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Roman harbours

Paula F. de Coetlogon Williams
Institute of Maritime Archaeology, St Salvator's College, St Andrews, Fife, Scotland

Considering the extent of classical scholarship over several hundred years, Roman harbours are a very under-researched subject. This may be partly because it involves not only the study of literary accounts, inscriptions, artistic and numismatic evidence, but also practical archaeology and, preferably, some knowledge of seamanship, and on the whole those who are drawn to nautical studies prefer ships to harbours.

The antiquarians and travellers of the last three centuries did much useful work identifying ancient sites, recording inscriptions and other remains, and occasionally planning the ruins. Many of these travellers, because of the primitive conditions prevailing, especially in eastern Europe and Asia Minor, chose to journey as far as possible by sea, and so they not only identify a number of coastal sites, but comment on practical points such as the amount of shelter offered by an ancient harbour.

These reports, though numerous, are usually very brief, seldom illustrated, and often tinged with a certain romanticism, of which this is a charming example. 'But the mole (at Kastelli Kissamou, in Crete) is a stout achievement, and will probably last for another two or three thousand years, unless in our thirst for islands we do really lay hands on Crete, and later improvements in steam communications make these glorious bays of the Aegean as favoured of the people as are Margate and Hastings and Brighton nowadays' (Edwardes, 1887: 275).

In contrast, Captain Spratt, who explored Crete while making the first Admiralty chart of the island, writes more prosaically and usefully about the same site: 'Its ancient port is its most remarkable and interesting feature at present, being nearly dry, and having the old massive mole of large rude blocks of limestone, that, jutting out into the sea from the western shore of a small bay, protected it from the north, now almost entirely out of the sea, having been elevated about eighteen feet by the subsequent uplift of this part of the island...' (Spratt, 1865, II: 218).

Such reports, useful as they are, need to be checked and, where the remains still exist, investigated further. One site where this has been done is Phaselis, in south-west Turkey. In 1817 Captain Beaufort wrote: 'The principal port was formed by a stone pier, at the western side of the isthmus; it projected about two hundred yards into the sea, by which it had been entirely overthrown, and can now only be traced under water. The two other ports were on the eastern side; one of them is very small, with a narrow entrance in the pier, where it seems to have been closed by gates. The pier is angular, with a rock for its outer abutment; and to this circumstance it probably owes its preservation, the masonry being still nearly perfect. The third port seems to have been only a recess in the shore, where the lake discharges itself, and without any artificial protection; unless a long broken reef which faces it, was once the foundation of a great mole' (Beaufort, 1818: 59–60). This is a relatively long and detailed account, but comparison with the modern report (Blackman, 1973*a*) serves to show how much more work needs to be done on similar sites.

At the beginning of this century a few engineers surveyed the remains of some ancient harbours, notably Jondet at Pharos (Jondet, 1916). Also geologists such as Gunther (1903*a*, *b*) showed interest in submerged coastal sites as datable evidence for changes in sea-level. Since then a number of sites, either silted up or submerged, have been surveyed or excavated, especially since the advent of underwater

archaeology. But the only major study and collection of material is Karl Lehmann-Hartleben's thesis on Ancient Harbours in the Mediterranean, published in 1923. This is based largely on literary sources rather than on field-work. It includes a catalogue of some 300 sites, based on travellers' reports and a few early excavations such as those at Delos (Paris, 1916). There is a great need now to update this catalogue, as well as to re-assess some of the existing entries.

As is inevitable in a work of such size, there are occasional contradictions and inconsistencies. He was too reliant on vague reports in his sources, and sometimes what is only in his source a tentative identification of a site becomes definite in his catalogue. In all academic work there is a tendency for certain general statements arbitrarily to be picked up and repeated until they become accepted fact, when often the original statement was clearly only a suggestion or supposition. The fuller and more valuable the original work is, the more likely this is to happen. We need to read Lehmann-Hartleben's work, therefore, in a spirit of constructive criticism, to check the facts on which any general statements are based, and to reinforce them with examples from recently excavated sites.

