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ARCHAEOLOGICAL EVIDENCE FOR SHIPS AND HARBOR FACILITIES AT BERENIKE (RED SEA COAST), EGYPT

Steven E. Sidebotham

1. Introduction

Located about 825 km south of Clysma/Suez and ca. 260 km east of Aswan (at 23° 54.62' N/35° 28.42' E) (figs. 1–2), Berenike functioned as a major Ptolemaic-Roman emporium for about 800 years between the third century B.C. and the sixth century A.D.¹ Through it passed numerous peoples, merchandise, and ideas linking the Mediterranean basin, the Near East, and Egypt on the one hand and the Red Sea and Indian Ocean littorals on the other. Founded by Ptolemy II Philadelphus in about 275 B.C. and named after his mother (Plin. *HN* 6.33.168), Berenike, along with the more northerly emporium at Myos Hormos (Quseir al-Qadim, about 300 km from Berenike), comprised, according to literary sources (Strabo, *Geography* 2.5.12; 16.4.24; 17.1.45; Plin. *HN* 6.26.102–103; and the *Periplus Maris Erythraei* 1, 19, 21), the premier Red Sea ports in Egypt in the early Roman period. Written documentation suggests that Berenike still functioned to some degree in A.D. 524/525, when a Roman expedition was presumably launched in support of an Axumite attack on the Himyarites in South Arabia (*Sancti Martyrium Arethae* 27, 28, and 29).²

The archaeological evidence from Berenike recovered from eight seasons of fieldwork between 1994 and 2001 corroborates and greatly expands upon the literary. Items from as far west as Gaul and Spain and as far south and east as the kingdom of Axum, South Arabia, coastal sub-Saharan Africa, the Persian Gulf, India, Sri Lanka, perhaps Vietnam/Thailand, and eastern Java have been identified. The plethora of “imported” finds includes floral, faunal, and artifactual and ranges from common trade goods to exotic “luxuries.”³ The overall appearance of the ships that carried this merchandise between Berenike and the “East” and the harbor facilities that accommodated these merchantmen are the subject of this paper.

The evidence can be divided into two broad categories: (1) archaeological artifacts related to ships and shipping and (2) architectural evidence for harbor facilities.

2. Archaeological Artifacts Related to Ships and Shipping

Artifacts and ancient documents related to ships and shipping are more abundant from the excavations at Berenike than the facilities that would have accommodated them. The bulk of these finds

¹ The most significant publications on the work conducted at Berenike and environs appear in Sidebotham and Wendrich 1995; 1996a; 1996b; 1996–1997; 1998a; 1998b; 1999; 2000; 2001–2002; 2002; 2007; Sidebotham 2002.

This campaign may also be recorded in an old Ethiopian inscription on a stela found at Marib, Yemen: see Robin 2005, 15 (fig. 6), 16.

² See van Hecke et al. 1970, 743, 747; Vasiliev 1950, 294–295.

³ For a synopsis of this trade, see Raschke 1978; Sidebotham 1986; and Young 2001.

Fig. 1. Northern end of Red Sea and location of Berenike
(drawing Martin Hense).



Fig. 2. Site plan of Berenike as of the end of the 2000–2001 season
(drawing F. G. Aldsworth and H. Barnard).

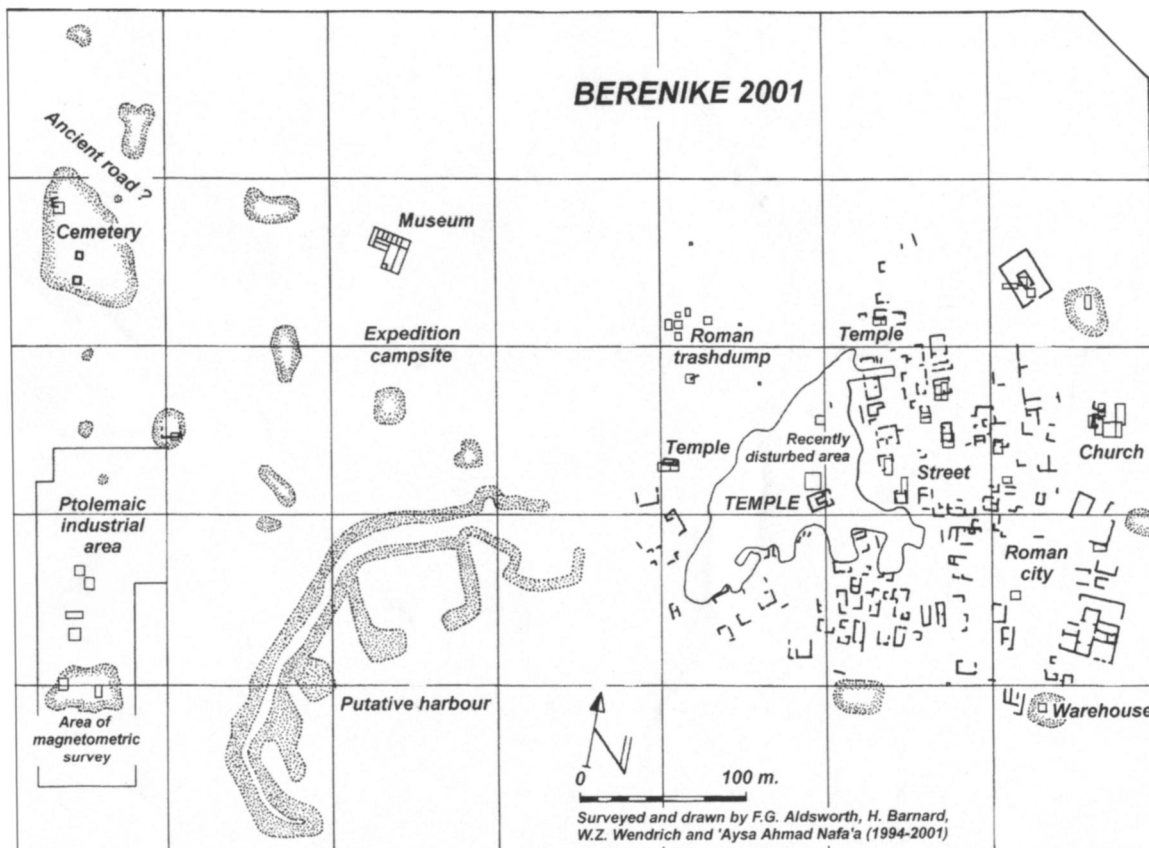




Fig. 3. Copper alloy nails and tacks from the Ptolemaic industrial area (photo author).

derives mainly, but not exclusively, from the early Roman (mainly Julio-Claudian and Flavian) rubbish deposits north of the city; one other trench in the northeastern part of the site also provides dramatic graphic evidence for the appearance of an ancient merchant ship that plied the Red Sea in the early Roman period. Little has come from the Ptolemaic era or from the best-excavated period in the city's history, the late Roman.

