

The Feeding of the Trireme Crews and an Entry in *IG ii²* 1631

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During the fifth and fourth centuries B.C., when some of the most celebrated naval battles of ancient times were fought, the ship-of-the-line was the trireme. Recent research, capped by the launching of a full-scale replica that has undergone multiple trials with signal success, has given us a very good idea of what a trireme was like. It was a fighting machine designed first and foremost for speed and maneuverability, and so it was long, slender, and shallow (roughly 121 feet in length, 20 in beam, 3 in draft). Into this cigar-shaped hull was crammed a crew of 200: 170 rowers and 30 deckhands, officers, and marines. There was hardly any space left for storage, and most of it must have been taken up by spare oars, spare tackle, and similar vital items.¹

The rowers, packed in like sardines, could not sleep aboard. Demosthenes' client Apollodorus, for example, reporting on his experiences as trierarch, laments the time when, because the fleet to which his trireme belonged was unable to land at nightfall, "we had to spend the night at anchor in the open water without . . . sleep" (Dem. 50.22). Every now and then the rowers did sleep on their benches, but solely as the result of special circumstances. In 387 B.C., for example, the Spartan admiral Teleutias, in a raid on Piraeus from his base at Aegina, sought surprise by traveling at night, "now stopping to order the men to catch a bit of sleep, now pressing ahead with the oars" (Xen. *Hell.* 5.1.19).² Nor, again except for special circumstances, did the men eat on board: the scant storage space permitted the carrying of only a minimal amount of provisions,³ and doing any cooking was out of the question.

¹ See Morrison-Coates 1986: 134 and 195 (dimensions), 107-8 and 111 (crew), 192-229 (replica); Morrison-Coates 1989: 46-56 (performance of the replica).

² Iphicrates used a similar procedure to take advantage of particularly favorable weather when operating off a hostile coast (Xen. *Hell.* 6.2.29).

³ Jordan 107-08 is unaware of the physical limitations of triremes in arguing that they were able to load aboard enough supplies to stay at sea for long periods (he even ascribes the defeat at Aegospotami [see below] to "the failure . . . to take sufficient amounts of food on board"), and hence is unable to interpret correctly the evidence he offers. In Thuc. 6.34.4, cited as proof that a fleet could load aboard a two-months' supply of food, the word he takes to mean food, *trophê*, must here mean "pay" (cf. Pritchett 4-5). In Xen. *Hell.* 3.4.3, cited as proof that a fleet

Commanders took care of eating and sleeping the only way they could—by putting into shore. During the day a brief stop was made for the midday meal, and at evening a night-long stay for dinner and rest.⁴ The men got their sleep by stretching out alongside the ships.⁵ Their food they got by virtue of an arrangement that seems incredibly cavalier: they were given, over and above their pay, a cash allowance for food, and it was left to them to go and buy it (see Jordan 109-10).

At its home port, a Greek navy took no responsibility for sheltering and feeding its personnel; there were no barracks or mess halls at Piraeus or Corinth or any other naval base. The men slept where they could—citizens or metics presumably at their homes and foreigners in hired quarters—and ate at their homes or in taverns or at vendors' stalls.⁶ When a fleet was away from its base, its commander had to find a place for the night's stay that not only had space where the ships could moor and the men could sleep, but—equally important—had an *agora*, to use the ancient historians' term, a market where the men could buy food. The favored choice was a port, for, in addition to offering safe anchorage, it was sure to have an *agora*; the one uncertainty a commander faced was the possibility that, since Greek markets were under government supervision, the authorities might not grant access to it. When, for

could load aboard even a six-months' supply of *sitos*, the supply, intended for Agesilaus' army of over 8,000 (3.4.2) rather than his rowers, unquestionably was carried on freighters accompanying the expedition.

