NOTES ON CERTAIN GREEK NAUTICAL TERMS AND ON THREE PASSAGES IN *I.G.* ii². 1632[1]

I. μονόκροτος, δίκροτος, τρίκροτος

IN 1905[2] Dr. Tarn put forward the theory that the trireme had three squads of oarsmen, one forward, one amidships, and one aft, and that its oar system was similar to that of the Venetian *a zenzile* galleys of the fifteenth and early sixteenth centuries, ships in which 'three oarsmen sit to each bench, each pulling his own oar, so that the man who sits furthest inboard pulls the longest oar'.[3] I reproduce in Fig. 1 the representation of a model of a Venetian trireme of 1539 which Admiral Paris gives in his *Souvenirs de Marine* and which he takes from Admiral Fincati's *Le Triremi* (Rome, 1881).[4] Tarn claimed that the terms which correspond to this division into squads are τρίκροτος, δίκροτος, and μονόκροτος, and that the usual reference of these terms 'to the (triple) beat of the three banks of a trireme, and the (double) beat of the two banks of a bireme, and the (single) beat of the one bank of a μονήρης' is supported by no evidence: 'and if it were true we ought to find τετρακίκροτος and so forth, terms which never occur'.

On the theory which I am concerned to defend there is a very good reason for the -κροτος series to stop at τρίκροτος. I argued for this theory before the Cambridge Philological Society in March 1940 and published my arguments in the *Mariner's Mirror* of January 1941, vol. xxvii. The theory is, in brief, as follows:

(1) the numeral in the -ήρης series gives the number of men in the group of oarsmen into which the single oarsman of the original long-ship[5] had been expanded;

(2) the first method of expansion was to set oarsmen at different levels; and in the trireme, with three levels, the limit of this method was reached;

(3) further expansion of the group must have involved, what is probable on other grounds, the introduction of a new method, i.e. setting more than one man to each oar, or, possibly, the introduction of the system known in Venice as *a zenzile* at more than one level.

There seems to be no doubt that the -κροτος series means, as Tarn says, ships whose crews are trained in, or fall into, one or two or three squads. On my theory, however, the three squads attested by the names θρανῖται, ζύγιοι, θαλαμιοί were divided according to level; and the cessation of the -κροτος series after three is due to the fact that the levels, and hence the squads, never in fact exceeded that number. The -ήρης series, on the other hand, could continue, since it gave the number of men in the group, irrespective of level or squad.

One general objection may be made to Tarn's three-squad *a zenzile* ship. With him it is a matter of mere coincidence that a trireme had three squads. On the three-level theory, on the other hand, the number of squads as of levels is dictated by a hard mechanical necessity, and a trireme means a ship with three men in each group of oarsmen, separated by level, and so a ship of three levels or squads. This objection could not have been made to the Venetian *a zenzile* galley, in which the oarsmen were divided into squads not longitudinally but according to each man's position

[1] The substance of these notes was presented to the Cambridge Philological Society in a paper read on 8 May 1947.

[2] *J.H.S.* xxv.

[3] Budé, *de asse et partibus eius*, 1514, v. p. 135. He, like Tarn, attributed this system to the ancient triremes.

[4] My thanks are due to the Trustees of the National Maritime Museum, Greenwich, for allowing a photograph to be taken from their copy of Paris's book.

[5] What Koester (*Das antike Seewesen*, Berlin, 1923) calls the 'Urrojer', p. 105.

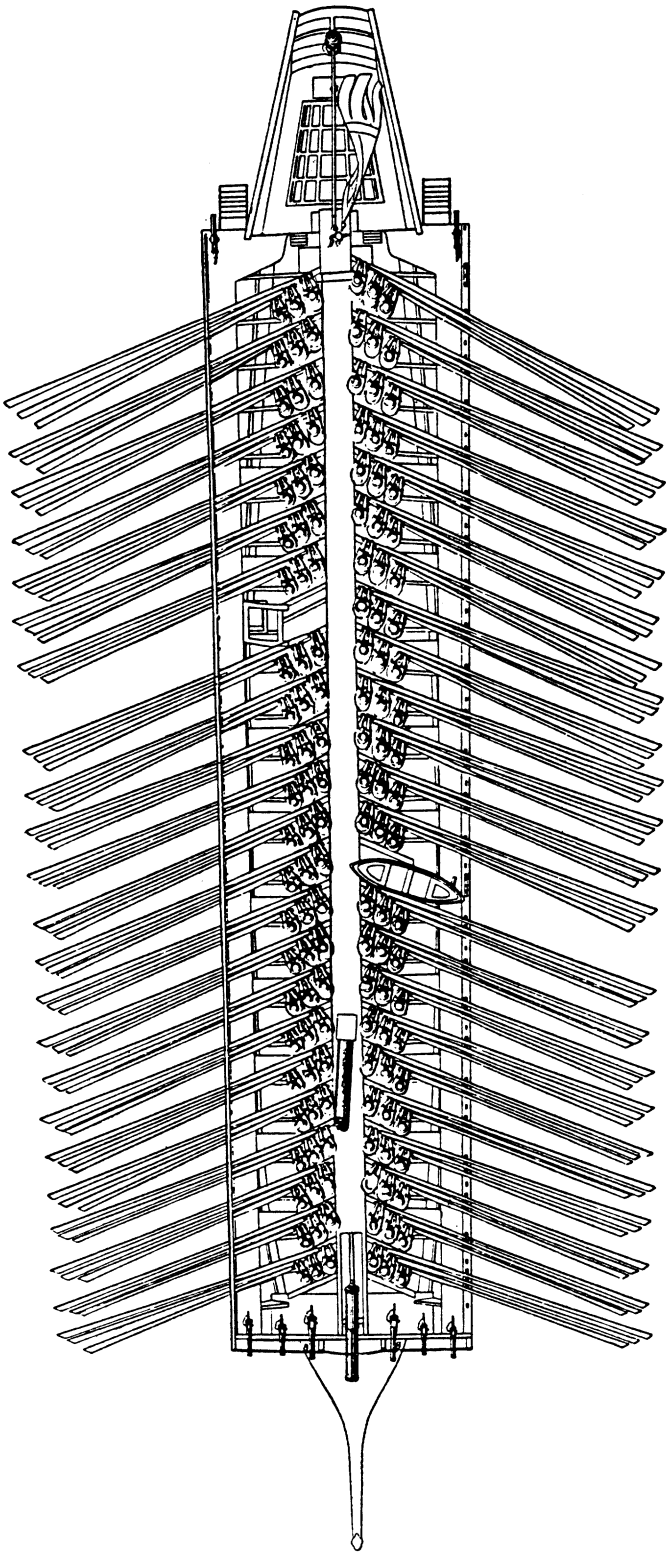

FIG. 1

on the bench. So a *trireme* was a three-squad ship with three men to the bench, a *quadrireme* a four-squad ship with four men to the bench.

