

This is an Accepted Manuscript of an article published by Wiley Blackwell in the International Journal of Nautical Archaeology (IJNA), appearing online on 26 October 2010 and in print in Volume 40, Issue 2, in September 2011. The published version is available online at doi: 10.1111/j.1095-9270.2010.00295.x. Please use the IJNA version in any citations:

Cooper, J.P. 2011. 'Humbler Craft: Rafts of the Egyptian Nile, 17th-20th Centuries AD', *International Journal of Nautical Archaeology* 40(2): 344-360

Humbler Craft: Rafts of the Egyptian Nile, 17th-20th Centuries AD

John P. Cooper

The MARES Project, Institute of Arab and Islamic Studies, University of Exeter, Stocker Road, Exeter, EX4 4ND, UK, j.p.cooper@exeter.ac.uk

Abstract

Written accounts and images created by foreign travellers on the Egyptian Nile over the past four centuries indicate the widespread use of rafts and floats for both local and long-distance Nile travel. Many of the materials employed are poor survivors in archaeological deposits, or are otherwise easily overlooked as components of river-craft: moreover, several of these raft types were built for a single season or journey, then dismantled. Well-preserved wooden boats belonging to the pharaonic élite have commanded the attention of maritime archaeologists of the Nile. But these traveller accounts alert us to a class of vessels not yet recognized in archaeological deposits, and which point to a humbler quotidian experience of Nile navigation than the royal ships of antiquity.

Key words: Egypt, Nile, Boat, Raft, Navigation, Landscape.

Introduction

When it comes to the watercraft of the Egyptian Nile, scholarly and popular attention has so far been drawn powerfully towards high-status, wooden-hulled vessels of the Pharaonic period. Iconographic depictions of Nile vessels in dynastic temples and tombs, boat models deposited in the tombs of high-status individuals, and full-scale royal vessels excavated in funerary contexts have, quite understandably, captured our archaeological and historical imaginations (Černý, 1952: 114, 120, Clark, 1959: 140-4, 191, Creasman, 2005, Creasman *et al.*, 2009, David, 1982: 25, 25, 51, 63, 109, Flinders Petrie, 1924: 23, 29, 115, 158, Glanville, 1972, Göttlicher and Werner, 1971, Jones, 1990, Landström, 1970, Lipke, 1984, Mark, 2009, Meeks and Favard Meeks, 1996: 179, Partridge, 1996: 3-75, Reisner, 1913, Mark 2009, Taylor, 2001: 28, 42, 178, 189, 198, Ward, 2006, 2004, 2000, Winlock, 1955). In reflection of that interest, some of these high-status vessels have found their way into correspondingly high-profile museum displays. Khufu's 26th century BC solar boat resides in a dedicated museum space at Giza, alongside his pyramid. Two of the Dahshur funerary boats of Senwosret III (1878-1839 BC) can be seen in the Cairo Museum, with two further Dahshur vessels on display at the Carnegie Museum of Natural History in Pittsburgh, USA and the Field Museum of Natural History in Chicago, USA. Beyond the Nile, Pharaonic maritime expeditions by way of the Red Sea to the land of Punt have been investigated through the monumental bas-relief depictions at Hatshepsut's temple at Deir al-Bahri (c. 1473-1458 AD) (Breasted, 1906-7, Desroches-Noblecourt, 2002: 209-39, Dixon, 1969, Herzog, 1968, Millet, 1962, Naville, 1898, Phillips, 1997, Ratié, 1979: 139-61, Sethe, 1905, Smith, 1962, 1965), and more recently through archaeological investigations at Marsa Gawasis (Bard and Fattovich, 2007, Ward and

Zazzaro, 2010). Such Punt-bound vessels have been the subject of a recent scholarly reconstruction and sea trials, attracting the interest and financial support of a television documentary production company (Begoin, 2009, Ward et al., 2008). The latter is an indicator of public interest in such vessels.

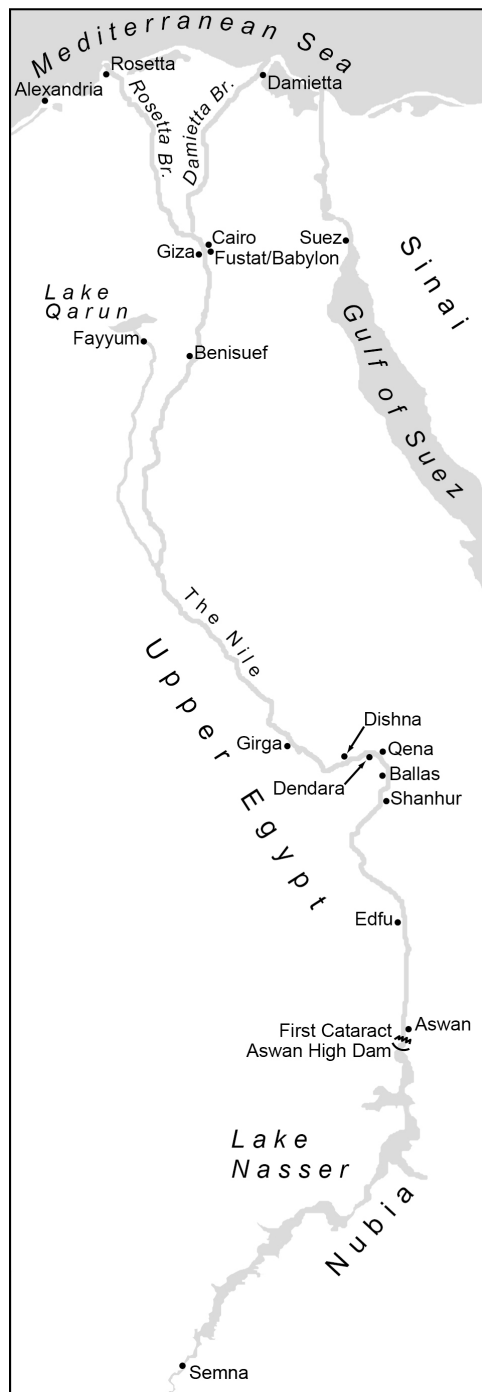


Figure 1. The Nile Valley in Egypt and Nubia, showing the locations and waterways discussed in the text (J.P. Cooper).

The scholarship carried out on these large and prestige craft is unarguably important, but it leaves much under-investigated in the field of past Nile watercraft. This state of affairs has been exacerbated by the fact that archaeologists have to date found comparatively little evidence of 'workaday' pre-modern Nile vessels deposited within a fluvial context, rather than an élite funerary one. Indeed, archaeological samples of working boats has so far been limited to the Twelfth Dynasty boat timbers re-used in building a causeway around the pyramid of Senwosret I (c.1950 BC) at Lisht (Haldane, 1992), and the Late Period riverboat found by construction workers at the Cairo suburb of Mataria in 1987. The former yielded timbers, but no hull. The latter was the subject of a rescue excavation and conservation process of limited success, and has been published in only limited form following subsequent inspection of the timbers by Ward (2000: 129-35, Haldane [Ward] 1996).

One consequence of this distribution of available data is that vessels that did not qualify for inclusion in the practice of ancient religious rites – either as funerary depositions or iconographic representations – remain little known and still less understood. Indeed, if one moves forward in time into the pre-modern Islamic era, during which public and ritual art largely embraced abstract decoration, the situation is even more difficult for those wishing to build an understanding of the form and variety of past Nile watercraft. Without even the iconographic and depositional legacy left by the Pharaonic era, scholars are left with precious little data on which to work. While Khalilieh (2005: 318-9) has considered that the 8th-9th century AD Tantura B wreck, discovered at Dor, Israel might be a flat-bottomed Nile vessel that had ventured into the Mediterranean, archaeologists have yet to have the satisfaction, and confirmation, of discovering such a vessel in a Nilotic context.

Until further and more direct archaeological evidence is forthcoming, it is worth considering the utility of the many first-hand accounts written by past travellers on the Nile in illuminating the scope of watercraft active on the river. Travel literature is particularly rich for Egypt, a country whose many monuments, religious sites and resources have exerted a pull on the curious, the pious, and the imperialist for centuries (see Fig.1 for a map of locations mentioned in the text). The literary legacy of these visitors provides not only incidental textual detail of the watercraft that travellers met *en route*, but also, occasionally, detailed graphic illustrations by which visitors sought to make a pictorial record of the vessels they encountered. With the dawn of the photographic era in the 19th century, some of these craft, today absent from the river network, were also captured on camera. For archaeologists working in Egypt, the insights these sources provide may even make the difference between successfully recognizing, and failing to recognize, the remains of watercraft in archaeological contexts.

This article takes the case of rafts, watercraft often regarded as so humble in the maritime or fluvial landscape that they escape figurative representation within the societies in which they occurred, and equally often fail to win the interest of today's scholars. It is almost 80 years since Hornblower observed, in a brief note, that the use of reed rafts on the Nile around Cairo as recently as the mid-19th century 'has been hardly noticed' (Hornblower, 1931: 53, remarking on an illustration in P. and H., 1848: Plate 65). Since then, scholarly mention of Egyptian Nile rafts has tended to occur within the context of global watercraft typologies (Hornell, 1942: 39, 41, Hornell, 1946: 7, 14, 17, 36, 37, 46-51, McGrail, 2001: 17-18, 20-22), with much remaining to be said about their place within the particular social or navigational landscape. Moreover, their treatment has been laced with Darwinian metaphor. Nile rafts have been construed as 'primitive' (Breasted, 1917), or as evolutionary antecedents, prone to 'extinction' in the face of new

'inventions' (Hornell, 1946: 7, 15, 17, 36, 37, 46, 50-1). Rafts observed on the modern Nile have been seen as 'survivals' of watercraft from an ancient past, usually Pharaonic, which constitutes the ultimate focus of interest (Breasted, 1917: 174, Hornblower, 1931: 53). Even in more recent scholarship, mention of Nile rafts has concentrated on their place as technological precursors (Vinson, 1994: 11-2, Ward, 2006: 119-20).