⁴ Cf. Thuc. 8.101 (a Peloponnesian fleet sailing in 411 B.C. from Chios to Rhoeteium in the Hellespont stopped on the first day at the island of Carteria for lunch and at Arginusae for dinner, and on the second at Harmatus for lunch); Xen. *Hell.* 6.2.28-29 (Iphicrates, when landing on a hostile shore, cut to a minimum the time the men took to eat and guarded against enemy attack while they were eating or sleeping); Thuc. 4.26.3 (the Athenian ships blockading the Spartans at Pylos in 425 B.C., since they had no anchorage and were forced to moor in the open water, put into shore in relays to enable the crews to eat).

⁵ Cf. Xen. *Hell.* 5.1.20: τῶν [τριήρων] . . . ἔξω . . . κατὰ ναῦν ἐμελλον οἱ ναῦται σκηνήσειν, "the crews of (triremes) . . . outside (i.e., the home base) . . . quarter themselves by their ship." Dakyns and Brownson (Loeb) mistakenly render κατὰ ναῦν as "aboard" or "on board"; Hatzfeld (Budé) properly translates "près de leurs vaisseaux."

⁶ Cf. Xen. *Hell.* 5.1.20: τῶν δὲ Ἀθηνησιν . . . οἱ μὲν τριήραρχοι οἴκοι καθευδῆσотеιν, οἱ δὲ ναῦται ἄλλος ἄλλη σκηνήσοιεν, "of the (triremes) at Athens (sc. at their home base), . . . the trierarchs would sleep at home and the crews would quarter themselves, some in one place and some in another." Where the crews ate can be deduced from an incident that took place in 413 B.C. during the last stages of the conflict in the harbor of Syracuse. The commanders of the Syracusan fleet, in order to catch the Athenian fleet by surprise, had the Syracusan market authorities transfer the market to the waterfront, "so that, disembarking their men, they could have them eat lunch right away alongside the ships and, after a short time, again attack the Athenians that very same day and catch them unawares" (Thuc. 7.39); the clear implication is that the men normally shopped at the market in town and ate in various places scattered about the city.

example, the great Athenian expedition to Sicily in 415 B.C. sought ports in Italy to put in at, none was willing to furnish a market; they merely let the ships land and take on water, and Tarentum and Locri refused even that (Thuc. 6.44.2). If no port was available, the next choice was a beach near one; the ships would be pulled up on shore and arrangements would be made with the authorities to set up an *agora* nearby, or, failing that, to allow the men to use the *agora* in town.⁷ In picking a shore to pull up on, the availability of an *agora* was a vital consideration. It was, for example, an impossibly bad choice that caused the near total destruction of the Athenian fleet at Aegospotami in 405 B.C.: its boneheaded commanders selected a beach without a market nearby, and the men had to walk no less than fifteen stades to buy their food at Sestus, which presumably either opened the town market to them or set up a market for them (Xen. *Hell.* 2.1.25); the Spartan admiral, cannily launching his attack while the Athenian crews were straggling off to do their shopping, caught the bulk of the Athenian triremes either completely empty or only partially manned (2.1.27-28).⁸

Although, as noted above, some ports were reluctant to let fleets in, most seem to have been willing. After all, the arrival of thousands of hungry seamen created a sellers' market that ensured a welcome influx of cash. It even offered opportunities for gouging. The Pseudo-Aristotelian *Economics* (2.7, 1347a) cites a conspicuous example that took place at Lampsacus in 410/9 B.C.: "when a big fleet of triremes was expected, . . . [the authorities] ordered the vendors to sell barley meal for 6 dr. the medimnos, though at the time the price was 4 dr., and to sell oil for 4 dr. 3 ob. the chous, though at the time the price was 3 dr., and wine and the other items similarly." (For the date, see van Groningen 83.)

Inevitably there were times when fleets were in deserted or hostile areas where no *agora* was available; more on that point later.

