

ANCIENT SHIPS.

THE Mediterranean is a sea where a vessel with sails may lie becalmed for days together, while a vessel with oars could easily be traversing the smooth waters, with coasts and islands everywhere at hand to give her shelter in case of storm. In that sea, therefore, oars became the characteristic instruments of navigation; and the arrangement of oars, the chief problem in shipbuilding. And so long as the Mediterranean nations dominated Western Europe, vessels of the southern type were built upon the northern coasts, though there generally was wind enough here for sails and too much wave for oars. But afterwards the nations of Western Europe filled the Mediterranean with sailing-vessels of the types they had devised for voyages on the Ocean; and oars finally gave place to sails. Yet, only a few years before sails began in their turn to give place to steam, oars were still employed on vessels of considerable size that were intended for the Mediterranean alone; and probably would have been more generally employed there, had there still been an adequate supply of galley-slaves. In the ancient world, however, the rower was not usually a slave: and it is a strange fact that Athenian citizens in the age of Pericles, who were in no wise unconscious of their own transcendent gifts, willingly laboured at the oar to generate a mechanical force that was directed by the intelligence of others.

T.

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The art of rowing can first be discerned upon the Nile. Boats with oars, as in fig. 2, are represented in the earliest pictorial monuments of Egypt, dating from about 2500 B.C.: and although some crews are paddling with their faces towards the bow, others are rowing with their faces towards the stern. The paddling is certainly the older practice; for the hieroglyph *chen* depicts two arms grasping an oar in the attitude of paddling, and the hieroglyphs were invented in the earliest ages. And that practice may really have ceased before 2500 B.C., despite the testimony of monuments of that date; for in monuments dating from about 1250 B.C. crews are represented unmistakably rowing with their faces towards the stern and yet grasping their oars in the attitude of paddling, as in figs. 3 and 5, so that even then Egyptian artists mechanically followed the turn of the hieroglyph to which their hands were accustomed. In these reliefs there are twenty rowers on the boats on the Nile, as in fig. 3, and thirty on the ships on the Red Sea, as in fig. 5; but in the earliest reliefs, as in fig. 2, the number varies considerably and seems dependent on the amount of space at the sculptor's disposal. In the contemporary relief representing a battle fought in the Mediterranean about 1000 B.C. the Egyptian war-ships, as in fig. 6, have from twelve to twenty-two rowers apiece according to the requirements of the sculptor, while the Asiatic war-ships, as in figs. 7 and 8, have not any rowers at all.

Among the Greeks the oars of a ship were collectively termed *tarsos*, and among the Hebrews ships of a certain type were known as ships of *taršîš*; and Tarsos and Taršîš

¹ Iliad, i. 308, 309, Ἀτρείδης δ' ἄρα νῆα θοὴν ἄλαδε προέρυσσεν, | ἐς δ' ἐρέτας ἔκρινεν ἐείκοσιν. xvi. 168—170, πεντήκοντ' ἦσαν νῆες θοαί, ἦσιν Ἀχιλλεύς | ἐς Τροίην ἠγείτο Διὸ φίλος· ἐν δ' ἄρ' ἐκάστη | πεντήκοντ' ἔσαν ἄνδρες ἐπὶ κληῖσιν ἑταῖροι. But this last line is clearly an interpolation: the κληῖδες are not mentioned elsewhere in the Iliad though often mentioned in the Odyssey—see note 110 on p. 46—and the number of rowers is unparalleled in the Iliad outside the Catalogue, while the number of the ships according to the Catalogue, ii. 685, would incite an interpolator to repetition.

² Iliad, i. 402—404, ὦχ' ἐκατόγχειρον καλέσασ' ἐς μακρὸν Ὀλυμπον, | δὲ Βριάρεων καλέουσι θεοί, ἄνδρες δέ τε πάντες | Αἰγυῖονα.

³ The story of the Mynyæ, for example, as narrated by Herodotos, iv. 148.

were the Greek and Hebrew names for Tarsus in Cilicia. The coincidence suggests that this city was pre-eminent in furthering the use of oars upon the Mediterranean. But of this there are no records. The early progress of the Phœnicians and their neighbours must be divined from the progress of their disciples, the Greeks. In the Iliad, apart from the Catalogue, the Greeks have ships with twenty rowers¹: but the allusion to Briareos, the hundred-handed giant of the Ægean, indicates some knowledge of the fifty-oared ship which forms so essential a feature in legends of somewhat later date, such as those of the fifty daughters of Danaos or the fifty comrades of Jason². The thirty-oared ship belongs to legends of far later date³. In the Odyssey the Greeks still have ships with twenty rowers, while the Phæacians at Corfu have a ship with fifty⁴. An advance from twenty to fifty oars, without intermediate steps, seems hardly possible unless a nation was adopting the discoveries of another: and a greater advance, again at a single step, may be traced in the Catalogue of the Ships, which mentions ships with fifty rowers and ships with a hundred and eighteen⁵. Ships could not be indefinitely lengthened to accommodate an increasing number of rowers; and consequently the oars began to be arranged in two and then in three banks one above another. These ships with a hundred and eighteen rowers must have been two-banked ships formed by inserting ports for eight and fifty oars in the intervals between the tholes on ships of sixty oars. Yet the Greeks never employed sixty-oared ships, and apparently never knew that such existed, for they had no name for them: so the invention was not theirs.