PTOLEMAIC

In the Ptolemaic industrial zone at the extreme western side of the site excavations unearthed large (up to 20 cm long) copper alloy nails (fig. 3) and lead sheets, which may have been used in ship repair. Some of the larger nails must have been employed in maritime-related activities such as hull and superstructure repair. Smaller copper alloy and iron nails and tacks (together with tarred material: not found) could have been used to sheath hulls with lead, more rarely copper, to reduce the deleterious effects of marine microorganisms; this was a common phenomenon in the Mediterranean in antiquity and seems to have also been practiced in the Red Sea, certainly at Quseir al-Qadim.⁴ The 95 kg of lead sheets recovered from trench BE00-36 at Berenike preserved no telltale nail holes. The sheets were also thicker than the usual lead hull sheathing one normally finds, but lead is very malleable, and these sheets could have easily been hammered into the desired thicknesses for sheathing the hulls of large open-water merchant vessels.

While there has been no clear-cut archaeological evidence of shipbuilding or repair at Berenike in the Ptolemaic period, a papyrus dated 224 B.C. indicates that a large deep-water vessel, in this case an *elephantagos* (an elephant transport), was outfitted at that time at a port named Berenike. Unfortunately, it is not clear from the papyrus whether the port in question is that considered in this paper or one elsewhere in the Red Sea. That the document was found in the Fayum, however, suggests that Berenike Troglodytika (the Egyptian one, which is the subject of this paper) is the port in which the outfitting took place.⁵

The find of a single elephant tooth from this area (in trench BE00-40) is the only solid archaeological evidence (there is some ivory, which could have arrived independently of the elephants) of the lively elephant trade that the ancient literary and papyrological sources indicate was so important to Berenike's livelihood in the Ptolemaic period.⁶

⁴ For Berenike, see Sidebotham and Wendrich 2001–2002, 43; for lead sheathing of the hulls of ancient merchant ships, see Casson 1971, 195 (translation from Athenaeus on use of lead sheathing), 210, table on 214–216; Parker 1992, 27; Casson 1994, 35, 106, 121 (the same Athenaeus passage noted above), 140; for lead sheathing from excavations at Quseir al-Qadim, see Thomas and Whitewright 2001, 38–39, 40 (fig. 9.5); Whittaker, Walsh, and Blue 2006, 80; Thomas and

Masser 2006, 135, 138; Van Rengen and Thomas 2006, 147, 149; Thomas 2006b, 153.

⁵ Wilcken 1963, 533–535.

⁶ On the elephant trade, see Scullard 1974, 123–133; Casson 1993.

EARLY ROMAN

The early Roman trash dumps north of the city (trenches 13, 19, 29, 31, 33, 48) were created by the third quarter of the first century A.D.⁷ Excavation of these deposits produced abundant organic and inorganic remains, including mummified pets and hundreds of ostraca and papyri that provide much evidence of daily life, industrial activity, and Roman customs house and shipping procedures. The ostraca are primarily public in nature; the papyri comprise mainly private letters, receipts, a land register, and bills of sale (one of which was for a white male donkey and his saddle for 160 drachmai). Some of the ostraca provide evidence for items loaded on the ships for consumption by the crews and for transit as merchandise to ports in Arabia and India. These include rations presumably for the ships' crews⁸ and wines: Italian, Aminaean, Rhodian, Ephesian, Kolophonian, and Laodicean (some of which are also mentioned in the *Periplus Maris Erythraei* as favored items in the Arabia-India trade).⁹

The name of one ship (Gymnasiarchis),¹⁰ as well as numerous personal names of soldiers, merchants, customs officials, and camel drivers, also appears in these texts.¹¹ Among other remains from the early Roman trash dump are brailing rings made of animal horn (fig. 4),¹² Indian-made sailcloth (fig. 5),¹³ perhaps lifting nets (fig. 6),¹⁴ and possibly the reinforced remains of sails (although these sturdy textile strips could have been used for tents or animals' girths). Sturdy matting woven of bamboo, and in patterns that are typical of northwestern India today, may have served as awnings¹⁵ or possibly as sails.¹⁶ A papyrus found at Berenike in 1999 contains a highly abbreviated list of items related to sailing, including bundles of rope, a mast belt, block and tackle equipment, branding irons, and a type of gum.¹⁷

Close parallels to the Berenike material have been excavated at Quseir al-Qadim from this period, including ropes used as shrouds and stays, running rigging to raise and trim the sails, sheaves (wooden pulley blocks), brailing rings made of wood and horn, lead hull sheathing, copper tacks, possible lifting nets, and, most recently, a mid-first-century A.D. sail of Indian manufacture with brailing ring attached.¹⁸

While the Coptos Tariff of May A.D. 90 refers to the transport of a ship's mast to the Red Sea coast from the Nile and there was possible occasional ship construction at some of the Red Sea ports (Clysma/Suez being the best candidate given the proximity of the Nile-Red Sea canal and

⁷ On these dumps, see Sidebotham 1998, 109; 1999, 46–57; 2000, 100–107; 2007b. Excavations in trench 13 revealed portions of a Ptolemaic building and recovered one Demotic ostrakon in trench BE99-31 and two from trench BE00-10 (cf. Bagnall et al. 2005, 103–104). There was a secondary deposit of a human burial from the late Roman period in trench BE01-48. Trenches 14 and 15 were late Roman dumps near the early one (Sidebotham 1998, 109).

⁸ Bagnall, Helms, and Verhoogt 2000a, 21–24.

⁹ See Bagnall, Helms, and Verhoogt 1999, 201–205; Bagnall, Helms, and Verhoogt 2000a; Bagnall, Helms, and Verhoogt 2000b; Bagnall et al. 2005, 8, 9, 60, 63, 65, 76–78.

¹⁰ Bagnall, Helms, and Verhoogt 2000a, 61, no. 86.

¹¹ Bagnall, Helms, and Verhoogt 2000a, 11–14, 24–30.