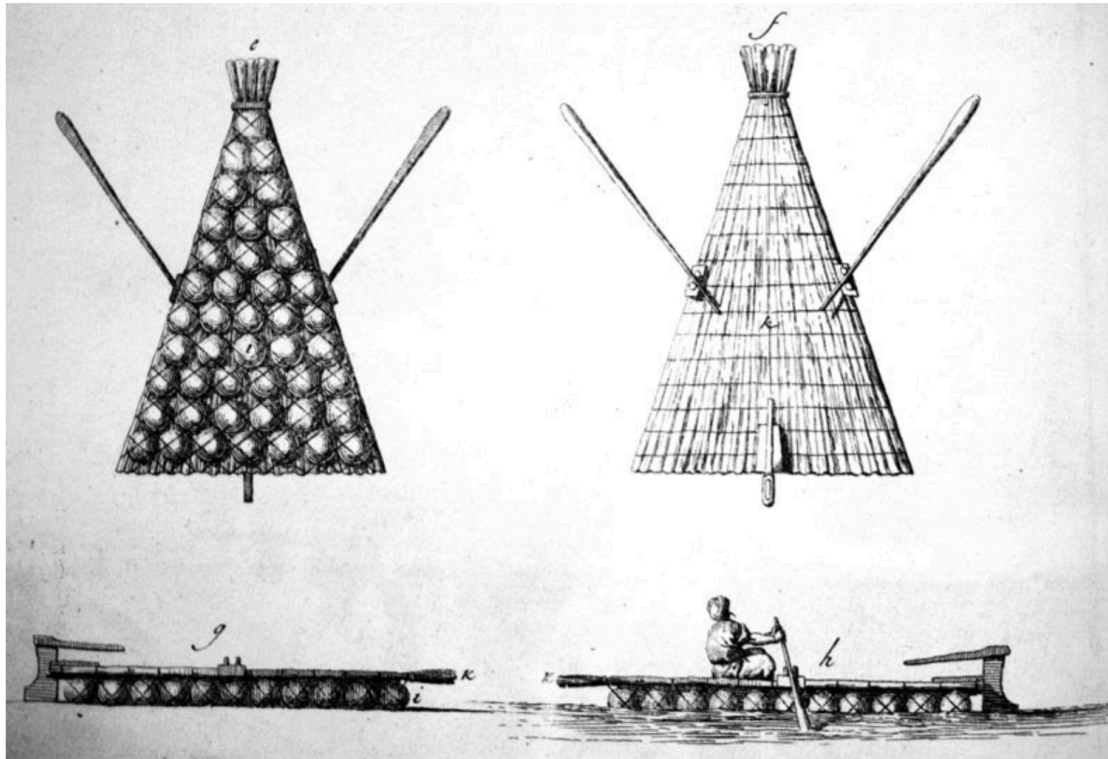


Figure 2. Nile raft made from ceramic pots, bound to a frame and covered with a deck of palm leaves, as illustrated by Norden (1757: 1.Plate XXXII). The rafts were used for fishing and personal transportation (Norden, 1757: 1.81). (Image courtesy of the University of Exeter, Special Collections)

Literary data from visitors to Egypt between the 17th and 20th centuries AD draw our attention to the wide range of rafts that were, in fact, to be encountered on the Nile even then. They demonstrate the diversity of materials – ceramic pots, gourds, bundled reeds – that were employed in providing fundamental buoyancy for river-users in an otherwise wood-poor country. These authors offer valuable information also on the uses to which

such craft were put. However mundane and ostensibly crude, these vessels enabled a variety of social and economic activities along Egypt's waterways, and constituted an important technology through which people created their landscape within the Nile basin. Attention to such apparently [Paula: change is to avoid repeating 'ostensibly'] modest constructions diverts our attention, however briefly, from the prestige craft of the élite, and in favour of the working and social lives of less glamorous, but altogether larger and still interesting, social groups.

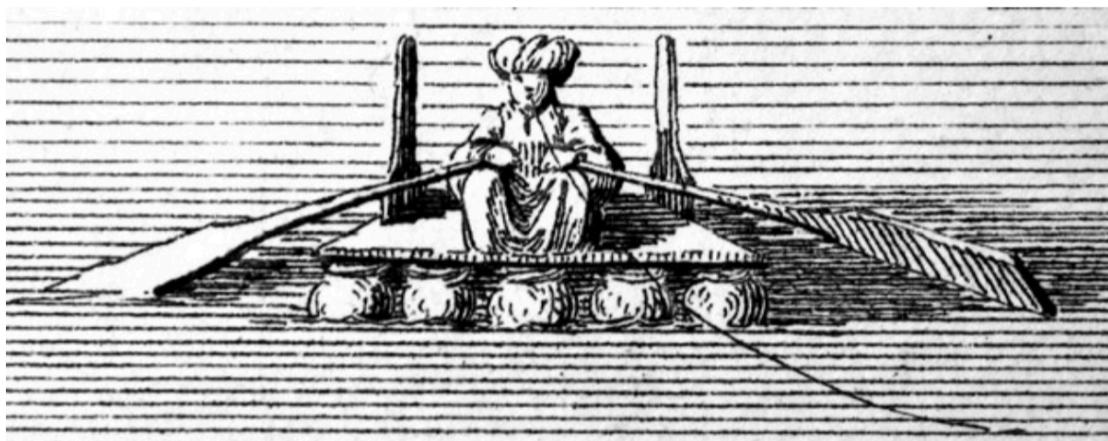


Figure 3. A ceramic pot raft in use on the Nile near Memphis, as illustrated by Norden (1757: 1. Un-numbered plate between plates XXII and XXIV: *Vuë de la Ville de Gize*). A fishing line can be seen in the rower's mouth. (Image courtesy of the University of Exeter, Special Collections)

The sources

A number of visitors to Egypt from the 17th century AD onwards record in their writings and illustrations types of vessel that were, to their eyes, particularly strange, amusing, or worthy of note. The Anglican churchman Richard Pococke and the Danish Naval captain Frederik Ludvig Norden both travelled up and down the Nile in 1737-38 AD. Each noted and illustrated ceramic pot rafts that he encountered on the river (Norden, 1757: 1. Plate XXXII, 1.81, 2.53, Pococke, 1743: 1.184, 1. Plate VIII). Pot rafts were also reported by the German Carsten Niebuhr (1792: 1.47) some decades later,

and also observed and illustrated in the Napoleonic *Description de l'Égypte* (Jomard, 1809-28: *État Modern* 1, Plate 76, *Antiquites, Descriptions* 1.9.10.329). In the 19th century they are observed by the English writer and philosopher Harriet Martineau (1848: 53-4), the English traveler Howard Hopley (1869: 29) and the German physician Karl Klunzinger (1878: 15) as well as being captured in photographs published by the travel writer John L. Stoddard (1897: 283) and the maritime ethnographer James Hornell (1946: Plate IV.A). Meanwhile, the 17th century traveller and soldier Jean Coppin (Sauneron, 1971: 211) and the pilgrim Antonius Gonzales (Libois, 1977: 74-5) noted the use of gourd rafts on the river, as did Charles Rochfort Scott (1837: 1.73) in the 19th. A variant on the gourd raft was also photographed in Sudanese Nubia by Herman Bell (2006: 114) as late as the 1960s (Fig. 11). Meanwhile, Martineau (1848: 62) also observes a raft made of bundled millet stalks, while the archaeologists A.S. Hunt and J.G. Milne (Anonymous, 1917: 256) both photographed fishermen using reed rafts near al-Bahnasā (Oxyrhynchus) around the turn of the 20th century AD. H. [CHK 1st name] A. Winkler (1936: 18) saw such rafts in use in Egypt as late as the 1930s (1936: 18). Again, Bell (2006: 113) also photographed reeds rafts in Sudanese Nubia as late as the 1960s. Meanwhile, Benoît [CHK 1st name] de Maillet, French Consul in Cairo between 1692 and 1708, described the hair-raising process by which Nubian men shot the rapids of the First Cataract riding on rafts made of timber, or of a combination of timber and ceramic pots (Le Mascrier, 1735: 43). In the mid-19th century, the American lawyer John Lloyd Stephens likewise saw men riding the First Cataract astride logs (Stephens, 1839: 27), a practice captured later by the British illustrator Talbot Kelly (Penfield, 1899: 487). It is on the strength of the observations of such travellers that this article proceeds.

Ceramic pot rafts

The existence of rafts based on the buoyancy of ceramic pots was attested in Egypt in Antiquity. Discussing the gradual spread of an artificial canal network throughout the Delta, Strabo (63/64 BC - c. 24 AD) remarks that '... canals on canals having been cut, which are navigated with such ease that some people even use earthenware ferry-boats.' (Jones, 1917-32: 17.1.4).ⁱ Egypt's reputation for ceramic watercraft is also alluded to by the Roman satirist Juvenal, active in the late-1st and early-2nd centuries AD, who ridicules Rome's Egyptian subjects as '... this useless, warlike rabble/Who rig scraps of sail on their earthenware feluccas/And row with diminutive oars in painted crockery skiffs.' (Green, 1974: 285)

Beyond these textual references, we have no recognized archaeological or iconographic evidence for ceramic pot rafts in ancient Egypt – although, from what follows in this article, one might speculate that archaeologists may indeed have unwittingly handled potsherds that once formed components of such rafts.

We do not know the continuities or interruptions of usage of pot rafts in the intervening centuries, but observations of them re-surface in historical accounts of the Nile in the 18th century AD – this time with accompanying illustrations. These rafts take two broad forms: relatively small rafts, often triangular in plan, that were used for local, personal transportation and fishing; and much larger, rectangular rafts that were used commercially to float mass-produced pitchers to Egypt's urban consumption centres.

Travelling on the Nile in 1737 AD, Norden (1757: 1.81) observed the smaller, triangular, type of raft in use on the river. Indeed, one of these he illustrates in great detail (Fig. 2), while another is deployed as picturesque foreground in his view of the Nile at Memphis (Fig. 3). Norden's textual description of these craft is as follows:

In order to cross the Nile, the inhabitants have recourse to the contrivance of a float, made of large earthen pitchers, tied closely together, and covered with leaves of palm trees. The man that conducts it has commonly in his mouth a cord, with which he fishes as he passes on. (Norden, 1757: 1.81)

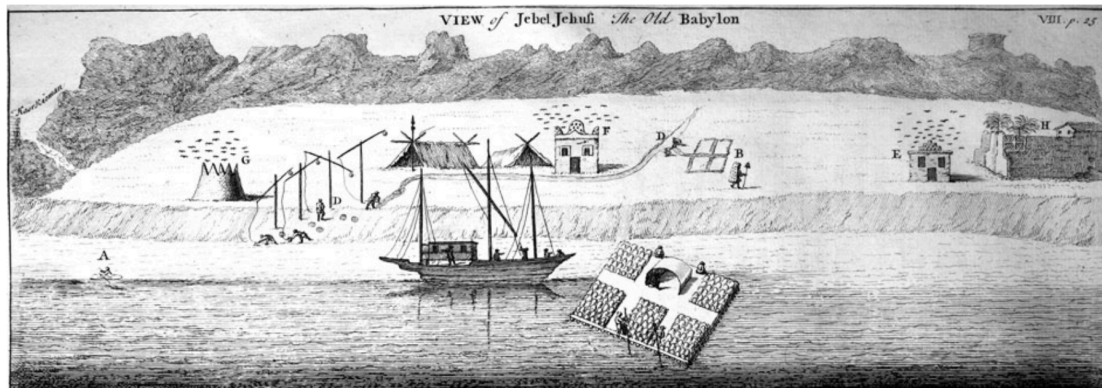


Figure 4. View of Babylon (Old Cairo), by Pococke (1743: 1. Plate VIII). The type of large ceramic pot raft he describes in his text (Pococke 1743: 1.84) is depicted on the shore to the right of the boat. The figures marked A and B, though Pococke does not discuss them, resemble smaller pot rafts of the type that Norden illustrates in detail (see Figs 2 & 3). (Image courtesy of the Devon and Exeter Institution).