⁴ Odyssey, i. 280, νῆ' ἄρσας ἐρέτησιν ἐέλκοσιν. iv. 669, ἀλλ' ἄγε μοι δότε νῆα θοὴν καὶ εἴκοσ' ἑταίρους. ix. 322, ὅσσον θ' ἰστὸν νηὸς εἰκοσὸβροιο μελαίνης. viii. 34—36, ἀλλ' ἄγε νῆα μέλαιναν ἐρύσσομεν εἰς ἄλα δῖαν | πρωτόπλοον, κούρω δὲ δῶα καὶ πεντήκοντα | κρινάσθων κατὰ δῆμον. These fifty-two men would include *κελευστής* and *κυβερνήτης*, leaving fifty to row with one to mark time and one to steer; for they are described as *κούροι*, not *ἐρέται* or *ἑταῖροι*, as otherwise was customary.

⁵ Iliad, ii. 719, 720, ἐπὶ νεῶν· ἐρέται δ' ἐν ἐκάστη πεντήκοντα | ἐμβέβασαν. 509, 510, τῶν μὲν πεντήκοντα νέες κλον· ἐν δὲ ἐκάστη | κούροι Βοιωτῶν ἑκατὸν καὶ εἴκοσι βαῖνον. These hundred and twenty men, *κούροι*, would likewise include *κελευστής* and *κυβερνήτης*.

There is nothing to shew when or where the ancients first built war-ships with a single bank of oars⁶. But two-banked war-ships were certainly in use in Phœnicia about 700 B.C., for Phœnician war-ships are represented with two banks of oars in Assyrian sculpture of that date, as in fgs. 10 and 11: and if three-banked war-ships were built in Egypt about 600 B.C., as Herodotos relates, they probably were in use in Phœnicia at a somewhat earlier date⁷. According to Thucydides, the first ships that were built by the Greeks for use in warfare, were built about 700 B.C. at Corinth and at Samos; and the first three-banked war-ships that were built for Greek fleets, were also built at Corinth; but vessels of that type were not built in large numbers by the Greeks until a little before 500 B.C., and then chiefly in Sicily and Corfu⁸.

⁶ Various traditions about them are quoted, or misquoted, by Pliny, vii. 57, *longa nave Iasonem primum navigasse Philostephanus auctor est, Hegesias Paralum, Ctesias Semiramim, Archemachus Ægæonem; biremem Damastes Erythraeos fecisse, triremem Thucydides Aminoclem Corinthium, quadriremem Aristoteles Carthaginienses, quinqueremem Mnesigiton Salaminius, sex ordinum Xenagoras Syracusios, ab ea ad decemremem Mnesigiton Alexandrum Magnum, ad XII ordines Philostephanus Ptolemæum Soterem, ad XV Demetrium Antigoni, ad XXX Ptolemæum Philadelphum, ad XL Ptolemæum Philopatorem.*

⁷ Herodotos, ii. 159, *πανσάμενος δὲ τῆς διώρυχος ὁ Νεκὼς ἐτρόπετο πρὸς στρατήϊας, καὶ τριήρεις αἱ μὲν ἐπὶ τῇ βορρῆν θαλάσῃ ἐποιήθησαν, αἱ δ' ἐν τῷ Ἀραβίῳ κόλπῳ· καὶ ταύτησί τε ἐχρᾶτο ἐν τῷ δέοντι, κ.τ.λ.* Nekau reigned from 610 to 594 B.C., or thereabouts. Clemens Alexandrinus, *stromateis*, i. 16. 76, *τούς τε Σιδωνίους (πρώτους ἀκηκάμεν) τρικροτον ναῦν κατασκευόσαι.*