¹² Sidebotham and Wendrich 1998b, 91 and fig. 12;

Vermeeren 2000, 341, 342; Wild and Wild 2000, 268 (pl. 11–10).

¹³ Wild and Wild 2000, 265, 266–269, 272; 2001.

¹⁴ Sidebotham and Wendrich 2001–2002, 43 and fig. 45.

¹⁵ Sidebotham and Wendrich 2001–2002, 43.

¹⁶ Chittick 1980, 297, 298.

¹⁷ Bagnall et al. 2005, 45–47 (no. 131).

¹⁸ Thomas and Whitewright 2001; Thomas, Whitewright, and Blue 2002; Blue 2002, 149; Whitewright 2003, 71 and 73 (fig. 59); Richardson 2002, 79; Whittaker, Walsh, and Blue 2006, 80; Thomas 2006b, 90, 153; Thomas and Masser 2006, 131–132, 135, 139; Van Rengen and Thomas 2006, 147, 149.



Fig. 4. Bone brailing rings from early Roman trash dump (photo author).

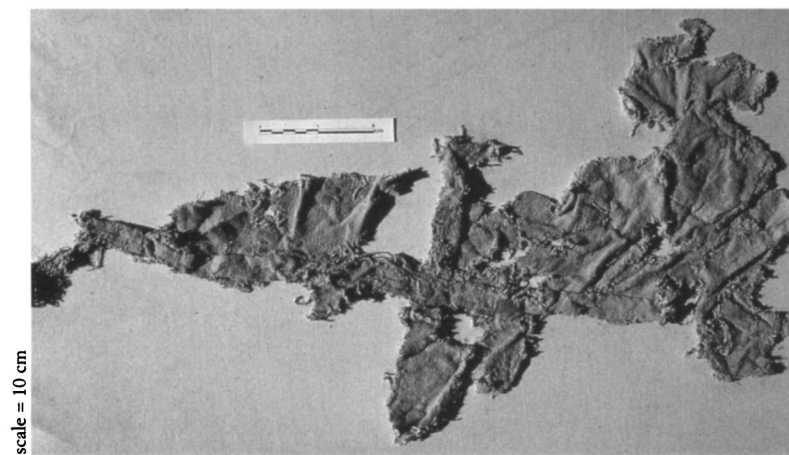


Fig. 5. Indian sailcloth from early Roman trash dump (photo author).

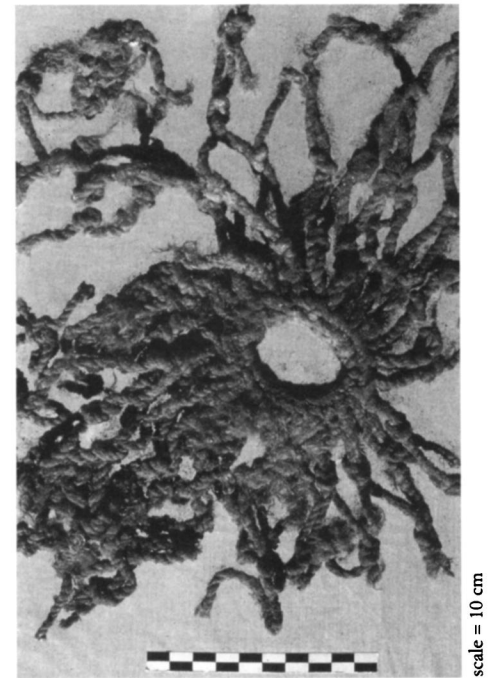


Fig. 6. Possible lifting net from early Roman trash dump (photo author).

the reduced shipping costs it allowed),¹⁹ one must surmise, given the long distances from the Nile and the high cost of transport overland,²⁰ that the bulk of the maritime-related “construction” activities probably involved ship repair rather than ship construction, certainly at Berenike, anyway. Yet recently remains of one or more dismantled ships’ hulls of cedarwood have been found in a cave immediately west of the Middle and early New Kingdom port of Wadi Gawaseis, suggesting that ship assembly (at least of smaller vessels) took place along the Red Sea coast.²¹ Of course, it is possible that heavier timbers for shipbuilding, more likely repair, could have been conveyed by sea to Berenike from more northerly Red Sea ports, especially from Clysma/Suez.

From Berenike trench BE95-4, locus 045 comes a pictorial graffito closely dated by association to A.D. 50/60–70, one generally accepted era for the composition of the *Periplus Maris Erythraei*²²

¹⁹ For discussion of the Coptos Tariff (OGIS 764 = IGRR 1.1183 = Bernand 1984, 199–208 [no. 67]), see Sidebotham 1986, 35, 53, 67, 80–81, 102, 105, 159; Young 2001, 48–50, 63, 67, 209; Burkhalter-Arce 2002, 199–233. Much has been written on the Nile–Red Sea canal: see Maclaren 1825; Bourdon 1925; Sijpesteijn 1963; Sidebotham 1986, 67–68; 1991, 16 and map 2.4; Tuplin 1991, 242–248; Paice 1992, 227; Sayed 1993; Cataudella 2002, 48–59; De Romanis 2002.

²⁰ Tuck 1997, 11 and notes.

²¹ Professor K. A. Bard, personal communication.

²² Casson 1989, 6–7; Groom 1995, 180, 182, 190; Fussman 1997, 66; Robin 1997, 53; cf. Belfiore 2004, 77–82.

and also, based on excavations conducted thus far, the peak of maritime commercial activity between the Mediterranean/Berenike and the "East." The graffito depicts a ship in harbor with sails furled and with two lifts above and two braces trailing down from the main yardarms and tied off below. There is a pennant clearly waving in a strong wind, above the spindle (figs. 7–8). This provides a good idea of the appearance of the ships plying the Red Sea–Indian Ocean trade routes in the early Roman period.²³

Just north of Ras Benas and Berenike in only about 7 to 10 m of water at a point called Fury Shoal/Sha'ab Sataya are the remains of a Roman shipwreck dated first century A.D. from identification of the amphoras (mainly Dressel 2–4/Peacock and Williams 10) scattered on the seabed. Once excavated, and should enough of the hull survive, it will provide the first documented evidence for the size, appearance, construction methods, and materials of a Roman-period Red Sea merchant vessel.²⁴