Norden's main illustration of such a raft (Fig. 2) shows a vessel of some structural complexity. The triangular base comprises 44 pots arranged in 11 rows, diminishing from seven pots wide at the stern to just one at the bow. His other illustration (Fig. 3), is of an apparently smaller raft, having just five pots in the aft row. In both cases, the pots appear to be of mutually uniform manufacture: globular in form, with a wide rim attached directly to the body, or perhaps with a short neck. No handles are apparent on the pots. The pots are oriented with their rims uppermost, and flush to the deck above. They appear to be held in place by ropes that cross beneath them, and cradle them up against the deck. On the illustration of the larger raft (Fig. 2) the deck construction is apparent, with some 28 of the palm 'leaves' that Norden identifies tapering to a holding collar at the bow, forward of which their ends fan out for a short way. This same raft has a broad-bladed central stern

rudder operated by a tiller, and resembling that of a Nile boat of the same period. Its position relative to the illustrated rower suggests that this was a two-person raft. The smaller raft in Fig. 3 has no rudder, and appears to be a one-person affair.

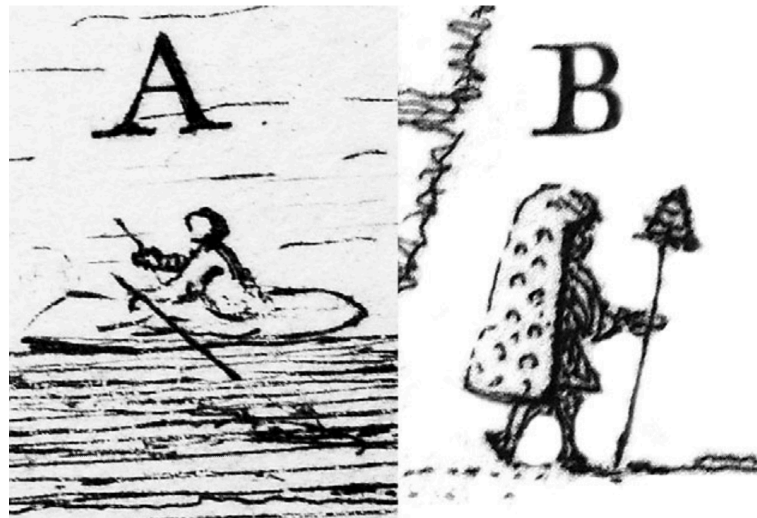


Figure 5. Enlarged sections of Pococke's View of Babylon (see Fig. 4), showing figures rowing (A) and carrying (B) something resembling a small triangular ceramic or gourd raft (Pococke, 1743: 1.Plate VIII). The craft marked A is only loosely sketched, but the circles on the underside of that marked B suggest pots or gourds in a configuration resembling that depicted by Norden. (Image courtesy of the Devon and Exeter Institution)

In both cases, the rafts are propelled by a seated, backward-facing rower. The narrow-bladed oars of the raft in Fig. 2 are held in place by rowlocks comprising two vertical posts, between which the oar rests. The oars of the smaller craft appear to be unattached to rowlocks, but this is perhaps a function of the smaller scale of the illustration – the rowlocks are perhaps to be associated with the two large vertical 'fins' that flank the rower. Finally, the oars are different on each of the craft. Those on the larger vessel have narrow ovoid blades that broaden gradually along the shaft, while those on the smaller vessel are much broader, and squarer at the end, with a more obtuse initial flaring of the blade from the shaft. Thus, within broadly the same

triangular raft type there appear to be variations in manufacture – size, presence or absence of rudder, differences in rowlocks – that perhaps suggest a localized, individual approach to their construction.

Pococke, who travelled on the Nile during the same winter as Norden, appears also to depict two such rafts in his view of Babylon, today's Old Cairo – one in the water, which he labels A, and one being carried on the back of a man, labelled B (Fig. 5). The sketches are admittedly rudimentary, particularly that labelled A, and Pococke provides no discussion of them in his text. However, the circles to be seen on the object carried on the back of the person that Pococke labels B are redolent of the ceramic pots seen on Norden's more detailed illustrations. They might, alternatively, be gourds, of which more below. Again, the oar shape is different from either of Norden's depictions, the blade being triangular.

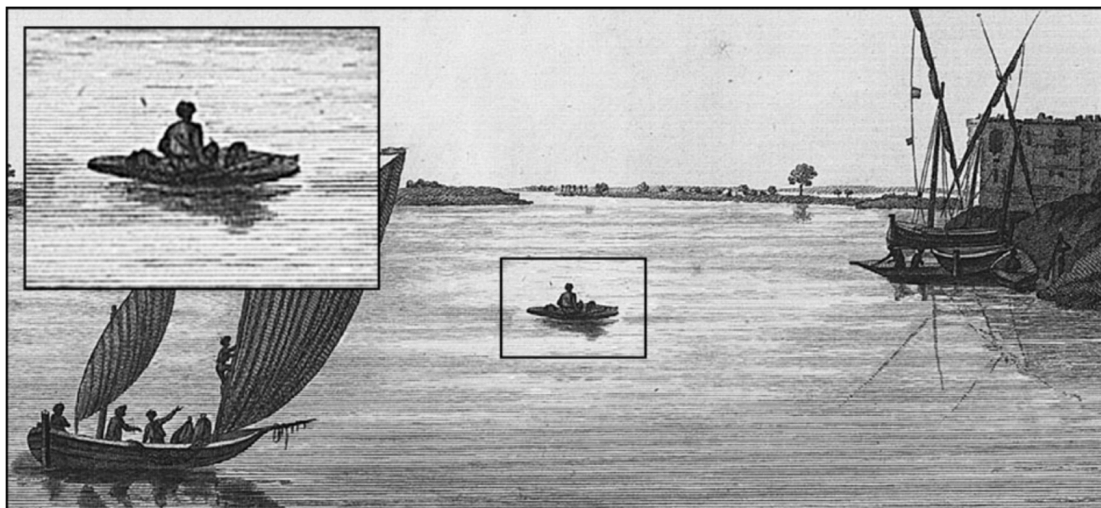


Figure 6. Enlarged section of a view of the Nile in Lower Egypt, from the Napoleonic *Description de l'Égypte* (Jomard, 1809-28: *État Modern* I. Planche 76). The small vessel (see inset) resembles the triangular pot raft also depicted by Norden (see Fig. 2) (Image courtesy of Harpocrates Publishing, *Description de l'Égypte* DVD edition).

Soon after Norden and Pococke, in December 1768, the Scottish explorer James Bruce (1804: 140) describes what seems to be a similar raft on the river near Memphis:

...we saw three men fishing in a very extraordinary manner and situation. They were on a raft of palm branches, supported on a float of clay jars, made fast together. The form was like an isosceles triangle, or face of a pyramid; two men, each provided with a casting net, stood at the two corners, and threw their net into the stream together. The third stood at the apex of the triangle ... which was foremost, and threw his net the moment the other two drew theirs out of the water. And this they repeated, in perfect time, and with surprising regularity.

He goes on: 'I could not sufficiently admire their success, in a violent stream of deep water, such as the Nile; for the river was at least twelve feet [3.63m] deep where they were fishing, and the current very strong.' (Bruce, 1804: 141)

Small pot rafts, used to ferry people across irrigation canals, remained in use in Upper Egypt in the mid-20th century. Hornell (1946: 36) reports that: 'Everywhere in that section of the Nile valley, rafts buoyed by pots provide ready and cheap means to pass across irrigation canals too deep to wade during the later phase of the inundation season ...'

Hornell's accompanying photograph (Hornell, 1946: Plate IV.A) shows just such a raft, square in plan, at Qena [Qīna], on the Dendara bend of the Nile. Using the human passenger as scale, the raft appears to be around 2m by 2m. The base comprises ceramic pots lashed in a six-by-six grid. Each pot appears globular in body, with a diameter of around 30cm. A neck around 15-20cm long ends in a circular rim around 10cm across. The upward-facing open mouths of the pots are overlain with a deck comprising branches and some kind of matting. The single passenger pulls himself across a canal using a static rope attached to both banks.

The second type of pot raft that travellers observed on the river was considerably larger than the fishing and ferry rafts so far discussed. It comprised a large, rectangular float of pots lashed to a palm-log frame.

Pococke provides a detailed description of one of these craft. Travelling upstream from 'Girge' [Jirja] on 31 December 1737, he says:

I first saw in this voyage the large floats of earthen ware; they are about thirty feet [c. 9m] wide, and sixty [c. 18m] long, being a frame of palm-boughs tied together about four feet [c. 1.2m] deep, on which they put a layer of large jars with their mouths uppermost; on these they make another layer of jars, and so a third, which last are so disposed as to trim the float, and leave space for the men to go between. The float lies across the river, one end being lower down than the other; towards the lower end, on each side they have four long poles, with which they row and direct the boat, as well as forward the motion down: It is said crocodiles have sometimes taken men from these floats...

(Pococke, 1743: 1.84)

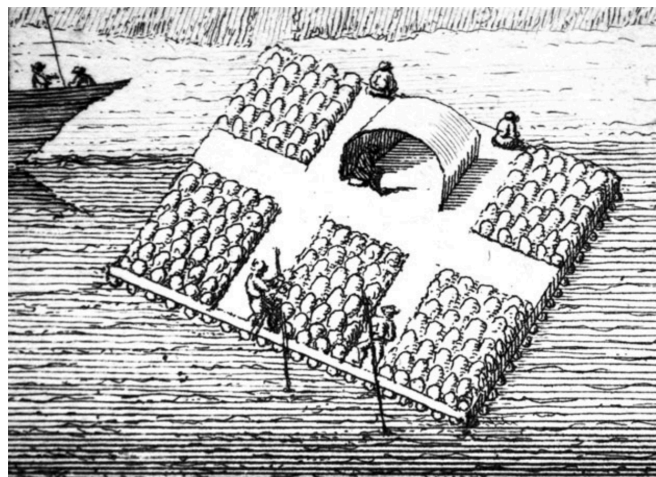


Figure 7. Enlarged section of Pococke's View of Babylon (see Fig. 4), showing a large pot raft of the type floated down to Cairo from Upper Egypt (Pococke, 1743: 1.Plate VIII). (Image courtesy of the Devon and Exeter Institution)

In addition to his description, Pococke also supplies an illustration of such a raft in his view of Babylon (Figs. 4 and 7). The vessel comprises a layer of roughly globular pots, visible between the river surface and the deck, and rectangular groupings of further pots on deck, with walkways in between. These are presumably the 'trimming' pots that Pococke describes. The

superstructure also comprises an awning, in which one person sits. Two other crew are seen to punt or row the raft, while two others sit on its edge.

In Upper Egypt, and in the same winter, Norden also observed pot rafts. At 'Deheschne' [Dashna], just downstream of the great Dendera bend of the Nile, he records that: 'Near this same place we saw several floats formed of earthen pots, tied together by twisted osiers. It is the ordinary manner of conveyance, and there need but two men to govern such a float.' (Norden, 1757: 2.38).

Whether Norden meant the same large type of rafts described by Pococke in this region, or whether this was another observation of the smaller fishing and ferrying rafts Norden described in Lower Egypt, is not clear from his text.

In 1762, the explorer Carsten Niebuhr was on the Damietta [Dumyāt] branch of the Nile, between the towns of Zifta and al-Manṣūra, when he observed apparently similar rafts bound for Damietta. He writes:

We saw ... several rafts laden with pots and other earthen ware from Upper Egypt. Those cargoes of earthen ware are fixed upon very light planks of the timber of the palm tree, joined into a raft, the progress of which is directed by six or eight men with poles in their hands. After selling their cargoes at Damietta, they walk home. (Niebuhr, 1792: 47).