⁸ Thucydides, i. 13, *ναυτικά τε ἐξηρτήετο ἡ Ἑλλάς καὶ τῆς θαλάσσης μᾶλλον ἀντείχοντο. πρώτοι δὲ Κορίνθιοι λέγονται ἐγγύτατα τοῦ νῦν τρόπου μεταχειρίσαι τὰ περὶ τὰς ναῦς, καὶ τριήρεις πρώτων ἐν Κορίνθῳ τῆς Ἑλλάδος ναυπηγηθῆναι. φαίνεται δὲ καὶ Σαμίους Ἀμεινοκλῆς Κορίνθιος ναυπηγὸς ναῦς ποιήσας τέσσαρας· ἔτη δ' ἐστὶ μάλιστα τριακόσια ἐς τὴν τελευταίην τοῦδε τοῦ πολέμου ὅτε Ἀμεινοκλῆς Σαμίους ἦλθεν. 14, ὀλίγων τε πρὸ τῶν Μηδικῶν καὶ τοῦ Δαρείου θανάτου τριήρεις περὶ τε Σικελίαν τοῖς τυράννοις ἐς πλῆθος ἐγένοντο καὶ Κερκυραίοις· ταῦτα γὰρ τελευταία πρὸ τῆς Ξέρξου στρατείας ναυτικά ἀξιόλογα ἐν τῇ Ἑλλάδι κατέστη. Αἰγυπῆται γὰρ καὶ Ἀθηναῖοι καὶ εἴ τινας ἄλλοι βραχέα ἐκέκτηντο, καὶ τούτων τὰ πολλὰ πεντηκοντόρους. cf. Diodoros, xiv. 42, ἀκούων γὰρ ὁ Διονύσιος ἐν Κορίνθῳ ναυπηγηθῆναι τριήρη πρώτων, κ.τ.λ.* But while Diodoros says *πρώτων ἐν Κορίνθῳ*, Thucydides takes care to say *πρώτων ἐν Κορίνθῳ τῆς Ἑλλάδος* to save the priority of the Phœnicians. Thucydides can hardly mean that the Corinthians were building three-banked ships three centuries before the peace of 404 B.C. The allusion to their three-banked ships is parenthetical. His meaning must be that they were only then beginning to build war-ships of any sort. But, as to their priority in this, see Herodotos, i. 163, *οἱ δὲ Φωκαῖές οὔτοι ναυτιλίῃσι μακρῆσι*

For more than two hundred years the three-banked ships were the largest war-ships afloat: but at length the system of successive banks was tested thoroughly. The extant fragments of the inventories of the Athenian dockyards merely shew⁹ that ships of four banks were first built there shortly before 330 B.C. and ships of five banks in 325 B.C. But according to Diodoros¹⁰ ships of four and five banks were built for the Syracusan fleet in 398 B.C., five-banked ships being then built for the first time; and according to Ælian¹¹ there were ships of five and six banks in that fleet forty years later. Pliny states that ships of four and five and six banks were first built at Chalcedon and Salamis and Syracuse respectively; and then Alexander the Great made the advance to ten banks¹². A whole fleet of seven-banked ships was built by

πρώτοι Ἑλλήνων ἐχρήσαντο, καὶ τὸν τε Ἀδρίην καὶ τὴν Τυρσηλίην καὶ τὴν Ἰβηρίην καὶ τὸν Ταρτησὸν οὗτοι εἰσι οἱ καταδέξαντες· ἐναυτίλλοντο δὲ οὐ στρογγύλῃσι νηυσὶ ἀλλὰ πενήκοντέροισι. Herodotos, however, may only mean that the Phocæans were the first Greeks to employ these war-ships on trading voyages and thus defy the piracy in the Western Mediterranean.

⁹ Corp. Inscr. Attic. vol. ii, no. 807, col. b, ll. 76—79, *τετρήρεις δ' ἐμ μὲν τοῖς νεωρίοις παρέδομεν Π|||, ἐμ πλῶ δὲ Δ—'Ἀριστοφῶντος ἄρχοντος, 330/329 B.C.:* no. 809, col. d, ll. 87—91, *τετρήρεις δ' ἐμ μὲν τοῖς νεωρίοις παρέδομεν ΔΔΔΔ||| καὶ πενήρεις Π||, τετρήρεις δ' ἐμ πλῶ Π||—'Ἀντικλέους ἄρχοντος, 325/324 B.C.* Ships of four and five banks are not previously mentioned in these lists. There is a list for the year before 325/324, no. 808, col. d, ll. 22—39; but none at present for the years immediately before 330/329. The first eighteen four-banked ships probably were built in two or three years, as the next thirty-two were built in five years besides seven five-banked ships; so the Athenians probably built their first four-banked ship in 331 or 332 B.C.

¹⁰ Diodoros, xiv. 42, *ἤρξατο δὲ (Διονύσιος) ναυπηγεῖσθαι τετρήρεις καὶ πενήρικα σκάφη, πρώτος ταύτην τὴν κατασκευὴν τῶν νεῶν ἐπινοήσας.* cf. 41, *διενοεῖτο γὰρ κατασκευάσαι ναῦς τετρήρεις καὶ πενήρεις, οὐδέπω κατ' ἐκείνους τοὺς χρόνους σκάφους πενήρικοῦ νεναυπηγημένου.* 44, *ἀπέστειλεν πενήρη, πρώτων νεναυπηγημένην.*

¹¹ Ælian, *variæ historiæ*, vi. 12, *ναῦς μὲν ἐκέκτητο (Διονύσιος ὁ δεῦτερος) οὐκ ἐλάττους τῶν τετρακοσίων, ἐξήρεις καὶ πενήρεις· πεζῶν δὲ δύναμις εἰς δέκα μυριάδας, ἱππεῖς δὲ ἑνεακισχιλίου.* Diodoros, xvi. 9, mentions these forces in narrating the events of 357 B.C., so Ælian is probably referring to that date: but Diodoros says nothing about the size of the ships.