One of the greatest problems about ancient harbours is the difficulty of dating them. Rock-cut harbours cannot be dated except where they appear to relate to more datable remains nearby. Roman concrete is distinctive, and very useful for dating. Otherwise one has to rely on other evidence, either archaeological from any surrounding buildings, or literary and historical. For example, there is plenty of evidence that there was an outer harbour at Portus, near Ostia, built by the emperor Claudius, and an inner one built by Trajan, and the remains of both of these have been found. Similarly it is known that the harbour at Antium was built in the reign of Nero, and that at Leptis Magna considerably enlarged in the time of Septimius Severus. But many harbours were repaired and even rebuilt several times, and some are still in use today, so dating is difficult.

A great many Roman harbours are known, some are dated, some are planned or excavated. But there is a need for detailed study of far more of these sites, to produce more material for comparative studies. One interesting aspect is the existence and design of lighthouses at various sites. There were famous and monumental lighthouses at Alexandria and at Portus (Ostia), and there is a tendency for any artistic representation of a lighthouse to be automatically assigned to one of these two. In fact there is a great deal of archaeological evidence for lighthouses at a number of sites around the shores of the Mediterranean and beyond. But what proportion of sites had them ? Not every harbour would have a great tower like the pharos at Alexandria or the lighthouse at Portus. There were such large towers, in fact, at a number of sites not only in Italy, but also in such distant places as Patara in Asia Minor, Leptis Magna in North Africa, Corunna in Spain, and Boulogne and Dover. But the lack of evidence for monumental structures such as these at other sites need not mean that there was no light shown at all at these sites.

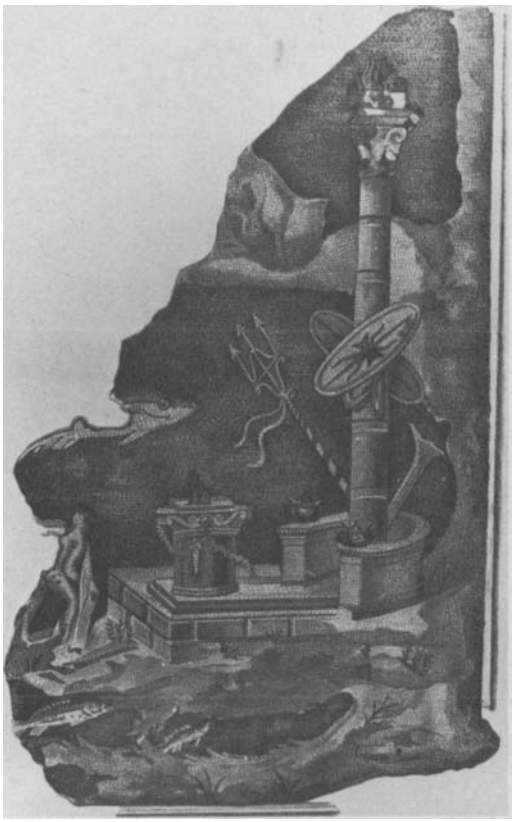

Figure 1. Mosaic from Praeneste.

A mosaic from Praeneste (Marucchi, 1904: pl. VI–VII) (Fig. 1), and a painting probably from Herculaneum (*Pitture d'Ercolano,* 1757, I: 75) seem to show a fire lit on top of a column standing in a prominent position by the sea. If this is a simple form of lighthouse it makes a lot of sense. In a minor port, and where the height of the column would be sufficient for a light to be visible at a reasonable distance, such a structure would be simpler and cheaper to build and maintain than a full-scale tower.

Another suggestion (Vermeule, 1962: 76–7) is that colossal marble statues were placed in prominent positions, as for example the figure on the top of a small island in the bay of Porto Raphti in Attica, and that fires were lit within the crowns on their heads, which had pierced sides like braziers. There are two other possible examples, both from Crete (Spratt, 1865, I: 210–11, 242). This suggestion seems very reasonable, and even if fires were not always lit on top of them, such large white marble figures in prominent positions would make good day-marks.