LATE ROMAN

Artifacts from late Roman levels at Berenike suggest the types of materials used in ship construction, in that period at least. Excavations have recorded teakwood leveling courses (figs. 9–10) built into the walls of some late Roman (primarily mid-/late-fourth-century A.D. on) edifices. The teak (which comes from India and is a very hard, durable timber) from these walls was clearly recycled, as is evident from their elaborate dowel holes and, in one instance, the presence of a nail embedded in a timber beam. Some of the pieces are over 3 m long (fig. 11), suggesting that they were originally large packing crates or, more likely, portions of ancient sailing ships.²⁵

The *Periplus Maris Erythraei* (36) reports that Omana (Oman) imported teak from India, perhaps used to build sewn boats called *madrake*.²⁶ The presence of elaborate dowel holes cut into the Berenike teak planks found built into the late Roman architecture of the city may suggest that they were worked in a western tradition rather than using Indian shipbuilding methods. Teak is durable, does not split, crack, or shrink or alter its shape. It is easily worked and has great elasticity and strength.²⁷ Thus, it would have been ideal for ship construction. Several medieval Arab writers mention ships built of teak in the sewn tradition sailing in the Red Sea and Indian Ocean.²⁸

If it is correct to interpret the teak found in late Roman architecture at Berenike as portions of ships, the question arises whether these vessels were made entirely of teak and built in India or, rather, whether these teak timbers were used to repair ships built in the "West" that had arrived in India, been repaired, and returned to Berenike. It is also unclear whether the teak ships were made for Roman merchants or their Indian or other counterparts. Once the arduous passage to Berenike from India had been completed, portions of ships would certainly have undergone needed repairs. In the timber-poor environment of the Eastern Desert, this valuable hardwood would have been quickly reused for other purposes—in this case, to stabilize the walls of buildings. Similar arrangements for secondary use of Roman ship planking have not yet been found in excavations at Quseir al-Qadim, though reused timbers, perhaps from ships, have been recovered from two graves in the Islamic necropolis there.²⁹

²³ Sidebotham 1996a.

²⁶ Groom 1995, 189.

²⁴ Ghisotti 1996. I wish to thank Mr. R. Thomas and Dr. L. Blue for bringing this article to my attention and for providing additional information on this shipwreck. See also Stoll, Kefrig, and Miete 1999, 188–189. I wish to thank Dr. G. R. Dumke for bringing this book to my attention.

²⁷ Hourani 1995, 89–90.

²⁸ Hourani 1995, 90, 92–93.

²⁵ Vermeeren 1998, 343; 1999, 319.

²⁹ For timber and wood that has been found at Quseir al-Qadim, see Whitcomb 1982, 28, 29–30 (roof of cellar); Meyer 1982, 201, 203 (pl. 53), 207–208; Blue 1999, 28 (lintel);



Fig. 7. Ship graffito from trench BE95-4, locus 045, pottery bucket no. 64 (2669-G) from A.D. 50–60/70 (photo author).

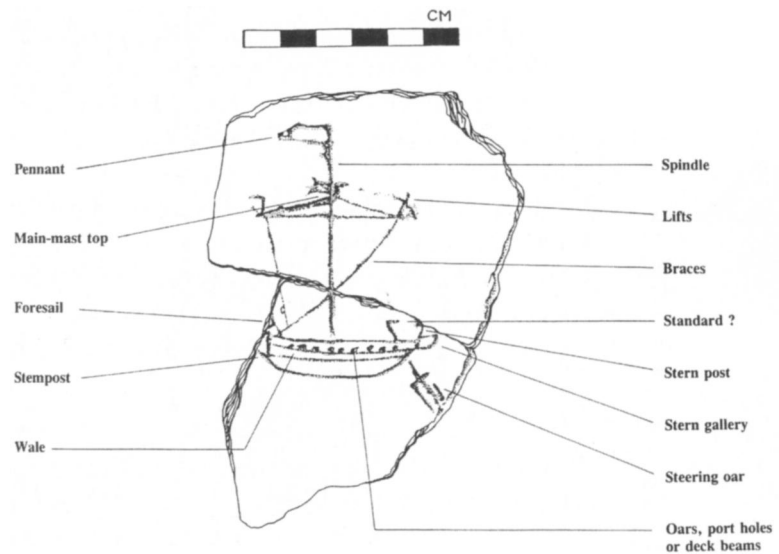


Fig. 8. Ship graffito from trench BE95-4, locus 045, pottery bucket no. 64 (2669-G) from A.D. 50–60/70 (drawing D. E. A. van Zijl).

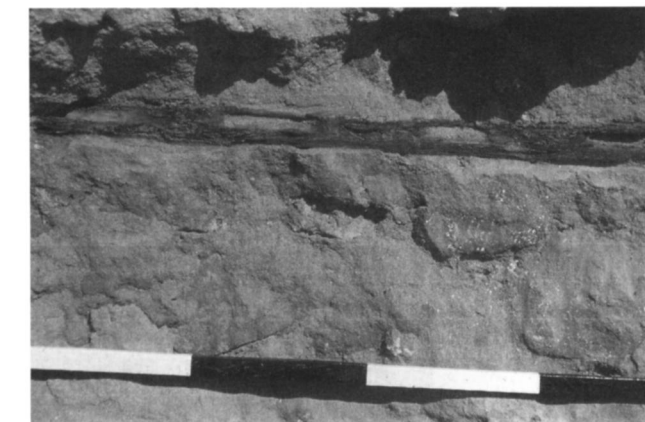


Fig. 9 (left above). Teakwood reused as leveling course in late Roman wall in trench BE97/98-16 looking south (photo author).

Fig. 10 (left). Detail of fig. 9 (photo author).

Fig. 11 (above). Teakwood (over 3 m long) reused in late Roman religious shrine in trench BE98/99-23 looking north (photo author).