¹² Pliny, vii. 57, already quoted in note 6. cf. Clemens Alexandrinus, *stromateis*, i. 16. 75, *Καρχηδόνοι δὲ πρώτοι τετρήρη κατασκεύασαν, ἐναυπήγησε δὲ αὐτὴν Βόσπορος*, where the allusion to Bosphoros shews that Chalcedon is meant, not Carchedon or Carthage. The common spelling, Calchedon for Chalcedon, would induce the error.

Alexander on the Euphrates in 323 B.C., according to Quintus Curtius: but the other biographers of Alexander nowhere mention ships of more than five banks¹³. According to Diodoros, there were ships of six and seven banks in the fleet of Demetrios Poliorcetes at the battle off Cyprus in 306 B.C., but none of more than five banks in the fleet of his opponent, Ptolemy Soter; while there had been a few ships of nine and ten banks in a fleet formed in 314 B.C. by Antigonos, the father of Demetrios, though apparently no other ships in that fleet were of more than five banks¹⁴. Pliny states that ships of twelve and fifteen banks were built by Ptolemy and Demetrios respectively: and a fifteen-banked ship is ascribed to Ptolemy by Pollux¹⁵. An eleven-banked

¹³ Quintus Curtius, x. 1. 19, *igitur Mesopotamiae praetoribus imperavit (Alexander) materia in Libano monte caesa devectaque ad urbem Syriae Thapsacum, septingentarum carinas navium ponere: septiremes omnes esse, deducique Babyloniam. Cypriorum regibus imperatum, ut eis sturramque et vela praebereint*. The statements of Aristobulos, who was present, are cited by Arrian, *anabasis*, vii. 19, *κατέλαβε δὲ (Ἀλέξανδρος) ἐν Βαβυλῶνι, ὡς λέγει Ἀριστόβουλος, καὶ τὸ ναυτικόν· τὸ μὲν κατὰ τὸν Εὐφράτην ποταμὸν ἀναπεπλευκὸς ἀπὸ θαλάσσης τῆς Περσικῆς· τὸ δὲ ἐκ Φοινίκης ἀνακεκομισμένον, πεντήρεις μὲν δύο τῶν ἐκ Φοινίκων, τετρήρεις δὲ τρεῖς, τριήρεις δὲ δώδεκα, τριακοντόρους δὲ ἐς τριάκοντα· ταύτας ξυνηχθεῖσας κομισθῆναι ἐπὶ τὸν Εὐφράτην ποταμὸν ἐκ Φοινίκης ἐς Θάψακον πόλιν, ἐκεῖ δὲ ξυμπεχθεῖσας αὐθις καταπλεῦσαι ἐς Βαβυλῶνα. λέγει δὲ ὅτι καὶ ἄλλοι αὐτῷ ἐναυπηγεῖτο στόλος τέμνοντι τὰς κυπαρίσσους τὰς ἐν τῇ Βαβυλωνίᾳ. Also by Strabo, xvi. 1. 11, *τὰ πλοῖα τὰ μὲν ἐν Φοινίᾳ τε καὶ Κύπρῳ ναυπηγησάμενον διάλυτά τε καὶ γομφωτά, ἃ κομισθέντα εἰς Θάψακον σταθμοῖς ἑπτὰ εἴτα τῷ ποταμῷ κατακομισθῆναι μέχρι Βαβυλῶνος, τὰ δ' ἐν τῇ Βαβυλωνίᾳ συμπεχθέντων τῶν ἐν τοῖς ἄλλοις καὶ τοῖς παραδείοις κυπαρίστων*. And probably also by Plutarch, *Alexander*, 68, *καὶ πλοῖα παντοδαπὰ περὶ Θάψακον ἐπήγγυτο*. These statements shew that Curtius has confounded the ships that were built on the Euphrates with those other ships that were brought over in sections from Phoenicia; and sufficiently disprove his assertion that this fleet consisted entirely of seven-banked ships. But possibly the word *septiremes* stands for some word like *solutiles* denoting that the ships were in sections.*