The argument on which Tarn bases his theory of the three squads rests on a conclusion derived from Arrian, *Anabasis* 6. 5. 2, that triakontors were dikrotoi. In *Hellenistic Naval and Military Developments*[1] he refers again to this key argument. If the term dikrotos meant a triakontor, then, 'since the only possible division of the rowers in a triakontor was into fore and aft squads', there were two longitudinally divided squads of oarsmen in a triakontor and three such squads in a trireme. In the later book Tarn attempts to reinforce the equation dikrotos = triakontor by consideration of an entry in a papyrus giving bread rations for a dikrotos. He calculates that the complement was thirty-two men; and so she was a triakontor. Of course this does not strengthen his argument at all. The questionable point is not whether a triakontor could be described as dikrotos but whether 'the only possible division of the rowers in a triakontor was into fore and aft squads'. I can think of at least two other ways. But fortunately there is a small number of contemporary representations which show that pentekontors and triakontors were sometimes rowed on a two-level system, and suggest that the crews of these ships, if divided into two squads, were so divided by level. A description of the most important will suffice.

The 'Vulci' black-figure kylix in the British Museum, which is dated in the last half of the sixth century B.C., shows two warships with oars rowed at two levels, the lower through oar-ports, the upper over the gunwale.[2] One of the ships appears to have a full complement of oars at both levels, but, since the kylix's handle interferes with the full representation of the ship, the total number cannot be counted. The other is shown in full, and has twelve oars at the lower level but only six at the upper.[3] All the oars depicted are in the half-shipped position.[4] With the full twelve oars at both levels we get, doubling for port and starboard and adding the two rudder oars, a perfect pentekontor. In face of this evidence alone, which is sufficiently well known, I can see no reason why Tarn claims an inevitable longitudinal division in the triakontor. The two-level system must at any rate have been fairly common for us to have one example of it among the very few ship-representations which have survived: and it must be remembered that with the passing of the black-figure technique our supply of these dries up practically to nothing.

The evidence of the ships on the 'Vulci' kylix is sufficient to make us prefer to divide triakontors and pentekontors, if they are to be divided, into upper and lower,

[1] Cambridge, 1930, p. 128 and Appendix IV.

[2] B.M., B 436. J. A. Davison, *C.Q.* xli, p. 24, n. 3. This arrangement appears first in some probably Phoenician galleys depicted in the palace of the Assyrian King Sanherib which dates from the end of the eighth century B.C. Koester (p. 54) supposes that the Phoenicians copied the Cretan type of warship (which was also the ancestor of the Greek type), and the two-level system may have had a similar origin. Another two-level ship is shown on the Bf. neck-amphora in the Bruschi Collection (Museum at Tarquinia: rep. *Jahrbuch*, 1912, pp. 76, 77). It has eight oars in each level and is either an inaccurately drawn triakontor or an intermediate type.

[3] Torr's reproduction, which is copied by Koester and the British Museum handbook *Greek and Roman Life*, has been doctored so that it shows eleven oars on the top level.

[4] The fullest description of this operation is given by Apollonius Rhodius i. 378 (the launching of the Argo):

> ὕψι δ' ἄρ' ἔνθα καὶ ἔνθα μεταστρέψαντες ἐρετμά
> πήχυιον προύχοντα περὶ σκαλμοῖσιν ἔδησαν.

Later (ibid. 392), when it is time to row, σκαλμοῖς δ' ἀμφὶς ἐρετμὰ κατήρτυον. Cf. Ovid, *Metam.* 11. 475 f.

> portibus exierant, et moverat aura rudentes,
> obvertit lateri pendentes navita remos.

Also ibid. 3. 676 (when Dionysus' wonder-working had made rowing impossible) 'at Libys obstantes dum vult obvertere remos'. In Ap. Rhod. the oars were placed ready for use, in Ovid half-shipped after use. The characteristic action (*obvertere*, μεταστρέψαι) is the same. Contemporary representations of *a scaloccio* galleys *under sail* show the oars fully out but 'parked' with the blade higher than the handle. There are several in the library of the National Maritime Museum, Greenwich.

rather than fore and aft, squads. As a matter of fact, the passage in Arrian's *Anabasis* which gave Tarn his start would suggest this two-level arrangement for triakontors: 6. 5. 2 *ὅσαι τε δίκροτοι αὐτῶν* (i.e. *τῶν τριακοντόρων*) *τὰς κάτω κώπας οὐκ ἐπὶ πολὺ ἔξω ἔχουσαι τοῦ ὕδατος*. But Tarn says that these ships of Alexander are not to be regarded as two-level triakontors of the common type, because 'Alexander had no biremes. Indeed they were not in use at his time.' I imagine that this assertion is due to the fact that the term *διήρης* was not used until later. But the type, if not the term, had certainly been in use before, and there is no reason why it should not have been in use then. Tarn's denial leads him to argue that in this passage of Arrian, as elsewhere, *κάτω* means forward. This argument will come up for consideration later.

II. 1. *θαλαμιά* (sc. *ὀπή*). 2. *παρεξειρεσία*.

As the oar-port[1] is the mark of the two-level system, so the outrigger seems to have been the technical development which led to the three-level system. Both these features of the trireme must be considered more closely, since Tarn denies the former and some Swedish scholars have recently denied the latter.

1. Reviewing[2] my article in the *Mariner's Mirror* Tarn asks: 'must I really repeat that there is no mention of port-holes in Greek, in either texts, inscriptions, papyri or scholia, nor any word for port-hole in the Greek language?' No one who has seen the 'Vulci' kylix could surely doubt that oar-ports *existed* in some Greek galleys: they are there as plain as a pikestaff.[3] In correspondence, following Tarn's review, Prof. J. L. Myres[4] drew his attention to Herodotus 5. 33, where the Ionian sea-captain Scylax is punished for not keeping watch by Megabates, who orders his bodyguard to tie him up *διὰ θαλαμιῆς διελόντας τῆς νεὸς κατὰ τοῦτο ἔξω μὲν κεφαλὴν ποιεῦντας ἔσω δὲ τὸ σῶμα*. Myres, like everyone else,[5] supposes that *θαλαμιή* here means oar-port and that it was through this that Scylax's head was put, but Tarn says the word means a hatch, from *θάλαμος* the forward cabin, although there is no separate evidence for such a forward hatch or cabin in triremes. Myres replied by quoting Aristophanes, *Peace* 1232 ff., which is even more significant. Trygaeus sits on the breastplate, which presumably stands upright with the neck opening uppermost, and says he will use it as a commode. 'But how ever will you wipe yourself?' the breastplate-seller asks, and Trygaeus answers:

τῃδὶ διεὶς τὴν χεῖρα διὰ τῆς θαλαμιᾶς
καὶ τῇδ'.
Br. Seller *ἄμ' ἀμφοῖν δῆτ' ;* *Tryg.* *ἔγωγε, νὴ Δία,*
ἵνα μή γ' ἁλῶ τρύπημα κλέπτων τῆς νεώς.