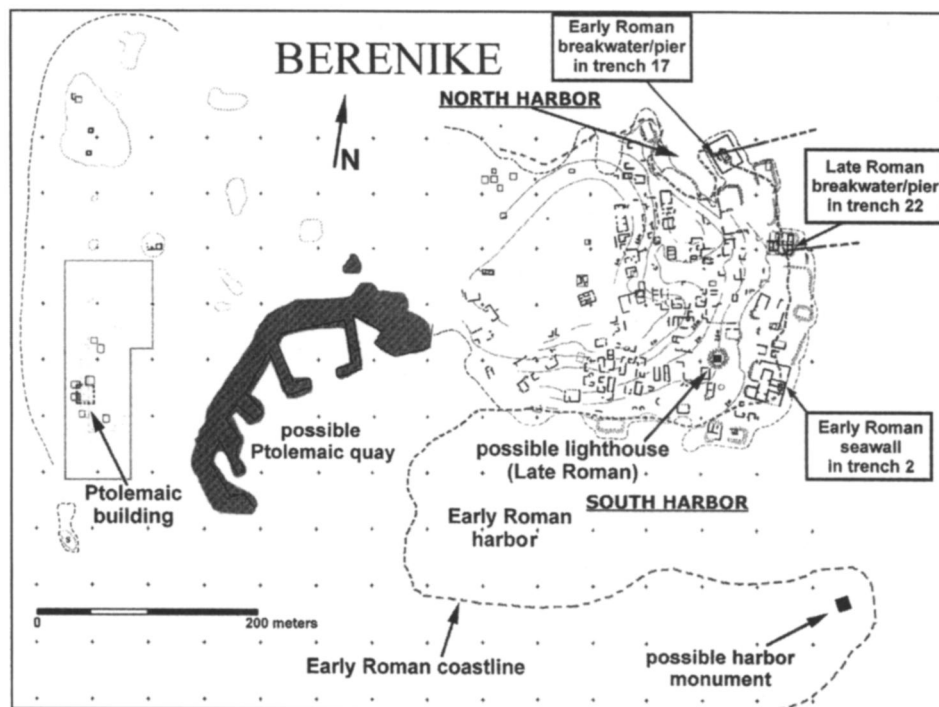


Fig. 12 (above). Plan of Berenike highlighting the putative Ptolemaic harbor and (from north to south at the eastern end of the site) Roman period seawalls and piers in trenches 17, 22, and 2 (drawing A. M. Hense).

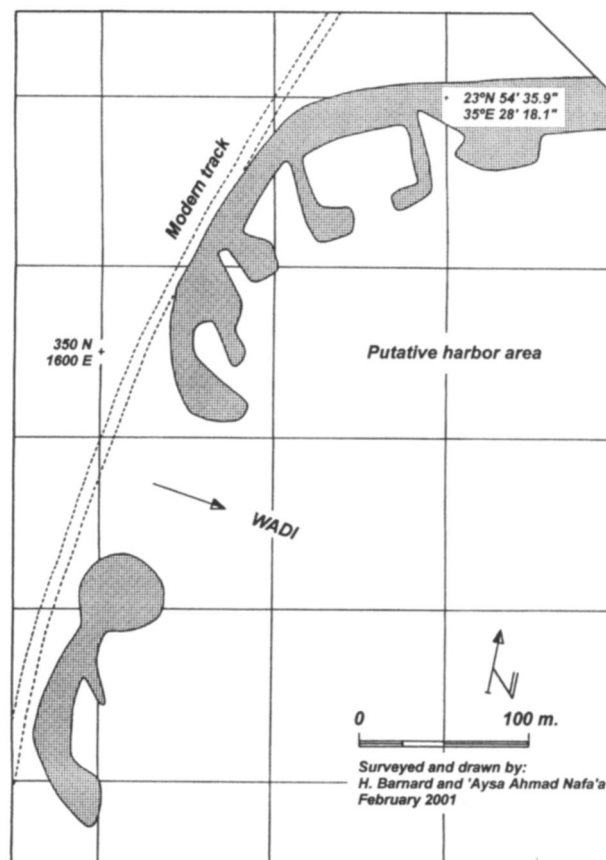


Fig. 13. Detail plan of putative Ptolemaic harbor (drawing H. Barnard).

3. *Architectural Evidence for Harbor Facilities*

PTOLEMAIC

Fieldwork has documented little architectural evidence for harbor/port facilities at Berenike. In the latest season of excavation at the site in winter 2000–2001 surveying recorded a series of “arms” extending from a semicircular berm that formed a southward-facing enclosure strongly reminiscent of a harbor (figs. 12–13). Atop the berm and projecting “arms” were piles of unworked vesicular basalt, a stone not indigenous to Egypt and one frequently imported for use as grinding stones from the northern or southern portions of the Red Sea or, perhaps, from farther afield. It is likely, in this instance, that they were used as ships’ ballast.³⁰ Perhaps upon arrival, after the ships’ contents had been unloaded and before departure, the ballast was emptied to make room for outbound cargoes. The entire area had silted up, and a few later Roman buildings had been erected in the area. Previously no particular notice had been taken of this feature. The current hypothesis is that it might be the Ptolemaic, and/or possibly the early Roman, harbor. When excavators are allowed once again to work at Berenike, this putative harbor area will be subject to excavation to confirm its function and dates of use.

This massive “harbor” feature and the associated basalt/putative ballast lay immediately southeast of the early to mid- (mid-third- to mid-second-century B.C.) Ptolemaic-era industrial area noted above, where ship-related items were made. It would have been logical to place the harbor facility and workshops making items used in ship repair/refurbishment in close proximity to each other. Location of the putative harbor on the southern side of the city would also have protected it somewhat from the strong prevailing northerly winds of the region.

EARLY ROMAN

Local geological conditions caused by harbor silting necessitated that the early and late Roman cities of Berenike be situated farther east and somewhat south of the Ptolemaic settlement.³¹ Similar silting problems also troubled the port at Quseir al-Qadim.³² Excavations unearthed two architectural features from the early Roman period at Berenike that are or appear to be harbor-related (fig. 12). From north to south along the eastern edge of the visible ruins are a seawall made of coral heads and ashlar (in trench BE97/98-17, loci 110/116/125) (figs. 12 and 14)³³ and another seawall made of giant limestone boulders (in trench BE94/95-2, loci 054a–b) (figs. 12 and 15).³⁴ These features are all approximately contemporary (early Roman, late first century B.C./first century A.D.) and provide a limited glimpse of the configuration of the early Roman port. These combined with the results of

Masser and Thomas 2001, 13 (probably thatching for roof and wood doorstep); 15 (fig. 4.2), 16 (fig. 4.3). For possible Islamic ship timbers in Islamic graves, see Blue 2002, 149; Macklin 2006, 158.

³⁰ Williams-Thorpe 1988, 286 (following Rougé 1981, 68–69) indicates the use of basalt millstones as ballast in ancient Mediterranean ships. For all manner of ballast: boulders, pebbles, beach rock, clay, and sand (but not metal ballast), usually collected from the shore rather than ballast piles, see Parker 1992, 28. I wish to thank Professor J. A. Harrell and Dr. L. Casson for these references. Further for stone as ballast, see Casson 1971, 176 and n. 43 and 219; cf. Harrell 1996, 109.