¹⁴ Diodoros, xx. 49, *εἶχε δὲ (Πτολεμαῖος) τὰς πάσας ναῦς μακρὰς ἑκατὸν καὶ τετταράκοντα· τούτων δ' ἦν ἡ μεγίστη πεντήρης, ἡ δ' ἐλαχίστη τετρήρης. 50, αὐτὸς δὲ (Δημήτριος) ἐκτάξας τὰς ναῦς ἀπήντα τοῖς πολεμοῖς, ἔχων τὰς ἀπάσας ὀκτῶ πλείους τῶν ἑκατὸν σὺν ταῖς πληρωθείσαις ἐκ τῶν χωρίων τῶν ληφθέντων· τούτων δ' ἦσαν αἱ μέγιστα μὲν ἐπτήρεις, αἱ πλείστα δὲ πεντήρεις. καὶ τὸ μὲν εὐώνυμον κέρας ἐπέειχον ἐπτήρεις μὲν ἑπτὰ Φοινίκων, τετρήρεις δὲ τριάκοντα τῶν Ἀθηναίων· ἐπίπλους δὲ τοῦτοις ἔταξεν ἐξήρεις δέκα καὶ πενήρεις ἄλλας τοσαύτας, κ.τ.λ. Speaking of the two hundred and forty war-ships collected by Antigonos, he says, xix. 62, *τούτων δ' ἦσαν τετρήρεις μὲν ἑνενήκοντα, πενήρεις δὲ δέκα, ἐννήρεις δὲ τρεῖς, δεκῆρεις δὲ δέκα, ἀφρακτοὶ δὲ τριάκοντα*. The rest presumably had the normal three banks.*

ship unquestionably was built by Demetrios, for the fact is mentioned by Theophrastos, a contemporary whose position secured him most trustworthy information¹⁶. She was built in Cyprus; and therefore after the naval victory in 306 B.C., which made Demetrios master of the island and its timber. According to Plutarch¹⁷, Demetrios had a thirteen-banked ship in 301 B.C., and built ships of fifteen and sixteen banks in 288 B.C. And there certainly was a ship of sixteen banks in the Macedonian fleet a century afterwards. She was expressly mentioned in the treaty with the Romans in 197 B.C.: her arrival in the Tiber in 167 B.C. was a memorable event; and she afterwards gave her name to one of the docks at Rome¹⁸.

¹⁵ Pliny, vii. 57, already quoted in note 6. Pollux, i. 83, καὶ Πτολεμαίου ναῦς, πεντεκαϊδεκῆρης· καὶ Ἀντιγόνου, τριάρμενος. For the meaning of τριάρμενος see note 124 on p. 54.

¹⁶ Theophrastos, historia plantarum, v. 8. 1, ἐν Κύπρῳ γούν οὐκ ἔτεμον οἱ βασιλεῖς (τὰ δένδρα) ἅμα μὲν τηρούντες καὶ ταμειούμενοι ἅμα δὲ καὶ διὰ τὸ δυσκόμιστον εἶναι. μήκος μὲν ἦν τῶν εἰς τὴν ἑνδεκῆρη τὴν Δημητρίου τμηθέντων τρισκαϊδεαύργιον, αὐτὰ δὲ τὰ ξύλα τῷ μήκει θαυμαστά καὶ ἄοζα καὶ λεία. This is repeated by Pliny, xvi. 76, with some exaggerations.

¹⁷ Plutarch, Demetrius, 31, ὁ γούν Δημήτριος τότε προσέπεμψε τοῖς Ἀθηναίοις ἐγκαλῶν μετρίως, ἀξιῶν δὲ τὰς ναῦς ἀπολαβεῖν, ἐν αἷς ἦν καὶ ἡ τρισκαϊδεκῆρης. cf. 30, καὶ γὰρ καὶ ναῦς ἐκεῖ καὶ χρήματα καὶ γυναῖκα ἐτύγχανε καταλειοπῶς. 32, πρότερον μὲν Σέλευκος ἐστίαςας ἐπὶ σκηνῆς ἐν τῷ στρατοπέδῳ Δημήτριον, αὐτὸς δὲ Δημήτριος ἐκείνον ἐν τῇ τρισκαϊδεκῆρει δεξάμενος. 43, στόλον δὲ νεῶν ἅμα πεντακοσίων καταβαλλόμενος τὰς μὲν ἐν Πειραιεῖ τρώπεις ἔθετο, τὰς δὲ ἐν Κορινθῷ, τὰς δὲ ἐν Χαλκίδι, τὰς δὲ περὶ Πέλλαν, αὐτὸς ἐπιὼν ἑκασταχόσε καὶ διδάσκων ἅ χρῆ καὶ συντεχνύμενος, ἐκπληττομένων ἀπάντων οὐ τὰ πλήθη μόνον ἀλλὰ καὶ τὰ μεγέθη τῶν ἔργων· οὐδεὶς γὰρ εἶδεν ἀνθρώπων οὔτε πεντεκαϊδεκῆρη ναὺν πρότερον οὔτε ἑκκαϊδεκῆρη. cf. 20, καὶ τὰς μὲν ἑκκαϊδεκῆρεις αὐτοῦ καὶ τὰς πεντεκαϊδεκῆρεις ἐθαύμαζον ἐστῶτες οἱ πολέμιοι παρὰ τὴν γῆν αὐτῶν πλεούσας, κ.τ.λ.