Soon after, the scholars of the Napoleonic expedition to Egypt also observed similar large rafts. These rafts, says the *Description de l'Égypte*, '...resemble our lumber trains.' (Jomard, 1809-28: *État Modern* 2.2.720). The *Description* also supplies an identification and illustration (Fig. 8) of at least one type of pot used in their construction. These were, it says, a type of jar called in Arabic a *ballāṣ* – named after the eponymous village in Upper Egypt – which was ordinarily used to transport oil and vinegar. It adds that '... these jars are made in the upper part of the Thebaid [Upper Egypt]: rafts are made of them, and they are taken all the length of the Nile, as far as the capital

[Cairo].’ (Jomard, 1809-28: *Antiquités, Descriptions* 1.10.10.329). Later in the century, Klunzinger (1878: 15) likewise notes that: ‘The large-handled jars of Balas [*Ballāṣ*], named after that village, are fastened together into rafts and by this means are transported by water.’ These jars were commonly used as water pitchers, in cheese-making, and to store other dry and liquid goods (Klunzinger, 1878: 122, Randall-Maclver, 1905: 26, Ellis-Lopez, 1996: 183, Redmount and Morgenstein, 1996: 744, Fathy, 1973: 100).

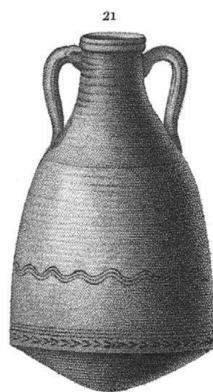


Figure 8. Illustration of a Ballas pot, from the Napoleonic *Description de l'Égypte*, which says that these were the pot types used in ceramic rafts (Jomard, 1809-28: *État Modern* vol. 2.2, pl. EE; p.720). (Image courtesy of Harpocrates Publishing, *Description de l'Égypte* DVD edition)

Martineau also saw raft of this type. She writes that they originated in Qena, another centre of water-pitcher and storage-jar manufacture (Randall-Maclver, 1905: 26). As her tourist vessel sailed upstream from ‘Girga’ [Jirja] in December 1846, she writes:

We now began to meet rafts of pottery coming down from Qena, the seat of the manufacture of the water jars which are in general use. Porous earth and burnt grass are the chief materials used. We meet [*sic.*] seven or more rafts in a group. First, a layer of palm fronds is put on the raft; and then a layer of jars; then another layer of each. The jars all have their mouths out

of the water. They are so porous that their conductors are continually employed in emptying them of water: that is, they are always so employed when we meet them. Not being worth sponges, they dip in and wring out cloths, with strings to them. The oars are mere branches, whose boughs are tied together at the extremity. Though they bend too much, they answer their purpose pretty well... (Martineau, 1848: 53-4)

Fortunately, a late-19th century photograph of one of these pot rafts also survives (see Fig. 9). The image is from the Egypt section of Stoddard's lecture series (Stoddard, 1897: 283). The author makes no reference to the picture in his text. Using the height of the crew as scale, the dimensions of the raft in the photograph are seen to be similar to those given by Pococke: the edge closest to the camera appears to be around 8m in length. Between the water line and deck, a single layer of pots can be seen. Above these is a pole, running the length of the raft, which appears to be a member of the main frame of the raft. On this frame is laid a deck of what might be palm branches – the dark fronds fringing the raft are visible – onto which a new layer of pots is laid. To the left of the picture, two crude 'steering oars' appear lashed to two supporting frames. These correspond well to where Pococke stations the working crew in his illustration. On the landward edge of the raft, two other branches serve to moor it: perhaps these too were used as steering oars during travel.

The resolution of the Stoddard photograph is not sufficient to identify with confidence the form of the pots used. Those on deck appear to have short necks with side-handles redolent of the *ballāṣ* form, but the overall body shape, and particularly the low carination typical of *ballāṣ* jars, cannot be discerned with confidence. Blackman (1927: 142) says that in Middle Egypt – she is no more precise – so-called 'ballāṣ' water jars were typically manufactured in a globular body form, i.e. without carination: perhaps different pot forms were used to make rafts in different locations.



Figure 9. "A Native Raft", from the Egypt volume of Stoddard's travel lecture series (Stoddard 1897: 283). Although Stoddard includes this photograph of a large ceramic pot raft in his work, he does not refer to it in his text. (With thanks to Stas Bekman).

From these observations, a picture begins to emerge of a relatively large-scale commercial operation by which mass-produced ceramic pots were formed into rafts in Upper Egypt for shipment to urban centres further downstream – as far as Cairo (Pococke, 1743: 1.Plate VIII, Hopley, 1869: 29), and even Damietta (Niebuhr, 1792: 47). Having guided these rafts downstream for hundreds of kilometres, the crew were then obliged to make their own way home.

Between the observations of Pococke and Stoddard is a period of around 160 years, during which these large pot rafts were observed, suggesting an enduring industry and associated commerce. Indeed, during the period that our authors were observing these large pot rafts, the area around Qena and Balas was the centre of a large-scale pottery industry supplying standardized porous ceramic water pitchers throughout Egypt – an industry that continued into recent times, and which has been the subject of ethnographic study by Nicholson and Patterson and others (Nicholson and Patterson, 1985a: 346, 1985b, 1985c, Matson, 1974, Randall-Maclver, 1905: 26, Bouriau *et al.*, 2000: 122, 123, Bard, 1999: 245, Petrie, 1896: 1).

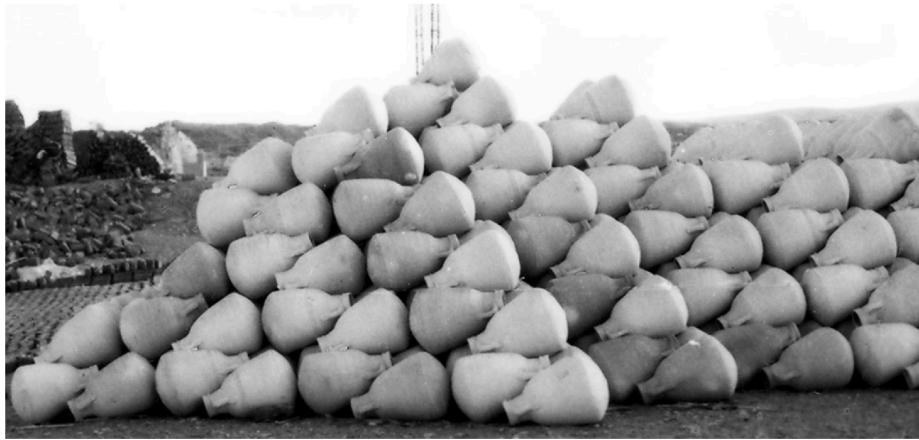


Figure 10. Ballas pots, stacked for transportation in the region of Ballas, 1992. (Image courtesy of Dr. Roberta Tomber).

Underlying the pottery industries around Ballas and Qena – from whence our authors say the rafts they saw came – were specific local deposits of marly pottery clay, rich in lime, and low in organic material. These beds occur respectively in the hills of the Western Desert and Wadi Qena, and are quite distinct from the Holocene silts of the Nile Valley bed (Lucas and Harris, 1962: 368, 381 *ff.*, 'Abd ar-Rāziq, 1967: 22, Redmount and Morgenstein, 1996: 744, Watterson, 1997: 38-9). Those near Ballas have been exploited since pre-dynastic times (Trigger *et al.*, 1983: 33), while the source bed for the clay supplying the Qena potteries accumulated some time between the late 10th and early 13th centuries AD (Butzer, 1974: 380). The technique of mixing ash into the clay in order to produce porous, cooling water jars – such, indeed, as the *ballāṣ* jar – dates back to the New Kingdom (Steindorff, 1929: 119, 232, 239). The porous water jars of Qena were known as Qulal (*sing.* Qulla) (Baedeker, 1902: 225).

Klunzinger, who lived in Egypt in 1863-9 and 1872-5, remarks that: 'The manufacture of pottery ... in some places of Egypt, [such as] as Keneh [i.e. Qena], Balas, Siout, is in a very flourishing state ...' (Klunzinger, 1878: 14). Of the Qena potters, Martineau (1848: 196) observed that: 'A man can make one hundred per day of the porous water bottles in common use.' The 1902

Baedeker guide reports that ‘hundreds of thousands of these vessels [i.e. the pots] are annually exported from [Qena] to Cairo and Alexandria in boats of a primitive but not unpractical description, constructed for the purpose.’

(Baedeker, 1902: 225) This suggests that, by the turn of the 20th century, many of the pots were exported in boats, rather than as rafts. It may be that such rafts were no longer being formed by this time, perhaps as a result of the construction during the 19th and early 20th centuries of barrages across the Nile at Nag Hamadi, Asyut, the Delta apex and Zifta. The guide also says that these jars could be seen on the riverbank at Ballas and Qena, waiting for shipment (Baedeker, 1902: 231).

Gourd rafts

Perhaps inevitably, given the scarcity of wood in Egypt suitable for boatbuilding, Egyptians drew upon their relatively rich natural and agricultural resources for alternative materials for small-scale watercraft for use in highly localized navigation – from bank to bank across the Nile, along canals and ditches, and for fishing.

Again, traveller accounts offer some insight. In 1639 AD, Coppin found himself at Benisuef [Banī Suwayf] during a pilgrimage to St Antony’s monastery. He writes:

While we rested beside the river, we saw a man fishing on a raft that he had made from a mesh of reeds placed over several dry gourds bound together. He propelled it with a palm branch, and went thus to the middle of the current, because the Nile, after the inundation has passed, is not very fast-flowing in the plains of Egypt. The Arabs told us that one was obliged to have recourse to such industries because, there being hardly any wood in this country, boats are very rare (Sauneron, 1971: 211).

The sight of a gourd raft amused Gonzales in 1665 AD as he travelled up the Damietta branch:

Comical to see was a man descending the Nile, quite alone, with two small oars in his hands, sitting on two or three planks bound together, and supported above the water by gourds fixed under the raft. Had one thrown a stone or a piece of wood, his boat would have been smashed to pieces. Gourds are so abundant in Egypt that *en route* we have noticed in many places, [drying] under the sun, great piles of thirty or forty feet [9.1-12.2m][across] and the height of a man. This is to extract the seeds, which are sown in the fields as far as the eye can see. (Libois, 1977: 1.74-5)

Almost a century later, at Shenhur, 6km upstream of Qūṣ on the Dendara bend, Norden (1757: 2.61) reports that, 'We ... saw that day, a float of straw, supported by gourds, and governed by two men.'