⁷ See Thuc. 6.44.3 (when the Athenian Sicilian expedition arrived at Rhegium, the authorities, refusing it access to the harbor, allowed the ships to be beached at a nearby point outside the city and furnished a market there); 6.50.1 (when Alcibiades in a single ship arrived at Messene to seek an alliance, the people refused his ship access to the city but offered to set up a market outside).

⁸ An *agora* could be manipulated to achieve the same result, as an incident that took place at Eretria in 411 B.C. reveals (Thuc. 8.95.4). The Eretrians, reluctant subjects of Athens, hatched a plot to bring destruction on an Athenian fleet moored in their harbor. Advising the commander of a Peloponnesian fleet in the neighborhood of what they were doing, they concerted not to sell the Athenian crews provisions at the regular market, thereby forcing them to buy from households far off at the edge of town. While the men were off doing this, the Eretrians signalled the Peloponnesian fleet to attack; the Athenian crews had to scramble desperately to get back and their ships, entering battle hastily manned and piecemeal, were decimated.

The basic items the men sought in an *agora* were barley meal, oil, and wine.⁹ Their midday meal, taken during a short stop on land, must have been a quick bite; for it they could have eaten barley cakes or the like that they had bought at an *agora* the night before and packed away.¹⁰ In the evening, however, they surely had hot food.¹¹ And this raises the question of whether any equipment connected with food was carried.

There is no indication that there was a ship's supply of water aboard triremes.¹² Even stored in skins, it would have added unwanted concentrations of weight as well as taken up precious space; moreover, we know the nature of the non-rowing personnel on Greek war galleys, and there is none whose assignment had anything to do with overseeing and distributing water.¹³ It follows that each member of the crew must have had his own water-skin, which he filled before coming aboard (a capacity of two quarts would hold enough for his daily minimum need¹⁴), as well as a cup to drink from; these could be easily tucked away somewhere near his seat, thereby distributing the weight evenly throughout the hull and taking up none of the limited storage area. Each must have had, too, his own wineskin, for, as noted above, wine was one of the items the men bought at an *agora*, and this required having a container for the vendor to fill.¹⁵ Did they have to bring aboard their own

⁹ See the passage from the *Economics* cited in the text. For barley as the preferred cereal, see also Thuc. 8.100.1-2 (Thrasyllus in 411 B.C., planning to use Lesbos as base for his fleet, ordered the people of Methymna "to furnish barley meal and the other provisions"); Plut. *Mor.* 349a (trierarchs supply their men with barley meal and, as the accompaniment for it [ὄψον; on the meaning of the term, see Sparkes 123], onions and cheese). Barley rather than wheat seems to have been the basic constituent of the Athenian diet; see Hansen 24-5.

¹⁰ Like the food for the crew of the trireme that the Athenians, when they had second thoughts after decreeing the destruction of Mitylene, sent to overtake the ship that was carrying the decree there (427 B.C.); the men rowed continuously, not stopping to eat but eating "while under way barley meal kneaded with wine and oil" (Thuc. 3.49.2-3).

¹¹ Cf. Xen. *Hell.* 1.6.27-28: in 406 B.C., the Spartans became aware of the presence of the Athenian fleet at Arginusae by spotting the cooking fires there.

¹² The trireme replica carries no ship's water supply; the crew members come aboard with their own supply in plastic bottles or the like, which have a capacity of one and a half liters (Morrison-Coates 34-6).

¹³ On the personnel aboard Greek war galleys, see Casson 300-9. There was, for example, no equivalent of the *barillat* of the French galleys of the seventeenth century, the man in charge of all the barrels aboard (wine, salted meat, etc., as well as water), or of the *sous-comites*, assistants to the *comite* (chief rowing officer), whose duties included distribution of wine and spirits (Masson 246-7).

¹⁴ A daily minimum of two quarts is the figure cited by Guilmartin 63. The rowers of the trireme replica were more lavish, each consuming slightly more than a quart (1 liter) per hour (Rankov 138).