Since this paper was written, geochemical analysis of the basalt ballast from the putative Ptolemaic/early Roman har-

bor at Berenike has shown that 100 percent of those samples derived from the South Arabian port of Qana’ on the Indian Ocean coast of Yemen. For this, see Peacock, Williams, and James 2007, 59.

³¹ See Harrell 1996, 105–106, 112–126 on harbor silting at Berenike.

³² Blue 2002, 142, 144–147, 149; 2006, 43–61; Thomas 2006a, 90; Peacock and Blue 2006b, 174–176.

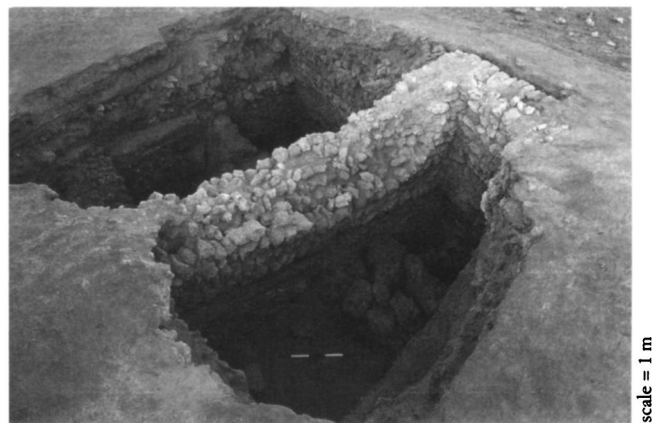
³³ Sidebotham 2000, 74–75.

³⁴ Sidebotham 1996b, 25.

Fig. 14. Trench BE97/98-17, loci 110/116/125 (sea wall in northern harbor) looking northwest (photo author).



Fig. 15. Trench BE94/95-2, loci 054a-b (limestone sea wall) looking southwest (photo author).



a magnetometric survey indicate that there were at least two bays or inlets, one on the north side of the site³⁵ and another on the south. Whether there were others and whether the northern inlet accommodated only smaller tender vessels associated with unloading larger ships or small coastal-hugging Red Sea “tramp” steamers and the more substantial southern harbor served only larger longer-distance merchantmen can only be suggested and not proven.

Parallels for the early Roman harbor facilities at Berenike may be found at the ongoing excavations of Quseir al-Qadim, where an early Roman pier (early first century A.D.) has been found, built, however, on Nile, Dressel 2–4 (Italian), Rhodian, and Dressel 6 (Istrian peninsula) amphoras dating late first century B.C. to early first century A.D.³⁶ The port at Quseir al-Qadim was very primitive and not at all monumental,³⁷ as seems to have been the case at Berenike. The amphoras described above from Quseir al-Qadim were part of a land reclamation project similar to what took place at Berenike all along the eastern edge of the site in the late Roman period (cf. trenches BE95/96/97-5, BE96/97/98-12, etc., noted below).³⁸

The literary sources and some of the ostraca that have been found in the early Roman trash dumps at Berenike may provide some insights as to when some of these first-century building

³⁵ Herbich 2007.

³⁶ Bradford 2000, 44; 2001; Whittaker 2002, 38; Blue 2002, 145, 148 (fig. 8); 2006, 47; Blue and Peacock 2006, 70, 74; Thomas 2006a, 90.

³⁷ For the primitiveness of the port at Quseir al-Qadim, see Whitcomb and Johnson 1979; 1982, *passim*; Sidebotham 1986, 56; Peacock et al. 1999; 2000; 2001; 2002; 2003; Blue 2002; Peacock and Blue 2006a, 66.

³⁸ Sidebotham 1999, 93; 2006b.



Fig. 16. Vespasianic inscription of A.D. 77/78 recording the *hydreuma* . . . praesidium et lacus at Siket, 7.2 km west-northwest of Berenike and just off the main route between Berenike and the Nile (photo author).

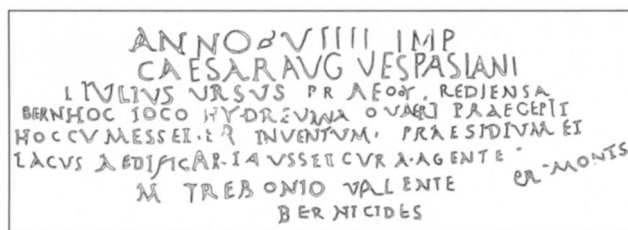


Fig. 17. Squeeze of the text from the inscription in fig. 16 (drawing A. M. Hense).

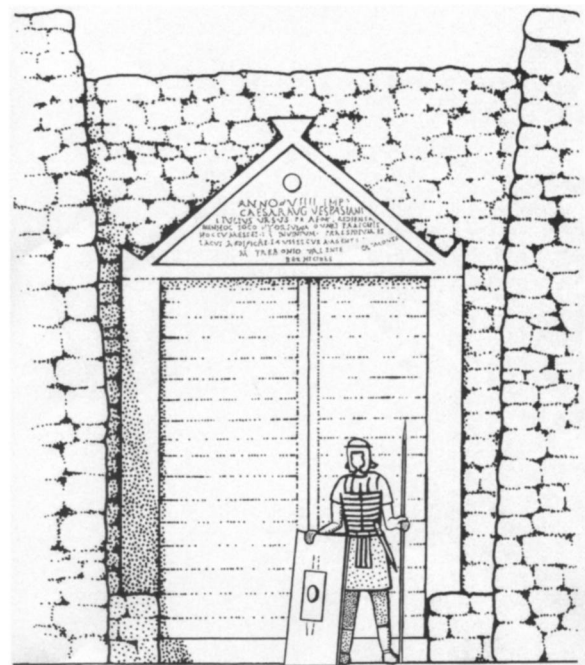


Fig. 18. Artist's rendering of placement of the inscription from fig. 16 in the gate of the praesidium at Siket (drawing A. M. Hense).

activities took place. Strabo (*Geography* 17.1.45) indicates that Berenike had convenient landing places, suggesting that it was an anchorage or roadstead, not a port with a proper harbor, in his day. By Pliny's time (A.D. 50s–70s) (*HN* 6.26.103) it seems that there was a proper port at Berenike. Thus, we might extrapolate that sometime in the first three-quarters of the first century A.D. a proper harbor was constructed at Berenike.³⁹

The *Nikanor Ostraca* (late first century B.C. to A.D. 60s⁴⁰) indicate a spurt of trade activity in the reign of Tiberius, and it may be that major renovations/enlargements to augment, or more likely replace, the silted up Ptolemaic facilities took place or were completed sometime during his reign at Berenike.⁴¹ Numerous Tiberian coin finds in India and the reintroduction of the tetradrachm coin in Egypt during the reign of Tiberius all point to increased mercantile activity during his reign,⁴² as does the presence of a number of Tiberian-era graffiti on the road joining Quseir al-Qadim to the Nile.⁴³

Numerous ostraca excavated from the early Roman trash dump and inscriptions erected at a number of *praesidia* on the road between Berenike and Coptos (figs. 16–18) also suggest that the

³⁹ Sidebotham 1986, 52.