In the 19th century, too, Rochfort Scott saw net fishermen using a gourd raft on the Rosetta [Rashīd] branch. He writes:

A novel kind of fishing boat, or rather raft, especially excited my imagination; it consisted of some dozens of empty gourds lashed together and decked over with canes; this fragile vessel, not more than 8 feet [2.4m] long and 4 [1.2m] wide, carried two men, with their oars and small net, with the greatest ease. (Rochfort Scott, 1837: 1.73)

The gourd in question was probably the bottle gourd (*lagenaria siceraria* (Mol.) Standl.), since it is one of the few gourd types that can be dried to make a lasting container. The bottle gourd has been cultivated in Egypt since at least 2000 BC (Cappers, 1999: 176, Prendergast and DeckerWalters, 2000: 424, Schweinfurth, 1884: 314, Täckholm, 1961: 32, Heiser, 2007: 11). Its fruit comprises a globular body up to 30cm in diameter, with a neck that can take the total length of the gourd to 1m (Stephens, 1994: 1, 2). It has a volume of up to 7.5l (Stephens, 1994 (2009): 2).

While no image of an Egyptian gourd raft has been identified in this research from any era, the American linguist and anthropologist Herman Bell not only photographed rafts incorporating gourds further up the Nile at Semna

in Sudanese Nubia (Fig. 11) in 1964, but also acquired an example, and shipped it to the Mariners' Museum at Newport News, Virginia, USA, where it is currently on display to the public.ⁱⁱ Bell obtained this raft just as the region downstream of Semna was about to be inundated following construction of the Aswan High Dam, and its Nubian population evacuated. Gourds were widely cultivated in the region, and examples of Bell also noted gourd rafts in the Second Cataract region, further north (Herman Bell, *pers. comm.*). The museum example (Fig. 11, inset) is 2.7m long, 1.05m wide at its broadest point, and some 23cm deep (Lyles Forbes, Chief Curator, The Mariners' Museum, *pers. comm.*). It comprises a central core of three bundles of reeds, flanked on each side by gourds – nine on the port side, seven to starboard – which are lashed in place within a frame. Two cross-timbers provide lateral integrity, while a third forms a seat for the rower. The raft is rudderless, and paddled. The gourds provide additional buoyancy to the raft, particularly as the reeds tend to become waterlogged over time. As the reeds deteriorated, they could be replaced, and the timber and gourds re-used in a new raft.

The local Nubian term for these rafts was *geyyi* 2. They provided a convenient way of crossing the river: Bell noted no instance of these being used for fishing (Herman Bell, *pers. comm.*).

Reed rafts

Reed rafts made of papyrus are a familiar enough feature of ancient Egyptian representations of Nilotic scenes (Hornell, 1946: 46-51, Partridge, 1996: 19-23). The *paktōn* on which Strabo says he was ferried to Philae also seems to have been some kind of papyrus or reed craft, being 'a small boat constructed of withes, so that it resembles woven-work' (Jones, 1917-32: 17.1.50)³.



Figure 11. A *geyyi* raft at Semna, Sudanese Nubia, comprising bundled reeds with bottle gourds to provide lateral stability (Image courtesy of Herman Bell, University of Exeter). The inset shows the example at the Mariners' Museum, Newport News, Virginia, USA (Image courtesy of the Mariners' Museum).



Figure 12. A man paddling a bundle of reeds near Cairo in the mid-nineteenth century AD. Line drawing by M.F. Broome (Hornblower 1931: 53) from a plate in P. & H.. (1848: Planche. 65).

The papyrus plant has since disappeared from Egypt as agriculture has extended across the Nile river basin. Nevertheless, rafts made of the common reed, *Phragmites australis*, were in use in Egypt in early modern times, and in Nubia as late as the 1960s (Herman Bell, *pers. comm.*)(Fig. 16). Leaving Edfu [Idfū] by river in December 1846, Martineau (1848: 62) observed: '... a man crossing the river, here very wide, on a bundle of millet stalks. His clothes were on his head, like a huge turban, and he paddled himself across with the branch of a tree.'

Copyright Image

Figure 13. 'Manière de passer le Nil dans la haute Egypte', a pen-and-ink illustration done in 1802 by Baron Dominique Vivant Denon (© Trustees of the British Museum).

Around the same time, a plate illustrating a scene of boats around Cairo was created for the *Égypte Modern* section of the French series *L'Univers* (P. and H., 1848: Plate 65). It included a representation of a man on a reed raft. The artist has included in the foreground a depiction of a man sitting astride a reed bundle with his legs in the water, propelling himself with a double-ended paddle. A line drawing of the relevant portion of the plate was made by M.F. Broome for Hornblower (1931: 53), and is reproduced here in Fig. 12. Hornblower interprets the bundle behind the man's back as his clothes.

A similar raft, ridden astride, was also illustrated by Denon, the first director of the Louvre Museum, who was in Upper Egypt in 1802 (1825: 124, pl. XCIII). Indeed, the posture adopted by the paddler suggests that the plate appearing in *L'Univers* may, indeed, be based on this earlier illustration. Denon's sketch shows a man astride a raft made of two curved bundles of reeds, lashed together (Fig. 13).

Meanwhile, at al-Bahnasā in 1896-7, the archaeologist Arthur Hunt photographed several fishermen using reed rafts on the Baḥr Yūsuf, a waterway running parallel to the main Nile in Upper Egypt. Fig. 14 shows a close-up of one of these rafts from one of Hunt's photographs, from which the fisherman is casting a net. The craft appears almost circular in cross section,

with no sign of a flat deck platform, and is bound around the outside with rope. It has a 'square' stern – the product, perhaps, of the reeds being stood on the stern end while being bound together to form the bundle. The vessel tapers to a point at the bow. No means of propulsion is apparent.



Figure 14. A fisherman and his reed raft at al-Bahnasā on the Baḥr Yūsuf, 1896-7, photographed by A.S. Hunt (Image courtesy of the Egyptian Exploration Society).

Visiting Hunt and fellow archaeologist Bernard Grenfell on the Baḥr Yūsuf in December 1905, J.G. Milne photographed a group of these fishermen in action from Grenfell and Hunt's house (Fig. 15). Grenfell is quoted in a supplementary note of the *Journal of Egyptian Archaeology* as saying that the fishermen 'were out every day on such rafts fishing with small drag-nets. Their skill at balancing themselves upright and throwing the nets from these slender structures always used to excite our admiration, for they seldom upset.' (Anonymous, 1917: 255).

As late as the 1930s, Winkler (1936: 18) reported seeing reed rafts in use on the Nile near Edfu. The name *ramūs* (pl. *rawāmīs*) is a local variant of a widespread Arabic term for a raft, though usually made of wood (Agius, 2002: 130, 2008: 122). Soon after, however Hornell (1946: 51) says that such rafts 'are never seen except as temporary and exceptional expedients for the

crossing of canals and occasionally of the Nile.’ This characterisation of their use as exceptional does not reflect the earlier observations of Grenfell, Hunt and Milne at al-Bahnasā, and may indicate a decline in the intervening decades.

Like Martineau, Hornell says that the type of reed used in these rafts was sorghum millet. However, unlike the rafts photographed by Hunt and Milne, Hornell says that the individual reed bundles were lashed side-by-side, forming a platform, rather than the whole raft being round in cross-section. Hornell’s description broadly matches the reed raft that Bell (2006: 113) photographed at the Semna Cataract in Sudanese Nubia (Fig. 12).



Figure 15. A group of fishermen using reed rafts at al-Bahnasā on the Baḥr Yūsuf, 1905, photographed by J.G. Milne (Anonymous 1917). (Image courtesy of the Egyptian Exploration Society).



Figure 16. A Nubian reed raft at the Semna Cataract (Image courtesy of Herman Bell, University of Exeter).

Timber rafts

The rafts and floats so far described – built around ceramic pots, gourds, reeds and skins – can be understood as a response to the relative scarcity and expense of timber in Egypt suitable for boat building (McGrail, 2001: 16, Ward 2000: 15-24). A range of local timbers did exist, including acacia (*Acacia nilotica*), sycamore fig (*Ficus sycomorus*), date palm (*Phoenix dactylifera*), dūm palm (*Hyphaena thebaica*), persea (*Mimusops schimperi*), tamarisk (*Tamarix sp.*), and sidder (*Ziziphus spina-christi*). Some of these were used in boatbuilding; sidder, sycamore and acacia have been found in the pegs, fastenings and internal framing of the Khufu ship (McGrail, 2001: 26); acacia or tamarisk among the Abydos and El-Lisht boat timbers (Haldane, 1988, Haldane, 1993, Ward 2006); and acacia, sycamore fig, tamarisk and sidder among the ship timbers found at Marsa Gawasis (Ward and Zazzaro, 2010, Gerisch *et al.*, 2007: 185-8). Despite its short lengths and difficult working, local acacia could, moreover, be used as hull planking, and may in some eras have been the staple wood for the hulls of working Nile boats (Theophrastus, in Hort, 1916: 4.2.1.8, Herodotus, in Capps *et al.*, 1921: 2.96, McGrail, 2001: 40, Pliny the Elder, in Rackham, 1938: 13.19). In addition, the political and economic élite had, in some eras, the means to bring timber from outside Egypt: the Khufu boat and Dahshur royal funerary boats were made largely of Lebanon cedar (*Cedrus libani* (McGrail, 2001: 40), as were most of the ships' timbers found at Marsa Gawasis (Ward and Zazzaro, 2010, Gerisch *et al.*, 2007: 185-8). However, for social groups of lesser means, the scarcity of timber in the Nile valley was a spur to the creative use, as we have seen, of alternative materials, creating rafts for local fishing and transportation.ⁱⁱⁱ

One apparent exception to this observation was construction of temporary timber rafts in Nubia, south of the First Cataract. However, these rafts were created for express the purpose of importing the component timber

into Egypt for subsequent sale, and therefore can also be seen as a response to, and indeed an indication of, Egypt's timber shortage. The process of bringing these rafts into Egypt was quite hazardous, in that their owners rode them down the rapids of the First Cataract – and perhaps others further upstream – at the height of the annual Nile flood. The practice attracted the interest of de Maillet in the 18th century AD:

It is in this season of the rise of the river that, using rafts, the peoples of Nubia hazard descending [the First Cataract] and passing these dangerous straits. These rafts are made of a wood on which they have to pass several cataracts. Thanks to these delicate machines, they have no fear of wrecking. Arriving at the final Cataract [i.e. the First] they let them run on. They close their eyes and cover their ears, so as not to be frightened by the greatness of the danger, nor deafened by the noise that the water makes in tumbling down this fearful precipice ... If, during the passage, it happens that their raft strikes against a rock and breaks or comes undone, they attach themselves firmly to one of the component pieces of wood. That is there only resource, and often their salvation. Thanks to this feeble recourse, they re-assemble the debris of their wreckage in those places where the Nile flows more calmly. (Le Mascrier, 1735: 43).

Stephens, ascending the First Cataract in February 1836, says that it was also by travelling down the rapids on a wooden log that the Nubian pilots who conducted Nile boats up and down the Cataracts familiarized themselves with their hazards. The captain of Stephens' own vessel, though Egyptian rather than Nubian, had learned to pilot the rapids in this way:

As the Nubian does now, firmly seated on a log and paddling with his hands, he had floated in every eddy, and marked every stone that the falling river lays bare to the eye; and now with the experience of years, he stood among Nubians, confessedly one of their most skilful pilots through a sometimes difficult and dangerous navigation. (Stephens, 1839: 27)

The 'falling river' reference indicates that this inspection process was done after the inundation, as the hidden hazards emerged above the waterline.