¹⁸ This treaty is cited by Polybios, xviii. 27, τὰ δ' αἰχμάλωτα καὶ τοὺς αὐτομόλους ἅπαντας ἀποκαταστήσαι Φίλιππον Ῥωμαίοις ἐν τοῖς αὐτοῖς χρόνοις· ὁμοίως δὲ καὶ τὰς καταφράκτους ναῦς, πλὴν πέντε σκαφῶν καὶ τῆς ἑκκαϊδεκῆρους, and by Livy, xxxiii. 30, captivos transfugasque reddere Philippum Romanis, et naves omnes tectas tradere praeter quinque et regiam unam inhabilis prope magnitudinis, quam sexdecim versus remorum agebant. The arrival in the Tiber is described by Plutarch, Æmilius Paulus, 30, ἀνέπλει τὸν Θύβριν ποταμὸν ἐπὶ τῆς βασιλικῆς ἑκκαϊδεκῆρους κατεσκευασμένης εἰς κόσμον ὅπλοις αἰχμαλώτοις καὶ φοινικίσι καὶ πορφύραις, ὡς καὶ πανηγυρίζων ἔξωθεν καθάπερ εἰς τινα θριαμβικῆς θέαν πομπῆς καὶ προαπολαύει τοὺς Ῥωμαίους τῷ βοθλίῳ σχέδην ὑπάγοντι τὴν ναὺν ἀντιπαρεξάγοντας, and also by Livy, xlv. 35, Paulus ipse post dies paucos regia nave ingentis magnitudinis, quam sexdecim versus remorum agebant, ornata Mace-

War-ships of still greater size are ascribed to Ptolemy Philadelphos and Ptolemy Philopator, who ruled Egypt from 285 to 247 B.C. and from 222 to 204 B.C. respectively. Athenæos states that, besides various ships of thirteen banks or less, Philadelphos had one ship of twenty banks and two of thirty banks, while Philopator built a ship of forty banks; and he quotes a long account of this ship from Callixenos of Rhodes¹⁹. Plutarch states that Philopator built a ship of forty banks, and then describes her in the phrases employed by Athenæos, so that he is also quoting from Callixenos²⁰. Pliny states independently, on the authority of Philostephanos of Cyrene, that Philadelphos and Philopator built ships of thirty and forty banks respectively²¹. And these amazing statements have partly been confirmed by an inscription that was unearthed a few years ago in the temple of Aphrodite at Paphos in Cyprus, namely, a dedication by the reigning

donicis spoliis non insignium tantum armorum sed etiam regionum textiliū, adverso Tiberi ad urbem est subvectus, completis ripis obviam effusa multitudine, both authors doubtless copying the lost description by Polybios, who was in Rome soon afterwards and knew Paulus intimately. cf. Eutropius, iv. 8, *Romam cum ingenti pompa rediit (Paulus) in nave Persei, quæ inusitatæ magnitudinis fuisse traditur, adeo ut sexdecim ordines dicatur habuisse remorum.* The dock is mentioned by Polybios, xxxvi. 3, δι' οὗ παρακομισθέντες ἀσφαλῶς εἰς τὴν Ῥώμην, συνεκλείσθησαν ὁμοῦ πάντες εἰς τὸ τῆς ἑκκαίδεκῆρου νεώριον.

¹⁹ Athenæos, v. 36, πολλῶν δ' ὁ Φιλάδελφος βασιλέων πλοῦτῳ διέφερε, καὶ περὶ πάντα ἐσπουδάκει τὰ κατασκευάσματα φιλοτίμως, ὥστε καὶ πλοίων πλήθει πάντας ὑπερέβαλλε. τὰ γοῦν μέγιστα τῶν πλοίων ἦν παρ' αὐτῷ τριακοντῆρεις δύο, εἰκοσῆρης μία, τέσσαρες τρισκαίδεκῆρεις, δωδεκῆρεις δύο, ἐνδεκῆρεις τεσσαρεσκαίδεκα, ἐνήρεις τριάκοντα, κ.τ.λ. 37, ἐπεὶ δὲ περὶ νεῶν κατασκευῆς εἰρήκαμεν, φέρ' εἰπωμεν καὶ τὰ ὑπὸ τοῦ Φιλοπάτορος βασιλέως κατασκευασμένα σκάφη· περὶ ὧν ὁ αὐτὸς Καλλιξένος ἱστορεῖ ἐν τῷ πρώτῳ Περὶ Ἀλεξανδρείας οὕτως λέγων—τὴν τεσσαρακοντῆρη ναῦν κατασκεύασεν ὁ Φιλοπάτωρ, κ.τ.λ. The date of Callixenos cannot be fixed. A certain Callixenos held some high office at Rhodes about 100 B.C., for his name is found on Rhodian coins of that period: but there is nothing to shew that he was the historian.