As Myres says: (1) *θαλαμιά* is here applied to each of the lateral arm-holes; (2) *τρύπημα* is more applicable to an oar-port than to a hatch; (3) as a lateral opening it is expressly distinguished from the upward opening of the breastplate; (4) if *θαλαμιά* means a hatch there is no point in the line 'so as to avoid being caught in fraudulent practice over a ship's hole', which Rogers and van Leeuwen say contains a reference to the practice of fraudulent trierarchs who would sail without the proper complement of oarsmen and deceive the inspectors by making the *θαλαμιοί* put hands out through *two* oar-ports.[6]

[1] Oars were worked through a side-fence or lattice in the long-ship, but that did not involve an oar-port, which is a port below the gunwale.

[2] *C.R.* lv, 1941, p. 89.

[3] Oar-ports are visible in many pictures of ships: e.g. Aristonothos vase 650, Nikosthenes cup 530, Rf. stamnos in B.M. (*C.A.V.* 3, pl. 20. 1), 470, Talos vase 390. In the case of the first and third it is possible that two-level ships are shown with only one squad working, since human figures are always too big for the ships in which they are drawn. The trireme on the Talos vase shows oar-ports for the zygii also. This was no doubt designed to increase the free-board. (Cf. also the Delphi 'Dioscuri' relief and the Ficoronian chest.)

[4] *C.R.* lvi, 1942, 55.

[5] e.g. Koester, p. 114.

[6] Cf. Aesch. *in Ctes.* 146; Cicero, *In Verr.* 2. 5. 51. 135.

There is, I think, a third fifth-century use of *θαλαμιά* to mean an oar-port. In the *Acharnians* a famous passage describes the activity at the docks when a fleet is being launched: 552–3 (the docks were full of hubbub)

κωπέων πλατουμένων
τύλων ψοφούντων θαλαμιῶν τροπουμένων.

κωπῶν is usually supplied with *θαλαμιῶν* although the trimming of oar-timber had just been mentioned; and although *all* the oars, not only those of the thalamian squad, would need fitting with ordinary oar-thongs. But it appears that the oar-ports did need a special fitting which could be described by the word *τροπόω*. This fitting was the *ἄσκωμα*, a leathern bag fitting round the oar and nailed round the oar-port.

The oarsmen of the lowest level in a trireme would not have used rowlocks much higher above the waterline than those of the open long-ship, i.e. 16–18 inches. The building-up of the gunwale to take the upper squad's oars, the subsequent imposition of the outrigger, and the increase of the complement from 50 to 200, resulted in a substantial craft which might be expected to keep the sea when the old long-ship would have run for harbour. But something had to be done to prevent the water coming in through the *θαλαμιαί* in an emergency.[1] The means adopted appears to have been a leather bag, fitting round the oar when it was in use or half-shipped, and closing the port completely when it was shipped. Such are discernible on the Lenormant relief, though Tarn denies it, and in the Talos vase ship[2] which I regard as a trireme, though Tarn unkindly describes the artist's efforts in this direction as the issue of bilge-water. But that is not the only evidence.

In the *Frogs* *ἀσκώματα* are listed with linen and pitch as naval material the export of which was forbidden.[3] Among items of naval gear listed in the above-mentioned passage in the *Acharnians* are *ἀσκοί* and they come next to *τροπωτῆρες*; and, best of all, near the beginning of the same play Dicaeopolis addresses the King's Eye thus:

ὦναξ Ἡράκλεις·
πρὸς τῶν θεῶν ἄνθρωπε ναύφαρκτον βλέπεις . . .
ἄσκωμ' ἔχεις που περὶ τὸν ὀφθαλμὸν κάτω.[3]

The explanation must be that *ἄσκωμα* is a piece of naval gear and that in a ship it normally surrounds the *ὀφθαλμός* and is 'below'. Now there is one of the naval lists which, no doubt because it details chiefly old ships or new ones unallotted for some reason or other, pays particular attention to fixtures apart from the normal records of *σκεύη ξύλινα* and *σκεύη κρεμαστά*. Of an old ship, the *Panthera*, it is said *ὀφθαλμὸς κατέαγεν*, a phrase which is repeated in connexion with another.[4] With these entries must be compared another from another similar list *αὕτη σκεῦος ἔχει οὐθέν· οὔθ' οἱ ὀφθαλμοὶ ἔνεισιν.*[5] It is tempting to suppose that *ὀφθαλμός* was slang for oar-port: and there is a measure of support in the scholia for the identification.[6] Boeckh identifies this *ὀφθαλμός* with the *ὀφθαλμός* which Pollux puts in the bow of the ship and which was near the name-plate. A painted eye is certainly visible in large numbers of ship-representations from Greece and all over the world, but it is difficult to see how such an eye could be broken.

[1] When of course it was too rough to *row*.

[2] The relief is dated at the end of the fifth century, the vase at the beginning of the fourth.

[3] *Frogs* 364; *Acharnians* 549 and 97.

[4] *I.G.* ii² (VII Tabulae Curatorum Navalium), 1604. 68 and 75.

[5] 1607. 24–5. It may be argued that port-holes do not fall out with age. But we know nothing about this ship. She may have been *καινὴ ἀνεπικλήρωτος* and unfinished to the extent of not having oar-ports made.

[6] Second Scholiast on the *Acharnians* 97: *ὁ τῆς κώπης ὀφθαλμὸς ἔχει τὸ ἄσκωμα· κώπης δὲ ὀφθαλμὸς τὸ τρῆμα*: and cf. Eustathius, 1931. 42 . . . *ὀφθαλμοὺς ὁποῖοι καὶ οἱ κατὰ τὰς τριήρεις· λέγονται γὰρ ὀφθαλμοὶ ῥητορικῶς ἐν ἐκείναις αἱ ὀπαὶ ὧν αἱ κῶπαι διείρονται.*

To return to *ἀσκώματα* and oar-ports, the secondary evidence, though of little value, is unanimous. *Et. Magn.* *ἀσκώματα· τὰ δέρματα τὰ ἐπιρραπτόμενα ταῖς κώπαις ἐν ταῖς τριήρεσι διὰ τὸ μὴ εἰσφρεῖν*[1] *τὸ θαλάσσιον ὕδωρ.* Suidas: *τὰ ἐν ταῖς κώπαις σκεπαστήρια ἐκ δέρματος οἷς χρῶνται ἐν ταῖς τριήρεσι, καθ' ὃ τρῆμα ἡ κώπη βάλλεται.* And the scholion on *Frogs* 364 resembles Suidas closely. Pollux, 1. 87, mentions *τρήματα δι' ὧν διείρεται ἡ κώπη*, and proceeds *τὸ δὲ πρὸς αὐτῷ τῷ σκαλμῷ δέρμα ἄσκωμα.*

The conclusion is that *ἀσκώματα* were leathern bags fitted to oar-ports, and that *θαλαμιαί* was the name of these oar-ports.[2]

2. Tarn,[3] Koester, and the new Liddell and Scott all accept Assmann's conjecture[4] that the word *παρεξειρεσία*, which is used three times by Thucydides, signifies an outrigger, although the scholia and the lexicographers declare unanimously that the word means 'the space beyond the rowing' at bow and stern. Since, however, Alexanderson[5] in 1905 and Blinkenberg[6] in 1938 believe that the definition given by the scholia is right, it may be worth while to suggest two further considerations.