The practice of shooting the First Cataract riding on logs continued until at least the end of the 19th century AD. Lest the foregoing textual descriptions of the descent of the rapids seem to describe an activity too foolhardy to be believed, the process is also captured in an illustration (Fig. 17) by Talbot Kelly, published in *Century Magazine* (Penfield, 1899: 487).

The type or types of timber that the Nubians of recent centuries were importing into Egypt is not clear from these sources. However, ancient Egyptian texts, such as the Sixth Dynasty inscription of Weni at Abydos, sometimes say that acacia was brought from Wawat in Nubia for boat construction in Egypt (Gale *et al.*, 2000: 335).

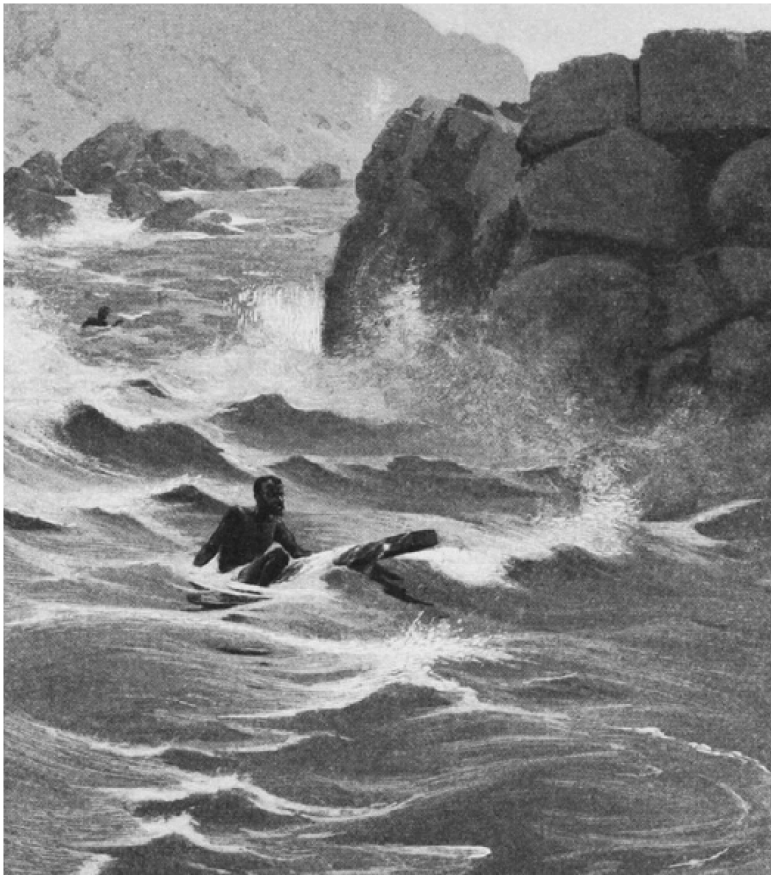


Figure 17. 'Log-swimming down the [First] cataract': illustration by R. Talbot Kelly (Penfield 1899: 487).

Remarkably, rafts constructed at least in part from pots were also imported into Egypt down the First Cataract. Returning to de Maillet's description of the timber rafts that descended the Cataract, he continues: ... these [timber] rafts are also very often composed in part of earthen pots, or vases, which are made in Nubia, and which these peoples go to sell in Egypt. If part [of the inventory of component pots] is smashed on the journey by an encounter with some stones, then the sale of what remains compensates them for this loss. The pilots of these rafts are often attacked during the night by crocodiles. This obliges them to make fires on flat stones, which they place on the rafts for that purpose, and to cry out from time to time in order to keep away these inimitable abductors (Le Mascrier, 1735: 43).

Any means necessary

Such was the imperative to remain connected across and along the Nile network that Egyptians resorted not only to boats and the rafts discussed here, but also to more impromptu methods. For those seeking simply to cross the river, an inflated animal skin could be deployed. James Bruce (1813, 2.45) at Luxor in the early 19th century, wanted some fruit from a garden on the other bank. To this end, he '... procured a servant of the governor of the town to mount upon his goatskin filled with wind, and float down the stream to El Gournie, to bring a supply of these, which he soon after did.' Bruce (1813, I.118) also reports how thieves used such floats to approach and steal goods from boats at night. The use of inflatable skins is attested in a wide range of river contexts (Hornell, 1946: 6-17). Indeed, animals did not even have to be dead before Egyptians used them as a means of crossing the river. Gonzales reports that, at various places on the river, he saw:

...herds of fifty, sixty water buffalo and more, swimming across the river, with sometimes three or four small boys of seven or eight years of age [riding] on

their necks, holding on to their horns, swimming also, from one side to the other. (Libois, 1977: 74)

When river conditions were suitable, and a source of buoyancy was not available, people sometimes simply swam, their clothes in a bundle on their heads. Travellers, among them Rocchetta and Stochove, remarked that Egyptians were powerful swimmers (Burri *et al.*: 66, Van de Walle 1975: 12). Thus, boats, rafts, floats, the back of an animal and simply swimming can be seen as existing on a spectrum of human adaptation to the interfacing land-water conditions of the Nile valley.

Rafts and river conditions

Hornblower (1931: 54) speculates that the reason that he did not see reed rafts on the Baḥr Yūsuf in the way that Grenfell, Hunt and Milne had done before him, may have been due to some seasonality in their usage. Such seasonality must, indeed, have been an important factor in many aspects of the use of rafts on the Egyptian Nile. Returning to the pot rafts that Hornell noted being used as local ferries, he reports that, as the Nile flood abates in December, '... the canals become shallow enough to ford; this is the signal to dismantle the raft.' (Hornell, 1946: 36)

Even outside the seasonal irrigation canals, the cycle of the Nile must have influence the use of rafts on the river network. Before completion of the Aswan High Dam in 1964, the river current on the main river channel and Delta branches typically flowed at just 0.6-1.4 knots, averaged across the water column, during the low water levels of the summer months (Hurst, 1954: 7, Lane, 2000: 30, Willcocks, 1890: 32). This must have been the easiest time to operate the smaller craft, some of which must have been relatively slow to propel across the water. Indeed, it may be that, during the height of the flood, the current was simply too strong on the main Nile channels to use small rafts, when crews sometimes struggled to control even sailing boats (Light, 1818: 123-4). During that season, the mean current across the water column

exceeded 3.2 and sometimes even 3.8 knots (Willcocks, 1904: 32, Hurst, 1954: 7). The resulting conditions may, perhaps, have been too fast-flowing, and too turbulent in some locations, for a small pot or gourd raft to be kept stable and dirigible in all directions. Here, some experimental archaeology might be illuminating as to the performance characteristics of these craft.

At the same time, however, the agricultural lands of Egypt were transformed into basins of standing or slow-flowing Nile water as the river burst its banks, with the villages raised, like islands, on higher ground, and the flooded landscape criss-crossed with dykes (al-Qazwīnī, ed. Wüstenfeld, 1848: 175, al-Maqrīzī, ed. Sayyid, 2002: 1.133) Indeed, the 10th-century geographer Ibn Ḥawqal observes that: 'Because the water covers the surroundings of most of [Egypt's] cities and farmlands, they [i.e. the populace] take to [boats] in all its lands, and the journeys of one of them to the other are by water in boats.' (Ibn Ḥawqal, ed. Kramers, 1938-9: 137). Klunzinger (1878: 126-7) notes that, at his time, rafts formed part of the fleet of small watercraft maintaining communication between nearby settlements during the inundation.

Among the most vulnerable of the rafts described above must have been the large pot rafts formed in order to ship their components on the long journey downriver to the large urban markets. While local rafters could pick and choose the day for venturing out onto or crossing the river, long distance rafters were committed to journeying during weather and river conditions that were as yet unknown, and for a considerable period. The approximately 650km journey from Qena to Cairo was typically covered in a little over two weeks in a sailing vessel (Cooper, 2008: 1.96-103). Sitting low in the water with little superstructure, a raft would perhaps have had less difficulty than sailing boats in overcoming the prevailing northerly winds of the Nile valley, which could stop vessels in their tracks even with the assistance of the current (Stephens, 1839: 29). However, passage for such rafts cannot have been

much faster than the river current itself: the journey was still one of perhaps two weeks or more.

The operators of such large rafts cannot easily have journeyed on the river during low Nile, when shallows and sandbanks meant that grounding was a major problem for all Nile navigators, preventing the largest Nile vessels from operating entirely (Cooper, 2008: 1.81-5). People navigating in boats as river levels fell had tested methods for freeing vessels that became lodged on the sandbanks that proliferated during low Nile: the crew descended into the river and 'bounced' the boat off (Norden, 1792: Plate. 31). However, this approach would not have worked so easily for large and cumbersome pot rafts. Grounding was sometimes catastrophic even for wooden-hulled boats: it must have been particularly so for unwieldy rafts comprising open-topped pots that were prone to swamping. The implication is that that journeys of the large rafts cannot have begun any earlier than July, when the rise of the Nile typically began to gain momentum, and it cannot have continued much beyond January or February, by which time water levels were again becoming perilously low. Certainly, Stoddard's photograph shows a raft in operation when the river behind it was in flood (Fig. 9), and it was during December and January – perhaps the optimal time – that Pococke and Martineau witnessed these large rafts descending the river. Moreover, April-May was the season of the southerly *khamsīn* winds (Light, 1818: 38, Wilkinson, 1847: 2, Poole, 1844: 101). These usually blew up suddenly, lasted for up to four days at a time, and brought tempestuous conditions to the river that open-mouthed pot rafts could surely not have endured. *Khamsīn* conditions could cause the wrecking even of large sailing vessels (Cooper, 2008: 1.95-6). This was surely not the season in which to ship pots north by raft.

Discussion

The data presented in the foregoing discussion alert us to a broad range of hitherto under-investigated Nile watercraft: rafts, made of ceramic pots, reeds, gourds, timber and animal skins. The observations of Nile travelers ask us to go beyond a consideration of Nile rafts simply as 'primitive' craft constituting components of an evolutionary watercraft typology. It invites us to broaden our focus out from the prestige Nile boats of pharaonic-era royal burial practices, which, if considered in isolation, distort our appreciation of human activity on the Nile. The use of small rafts as fixed ferries, as local water taxis, and as fishing craft begins, moreover, to reveal a riverscape populated by humbler and more localized social groups than the grand, centralized political entities that are reflected in the large wooden vessels of Egypt's political and religious elites (Ward 2000: 12, 2006).

The Nile rafts discussed here also invite consideration of the communities that produced them. Were fishing rafts subsistence craft, made by individuals hoping to supplement the diets of their direct families? Or were they the property of artisan fishermen who supplied fish to the local village or town market? Were the rafts themselves made by the people who did the fishing from them, or were they the products of specialized local craftsmen? What informed the choice of buoyant material? What role did those rafts used as ferries play in social interaction on a local level? Were these privately owned craft created by individuals for their own use, or by small-scale entrepreneurs? Or were they in some way owned by the community, and controlled by the local political administration? Meanwhile, the use of animal skins by thieves seeking to steal from merchant craft at night brings Egyptian boat archaeology into contact with social delinquency, rather than the ordered world of religious and political ritual or long-distance mercantile trade.

