the name was used generically, just as the name of trireme had been used before, to signify a man-of-war, without reference to the size of vessel or the number of banks of oars.

Meanwhile, with the peace of the Mediterranean ensured, for piracy was kept in abeyance by the imperial power, and with increased commercial activity, the building of large merchant vessels naturally followed. These were propelled by sails and not by oars, which, however, continued to furnish the principal motive power for the ship of war until the necessity for increasing its carrying power began to make it too unwieldy for propulsion by rowing.

The great com ships, which brought supplies from Egypt to the capital, were, if we may take the vessel described by Lucian as a typical instance, 120 cubits long by 30 broad and 29 deep. The ship in which St Paul and his companions were wrecked carried 276 souls besides cargo. Even larger vessels than these were constructed by the Romans for the transport of marbles and great obelisks to Italy. These huge vessels carried three masts, with square sails, and on the main mast a topsail, which the corn ships from Alexandria alone were allowed to keep set when coming into the Italian port. All other merchant vessels were compelled to strike the *supparum.*

But while the construction of large vessels for commercial purposes was thus developed, the policy of keeping the war- vessel light and handy for manoeuvring purposes prevailed, and, though vessels of three, four or even five banks were still built, the great majority did not rise above two banks. In the war with the Vandals (a.d. 440-470) we hear of ships of a single bank, with decks above the rowers. These, we are told, were of the type which at a later date were called Dromons (δρoμωm) in allusion to their speedy qualities, a name which gradually superseded the Liburnian, as indicating a man-of-war. During the following centuries the Mediterranean was the scene of constant naval activity. The rise of the Mussulman power, which by A.D. 825 had mastered Crete and Sicily, made the maintenance of their fleet a matter of first importance to the emperors of the East, and as the Arab inroads became more threatening, and piracy more rife, so the necessity of improving their galleys as regards speed and armament became more and more pressing. It was during this period, and that very largely by the Arahs, that a great advance was made in the employment of what we should call artillery. The use of Greek fire and of other detonating and combustible mixtures, launched by siphons or in the form of bombs thrown by hand or machinery, led to various devices by way of protective armour, such as leather or felt casing, or woollen stuffs soaked in vinegar, and all such contrivances tended gradually to alter the character as well as the equipment of the war vessel.

During the same period the rise and growth of the Venetian republic mark the entrance on the scene of a new seafaring and shipbuilding power.

Meanwhile, the northern seas were breeding a new terror. In the 5th century the Roman fleet which guarded the narrow entrance into the British Channel had disappeared. The Frankish power gradually established itself in Gaul. But behind the Franks still fiercer races, born to the use of oar and sail, were gathering for the invasion of the west and south. For a while it seemed as if the empire consolidated by Charlemagne would be able to withstand their inroads. Yet even in the year of his coronation (a.d. 800) the piratical Northmen had carried their ravages as far as Aquitaine. Charlemagne organized a naval force at Boulogne and at Ghent. But, though in alliance with the kings of Mercia and Wessex, he had not that control of the Channel which the possession of both shores had given to the Romans. The ships of the Vikings, propelled by oar and sail, were seagoing vessels of an excellent type. They were of various sizes, ranging from the *skuta* of about 30 oars to *ask* or *skeid* with 64 oars and a crew of 240, and to the still larger *dreki* or dragon boats, and the famous *snekkjur* or serpents, said to be represented on the Bayeux tapestry. Of these vessels we have fortunately, though of the smaller class, a typical instance in the well-known Viking ship discovered in 1880 in a

tomb-mound at Gokstad near Christiania, of which the dimensions are given as: length 78 ft., beam 16 ft. 7 in., depth 5 ft. 9 in., with high stem and stern; clinker-built of oak throughout, with 16 oars on either side. Of this type were the vessels large and small which had by the 9th century or even earlier found their way into the Mediterranean. Such were the fleets which continually infested the northern and western coasts of Gaul, carrying swarms of the fierce Northmen who eventually came to stay, and gave their name to the portion of Neustria which they had wrested from the Frankish king (912). If, as is probable, the Danes who invaded England used the same class of vessel, Alfred the Great must, according to the *Saxon Chronicle,* be credited with improvements in construction, which enabled him to defeat them at sea (897). He built, we are told, vessels twice as long as those of the Danes, swifter, steadier and higher, some of them for 60 oars, and after his own design, not following either the Danish or Frisian types.

While the northern seas were thus full of activity and conflict, there was little repose in the Mediterranean. The emperors of the West do not seem to have maintained their fleets or naval stations as they had been of old. Ravenna and Misenum were shorn of their ancient glories. But in the East things were different. There, as we have said, it was fully perceived that the maintenance of the empire depended upon sea power. The *Tactica* of the Emperor Leo (886-911), followed by Constantine Porphyrogenitus (911-959), give us full details as to the com­position of a Byzantine fleet and its units. *Dromons* of two sizes and of two banks of oars are described, and, besides these, smaller Dromons of great speed are referred to as “ galleys or single-banked ships.” In all these the rule was still “ one oar, one man,” but the way was being prepared for improvements by which the medieval galley, still preserving a comparatively low freeboard, was enabled to equal or to surpass the many- banked vessel in speed, while it was gradually adapted to carry greater weight and more powerful means of offence.

The medieval man-of-war was essentially a one-banked vessel *(μοvοκροτσv),* but the use of longer oars or sweeps took the place of the smaller paddling oars of the ancient vessel, and altered greatly the angle at which the oars reached the water. It was the increase in the length and weight of the oar, requiring for its efficiency greater power than that of one man, which led to the employment of more than one man to an oar. With the longer oar the necessity arose of placing the weight at a greater distance from the power applying the lever. This was gained by the invention of the *apostis,* which was practically a framework standing out on each side of the hull and running parallel to it; a strong external timber, in which the thowls, against which the oars were rowed, were set. By this means it became possible not only to arrange the oars horizontally, in sets of three or more of different lengths *(alla zenzile),* instead of in banks one above the other obliquely, but still further to make an innovation, unknown to the ancients, which, while greatly increasing the length and substance of the oar, and its leverage, applied the strength of three or four men (or even up to seven with the larger galleys and galleasses) for the motive power of each blade. As time went on oars of from 30 to 50 ft. came into vogue, the inboard portion of which was about one-third of the length, and furnished with handles *(manettes)* attached to the loom, while the men for each oar were arranged in steps *(alla scaloccio).*

It must not be imagined that these developments took place all at once, or that any improvements in building, or in the method of propulsion, were generally adopted but by slow degrees. Moreover, as commerce increased and merchant vessels gained in size, the necessity of being able to defend themselves against piratical attacks became more and more cogent, a necessity which ultimately led the way to the supersession of the galley by the sailing vessel. Yet the galley for centuries, especially in the Mediterranean, maintained its place as the ship of war *par excellence,* even when mixed fleets of galleys and sailing vessels were not uncommon. In the Atlantic and northern seas it was less *en évidence,* though even with the Spanish Armada some galleys and galleasses were included in the invading fleet.