The first is grammatical. The formation of the word is covered by a general rule stated in Kühner–Blass[7] and not, so far as I am aware, admitting of exceptions, that where verbs and verbal nouns are compounded with prepositions the relation is of the kind known technically as 'parathesis', i.e. the prepositions are adverbial. Admittedly, *εἰρεσία* is derived from a verb (*ἐρέσσω*) only indirectly, through *ἐρέτης*, but it is so derived none the less. Analogues are: *εὐεργεσία, εὐεργέτης, εὐεργετέω*; *προστασία, προστάτης, προστατέω.* *παρεξ-* is then adverbial to *-ειρεσία* and the whole word means 'a rowing outside along'. Compare in Thucydides *διέξοδος, ἀντιπαρασκευή, ἐγκατάληψις.*

The second point for consideration is a passage from a Byzantine writer of the sixth century A.D., admittedly only second-class evidence, but striking. It is unknown to Liddell and Scott. Agathias[8] speaking of rafts made by the Huns says that, in order to make them seaworthy, *κωπητῆρας ἐφ' ἑκατέρᾳ πλευρᾷ καὶ οἷον παρεξειρεσίας αὐτομάτους ἐμηχανήσαντο.* Since 'rowing apparatus on both sides' seems to be further defined as 'a kind of natural *παρεξειρεσία*', it would appear that the interpretation of the word as 'outrigger' finds strong confirmation.[9]

Reviewing my article Tarn says 'once there was an outrigger the oars could not be rowed anywhere else'. This opinion is of course bound up with his general theory of the trireme, but as a statement of mechanical possibility it is demonstrably untrue. Starting with a two-level ship of the kind attested we can, by adding the outrigger, arrange for a third oar, *of the same length as the other two*, to be worked over it. My article was, I am afraid, so prolix that Tarn missed this essential feature of the reconstruction proposed. He calls it 'an impossible monster' with oars of different lengths.[10] Figure 2 gives the plan which accompanied my article in the *Mariner's*

[1] *εἰσφέρειν* MSS.: *εἰσφρεῖν* edd. recc.

[2] Fittings of a very similar nature are visible in the Roman ship on the Vatican relief.

[3] *J.H.S.* xxv. 141, note 10.

[4] Article 'Seewesen' in Baumeister's *Denkmäler des klassischen Altertums*, iii. 1593 ff.

[5] A. M. A., *Om betydelsen af ordet παρεξειρεσία*: Comm. Philol. in hon. Ioh. Paulson, 1905.

[6] Chr. B., Det kgl. Danske Videnskab. Selskab.: Arch.-Kunst. Meddels. ii. 3. *Triémiolia*: *étude sur une type de navire Rhodien*: København, 1938, p. 38. 1

[7] ii. 338.

[8] *Corp. Script. Hist. Byz.*, Pars iii, p. 326, 12: Agathiae *Hist.* v. 21 ad fin.

[9] The other passages where the word appears are: Thuc. 4. 12. 1; 7. 34. 5 and 40. 5; Plutarch, *de glor. Ath.* 347 B (an account of the incident in Thuc. 4. 12. 1); Arrian, *Periplus Mar. Eux.* 3 (the waves come in, not only through the oar-ports, *κατὰ κώπας*, but over the *παρεξειρεσία* as well) and fr. 160 J.; Polyaenus 3. 11. 13 and 14. The most informative is Arrian, *Peripl. M. Eux.* 3.

[10] Breusing (*Die Nautik der Alten*, Bremen, 1886, and *Die Lösung der Trierenrätsels*, Bremen, 1889) asserted that it would be impossible to keep time with oars of different lengths, and that *therefore* there could never have been ships with banks of oars at different levels. Tarn appears to adopt this argument. Koester (p. 106), who was a practical sailor, approves Assmann's contradiction of this assertion (*Seewesen*, p. 1610, B. ph. W. 1888, p. 26), and Mr. R. C. Anderson's views

Mirror.[1] The photograph of the section of the Lenormant relief of which it is an accurate projection has had to be omitted.

On my view the outrigger played a vital role in the development of the trireme. In short, I maintain the exact opposite of Tarn's pronouncement. The presence of the outrigger shows that there were oars rowed in other positions than over it. The normal position for rowing an oar is over the gunwale. Oar-ports enable oars to be worked through the side, the outrigger provides a third method of working. If we regard the presence of oar-ports and the outrigger as proved for fifth-century triremes, then a three-level oar-system follows.

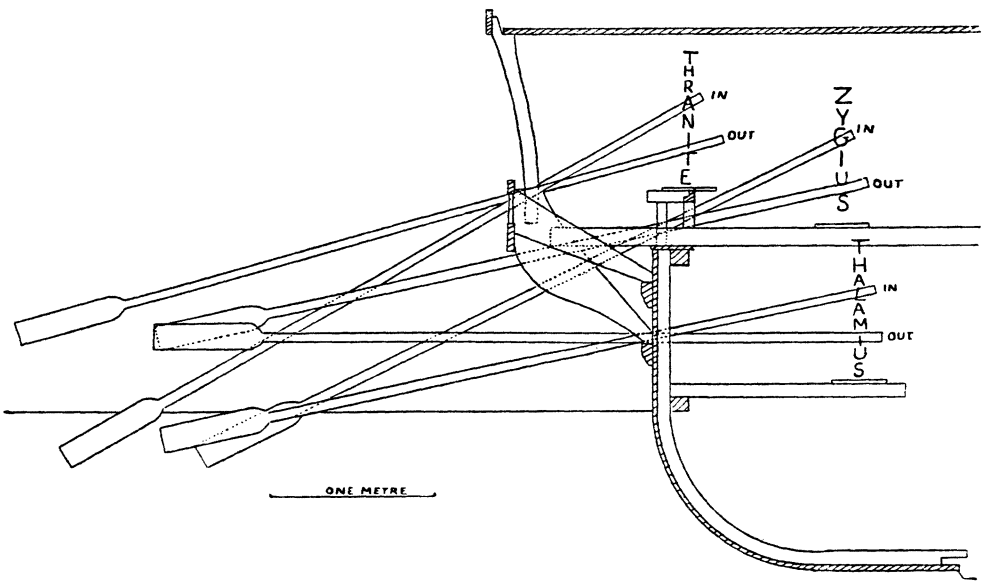

FIG. 2

III. *θρανίτης, ζύγιος, θαλαμιός*.

Tarn refers[2] to what he calls 'the fact, now thoroughly proven, that the words thranite, zugite, thalamite refer to three longitudinal squads'. I have already criticized what is, on his own account, his key argument, concerning the word *δίκροτος* and triakontors. Consideration of the terms *θρανίτης, ζύγιος*, and *θαλαμιός* will provide an opportunity of criticizing his ancillary arguments.