In any case, the rafts reflect, in their part, the formation of an inhabited human riverscape in its many dimensions. Clearly, the individuals and communities who produced and used these craft were responding both to the

physicality of the fluvial environment within which they lived, and to the materiality of the socio-economic context in which they found themselves. The rafts demonstrate the resourceful deployment of available materials – clay, reeds, gourds, animal skins – to the demands of food production and storage and, in addition, to communication within the community. Their employment, meanwhile, demonstrates and reflects the human population's familiarity and interaction with the seasonal cycles of the river, and the fertile valley in which they lived.

Operating a different geographical scale, the large ceramic rafts created in the Qena region as a means of transporting pots to market, as well as the timber and ceramic pot rafts created by Nubians descending the First Cataract, outline the existence of inter-regional trade, awareness of socially held and shared knowledge, and of market intelligence and communication linking large-scale rural industries with busy, but distant, population centres. It points as well as to a relatively complex work and skill network, connecting clay-miners on the desert periphery of Upper Egypt, potters in the nearby Nile valley towns, rafters on the river, and traders in commercial centres, all in a supply and information chain stretching for hundreds of kilometers, and subject to the seasonal cycle of the river.

This discussion of the Nile rafts observed by visitors to the Egyptian Nile in the past three centuries constitutes in part a plea for a more diverse appreciation of Nile craft, and indeed for greater esteem for a class of watercraft that is frequently dismissed as crude or primitive, and for the people who created, owned, operated and used them. It also demands reflection on what, among the materials that might be found within an Egyptian archaeological context, constitutes boat remains. Rather than the shaped and cut timbers of a boat hull, with their often give-away characteristics, this discussion of Nile rafts asks for a broader consideration of what comprises the material evidence for Nile watercraft. Many of the organic

materials comprising Nile rafts – reeds, gourds, animal skins – may well not survive in archaeological contexts, even though such rafts might have been common in their day. Moreover if such transient materials were to survive they, or more robust ceramic pots, may not prompt archaeologists to recognize them as components of a river-going vessel. A *ballāṣ* pot found in a medieval domestic context in urban Cairo might formerly have been part of a raft that once descended the river from Upper Egypt. In addition, a number of the rafts described here were built with the express intention that they would be dismantled after a single journey – or after a single Nile flood season – and their constituent parts, be they timbers or pots, sold for their intrinsic economic value or in some other way re-used. Such watercraft would only survive in the archaeology if their builders' intentions were not realized – through, for an example, a wrecking incident that left them at the bottom of the river, or abandoned on a sandbank. Even then, a group of such pots found on the riverbed may be misconstrued as the cargo of a wrecked Nile boat, rather than forming a Nile raft in its own right. With such a weak trace in the material remains of past Nile navigational activity, such humble craft struggle for scholarly attention against the compelling wooden hulls of pharaonic-era royalty.

Acknowledgements

This article has its origins in chance encounters with material on Nile rafts during research for my Ph.D. thesis at the Centre for Maritime Archaeology, University of Southampton (Cooper 2008), and was developed during my current research fellowship at the Institute of Arab and Islamic Studies, University of Exeter. In the former case, I am indebted to the Arts and Humanities Research Council for its Ph.D. scholarship, and to my supervisor, Dr Lucy Blue. In the latter, the research was conducted as part of the MARES

Project, a three year programme investigating the maritime past and heritage of the Red Sea and Arabian-Persian Gulf (<http://projects.exeter.ac.uk./mares>). The project is funded by the Golden Web Foundation, an educational charity registered in the UK (www.goldenweb.org). In addition, I am grateful to Professor Herman Bell of the Institute of Arab and Islamic Studies, University of Exeter, and to Lyles Forbes, Chief Curator of the Mariners' Museum, Newport News, Virginia, for their data on the museum's gourd and reed raft. I am also grateful to those individuals and organisations who supplied images for this article, and whose names appear in the relevant figure captions.

References

- 'Abd Ar-Rāziq, A., 1967, Documents sur la poterie d'époque mamelouke, Sharaf al Abawāni. *Annales Islamologiques* 7, 21-32.
- Agius, D.A., 2002, *In the Wake of the Dhow: The Arabian Gulf and Oman*. Reading.
- Agius, D.A., 2008, *Classic Ships of Islam: From Mesopotamia to the Indian Ocean*. Leiden.
- Anonymous, 1917, The Earliest Boats on the Nile: A Supplementary Note by the Editor. *The Journal of Egyptian Archaeology* 4, 255-6.
- Baedeker, K., 1902, *Egypt: Handbook for Travellers*. Leipzig.
- Bard, K. A., 1999, Deir al-Ballas, in *Encyclopaedia of the Archaeology of Ancient Egypt*. London.
- Bard, K. A. & Fattovich, R., 2007, *Harbor of the Pharaohs to the Land of Punt: Archaeological Investigations at Mersa/Wadi Gawasis, Egypt, 2001-2005*. Naples.
- Begoin, S., 2009, Quand les Egyptiens naviguent en la Mer Rouge (television documentary). France, Sombrero & Co.
- Bell, H., 2006, Paradise Lost: Nubia before the 1964 Exodus. *Sudan & Nubia* 10, 110-6.

- Blackman, W. S., 1927, *The Fellāhīn of Upper Egypt*. London.
- Bouriau, J. D., Nicholson, P. T. & Rose, P., 2000, Pottery, in Nicholson, P. T. & Shaw, I. (eds) *Ancient Egyptian Materials and Technology*. Cambridge.
- Breasted, J. H., 1906-7, *Ancient Records of Egypt*. New York.
- Breasted, J. H., 1917, The Earliest Boats on the Nile. *Journal of Egyptian Archaeology* 4, 174-6, 255.
- Bruce, J., 1804, *Travels to Discover the Source of the Nile in the years 1768, 1769, 1770, 1771 and 1773*. Edinburgh.
- Burri, C. Sauneron, N. & Sauneron, S., 1974, *Voyages en Egypte*. Collection des voyageurs occidentaux en Égypte 8. 11-111. Cairo.
- Butzer, K. W., 1974, Modern Egyptian Pottery Clays and Predynastic Buff Ware. *Journal of Near Eastern Studies* 33, 377-382.
- Cappers, R., 1999, Trade and subsistence at the Roman port of Berenike, Red Sea coast, Egypt, in Van Der Veen, M. (ed.) *The Exploitation of Plant Resources in Ancient Africa*. New York.
- Capps, E., Page, T. E. & Rouse, W. H. D. (eds), 1921, *Herodotus with an English Translation by A.D. Godley*. London.
- Casson, L., 1971, *Ships and Seamanship in the Ancient World*. Princeton.
- Černý, J., 1952, *Ancient Egyptian Religion*. London.
- Clark, R. T. R., 1959, *Myth and Symbol in Ancient Egypt*. London.
- Cooper, J. P., 2008, The Medieval Nile: Route, navigation and landscape in Islamic Egypt. Unpublished Ph.D. thesis, School of Humanities, University of Southampton.
- Courteney, E. 1980 *A commentary on the Satires of Juvenal*. London.
- Creasman, P. P., 2005, The Cairo Dashur Boats. *INA Quarterly* 32, 15-19.
- Creasman, P. P., Vining, B., Koepnick, S. & Doyle, N., 2009, An Exploratory Geophysical Survey at the Pyramid Complex of Senwosret III at Dahshur, Egypt, in Search of Boats, *International Journal of Nautical Archaeology* 38, 386-399.

- David, A. R., 1982, *The Ancient Egyptians: Religious Beliefs and Practices*. London.
- Desroches-Noblecourt, C., 2002, *La Reine Mystérieuse: Hatshepsout*. Paris.
- Denon, D.V. 1825. *Egypt Delineated*. London.
- Dixon, D. M., 1969, The Transplantation of Punt Incense Trees in Egypt, *Journal of Egyptian Archaeology* **55**, 55-65.
- Ellis-Lopez, S., 1996, Analytical Techniques in Near Eastern Archaeology: Ethnography and Pottery Study. *The Biblical Archaeologist* **59**, 183.
- Fathy, H., 1973, *Architecture for the Poor: An Experiment in Rural Egypt*, Chicago.
- Flinders Petrie, W. M., 1924, *Religious Life in Ancient Egypt*. London.
- Gale, R., Gasson, P., Hepper, N. & Killen, J., 2000, Wood, in Nicholson, P. T. & Shaw, I. (eds) *Ancient Egyptian Materials and Technology*. Cambridge.
- Gerisch, R., Manzo, A. & Zazzaro, C., 2007, Finds: Other wood and wood identification. IN Bard, K. A. & Fattovich, R. (eds) *Harbor of the Pharaohs to the Land of Punt: Archaeological Investigations at Mersa/Wadi Gawasis, Egypt, 2001-2005*. Naples.
- Glanville, S. R. K., 1972, *Catalogue of Egyptian Antiquities in the British Museum II: Wooden Model Boats*, Oxford.
- Göttlicher, A. & Werner, W., 1971, *Schiffsmodelle im Alten Ägypten*. Wiesbaden.
- Green, P., 1974, *The Sixteen Satires*. Harmondsworth.
- Haldane, C. W., 1988, Boat timbers from El-Lisht. *The Mariner's Mirror* **74**, 141-52.
- Haldane, C. W., 1992, The Lisht Timbers: A Preliminary Report, in Arnold, D. (ed.) *The Pyramid Complex of Senwosret I, vol. III: The Southern Cemeteries of Lisht*.
- Haldane, C. W., 1993, Ancient Egyptian Hull Construction, in Tzalas, H.E. (ed.) *Tropis IV: Proceedings of the 4th International Symposium on Ship*

- Construction in Antiquity, Center for the Acropolis Studies, Athens, 28–31 August 1991.* 235-44.
- Haldane, C. W., Mataria boat, in *Encyclopaedia of the Ancient Near East*. Oxford. Vol. 3: 441.
- Heiser, C. B., 2007, *The Gourd Book*, Norman.
- Herzog, P., 1968, *Punt*, Glückstadt.
- Hopley, H., 1869, *Under Egyptian Palms: or, three Bachelors' Journeyings on the Nile*. London.
- Hornblower, G. D., 1931, Reed-Foats in Modern Egypt. *Journal of Egyptian Archaeology* **17**, 53-4.
- Hornell, J., 1942, Floats: a Study in Primitive Water Craft. *Journal of the Royal Anthropological Institute of Great Britain and Ireland* **72**, 33-44.
- Hornell, J., 1946, *Water Transport: Origins and Early Evolution*. Cambridge.
- Hort, A. F., 1916, *Theophrastus: Enquiry into Plants*. Cambridge (Mass.) and London.
- Hurst, H. E., 1954, Measurement and Utilization of the Water Resources of the Nile Basin. *Proceedings of the Institution of Civil Engineers* **3**, 1-50.
- Jomard, E. F. (ed.), 2006 (1809-28), *Description de l'Égypte: ou, Recueil des observations et des recherches qui ont été faites en Égypte pendant l'expédition de l'armée française / publié par les ordres de Sa Majeste l'empereur Napoleon le Grand*. Harpocrates Publishing DVD. Paris.
- Jones, D., 1990, *Model Boats From the Tomb of Tut'Ankhamūn*. Oxford.
- Jones, E. L., 1917-32, *The Geography of Strabo*. London.
- Khalilieh, H. S., 2005, The Enigma of Tantura B: Historical Documentation and the Lack of Circumstantial Documentary Evidence, *International Journal of Nautical Archaeology* **34**, 314-322.
- Klunzinger, K. J., 1878, *Upper Egypt: its people and its products*. London, Blackie.