Modern lighthouses fall into two distinct categories. All serve as guides to navigation, but some are built on headlands, islands, and particularly on isolated rocks, as a warning to keep well clear of these dangerous places; while others, notably those at the entrances to harbours, are markers, to be approached rather than avoided. Existing evidence suggests that all Roman lighthouses were of this second type. They are all found either on the end of a harbour-arm, e.g. Leptis Magna, or on an island, either natural or man-made, at the entrance to a harbour, e.g. Portus, Centumcellae, or on a hill above a harbour e.g. Dover, Fréjus.

Another interesting question is to what extent were Roman harbours standardized ? Naturally they varied in shape and size to suit the natural features of the site. For example some moles were built to join and add height to an existing chain of rocks, and some were totally artificial. On the flat sandy coast of North Africa very long moles had to be built in order to reach a reasonable depth of water, e.g. Thapsus. There must also be variety in the materials used, depending on local supplies and conditions. But one might expect some degree of standardization in details, such as the means of mooring ships. But in fact the more examples of moorings that one collects, the greater the variety of both the features themselves and their positions on the quays and jetties.

The simplest form of mooring is a hole cut obliquely through the edge of a quay. In most built harbours, however, one finds bollards or pierced mooring-stones, or both. Bollards were sometimes cut from the rock, but were more usually set into the surface of a built quay, e.g. Chersonisos in Crete (Leatham & Hood, 1958–9: 267). The definition of a bollard is not clear, and some, especially those found out of context, may be wrongly identified. The shape of the examples found so far varies considerably. Some are cylindrical, some cylindrical on a square base, like the fine examples from Narbonne (Guy, 1955: figs 5–6). One of those from Fréjus is conical, which seems unlikely unless there was a metal ring attached to it (Aubenas, 1881: 500). Most bollards stood upright on the horizontal surface of the quay, but at Nisida there were two set in niches in the sides of piers of the arched mole (Gunther, 1903: 33, fig. 15), and at Phaselis there are curious bollards projecting horizontally from the vertical face of the quay (Blackman, 1973: 360, fig. 17).

At the Trajanic harbour at Portus there are short columns with numbers on them, presumably numbering berths (Testaguzza, 1970: 171). It is possible that some other 'bollards' are in fact simply some sort of marker.

Mooring-stones are dressed stone blocks with a hole pierced in them. They are set in quays, projecting from them, usually with the hole horizontal, but occasionally with the hole vertical. Most of these stones are set in the lowest vertical face of a quay, but some are set in a higher back wall, as at Leptis Magna and on the banks of the Tiber at Rome (Bartoccini, 1958: pl. LIII; Parker, 1868: nos 1785–6). Some of those at Rome are carved in the form of lions' heads (Fig. 2) (Parker, 1868 no. 160; 1878: pl. XIV), and one from Terracina has the head and fore-paws of a lion (Fig. 3) (Mengarelli, 1900: 637–8, fig. 2). The distances at which such stones are set, in the few instances where this is recorded, vary from about 3 m in places at Leptis Magna (Bartoccini, 1958: 28) to over 17 m at Terracina, but here there may