²⁰ Plutarch, Demetrius, 43, ἀλλ' ὕστερον τεσσαρακοντῆρη Πτολεμαῖος ὁ Φιλοπάτωρ ἐναυπηγήσατο, μήκος διακοσίων ὀγδοήκοντα πηχῶν, ὕψος δὲ ἕως ἀκροστολλοῦ πενήκοντα δυεῖν δεόντων, ναύταις δὲ χωρὶς ἐρετῶν ἐξηρτυμένην τετρακοσίοις, ἐρέταις δὲ τετρακισχιλίοις, χωρὶς δὲ τούτων ὀπίστας δεχομένην ἐπὶ τε τῶν παρῶν καὶ τοῦ καταστρώματος ὀλίγη τρισχιλίω ἀποδέοντας. cf. Athenæos, v. 37, τὸ μήκος ἔχουσαν διακοσίων ὀγδοήκοντα πηχῶν... ὕψος δὲ ἕως ἀκροστολλοῦ τεσσαράκοντα ὀκτὼ πηχῶν... ἐδέξατο ἐρέτας πλείους τῶν τετρακισχιλίων, εἰς δὲ τὰς ὑπηρεσίας τετρακοσίου· εἰς δὲ τὸ κατὰστρωμα ἐπιβάτας τρισχιλίου, ἀποδέοντας ἑκατὸν καὶ πενήκοντα.

Ptolemy of the statue of a man who is there described as the architect of the thirty-banked ship²². There may have been a forty-banked ship: but Callixenos seems quite untrustworthy in his account of her. According to Diodoros²³, Sesostris built a sacred barge upon the Nile two hundred and eighty cubits in length: and numerous representations shew, as in fig. 3, that these sacred barges were vessels of light draught with curiously elevated stems and sterns. Now, according to Callixenos, the length of the forty-banked ship was two hundred and eighty cubits, the draught was under four cubits, and the height of the terminal ornaments at the stem and the stern was forty-eight and fifty-three cubits respectively²⁴. These measurements must belong to one of those sacred barges, probably to the one mentioned by Diodoros: and such a barge could not possibly have forty banks of oars.

²¹ Pliny, vii. 57, already quoted in note 6. Athenæos says that Philostephanos was a friend or follower of Callimachos, viii. 3, Καλλιμάχου δὲ γνώριμος, and Callimachos died about 240 B.C.

²² This inscription is printed in the Journal of Hellenic Studies, vol. ix, p. 255:—Β]ασιλεὺς Πτολεμαῖος | Πυργ]οτέλην Ζώητος ἀρχιτεκτονήσ[αντα | τὴν τριακον-
 τήρη καὶ εἰκ[οσῆρη. The term ἀρχιτέκτων was often applied to naval-architects: Aristotle, res publica Atheniensium, 46, χειροτονεῖ δ' ἀρχιτέκτονας ὁ δῆμος ἐπὶ τὰς ναῦς, cf. Athenæos, v. 40, Diodoros, iv. 41.

²³ Diodoros, i. 57, ἐναυπηγήσατο δὲ (Σεσόωσις) καὶ πλοῖον κέδρινον τὸ μὲν μήκος πηχῶν διακοσίων καὶ ὀγδοήκοντα, τὴν δ' ἐπιφάνειαν ἔχον τὴν μὲν ἕξωθεν ἐπίχρυσον, τὴν δ' ἐνδοθεν κατηγουρωμένην· καὶ τοῦτο μὲν ἀνέθηκε τῷ θεῷ τῷ μάλιστα ἐν Θήβαις τιμωμένῳ, κ.τ.λ. This statement is not incredible. According to the Harris papyrus—plate 7, line 5, in Birch's facsimile—Ramessu III provided the great god at Thebes with a vessel of cedar-wood, decorated with bronze and gold, and a hundred and thirty cubits in length.

²⁴ Athenæos, v. 37, τὴν τεσσαρακοντῆρη ναῦν κατεσκεύασεν ὁ Φιλοπάτωρ, τὸ μήκος ἔχουσαν διακοσίων ὀγδοήκοντα πηχῶν, ὀκτώ δὲ καὶ τριάκοντα ἀπὸ παρόδου ἐπὶ πάροδον, ὕψος δὲ ἕως ἀκροστολίου τεσσαράκοντα ὀκτὼ πηχῶν, ἀπὸ δὲ τῶν πρυμνητικῶν ἀφλάστων ἐπὶ τὸ πρὸς τῇ θαλάσῃ μέρος αὐτῆς τρεῖς πρὸς τοῖς πεντήκοντα πήχεις.....ὕστερον δὲ τῶν ἀπὸ Φοινίκης τις ἐπενήθη τὴν καθολικὴν, τὰ φρον ὑποσττήσάμενος ἴσην τῇ νηὶ κατὰ μήκος, ἣν πλησίον τοῦ λιμένος ὤρυξε. ταύτη δὲ τοῖς θεμελίου κατακοδόμησε λίθῳ στερεῷ πρὸς πέντε πήχεις τὸ βάθος, καὶ διὰ τούτων φάλαγγας ἐπικαρσίας κατὰ πλάτος τῆς τὰ φρον διώσας συνεχεῖς, τετράπηχυν εἰς βάθος τόπον ἀπολιπούσας. καὶ ποιήσας εἰσρουν ἀπὸ τῆς θαλάσσης ἐπέπλησεν αὐτῆς πάντα τὸν ὀρυχθέντα τόπον, εἰς δὲ βραδίως ἀπὸ τῶν τυχόντων ἀνδρῶν εἰσῆγαγε τὴν ναῦν. As the ship was floated into the dock, and the dock was only four cubits in depth, the ship must have drawn less than four cubits of water.