(table 2), 124 (table 3).

⁴⁰ Tait 1930; Rostovtzeff 1931; Fuks 1951; Meredith 1952, 104.

⁴³ Bernand 1972, nos. 41, 42, 43, 45, 46, 47; nos. 38, 44, 48, 49, and 95 are possibly Tiberian; from the Paneion at el-Boueib (south of the Myos Hormos–Nile road): nos. 143, 144, 145, and possibly 142 and 146. See also Sidebotham 1986, 55.

⁴¹ First suggested by Sidebotham 1986, 52–53.

⁴² Sidebotham 1986, 27–29, 52–53; Turner 1989, 10, 123

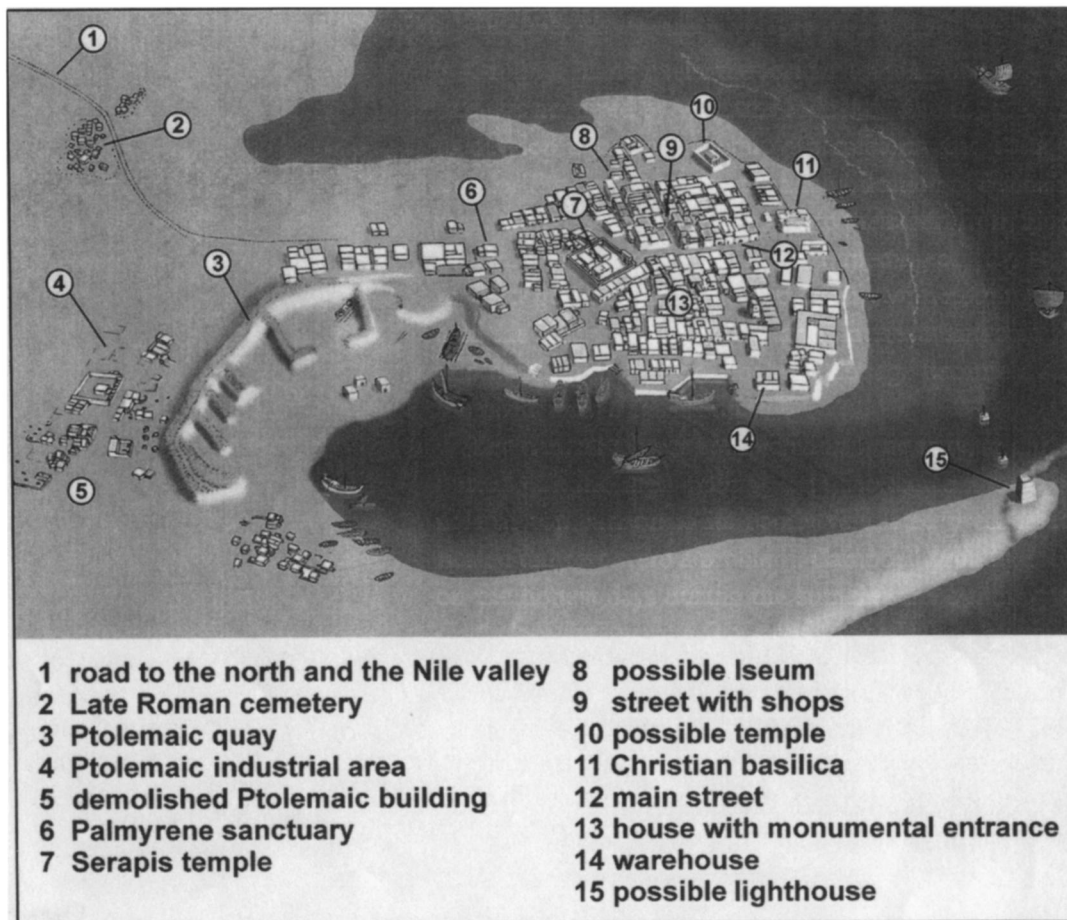


Fig. 19. Artist's view of late Roman Berenike locating features noted in the text (drawing A. M. Hense).

Julio-Claudian (Tiberius–Nero, A.D. 14–68) and Flavian periods (A.D. 69–96) were ones of robust activity at Berenike and along the route joining it to the Nile.⁴⁴

MIDDLE ROMAN

Archaeological evidence, or rather lack of it, points to a decline in operations at Berenike throughout some of the second, third, and early fourth centuries A.D. As known from recent excavations at Quseir al-Qadim, there was continued vibrant activity there in the second century, especially in the Trajanic–Antonine periods,⁴⁵ suggesting that, for whatever reason, Myos Hormos seems to have played a larger role than Berenike in the “Eastern” commerce in the Red Sea at that time. This situation did not last too long, as archaeological evidence from Myos Hormos indicates that the port

⁴⁴ See Kennedy 1985; Bagnall, Helms, and Verhoogt 2000a, 7 and from R. S. Bagnall, personal communication, for Julio-Claudian and Flavian dates of the Berenike ostraca; Bagnall, Bülow-Jacobsen, and Cuvigny 2001 for Flavian inscriptions from sites on or near the Berenike–Nile road from Siket (23° 55.88' N/35° 24.46' E), Khawr ej-Jer (Aphrodito at 25° 36.36' N/33° 37.38' E), and Khashm el Menih/Zeydun

(Didyme/Didymoi at 25° 45.30' N/33° 23.58' E). Although serving a quarry near Mons Porphyrites, the small station at Umm Balad (at 27° 08.78' N/33° 17.43' E) is also Flavian in date: Dr. H. Cuvigny, personal communication.

