golan. In Avi-Yonah, M. (Ed.), *Encyclopedia of Archaeological Excavations in the Holy Land*, Vol. II. Jerusalem, pp. 453–67.
Van-Doorninck, F. H., Jr, 1982, Protogeometric longships and the introduction of the ram. *IJNA*, **11.4:** 277–86.
Wachsmann, S., Raveh, K. & Cohen, I., 1986, The boat from Geinossar. *Hadashot Archeologiot*, **88:** 6–7 (in Hebrew).