¹⁵ Aristophanes, in a passage describing the fitting out of a fleet, lists among the items of equipment *askoi* and *kadoi* (*Ach.* 549). The first are almost certainly not wineskins but what are

cooking gear as well, e.g., to cook the barley meal into a gruel, the most common way barley was eaten?¹⁶ Or was there a ship's supply of such gear?

We happen to be very well informed about the equipment aboard triremes, at least those of the Athenian navy during the fourth century B.C., thanks to a series of inscriptions that contain the records of some of the naval boards for the years from c. 377 to 322 B.C. (*IG* ii² 1604-32), records which provide for that half-century a wealth of detail about the ships in the fleet. The texts consist of entries that, for the most part, set forth transactions between the naval authorities and the trierarchs, the wealthy citizens who were appointed yearly by the state to undertake the liturgy of the trierarchy, that is, to receive from the navy a hull, its gear, and rowers, and to be responsible for all the costs involved in keeping the vessel in good condition, fully equipped, and fully manned as well as to assume its command.¹⁷ Many of the entries list individually the items of gear that were issued to the trierarchs, and since these entries occur repeatedly in the same or almost the same words, we are in no doubt whatsoever about what went aboard each ship. The items were broken down into two categories, "wooden gear" and "hanging gear." The first consisted of oars for the rowers, steering oars, masts, mast-props, yards, poles, ladders; the second consisted of sails, special cables for reinforcing the hull, ropes of various kinds for the rigging, ropes for mooring, screens of canvas or hair or leather, anchors.¹⁸ There are hundreds of entries listing such gear—but there are no entries mentioning equipment that can be connected in any way with the preparation of food, save one, *IG* ii² 1631.404-9.

It is couched in a form found frequently in the naval inscriptions,¹⁹ the listing of given items of equipment trierarchs are presumed to have in their custody. The items in this entry, however, occur nowhere else.

ὅσοι τῶν τριηράρχων χαλκᾶ καὶ σιδηρᾶ γεγραμμένοι εἰσίν, τὰδε
ἔχουσιν δόντες ἀργυρίου : Π Δ Δ Γ : δραχμάς· κάδους : ἕξ :

called *askômata* in the naval inscriptions, leather baglike fittings to seal the oarports; see Morrison-Williams 283-4; Morrison-Coates 1986: 169-70. The second are not jars for storing water but buckets for fetching it; see Sparkes-Talcott 201, Amyx 187-88. Presumably the standard equipment of triremes in Aristophanes' day included a few *kadoi*. Their usefulness is obvious: when a fleet stopped at a watering place (cf. above), instead of all the men forming an endless line to fill each his own water-skin, a group with *kadoi* could haul what was needed right to the ships.

¹⁶ In a pinch they could put barley meal and water in their water-skins and cook the mix by dropping in hot stones (see Jensen 161). The question is: did they have to?

¹⁷ For a detailed study of the trierarchy, see Gabrielsen, chaps. 2-7.

¹⁸ See Morrison-Williams 289-307; Morrison-Coates 1986: 170-2, 220-1 (revised explanation of the cables for reinforcing the hull [*hypozômata*]).

¹⁹ *IG* ii² 1624.105-24, 1627.436-72, 1628.576-608, 1629.1050-84, 1631.257-78.

κρατήρας : ἕξ : οἰνοχόας : ἕξ : χυτρογάλους : ΓΙ : ἀξίνας
 ΓΙ : σκαφεῖα : ἕξ : ὀβελεῖας : ἕξ.

Those trierarchs who are recorded as having given for bronze and iron items 75 dr. have the following: 6 *kadoi*, 6 craters, 6 oenochoes, 6 *chytrോഗauloi*, 6 axes, 6 spades, 6 *obeleiai*.