⁴⁵ Tomber 2001, 43; 2002, 57; personal communication.

there ceased to operate sometime in the third century A.D.⁴⁶ Thereafter, in the late Roman period, Berenike, Clysma, and Aila were the dominant trade emporia at the northern end of the Red Sea and Adulis toward the southern end.

LATE ROMAN

Ironically, while excavations have uncovered more of late Roman Berenike (mid-fourth–sixth century A.D.) than any other period of the city's history, no positively identified architectural evidence has been found at all for what port facilities might have looked like at that time, aside from a possible quay or pier made of coral heads and ashlar found beneath the eastern end of a fifth-century church in trench BE98/99-22, loci 106/116 (figs. 12 and 19, no. 11).⁴⁷ A late fourth/early fifth-century A.D. warehouse at the extreme southeastern corner of the site in trench BE95/96/97-5 (fig. 19, no. 14) suggests that the southern harbor was still operational at that time.⁴⁸

The find of an Axumite aes coin of the late third/early fourth century⁴⁹ and an Indian silver coin of the second half of the fourth century,⁵⁰ as well as recovery of quantities of Axumite pottery,⁵¹ Indian and Sri Lankan beads,⁵² a bead from Jatim on the eastern end of the island of Java,⁵³ Indian textiles,⁵⁴ coconut,⁵⁵ black pepper,⁵⁶ teakwood,⁵⁷ bamboo,⁵⁸ Job's tear,⁵⁹ *abrus precatorius* seeds,⁶⁰ rice,⁶¹ sesame,⁶² and sorghum,⁶³ all indicate ongoing commercial contacts with other regions in the Red Sea/Indian Ocean in late antiquity.

J. G. Wilkinson's plans of Berenike drawn in 1826⁶⁴ indicate a mound on the eastern end of a peninsula that enclosed Berenike's southern harbor (fig. 19, no. 15). This area is, today, extremely dangerous due to the presence of land mines and cannot be examined, but the mound would have been a good location for a small temple, a large altar, or another edifice associated with coordination or monitoring of ship movements in the southern harbor. Where documented in the Mediterranean,

⁴⁶ Johnson 1979, 67; Whitcomb and Johnson 1982, 8; Tomber 2001, 43; 2002, 57; 2004, 351; Peacock and Blue 2006b, 174. 1999a, 302 (table 16-1); 1999b, 54–56; 2000, 306 (table 13-1), 309; Sidebotham 2007b.

⁴⁷ Sidebotham 2007b.

⁴⁸ Sidebotham 1996b, 76–82.

⁴⁹ Sidebotham and Wendrich 2001–2002, 41 (fig. 40); 2002, 30 (figs. 9–10); Sidebotham 2007a, cat. no. 114 (C4615). ⁵⁷ Vermeeren 1998, 334–335 (table 16-2), 337 (table 16-3), 343, 347, 348; 1999, 311, 318 (table 17-11), 321–324; 2000, chart on 315–328, 329, 334, 335, 337 (table 14-10), 339 (table 14-11), 340–341, 342; Cappers 1999b, 59.

⁵⁰ Sidebotham and Wendrich 2001–2002, 41 (fig. 40); 2002, 30 (figs. 9–10); Sidebotham 2007a, cat. no. 115 (C5649). ⁵⁸ Vermeeren 2000, 318 (no. 49), 321 (no. 96), 325 (no. 153), 328, 335, 340, 342.

⁵¹ Tomber 2007.

⁵² Francis 2000, 221–223; 2007.

⁵³ Francis 2007; cf. Lankton 2003, 70–72, 79–81.

⁵⁴ Wild and Wild 2000, 269–273; 2001; Wild 2002, 9–10; 2004, 61–63; Wild and Wild 2005, 13–14.

⁵⁵ Cappers 1996, 331; 1998a, 289, 304–305, 313, 316; 1998b, 83; 1999a, 303; 1999b, 57.

⁵⁶ Cappers 1996, 322 (table 19-2), 327, 330–331; 1998a, 289, 296 (table 15-3), 300 (table 15-4), 311–313; 1998b, 81–82;

⁵⁹ Cappers 1996, 331–332; 1998a, 289, 299 (table 15-3), 303 (table 15-6), 311; 1998b, 83; 1999b, 58–59.

⁶⁰ Cappers 2000, 307.

⁶¹ Cappers 1998b, 82; 1999b, 56–57; 2000, 306.

⁶² Introduced into Egypt by the third century B.C.: Cappers 1998a, 295 (table 15-3), 311; 2000, 307.

⁶³ Cappers 1998a, 290, 295 (table 15-3), 309, 324; 2000, 307.

⁶⁴ MS G. Wilkinson XLV D. 6 and 11 from Gardner Wilkinson papers from Calke Abbey, Bodleian Library, Oxford, reproduced in Aldsworth, Sidebotham, and Wendrich 1995, 16 (fig. 4), 18 (fig. 5, though upside down).

Roman harbors had such structures visible to those approaching from the sea on the port (left) side. Frequently, these were paired with a monument, often a lighthouse, on the starboard (right) side as one approached the harbor entrance.⁶⁵ In this connection, excavations in 1996 in trench BE96-9 of a high circular mound about two streets back of the southern/southeastern easternmost extant harbor structures aimed to reveal the remnants of a late Roman lighthouse, but the late Roman architectural remains—although clearly indicative of supporting a massive, heavy structure—and associated small finds found there were inconclusive on this point.⁶⁶ We tentatively now posit that the feature on the mound in trench BE96-9 may have been paired with the circular feature on the peninsula on the south side of the harbor. If the harbor entrance at Berenike fit into the Roman harbor model that seems to have been typical for the Mediterranean,⁶⁷ then such a paired arrangement at or near the harbor entrance would have been likely.

4. Conclusion

Eight seasons of excavation at Berenike have barely scratched the surface of the site, and while something of the location and appearance of the possible Ptolemaic and early Roman harbor facilities is known, nothing convincingly identified has come to light of the late Roman port. Documentation of the physical appearance and building materials of ships as well as sails, brailing rings, and possible lifting nets is known, and early Roman texts from the site list other sailing-related equipment.

Future work at the site will concentrate more on harbor facilities, and continued excavation in the trash dumps (both early and late) should also provide more written documentation and physical evidence for ships' tackle and other maritime-related objects.

⁶⁵ Tuck 1997, 102–104, 117, 182.

⁶⁷ Tuck 1997, *passim*.

⁶⁶ Sidebotham 1998, 79–96.

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