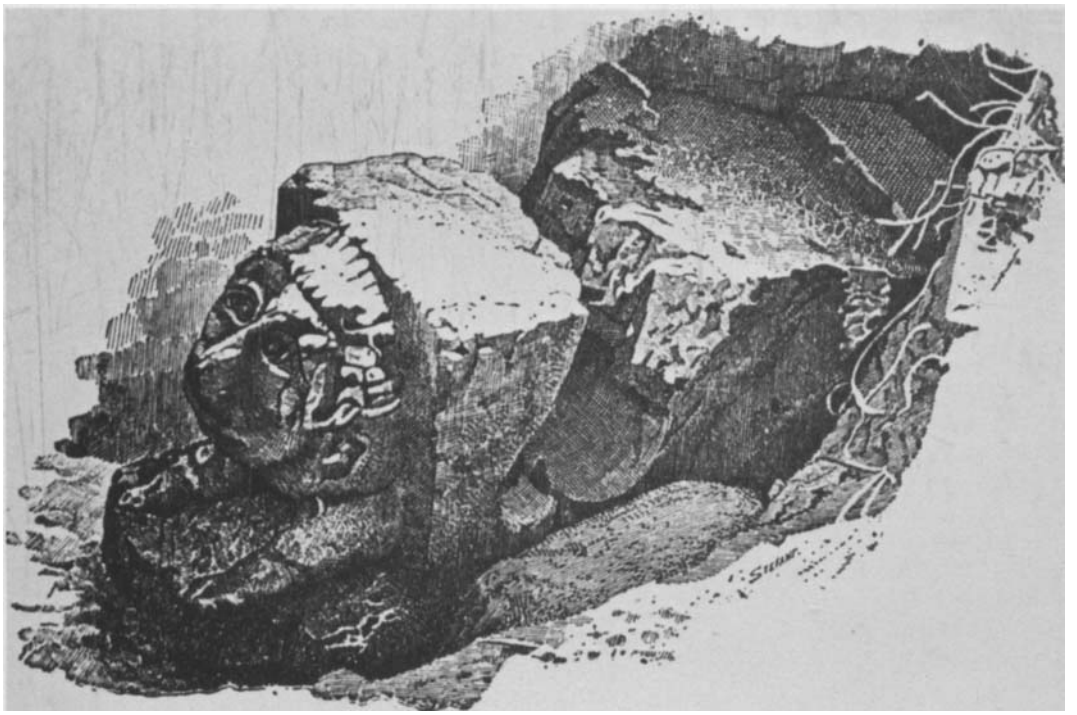

Figure 2. Mooring-stone at Rome carved in the form of a lion's head.

have been bollards as well (De la Blanchère, 1881: 333, pl. X).

There are also reports of iron mooring-rings from at least 13 sites, but very few of these are definitely set into a quay. It would appear from the find-places that such iron rings were used in smaller harbours, particularly in the provinces, as they were presumably simpler and less expensive to produce and fit. They could also be fitted to a wooden quay, as at Dover, where in 1855 there were found 'timbered quays, groins, warping gear, hawser rings, and other remains of a rough mariner's craft . . .' (Puckle, 1893: 129).

Thus it appears that each harbour was individual not only in shape and size, but also in details which could more easily have been standardized.

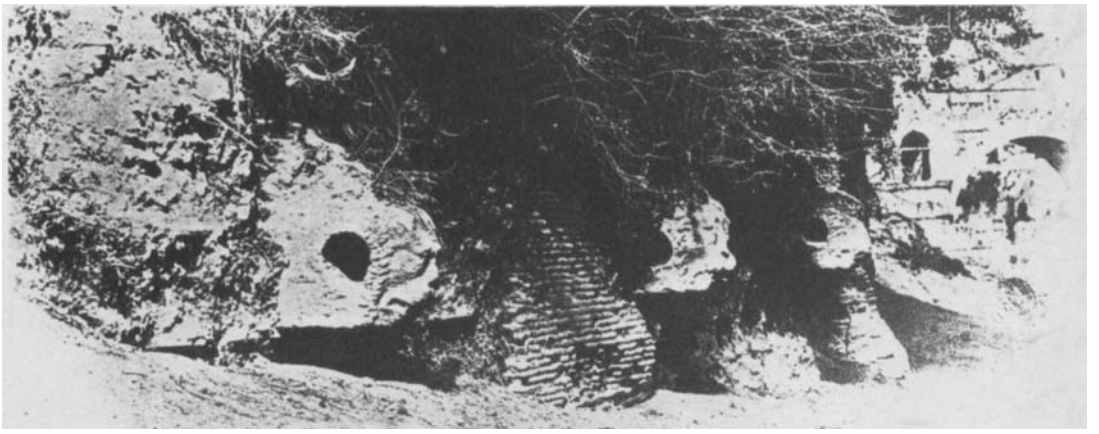

Figure 3. Mooring-stones in the Port of Rome in the Tiber, 180 BC.