The first four would be the items of bronze; we know from other sources that *kadoi*, craters, and oenochoes were made of bronze as well as clay, and we can presume that *chytrोगauloi* were, too.²⁰ Bronze obviously was more suitable than pottery for containers that were going to travel about on a ship and not stay put in a house. The axes and spades would be the items of iron and also the *obeleiai*, as we shall see in a moment. All these objects make their first and only appearance in the naval inscriptions here. And, though they may seem to be a haphazard agglomeration of utensils and tools, they are not. They are precisely what is needed for cooking and serving a meal in an encampment. Presumably a set of six each was the issue for a trireme.

The *kadoi* would serve for fetching the water needed for making gruel as well as for mixing with wine. The distinctive feature of a *kados* was a wide mouth; though the term was used of wide-mouthed containers for all sorts of liquids, it was applied in particular to a bucket-like type for carrying water from springs or wells (l.c. Sparkes-Talcott 201, Amyx 187-8). The *chytrोगauloi* were large pots for cooking.²¹ The axes and spades would be for setting up the cooking fires, the axes to cut firewood and the spades to scoop out sites. The craters and oenochoes, along with the *kadoi*, would be for the wine. Water from the *kadoi* and wine from the skins would be poured into the craters, and the mixture would be served in the oenochoes. Cups do not appear in the entry because, as suggested above, the men had their own, for drinking water aboard ship as well as liquids on land.

What of the *obeleiai*? The meaning of *obeleia* is unsure; *LSJ*, for example, defines it as “an unknown iron object” (cf. Tod 1). The derivation from *obelos*, an instrument normally of iron, points to its being of iron as well, and the matter is put beyond doubt by an entry in a contemporary inscription

²⁰ The *kados* was normally of bronze (see Sparkes-Talcott 201-2, Amyx 187-8) but could also be of clay; e.g., a wide-mouthed clay jar has been found bearing the inscription, “I am a beautiful *kados*” (*Kerameikos: Ergebnisse der Ausgrabungen* 9 [Berlin 1976] 192, ES 35). For craters of bronze, see *DS* i 1555, for oenochoes, iv 161-2.

²¹ The *chytra* was the pot commonly used for heating liquids (cf. Sparkes 130, Amyx 212), and the *chytrोगaulos* was presumably a particular variety. In Menander’s *Dyskolos*, a cook seeks to borrow a *chytrोगaulos* (505) that in the context would have to be big enough to boil meat (cf. 519) for a sizable party.

which states that “we made 19 *obeleiai* from 21 talents of iron corroded by rust” (*IG* ii²1672.310-11, 329/8 B.C.). *Obeleiai*, then, were not only of iron but were simple enough to be fashioned from pieces of scrap. Could not an *obeleia* have been a grill? Grills were common in the ancient world—they are represented in art and a certain number of specimens have survived—but the Greek word for them is unknown.²² *Obeleia* would be an apt term, since a grill is, in effect, a series of *obeloi* parallel to each other. The crews could have used them for making barley cakes.

This entry, to repeat, is unparalleled. It may, of course, have appeared, perhaps numbers of times, in the many parts of the inscriptions that have been lost, since even the best preserved are nowhere near complete. Yet, a sole instance in the thousands of lines that have survived points to its unusualness.²³ Trierarchs, it is safe to say, were not regularly issued such gear. And when they were, it was in a way that demanded more of them than all the other gear they received. They took over that gear on the understanding that they would return or replace it; only when they failed to do so were they required to come up with the cash value.²⁴ For these utensils and tools, however, they had to put up cash in the amount of 75 dr.; they had, as it were, to leave a deposit on them. Trierarchs were notoriously laggard about returning the “wooden gear” and “hanging gear” issued to them; they held on to it for various reasons including, it would appear in some instances, the hope of embezzling it (cf. Gabrielson 156-7). Those who were laggard about handing back such gear might well be even more so about handing back these items, which could be used in the household and not merely aboard ship. The deposit presumably helped to ensure their return. When were trierarchs issued this carefully monitored equipment for cooking and serving meals? What were the out-of-the-ordinary occasions that called for it?