First in this connexion is a purely philological point. *θρανίτης, ζύγιος*, and *θαλαμιός* are alone classical Greek for the three classes of oarsmen. There is no doubt about the first, which occurs in Thucydides and in adjectival form in Aristophanes and the fourth-century naval lists.[3] *ζύγιος* occurs adjectivally in the naval lists and in Polyaenus, who, though himself late, used good fifth- and fourth-century sources; although as a noun it only occurs in Pausanias the rhetor.[4] *θαλαμιός* is used as a noun of the

(*Mariner's Mirror*, vol. xix, p. 237 and vol. xxvii, pp. 314 ff.) are similar. As Anderson said, time-keeping would not be affected by a mere difference in length between the oars, only by a difference in the proportion of inboard to outboard parts. My approach is a more positive one. If, as the experts hold, there is a right length of oar for a man rowing in a given set of conditions, and if, as I have demonstrated, it *is* possible for all the oars in each oar-group in a three-level trireme to have been the same length, then I think they must have *been* so, particularly as this conclusion is supported by the evidence.

[1] My thanks are due to the Society of Nautical Research for permission to reproduce the plan here.

[2] *C.R.* lv, 1941, p. 89.

[3] Thuc. vi. 31. 3; Aristoph. *Acharn*. 162; *I.G.* ii². 1604 *et al.*

[4] *I.G.* ii². 1604 passim *et al.*; Polyaenus 5. 22. 4; Pausanias ap. Eustathium 629. 41.

oarsmen in Thucydides and probably with a similar meaning in Sophocles.[1] In spite of this usage it has been common to speak in English of the thranite, zugite, and thalamite oarsmen, using two bastard forms *ζυγίτης* and *θαλαμίτης* which were invented in the Byzantine period to match *θρανίτης*.[2]

Tarn argues from two passages in Polyaenus that the thranite squad was restricted to the stern. In one (5. 43) a pilot uses his steering-oars in such an ingenious way that the pursuing ship is said to be able to get its ram only so far as 'the first thranite oars'. In the other (3. 11. 14) Chabrias prepares a second set of steering oars which he fits through the *παρεξειρεσία* 'beside the thranite oars'. These passages certainly prove that, next forward of the steersman, you would come to thranite oars and thranite oars alone, but Tarn's conclusion, that the thranites rowed in the stern, the zygii amidships, and the thalamii forward, does not necessarily follow.

The naval lists of the fourth century show, without any doubt, that the proper complement of oars for a trireme was 200, of which 62 were thranite, 54 belonged to the zygii, and 54 to the thalamii.[3] Thirty were *περίνεῳ*, a term which I shall consider shortly. We must then suppose, on the ordinary three-level theory, that the thranite squad was four men a side longer than the other two. Now there is a fragment of a relief, like but not identical with the Lenormant relief, which shows an aftward part of a galley.[4] Interpreting this as a trireme in the same way as the Lenormant relief is interpreted, we can see that in the aftmost section of the part shown the zygii have ceased, although in the section forward of it the oar of a zygius is still visible. The state of the relief does not allow us to say anything about the thalamii. Quite apart from this fragment or the fact of the greater number of thranite oars, it would be reasonable to assume that in a Greek galley with oars at three levels it would be the topmost level that would be able to find a seat longest when the hull, curving sharply upwards and narrowing towards the stern, had squeezed out the lower levels.[5] Also, the presence of the outrigger would enable the thranite to work an oar when the ship was too narrow for the others to do so.

Many suggestions have been made to account for the name *θρανίτης*, but the only one that seems likely was put forward by Ridgeway in 1895,[6] that it is derived from the Homeric *θρῆνυς*. In the battle at the ships (*Iliad* 15. 729) Ajax steps backwards from the *ἴκρια*, the stern platform of the ship, *θρῆνυν ἐς ἑπταπόδην*. This *θρῆνυς* must then be a second, lower, platform before a second step, this time probably on to the ship's keel. This series of platforms is natural in a ship whose keel curves sharply upwards in the stern. Ridgeway suggested that the thranites were a small group of men who rowed from this platform, but this suggestion was effectively refuted by Torr, who merely had to quote the numbers of oars in the thranite class attested by the naval lists. It is, however, still possible that the thranites were so called because, when they were added to the two-level ship, they sat in the narrow stern on the platform, *and continued forward at that height above the water-line* throughout the ship. *θρῆνυς* occurs a number of times besides in Homer, and always means a footstool. This should indicate that the second platform in the ship was where the steersman's feet

[1] Thuc. 4. 32. 2; Soph. fr. 1052 Pearson.

[2] e.g. Scholiast on *Frogs* 1072 in Codex Venetus Marcianus 474, Eustathius 640. 10.

[3] *Thranite*: in the 9 cases where the total is given, 8 give 62, one 64. *Zygian*: in the 12 cases where the total is given, 11 give 54, one 52. *Thalamian*: in the 13 cases where the total is given, 12 give 54, one 53. *περίνεῳ*: in the 16 cases where the total is given. all give 30.

It is plain that in two of the three cases of variation, confusion between 62 and 54 has produced 52 and 64.

[4] The Aquila fragment: see Rumpf, *Römische Fragmente*, Winckelmannsprogramm 95, Berlin, 1935.

[5] See particularly the Talos vase ship (which I claim as a trireme), and *Aeneid* 6. 4 f. *curvae puppes*.

[6] *C.R.* ix. 166.

rested as he sat on the *ἴκρια*.[1] A quotation from Pausanias the rhetor in Eustathius[2] (*ὅτι ἐπισφελίτης ὁ θρανίτης· σφέλας γὰρ τὸ ὑποπόδιον*) confirms the connexion *θρανίτης–θρῆνυς*–footstool.

To recapitulate, (1) the greater number of oars in the thranite squad, (2) the Polyaenus passages, and (3) the derivation from *θρῆνυς*, are all consistent with the theory which I am defending, and afford no evidence that the thranites were a squad restricted to the stern. Tarn can bring no evidence to show that the zygii had any connexion with the waist or the thalamii with the bows.

Tarn cites one other passage, Polybius 16. 3. 4, where at the battle of Chios a dekeres rams a triemiolia *κατὰ μέσον τὸ κύτος ὑπὸ τὸν θρανίτην σκαλμόν*: and this must be considered briefly. He argues that 'historians never mention the height at which a ship is struck: their references are always longitudinal, so to speak'; and so *θρανίτης* is a longitudinal division. But if *κατὰ μέσον τὸ κύτος and ὑπὸ τὸν θρανίτην σκαλμόν* are *both* longitudinal, they must mean the same thing, which is uneconomical; and if they do, then how is the thranite the sternmost squad? The preposition *ὑπό* seems to me to show that the second reference is vertical and that there is no waste of words. If, as in the trireme, the triemiolia's thranite squad rowed through an outrigger, then for a large ship to get its ram 'under the thranite thole' would be to get it firmly wedged in the smaller ship's side-timbers. However, since very little is known of dekereis and less of triemioliae, the passage, as Tarn observes, is inconclusive.