According to Callixenos, the longest oars on the alleged forty-banked ship were thirty-eight cubits in length, the extreme breadth of the ship also being thirty-eight cubits, or fifty-seven feet. And he adds that they were weighted with lead inboard to balance the excessive length outboard: but this statement may safely be referred to the sacred barge from which he has evolved his ship, as some such weights are represented on the steering-oars of the sacred barge in fig. 3, and none are elsewhere ascribed to any ancient war-ship²⁵. The oars of a three-banked ship must all have been of very moderate size and weight; for a crew could make a forced march when each man was carrying his oar and its appurtenances²⁶. In war-ships there were always as many rowers as oars: but in some smaller vessels the oars were light enough to be sculled in pairs²⁷.

Of the two hundred oars²⁸ which an Athenian three-banked ship carried for her crew of two hundred men, a hundred and seventy belonged to the three banks, while the remaining thirty were *perineōi*—a term which also denoted the men who did not row in the banks²⁹. These thirty men must have worked these thirty oars from above the upper decking, for

²⁵ Athenæos, v. 37, πηδάλια δ' εἶχε τέτταρα τριακονταπήχη, κώπας δὲ θραντικὰς ὀκτώ καὶ τριάκοντα πηχῶν τὰς μεγίστας, αἱ, διὰ τὸ μύλυβδον ἔχειν ἐν τοῖς ἐγγχειριδίοις καὶ γεγονέναι λιαν εἶσω βαρεῖαι κατὰ τὴν ζύγωσιν, εὐήρεις ὑπὴρχον ἐπὶ τῆς χρείας. The extreme breadth of the ship of the ship is determined by the words already quoted in note 24, ὀκτώ δὲ καὶ τριάκοντα (πηχῶν) ἀπὸ παρόδου ἐπὶ πάροδον.

²⁶ Thucydides, ii. 93, ἐδόκει δὲ λαβόντα τῶν ναυτῶν ἕκαστον τὴν κώπην καὶ τὸ ὑπὲρσειον καὶ τὸν τροπιωτῆρα πεζῇ ἰέναι ἐκ Κορίνθου ἐπὶ τὴν πρὸς Ἀθήνας θάλασσαν, καὶ ἀφικομένους κατὰ τάχος ἐς Μέγαρα, καθελκύσαντας ἐκ Νισαίας τοῦ νεωρίου αὐτῶν τεσσαράκοντα ναῦς αἱ ἔτυχον αὐτόθι οἶσαι, πλεῦσαι εὐθὺς ἐπὶ τὸν Πειραιᾶ.

²⁷ Thucydides, iv. 67, ἀκάτιον ἀμφηρικὸν ὡς λησται εἰώθεσαν ἐπὶ ἀμάξῃ διὰ τῆς τάφρου κατακομίζειν τῆς νυκτὸς ἐπὶ τὴν θάλασσαν καὶ ἐκπλεῖν, cf. Leonidas of Tarentum, in the Anthology, vi. 4. 6, καὶ τοὺς ἐξ ἀκάτων διχθαδίοις ἐρέτας. Lucian, Charon, 1, ἐγὼ δὲ πρεσβύτης ὦν τὴν δικωπίαν ἐρέττω μόνος. Aristophanes, ecclesiazusæ, 1091, πῶς οὖν δικωπεῖν ἀμφοτέρας δυνήσομαι; Synesios, epistolæ, p. 165, ἦκεν ἐπὶ κελητιοῦ δισκάλμου. Cicero, de oratore, i. 38, *citius hercule is, qui duorum scalmorum naviculam in portu everterit, in Fuxino ponto Argonautarum navem gubernavit*. Livy, xxiv. 40, *legati venerunt nuntiantes Philippum primum Apolloniam tentasse, lembis biremibus centum viginti flumine adverso subvectum, deinde etc.*, cf. Virgil, georgics, i. 201, 202, *qui adverso vix flumine lembum | remigiis subigit*.