When a fleet put in for the night at an active port, as was usually the case, it is most unlikely that the crews, after doing their marketing, would be

²² See *DS* i 1557, fig. 2049 (iron grill found at Pompeii), Flower-Rosenbaum Pl. III (iron grill found at Newstead), Sparkes 134 and Pl. V,5 (clay grills). On the name for them, cf. Sparkes 129. The Latin is *craticula*; see *DS* s.v.

²³ Jordan 107 n. 35, taking no notice of the unusualness of the entry, cites it as evidence for the regular carrying of food on board. Gabrielsen 119, though he correctly connects it with meals on shore, also fails to note how rarely it occurs; he implies that such equipment was frequently carried. Moreover, he thinks the items listed were for six ships; this not only is a skewed way of interpreting the entry but makes no sense: one bucket, one crater, one oenochoe, etc., would hardly serve the needs of a crew of two hundred.

²⁴ See, e.g., *IG* ii² 1631.442-503. See also Gabrielsen 155-6, where he offers a number of individual examples.

allowed to turn a busy waterfront into a vast open-air kitchen with thousands of men lighting hundreds of campfires. It is more likely that in the *agora* there were vendors who either sold cooked food or cooked it to order. This could be the case even when ports refused to accept a fleet into its harbor and the ships were drawn up outside, where theoretically there would be space for fires. The *agora* set up nearby on such occasions could supply cooked food just like its counterpart in town. In other words, under normal circumstances there was no need to load cooking gear aboard the triremes.

What about abnormal circumstances, that is, the times when fleets had to put in where there was no *agora* to be found? If it was for only one night, there need be no problem: commanders could alert the crews the evening before to buy ahead not only for the coming midday meal but for the evening meal as well, and the men could lay in, say, a supply of *mazai*. But if several nights at such places were foreseen, that was a very different matter. In 433 B.C., for example, before the Battle of Sybota between the fleets of Corinth and Corcyra, the Corinthian commanders decided to establish an advanced base at an “uninhabited harbor”—and they loaded aboard provisions for three days.²⁵ They must have loaded aboard cooking gear as well.

And, when a fleet found itself off hostile territory, it had no choice. It perforce put in at uninhabited spots. Iphicrates, for example, in his operations in 373 B.C. along the coast near Corcyra time and again passed the night in places held by his enemies, places where he had to post special guards and take other precautions against a surprise attack (above, n. 4). He must have had aboard provisions and the requisite equipment.

The instance of Iphicrates points to the explanation of entries like the one we have been discussing. When a commander knew that he would be taking his fleet into areas where there certainly would be no *agora* available, he had to have aboard food and the equipment for cooking and serving it. He could stock up on food at the last available *agora*; the expense presented no problem, since he would reimburse himself from the men’s food allowance. But stocking up there on equipment would indeed present a problem: the money would have to come out of his own pocket, and, even if he had it, he would hardly be likely to lay it out, since he would have to extract repayment from the trierarchs, and that was a daunting prospect.²⁶ The solution was to load the equipment aboard at Athens. He would inform the naval authorities of his special need, and they would issue a set of utensils and tools to each trierarch, exacting a deposit to

²⁵ Thuc. 1.48.1 and *HCT* note ad loc.; the harbor is described as deserted in 1.50.3.

²⁶ Cf. Dem. 50.24-40 (Apollodorus’ difficulties in getting repayment of outlays from Polycles, the trierarch appointed to succeed him).

ensure that these highly useful objects would be returned. And the transaction would be recorded in an entry such as *IG* ii² 1631.404-9.

In sum, the trireme crews were fed by issuing them a cash allowance for buying food and by stopping at night at or near ports where they could do the buying, places that offered access to an *agora*. When it was known in advance that the stops would have to be at uninhabited spots, ships took aboard not only the food required but the equipment to prepare it.

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