There is no other primary evidence in favour of the theory of three longitudinally divided squads of oarsmen. But there are the scholiasts and lexicographers. Any descriptions of the trireme written after the fourth century A.D., the date by which Zosimus states categorically that the building of *τριηρικὰ πλοῖα* had long been forgotten, must be treated with suspicion owing to the tendency of antiquaries to reconstruct ancient galleys on the pattern of their contemporary craft.[3] And in general, Rutherford, the editor of the Aristophanic scholia, has said:[4] 'we should, perhaps, be more likely to form a just conception of the literary and social conditions under which the plays were written, if the scholia were swept clean away', for we are never quite sure that 'the explanations with which the scholia provide us have always a basis of fact'. With these provisos we may consider the fullest note for our purpose, that on *Frogs* 1074 *τῷ θαλάμακι* in the codex Venetus Marcianus 474: *τῷ θαλάμακι· τῷ κωπηλατοῦντι ἐν τῷ κάτω μέρει τῆς τριήρους. τῷ θαλάμακι· οἱ θαλάμακες ὀλίγον ἐλάμβανον μισθὸν διὰ τὸ κολοβαῖς χρῆσθαι κώπαις παρὰ τὰς ἄλλας τάξεις τῶν ἐρετῶν· καὶ ἡ μὲν κάτω θαλαμῖται, ἡ δὲ μέση ζυγῖται, ἡ δὲ ἄνω θρανῖται. θρανίτης οὖν ὁ πρὸς τὴν πρύμναν, ζυγίτης ὁ μέσος, θαλαμιὸς ὁ πρὸς τὴν πρῷραν. καὶ θαλαμιὰ ὀπὴ δι' ἧς ἐξέρχεται ἡ κώπη· οἷον οὖν παρὰ τῷ συγκαθέδρῳ παρδεῖν.*

The scholiast is obviously a three-level addict, but Tarn sees signs of virtue in the sentence *θρανίτης οὖν ὁ πρὸς τὴν πρύμναν, ζυγίτης ὁ μέσος, θαλαμιὸς ὁ πρὸς τὴν πρῷραν*, because he believes that *ἄνω* means aft and *κάτω* forward, but he does not seem to notice that the change from plural to singular (*θρανῖται* etc. to *θρανίτης* etc.) shows that the group of three oarsmen (one thranite, one zygius, and one thalamius) is now being described,[5] as Professor A. B. Cook has pointed out.[6] Looked at from the side, the two-level ship showed a zigzag arrangement of oar-ports and rowlocks: add another level and you have the quincunx pattern observable in the Lenormant relief and one of the ships on Trajan's column. Treating the zygius, the heir of the original single oarsman, as the starting-point, you have the thalamius added aft of him (and at a

[1] The two platforms appear in an Attic Bf. fragment in Graef, *Die antiken Vasen von der Akropolis zu Athen*, 2414*a*, Taf. 98. [2] 629. 41.

[3] Zosimus 5. 20. 3–4. See my 'Greek Trireme', *M.M.* Jan. 1941, pp. 15–21.

[4] Preface to his edition of the scholia.

[5] So Koester, p. 103, though his description of the source as 'antiken Autoren' is rather overdoing it.

[6] *C.R.* xix, 1905, p. 375.

lower level) and the thranite added forward of him (and at a higher level). This is exactly what the scholiast is saying,[1] and Eustathius, who may here, as on other naval occasions, be relying on the rhetor Pausanias (of the second century A.D.), confirms the arrangement when he says that the θαλάμακες[2] sat under the thranites (i.e. the thranite of one group sat directly over the thalamius of the next group aft).

On Tarn's interpretation the scholiast is talking tautology. He will be saying: the thalamii are in the bows, the zygii in the middle, and the thranites in the stern; and *so* the thranite is aft, the zygius in the middle, and the thalamius in the bows. Because of the high up-curve of the Greek galley's stern it is plain that there might be occasions when, in connexion with ships, ἄνω might mean 'aft'. But one does not have to be a wide reader to discover that this is nothing approaching a rule: e.g. in Thuc. 7. 65. 2 the Syracusans, fearing the use of grappling hooks to prevent their disengaging after a ram, τὰς πρῴρας καὶ τῆς νεὼς ἄνω ἐπὶ πολὺ κατεβύρσωσαν. If they put coverings over their sterns, they would have had to ram stern first for the device to be of any use.

IV. περίνεῳ (sc. κῶπαι).

Tarn's theory of the three longitudinally divided squads is logically independent of the system he adopts for the groups of three oarsmen into which the squads themselves are divided. This is the Venetian *a zenzile* system.

Professor A. B. Cook and Mr. Wigham Richardson suggested in 1905[3] an arrangement of oars for the trireme which was based on, but not identical with, the *a zenzile* system. Admiral Fincati[4] in 1881 had revived Budé's theory that the ancient trireme employed that system. Tarn[5] in 1930 says that of the two proposals, Fincati's and Cook and Richardson's, he prefers the former: and takes no account at all of the very serious objections that could be made to it and which appear to have led Cook and Richardson to their modifications. Nor are they removed by F. Brewster, who argues for the *a zenzile* system in ancient triremes in *Harvard Studies*, xliv, 1933.

The essential point of the *a zenzile* system is the employment, for the groups of three oarsmen on each side, of a bench canted slightly aft as it reached the middle line of the ship. On a bird's-eye view the benches make a herringbone pattern with the point aft (Fig. I). Each man pulls his own oar, 'so that the man who sits furthest inboard pulls the longest oar'. Two results of this system are apparent in the Venetian galley: (1) the benches had to be considerably farther apart than the standard 3 ft. of the normal long-boat,[6] and there are accordingly in Fincati's 170-ft. galley only 24 groups, i.e. 72 oarsmen a side; and (2) the oars had to be worked as nearly horizontally as possible, with the result that they had to be very long if the ship was to have a safe amount of free-board. Fincati gives: *pianero* 32 ft., *posticcio* 30½ ft., *terzicchio* 29½ ft.[7]

The length of the περίνεῳ oars in the naval lists is given a number of times as either 9 or 9½ cubits (13½ ft. or 14 ft. 4 in.).[8] The only other occurrence of the word which

[1] When he speaks of the 'docked' oars of the thalamii and says that they got less pay on that account, he may be thinking of a contemporary *a zenzile* galley in which the oarsman nearest the gunwale did use a considerably shorter oar (see Fig. I) and may have got less pay on that account. Or he may have been thinking of Thucydides' statement (6. 31. 3) that the thranites got a bonus on the Sicilian expedition.

[2] Eustathius 640. 10. His use of the word θαλάμακες suggests that he is thinking of *Frogs* 1072.

[3] *C.R.* xix. 371 ff.

[4] *Le Triremi*, ed. 2, Rome, 1881; trans. Serre, *Les Marines de guerre de l'antiquité et du moyen âge*, Paris, 1885.

[5] *Hell. Nav. and Mil. Dev.*, p. 129, n. 1.

[6] This is a constant because it depends on the average size of the human body.

[7] Fincati (Serre, p. 161 f.) quotes these measurements from a letter of the Venetian admiral, Messire Cristoforo da Canale.