One feature of harbour engineering about which very little is known is mechanical aids for unloading cargoes. There is literary evidence for the use of simple cranes (Vitruvius, *De Architectura;* X. 2.10). Is there any archaeological evidence ? A mosaic from the Foro delle Corporazione at Ostia (Becatti, 1961: pl. CLXXXI, no. 110; Paribeni, 1916: 327) (Fig. 4) appears to show a tower with a horizontal arm projecting from it for loading or unloading goods from a ship. It could, however, simply be showing a tower at a harbour entrance (but clearly not a lighthouse, as it has a pitched roof), and the horizontal arm could be one of the yards of the ship. There is also a graffito found on a wall of the theatre at Sabratha in North Africa (Turba, 1954: fig. 2) which seems to show an elaborate crane. But it is published only in a restored drawing, which looks highly implausible. In the inner harbour at Cosa, in Italy, there are two square pedestals which the excavators suggest 'may have served as mounts for devices used in loading amphorae onto the waiting ships.' (McCann & Lewis, 1970: 210). None of these pieces of evidence is conclusive, but they are very interesting, and a search for further examples might produce fascinating results.

Another point to be considered in the study of harbours is the various purposes for which they were designed, and whether the design varied to suit the use to which a particular harbour was to be put. In general, passengers travelled in cargo boats, so that the only harbours which might be designed to handle mostly passengers would be those serving the major centres of pilgrimage, for example Itea for Delphi, and Eleusis. There were also the small private harbours attached to rich coastal villas, such as those in the Bay of Naples. There were a few purely military harbours, for example Misenum and Classis (Ravenna). Detailed study and comparison of such harbours might show differences in design to suit the specific purpose for which each was built. Commercial harbours, too, must have served varying areas of hinterland and handled varying types of cargo, and may reflect these differences in their design.

An interesting question is to what extent and

Figure 4. Mosaic from the Foro delle Corporazione at Ostia.

by what means the Romans adapted their harbour-building to account for the far greater tidal ranges which they encountered when they advanced their empire to the Atlantic coasts of Europe. The typical built quay with a fixed row of mooring-stones or bollards was designed for coasts with a small tidal range. In particular, those quays with mooring-stones set in the back wall allow a very limited angle for a mooring-rope (Blackman, 1973: 119). The fact that these angles are used as evidence for the contemporary sea-level shows how narrow they are.

Unfortunately the evidence for harbours on the Atlantic coast of Europe and Britain is scanty. But a number of the known sites are to be found well up river estuaries, for example London, Gloucester (Fryer, 1973: 261–3). This is at least partly because they are built to supply forts which may be built on these sites for other reasons, but it may be also because the Romans wanted to avoid the open sea and the worst of the tidal range. This would appear to have been a general policy. In Scotland, for example, the advancing armies were supplied at least partly by sea (Tacitus, *Agricola:* 25, 38), and the absence of known coastal harbour sites, and the existence of possible harbour sites in more sheltered places such as Carpow, well up the Firth of Tay, and in the Montrose basin, suggests that the Romans preferred the problems of shallows and marshes to those of exposed coasts.

There are many questions left unanswered by the existing published archaeological evidence from Roman harbour sites. A vast amount of field-work is needed to check and amplify old reports and to produce a new body of properly recorded evidence which would hopefully prove useful in checking the older reports of sites now destroyed. A large body of detailed evidence would help to date sites not dated from literary or historical sources by comparison with those sites which can be dated. Such new material would also be very interesting in its own right. Perhaps someone will find more definite evidence for the use of cranes, for example, or archaeological evidence for one of the simpler forms of lighthouse.

I would like to make a plea for help with field-work. I feel sure that there are many ancient remains still to be found along coasts, as the travellers of the last two centuries found, but that these are often not noticed, or only known to a few local archaeologists. There is much which may not be published, even though it is obvious on the ground. There is also a need in many cases for more detailed observations to be made on sites already known or published. There are so many ancient harbours that anyone on holiday by the sea is liable to come across one, and any observations, drawings, photographs, measurements or theories would be extremely welcome. Even in the case of a published site another person's views are useful.

My own research involves mainly collecting and interpreting the artistic evidence for Roman harbours. Many illustrations, on lamps, gems, wall-paintings, mosaics and engraved glass may exist in museums but as yet be unpublished. Overlapping with this aim, I am trying to bring Lehmann-Hartleben's site-index up to date, but without much prospect of being able to do any field-work outside Britain. Hence this attempt to interest others who may have more opportunity to explore the coasts of Europe.

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