limit of practical utility in the disposition of the oars, as they appear to have been most usually adopted for the pur­poses of war.

In tracing the records of the sizes of vessels, we find, on the authority of Thucydides, that the Grecian flotilla, at the siege of Troy, about 1184 years b. c., consisted of 1200 vessels, the largest of which contained not more than 120, the least fifty people. He also expressly says that they were without decks. These were therefore mere open row­boats or canoes.

A great improvement on these must have been made in the fleets of the Corcyrians and Corinthians, between whom took place the first naval battle on record, and which oc­curred about 650 years before Christ ; because at that time it appears the arrangement of the oars in banks had been introduced.

We may perhaps infer, from a statement made by Thu­cydides, that these vessels were not adapted for carrying any large portion of sails, as they evidently had little if any ballast. He says (book i. chap. 50), “ The Corinthians, when their enemies fled, staid not to fasten the hulls of the galleys they had sunk unto their own galleys, that so they might tow them after, but made after the men, rowing up and down to kill rather than to take alive.” The vessels spoken of as sunk were evidently merely stove in and wa­ter-logged.

Herodotus, Thucydides, and Diodorus agree that Aminocles, the "shipwright of Corinth,” was the inventor of the trireme, about forty years previous to this battle. The invention of the quinquireme is generally attributed to the Carthaginians.

At the battle of Salamis, 480 years b. c., on the autho­rity of Plutarch, the largest Grecian vessels carried only eighteen soldiers, exclusive of the rowers, and those em­ployed in manoeuvring the vessels. In the fleet of Mar­donius, crowded as it must have been by a force collected for the purpose of invasion, we find that, on a comparison of the number of ships lost by tempest and the number of men drowned, the average is only sixty-six men to each ves­sel. This fleet consisted of 1200 galleys, and 2000 hulks (ὅλχαδες) of the “ round manner of building.”

The whole of the Grecian vessels appear to have been only half-decked ; the soldiers were stationed on platforms at each extremity, the middle or waist being left open for the rowers. Cimon, the celebrated Athenian commander, was apparently the first to join these two platforms with an intermediate flat, and thus to form a perfect deck, for the purpose of opposing a stronger armed force to the Persians. This innovation took place preparatory to the battle of Eu­rymedon, b. c. 470. These decks were hatches to be re­moved at pleasure. The quinquiremes appear afterwards to have been always thus fitted, the quadriremes and bi­remes only occasionally ; and all below these in size were open boats.

From the rapid preparation of armaments of most impos­ing force, in as far ns numbers of shipping are concerned, and also from the fact of the ease with which the vessels were transported by land, we must infer that they were of but small dimensions, and of very fragile construction ; and though occasionally we find that fabrics of large size were constructed, it was evidently, from the gorgeous descriptions which remain of them, more out of ostentation than from any anticipation of their utility.

The vessels composing the fleet of Alexander the Great in his Indian expedition, and in which Nearchus performed his celebrated voyage, were row-galleys of such moderate dimensions that, in the course of the voyage, they were fre­quently hauled on shore ; and although we find, by collat­ing the number of vessels and the number of men compos­ing the expedition, that there could not have been more than fifty or sixty men on board each vessel, their accom­

modations were so poor that the journal takes notice of the inconvenience experienced by the crews from being obliged to remain for two consecutive nights on board. Purchas gives the detail of this voyage of Nearchus, on the autho­rity of Arianus, lib. viii.

To pass to the Carthaginians, a people of great commer­cial enterprise and importance, and who inherited their nau­tical knowledge from their progenitors the Phoenicians, of whose commercial wealth history, both sacred and profane, gives repeated evidence : Ezekiel (chap, xxvii.) says of Tyre, It is situated at the entry of the sea, is a merchant for many isles ; its ship-boards are of fir-trees of Senir, their masts of cedars, their oars of oak of Bashan, their benches of ivory, their sails of fine embroidered linen. We find that the Carthaginians must at a very early period of their history have possessed vessels of considerable magnitude ; for in the journal of the much though unjustly disputed voyage of Hanno, which Clark, in his History of Maritime Discovery, places at 350 b. c., but which by some historians is said to have taken place as early as 1000 b. c., sixty ships afford­ed accommodation for 30,000 souls, including women and children, and this, too, with all the stores and requisites for colonization, which was the main purport of the enterprise. The little we know of the Carthaginians, we know through their implacable foes the Romans ; and as the Roman fleets were built after a Carthaginian model, we may pass on to investigate the few certain particulars we can collect of the Roman shipping ; though, in doing so, we must not assume that we are in possession of the extent of the state of naval science among the Carthaginians. All that the Romans adopted from them was their war-galley. Their commerce, and consequently their commercial vessels, were alike de­spised by this predatory state, which then lived almost solely by the sword.

Charnock, on the authority of Meibomius, has given the following as the dimensions of the Roman trireme and quadrireme. The triremes were 105 feet long and eleven feet broad. The quadriremes were 125 feet long and thirteen feet broad. The triremes, after the time of Julius Cæsar, were ninety feet long and ten feet broad. These dimen­sions have a much greater comparative length to breadth than the proportions adopted for the Neapolitan and Maltese galleys of more modern times. In them the length seldom exceeded seven breadths. According to Vossius, who is also one of the most voluminous writers on the subject of the shipping of the ancients, these Neapolitan galleys were ca­pable of performing voyages by the oar of sixty leagues in twenty-four hours ; and the distance from Naples to Paler­mo has been performed in seventeen hours.

Cæsar himself gives us a good criterion of the size of the Roman vessels employed by him in the invasion of Britain ; for he says that they were so large that they could not approach near enough to the shore for the soldiers to dis­embark, but that they were obliged, encumbered as they were with their arms, to jump into the water, which was breast high ; and that at last the galleys were ordered in be­tween these larger vesscls and the shore, to protect the dis­embarkation.

When we consider the dimensions above quoted for the Roman navy, it does not appear that there is necessarily much exaggeration in the accounts given of the wonderful exertions made by that people to prepare their first mari­time force. Sixty days after the axe was laid to the root of the tree, 160 galleys according to some accounts, 100 quin­quiremes and twenty biremes according to others, rode at anchor in tile sea ; the quinquiremes each manned by 300 rowers and 200 soldiers. Polybius states the Roman fleet at the time of the first Punic war to have consisted of 330 ships, each containing 300 rowers and 120 soldiers. If we compare the small number of vessels which the might of Rome put forth at this time, when her very existence de-