Kramers, J. H. (ed.), 1938-9, *Opus geographicum / auctore Ibn Hauḳal Abū 'l-Kāsim ibn Hauḳal al-Naṣībī secundum textum et imagines codicis Constantinopolitani conservati in Bibliotheca antiqui Palatii no. 3346 cui titulus est 'Liber imaginis terrae'*. Leiden.

Landström B., 1970, *Ships of the Pharaohs: 4,000 years of Egyptian shipbuilding*, London.

Lane, E. W., 2000, *Description of Egypt: Notes and views in Egypt and Nubia, made during the years 1825, -26, -27 and - 28: Chiefly consisting of a series of descriptions and delineations of the monuments, scenery, &c. of those countries; The views, with few exceptions, made with the camera-lucida*. Cairo.

Le Mascrier, 1735, *Description de L'Égypte: contenant plusieurs remarques curieuses sur la Geographie ancienne et moderne de ce País: Sur les Monuments anceins, sur les Mœurs, les Coutumes, & la Religion des Habitans, sur le Gouvernement & le Commerce, sur les Animaux, les Arbres, les Plantes, &c: Composées sur les Mémoires de M. de Maillet, ancien Conful de France au Caire, par M. l'Abbé Le Mascrier*. Paris.

Libois, C. (ed.), 1977, *Voyage en Egypte*. Collection des voyageurs occidentaux en Égypte, 19. Cairo.

Light, H., 1818, *Travels in Egypt, Nubia, Holy Land, Mount Libanon & Cyprus*. London.

Lipke, P., 1984, *The Royal Ship of Cheops: a retrospective account of the discovery, restoration and reconstruction. Based on interviews with Hag Ahmed Youssef Moustafa*. Oxford.

Lucas, A. & Harris, J. R., 1962, *Ancient Egyptian Materials and Industries*, London.

Mark, S., 2009, The Construction of the Khufu I Vessel c.2566 BC: a Re-Evaluation. *International Journal of Nautical Archaeology* **38**, 133-152.

Martineau, H., 1848, *Eastern Life, present and past*. Philadelphia.

- Matson, F., 1974, The Archaeological Present: Near Eastern Village Potters at Work. *American Journal of Archaeology* **78**, 345-7.
- McGrail, S., 2001, *Boats of the World: from the Stone Age to Medieval Times*. Oxford.
- Meeks, D. & Favard Meeks, C., 1996, *Daily Life of the Egyptian Gods*. London.
- Millet, N. B., 1962, A Fragment of the Hatshepsut Punt Relief. *Journal of the American Research Center in Egypt* **1**, 55-7.
- Naville, E., 1898, *The Temple of Deir el-Bahri, III. End of the Northern Half and Southern Half of the Middle Platform*. London.
- Nicholson, P. T. & Patterson, H. L., 1985a, Ethnoarchaeology in Egypt: The Ballas Pottery Project. *Archaeology* **38**, 53-59.
- Nicholson, P. T. & Patterson, H. L., 1985b, Pottery making in Upper Egypt: an ethnoarchaeological study. *World Archaeology*. **17**, 222-39.
- Nicholson, P. T. & Patterson, H. L., 1985c, The Ballas Pottery Project. *Anthropology Today* **1**, 16-18.
- Niebuhr, C., 1792, *Travels through Arabia and other countries in the East*. Edinburgh, Perth and London.
- Norden, F. L., 1757, *Travels in Egypt and Nubia*. London.
- Norden, F. L., 1792, *The antiquities, natural history, ruins and other curiosities of Egypt, Nubia, and Thebes: Exemplified in near two hundred drawings, taken on the spot, by Frederic Lewis Norden, the whole engraved on one hundred and sixty-four large plates, including a portrait of the author, by Martin Teuscher, of Newremburg*. London.
- P. & H., 1848, Égypte Moderne, in Anonymous, *L'Univers: Histoire et Description de Tous les Peuples*. Paris.
- Partridge, R., 1996, *Transport in Ancient Egypt*, London.
- Parry M.H. & Others, 2000, *A Dictionary of the World's Watercraft: from Aak to Zumbra*. London: Chatham Publishing.

- Penfield, F. C., 1899, Harnessing the Nile. *Century Magazine* **57**, 483-92.
- Petrie, W. M. F., 1896, *Naqada and Ballas*, London.
- Phillips, J., 1997, Punt and Aksum: Egypt and the Horn of Africa. *Journal of African History* **38**.
- Pococke, R., 1743, *A Description of the East and some other countries*, London.
- Poole, S., 1844, *The Englishwoman in Egypt: letters from Cairo, written during a residence there in 1842, 3 & 4 with E.W. Lane Esq., author of 'The Modern Egyptians'*. London.
- Prendergast, H. D. V. & Deckerwalters, D. S., 2000, Plant Portraits: Preserving the Gourd Perspective *Lagenoria Siceraria* Molina Standl. [Cucurbitacea]. *Economic Botany* **54**, 424-6.
- Rackham, H., 1938, *Pliny: Natural History*. London.
- Randall-Maciver, D., 1905, The Manufacture of Pottery in Upper Egypt. *Journal of the Anthropological Institute of Great Britain and Ireland* **35**, 20-9.
- Ratié, S., 1979, *La reine Hatchepsout - sources et problèmes*. Leiden.
- Redmount, C. A. & Morgenstein, M. A., 1996, Major and Trace Element Analysis of Modern Egyptian Pottery. *Journal of Archaeological Science* **23**, 741-62.
- Reisner, G. A., 1913, *Models of Ships and Boats. Catalogue général des antiquités Égyptiennes du musée du Caire: 4798-4976 et 5034-5200*. Cairo.
- Rochfort Scott, C., 1837, *Rambles in Egypt and Candia: with Details of the Military Power and Resources of Those Countries, and Observations on the Government, Policy and Commercial System of Mohammed Ali*. London.
- Sauneron, S. (ed.), 1971, *Voyage en Egypte*. Collection des voyageurs occidentaux en Égypte 4. Cairo.
- Sayyid, A. F., 2002, *al-Mawa`iz wa-al-i`tibar fi dhikr al-khitat wa-al-athar: li-Taqi al-Din Ahmad ibn `Ali ibn `Abd al-Qadir al-Maqrizi*. London.

- Schweinfurth, G. ,1884, Further discoveries in the flora of ancient Egypt. *Nature* **29**, 312-5.
- Sethe, K., 1905, Ein bisher unbeachtet gebliebene Episode der Puntexpedition der Keonigin Hatshepsowet. *Zeitschrift für Ägyptische Sprache und Altertumskunde* **42**, 91-9.
- Smith, W. S., 1962, The Land of Punt. *Journal of the American Research Center in Egypt* **1**, 59-60.
- Smith, W. S., 1965, *Interconnections in the Ancient Near East*, New Haven.
- Steindorff, G., 1929, *Egypt*, Leipzig.
- Stephens, G., 1839, *Incidents of Travel in Egypt, Arabia Petræa, and the Holy Land*. Edinburgh.
- Stephens, J. M., 1994, Gourd, Bottle - *Lagenaria siceraria* Mol. Standl. Institute of Food and Agricultural Sciences, University of Florida, document HS602. Gainesville.
- Stephens, J. M., 1994 (2009), Gourd, Ornamental - *Lagenaria spp.*, *Cucurbita spp.*, and *Luffa spp.* Institute of Food and Agricultural Sciences, University of Florida, document HS606. Gainesville.
- Stoddard, J. L., 1897, *Constantinople, Jerusalem, Egypt*. Boston.
- Täckholm, V., 1961, Botanical Identification of the Plants Found at the Monastery of Phoebammon, in Bachatly, C. (ed.) *La Monastère de Phoebammon dans la Thébaïde*. Cairo.
- Taylor, J. H., 2001, *Death and the Afterlife in Ancient Egypt*, London.
- Trigger, B. G., Kemp, B. J., O'Conner, D. & Lloyd, A. B., 1983, *Ancient Egypt: A Social History*. Cambridge.
- Van de Walle, B., 1975, *Voyage du Sieur de Stochove faictes années 1630, 1631, 1632, 1633*. Collection des voyageurs occidentaux en Égypte, 3. Cairo.
- Vinson, S., 1994, *Egyptian Boats and Ships*. Princes Risborough.

- Ward, C. & Zazzaro, C., 2010, Evidence for Pharaonic Seagoing Ships at Mersa/Wadi Gawasis, Egypt. *International Journal of Nautical Archaeology* **39**, 27-43.
- Ward, C. A., 2000, *Sacred and Secular: Ancient Egyptian Ships and Boats*. Philadelphia.
- Ward, C. A., 2004, Boatbuilding in Ancient Egypt. In Hocker, F., and Ward, C. (eds) *The Philosophy of Shipbuilding*. College Station.
- Ward, C.A., 2006, Boatbuilding and its social context in early Egypt: interpretations from the First-Dynasty boat-grave at Abydos. *Antiquity* **80**, 118-129.
- Watterson, B., 1997, *The Egyptians*. Oxford.
- Wilkinson, J. G., 1847, *Handbook for Travellers in Egypt: including Descriptions of the Course of the Nile to the Second Cataract, Alexandria, Cairo, the Pyramids, and Thebes, the Overland Transit to India, the Peninsula of Mount Sinai, the Oases, &c..* London.
- Willcocks, W., 1890, *Egyptian Irrigation*. London.
- Willcocks, W., 1904, *The Nile in 1904*. London.
- Winkler, H. A., 1936, *Ägyptische Volkskunde*. Stuttgart.
- Winlock, H. E., 1955, *Models of Daily Life in Ancient Egypt from the Tomb of Meket-Re at Thebes*. Cambridge (Mass.).
- Wüstenfeld, F., 1848, *El-Cazwini's Kosmographie*. Göttingen.

ⁱ Casson (1971: 342) suggests that Strabo's vessel was some type of coracle, whilst Hornell (1946: 51) and McGrail (2001: 21) interpret it as a raft.

ⁱⁱ Accession number 1980.0021.000001. Object Name: Raft, Reed, Egyptian. Title: Chatti Raft. The term *chatti* is applied to the raft after Parry (2000: 134), who uses the term to describe the pot rafts of Bangladesh, India and Pakistan, and then notes the use of similar rafts on the Nile. However, the term appears to be alien to the Nile. As Hornell (1952: 34) points, out, *chatti* is an Anglo-Indian word for the type of unglazed pot used in fabricating these rafts in India (Hornell 1952: 34).

ⁱⁱⁱ Hornell (1942: 41; 1946, 17) states erroneously that the early Egyptologist Giovanni Belzoni saw a fishermen's sailing raft made from the log of a dūm palm in Lake Qarūn (see Fig. 1). In fact, Belzoni (1822: 2.69) saw the vessel on the Red Sea.