[8] British naval cutters show the same difference in oar-lengths. The shorter ones are worked where the narrowing of the hull makes it necessary, and the smaller men are given

needs to be considered is Thucydides 1. 10. 4, where *περίνεως* is contrasted with *πρόσκωπος* and means a passenger in an oared galley, one who does not row. It is reasonable to infer from this usage that *περίνεῳ* oars were spare oars,[1] and this meaning is confirmed by Hesychius and Photius. Since the number of the *περίνεῳ* was 30, which makes the total oars up to the round number of 200, we seem to have another small reason for the meaning 'spare'.[2]

If 30 oars are spare, it follows that all the others were in regular use, 31 a side in the thranite squad and 27 a side in the other two squads. The Greek trireme, which cannot have been longer than the 124 ft. of the Zea docks,[3] had then room for 27 full groups. Fincati's 170-ft. *a zenzile* trireme has room for only 24.[4] The Greek trireme accordingly cannot have been rowed *a zenzile*. Richardson recognized this difficulty even when allowing himself a length of 150 ft.

If the spare oars were either 13½ ft. or 14 ft. 4 in. long, it follows that no others could have been used, at any rate no longer ones. Cook and Richardson accordingly gave their model oars of 10 ft., 12 ft., and 13½ ft.; and reduced the freeboard to 12 in.[5] But no ship with 200 men on board could risk disaster by so narrow a margin. Admittedly the François vase ship had not much more free-board, but she was a light, open triakontor. The Lenormant relief shows a trireme with its gunwale a yard above the waterline. It has oar-ports lower down, but that is quite another matter. As Koester observes, H.M.S. *Duke of Wellington*, which was in action in the Crimean War, had gun-ports only 18 in. above the waterline. Oar-ports, like gun-ports, could be closed in rough weather; and a sudden list, owing to alteration of weight or the events of battle, would not result in a fatal intake of water. Rough water or a sudden list would prove immediately fatal to a ship, like the trireme, of about 90 tons displacement,[6] if she had only 12 in. *free-board*. Tarn is quite right in preferring Fincati's trireme as more seaworthy, but he can only adopt it by ignoring the plain evidence of the inscriptions on the length of an ancient trireme's oars.

There can be no avoiding the conclusion. Both the *a zenzile* system and the theory of the three longitudinally divided squads run counter to all the evidence there is.[7]

V. *Note on three passages in I.G.* ii². 1632 (323–322 B.C.).

(*a*) l. 25 *τετρήρης Παραλί[α] Δημοτέλους ἔργον· τριήραρ(χος) [Π]υθοκλῆς Ἀχαρν(εύς) καὶ συντρ[ιή]ραρχ(οι) Καλλικλῆς Παιανι(εύς) [Σ]τέφανος Ἀχαρν(εύς) Πολυάρα[το]ς Χολαργ(εύς) σκεύη ἔχουσι τ[ῶν] ξυλίνων ταρρόν, κεραία[., ἱ]στόν, κρεμαστὰ ἐντελῆ· οὗ[το]ς τὴμ μὲν τετρήρη ἀποδέδ[ωκ]εν, τὰ δὲ σκεύη ὀφείλει διὰ τὸ [ἐπὶ] πεντήρη κατασταθῆναι.*

them. Aristotle (*de part. anim.* 4. 10. 687ᵇ18) says that the oars in the middle of the ship were longer than those at each end.

[1] Torr and Koester suppose these oars to have been used in an emergency from the upper deck, but they are not long enough for that. Koester suggests also that they might have been used on such occasions in the bow or stern. But the only emergency in which every available ounce of energy was required *at once* was in a sea-battle, and then the extra men would have been otherwise engaged, e.g. the marines.

[2] It is, I imagine, a coincidence that there were also 30 men (officers, marines, etc.) who with the 170 oarsmen made up the complement of 200, but I am not entirely happy in dismissing it as such.

[3] S. Dragatsis, *Πρακτικά*, 1885 with Dörpfeld's plan and reconstruction, which is also given by Judeich, *Topographie v. Athen*², p. 438. The plan shows a maximum length of 38 m. (= 124.26 ft.) from the back wall to the sea.

[4] Koester (p. 97, n. 1) speaks of Selim II's admiral Uechiati who built galleys of 30 oars a side and 164 ft. long. Since these galleys must have been rowed on the *a scaloccio* (or multiple-handed) system, we can see that this system too required a greater length than the ancient trireme admits.

[5] 'Oars must be nearly horizontal, so in the model the gunwale is 12 in. above the waterline.'

[6] Koester, p. 138.

[7] It is most unfortunate that the new Liddell and Scott should have accepted the former (see under *τριήρης*) and laid itself under grave suspicion of believing the latter (see *δίκροτος*, *τρίκροτος* in Add.).

(*b*) l. 233. τριήρης Θήρα Ἀρχένεω [ἔργον· τριή]ραρχος Κηφισόδωρος Κη[- - ς· οὗτος τὴν] τριήρη ἀπέδωκε, τὰ δὲ [σκεύη ὀφείλει], διὰ τὸ ἐπὶ τετρήρη καθ[εστηκέναι]· καὶ συντριηραρ(χοι) κτλ. σκεύη ἔχ[ουσι ξύλιν]α ἐντελῆ, κρεμαστὰ ἐντ[ελῆ, ἱστίο]ν τῶν λεπτῶν.

(*c*) l. 336. Ἡδεῖα Χ..... ἔργ(ον)· τ[ρ]ιήραρ(χος) Λύσανδρ[ος - - - -· οὗ]τος τὴν τριήρη ἀποδέδω[κεν διὰ τὸ ἐπ]ὶ τετρήρη καθεστηκέναι, [τὰ δὲ σκεύ]η ὀφείλει· καὶ συντριήραρ(χοι) κτλ. σκεύη ἔχουσι ξύλ[ινα ἐντελῆ - - -.

On the authority of these passages Tarn says:[1] 'it is certain from the official contemporary dockyard lists at Athens, that the fourth century Athenian quadrireme was an expanded trireme, as the same oars could be used in both'; accordingly the three-level, one-man-to-one-oar trireme must be rejected because it cannot be expanded into a quadrireme and quinquereme on the same pattern. Tarn has consequently to suppose that the fourth-century Athenian quadriremes and quinqueremes were *a zenzile* galleys with four or five men to the group or bench, while later, and in particular in Roman times, these same types were rowed on a different system, with four and five men to a single oar.

Tarn does admit the awkwardness of the conclusion, but the inference on which it is based has one merit, as far as he is concerned: it disposes of the three-level trireme. I cannot believe that without this merit it would have recommended itself to Tarn. As a matter of fact, the inference is, on the most favourable interpretation, by no means sure, certainly not sure enough to bear the whole weight of Tarn's theory of early Athenian quadriremes and quinqueremes.

It was Boeckh, the editor of the naval lists,[2] who first made the inference. He argued that the phrase διὰ τὸ ἐπὶ πεντήρη (or τετρήρη) καταστασθῆναι (or καθεστηκέναι) in the first two passages is closely attached to τὰ δε σκεύη ὀφείλει and gives the reason for the debt of gear (he owes the gear *because* he has been transferred), and in the third to the phrase τὴν τριήρη ἀποδέδωκεν and gives a reason for the delivery of the trireme (he gives up the trireme because he has been transferred). This is, however, taking too much account of the order of words in a routine, non-literary, inscription. The change of order in the third passage confirms what is to be conjectured in the first and second, that the phrase διὰ τὸ ἐπὶ πεντήρη καταστασθῆναι goes with τὴν τριήρη ἀποδέδωκεν and that τὰ δὲ σκεύη ὀφείλει there is parenthetical. Boeckh had invented a rule that trierarchies terminated officially if at any time the ship put back to the Piraeus; he accordingly sees two trierarchies here for the transferring trierarchs, one in the smaller and one in the larger ship, and is concerned to show that they must have followed each other more closely than was the usual practice. Prof. D. S. Robertson[3] has exploded Boeckh's invention,[4] and there is no need now to suppose that the office of either the head-trierarch or of his fellow-trierarchs terminated when he handed over the ship. He was given another ship; and his fellow-trierarchs presumably stayed with the former one. In the first passage, before the entry of the return of the ship by the head-trierarch, there is the statement σκεύη ἔχουσι κτλ., referring to all the trierarchs, and in the second and third passages there is the same statement, only it comes after the entry recording the return and the debt. There is no significance in the changed order, but the change in number between ὀφείλει and ἔχουσι is to be noted. All the trierarchs hold it, the head-trierarch who has been transferred alone *owes* it.

The naval lists are records of receipt and delivery made by one board of port-supervisors before handing over to their successors. They record (1) the ships and gear at the docks,[5] (2) the ships at sea and the gear drawn for them;[6] (3) the gear

[1] *C.R.* lv, 1941, p. 89; cf. *J.H.S.* xxv. 149, n. 46.

[2] *Urkunden über das Seewesen des Attischen Staates*, Berlin, 1840 (*Beilage zur Staateshaushaltung der Athener*).

[3] *C.R.* lxi, 1947, pp. 114–16.

[4] Based on a misinterpretation of the phrase κατάλυσις τριήρους in [Dem.] *adv. Polyclem* (50), 11.

[5] e.g. *I.G.* ii². 1607.

[6] e.g. 1632 (which includes the present passages).

that should have been returned by expired trierarchs, but is still outstanding;[1] (4) gear which has been returned during the year in question by expired trierarchs, and fines paid on it.[2] The pseudo-Demosthenic speech *Against Euergus and Mnesibulus* which is contemporary with the naval lists gives striking evidence of the unwillingness of trierarchs to return gear they had drawn from the State when their period of office expired. On the occasion recorded in the speech special legislation was passed requiring them to surrender it, as there was a shortage and an urgent expedition could not be fitted out. The reason was no doubt economic. The gear was drawn at a valuation, and in a period of war-time inflation the value of the gear might in the course of a year become greater than the valuation. The lists use two words to distinguish the two senses in which a trierarch might have gear in his possession: ἔχει when he is using it during his trierarchy, ὀφείλει when he ought to have returned it either because his trierarchy had come to an end or because for some other reason he had no proper claim to use it.[3]

If we now look back at the three passages, we can picture what happened in these cases:

(1) the four trierarchs drew gear for their ship;[4]

(2) the head-trierarch was then appointed to another vessel;

(3) the head-trierarch handed over his *ship*;[5]

(4) but the head-trierarch did not hand over or pay for his share of the *gear*, although he ought to have done so;

(5) the rest of the trierarchs kept their gear until the end of their year of office.

It seems to be a quite easily understandable situation. The reason why the head-trierarch did not return the gear may have been the economic one mentioned above, or it may have been that there were practical difficulties in dividing the gear up and determining his share while the ship was in commission. The same difficulty would not arise in the case of the ship; the port-supervisors would merely write off his responsibility.

In the same list there is probably another entry of the same ship, a tetreres, which is recorded as returned in the first passage.[6] Boeckh infers from this that, when the head-trierarch returned it, the ship was *then* fitted out with new trierarchs. That is because he believed that trierarchies came to an end if a ship put back to Piraeus. Now we know[7] this belief to be wrong: all the second entry shows is that the first trierarchs, who, as we know, began their period in the previous archon's year, terminated it in the present year in time for the ship to be fitted out again with new trierarchs.

In the light of these considerations it can be seen that Boeckh's inference that the trierarch took the gear with him on transfer to his new ship must be wrong. In the first place only he, and not all the trierarchs, is recorded as having been transferred. So the gear which he owes and has, according to Boeckh, taken with him is only a part of the total gear. In the second, if he 'owed' gear, it meant that he had *not* got

[1] e.g. $1623^{b}77$–82.

[2] e.g. $1631^{c}196$ ff.

[3] He may owe the gear or the money for it. In one list the entries are in this form: $1622^{e}170$–8: *ἐπὶ τ[ὴν Σ]ω[τ]ηρίαν Ἀγνοδήμου ἔργον· Μενεσθεὺς Ῥαμνού(σιος) οὐδὲν ἀποδέδωκ[ε]· εἶχεν δ' ἐπὶ τὴν ν[αῦν] σκεύη τάδε· κοντο[ύς] κτλ.*

[4] Which was one of those issued under the previous supervisors by the law of Diphilus (see $1632^{a}17$, the general rubric for the list) and was at sea when the present supervisors took over.

[5] The 'handing over' presumably consisted only of a book-entry.

[6] $^{a}42$ *τετρήρ]ης Παραλία Δ[ημοτέλους ἔργον]· τριή[ραρ(χος)- - - Ἀμφ]ιτρόπ(ηθεν) [καὶ συντριή]ραρ(χοι) - - -] Κυ[δ]αθ[η(ναιεύς).*

[7] From Professor Robertson's article abovementioned.

it with him on service. If he had it with him on service, he would be recorded as 'having' it, not as 'owing' it.

Apart from these points, the conclusion that trireme gear could, by simple increase in the number of items, become quadrireme gear, and quadrireme gear similarly become quinquereme gear, is not supported by anything else in the naval lists or elsewhere, and has, on the contrary, at least two points against it:

(1) There are cases of triremes adapted for horse-transport in which clearly one squad of oarsmen only is retained.[1] This type, a simple *reduction* of the trireme, is listed among triremes and not separately.

(2) There are always separate entries for the gear of quadriremes and quinqueremes.[2]

The inference, that a fourth-century Athenian quadrireme was an expanded trireme, is by no means 'certain from the official contemporary dockyard lists at Athens'.

J. S. MORRISON.

DURHAM COLLEGES,
DURHAM.

[1] $1629^{b}46$–60; also $1627^{b}42$–66 *et al.*

[2] $1627^{a}26$–38 ξύλινα τετρήρων, 131–67 σκεύη τετρήρων; c84–102 among quadrireme gear certain ropes are specified as τριηριτικά. $1628^{b}67$–81 σκεύη ξύλινα τετρήρων, 178–83 τετρήρων σκεύη κρεμα[στά] κτλ.