ships, the former, which had nearly the displacement of the 'Vic­tory,' had a length of 207 ft., a breadth of 56 ft., and a mean draught of 21. She had 1420 indicated horse-power, and her speed on the measured mile was 10∙3 knots. Her armament consisted of twenty- eight 8-in. guns and sixty-two 32-pdrs., carried on her lower, main and upper decks. The 'Hogue' had a length of 184 ft., a breadth of 48 ft. 4 in., a mean draught of 22 ft. 6 in.; she had 797 indicated horse-power and a speed of 8⅓ knots. Her armament consisted of two 68-pdrs. of 95 cwt., four 10-in. guns, twenty-six 8-in. guns, and twenty-eight 32-pdrs. of 50 cwt.—sixty guns in all.

"Vessels of lower rates (I refer to the screw steam frigates of the period just anterior to the Crimean War) were, both in construction and armament so closely analogous to the line-of-battle ships that I will not fatigue you by describing them, and will only allude to one other dass, that of the paddle-wheel steam frigate, of which I may take the ‘ Terrible ’ as a type. This vessel had a length of 226 ft., a breadth of 43 ft., a displacement of about 3000 tons, and an indicated horse-power of 1950. Her armament consisted of seven 68-pdrs. of 95 cwt., four 10-in. guns, ten 8-in. guns and four light 32-pdrs.”

The warships which existed at the beginning of the latter half of the 19th century were, with the exception of special vessels, divided roughly into three classes—

ships of the line, frigates and gun-

vessels. For many years the corresponding types of iron and steel vessels

were known as battleships, cruisers and

gunboats, but recently we have seen

the power of the cruiser increased to

that of the battleship, and new types

have been produced such as the torpedo

boat, the torpedo boat destroyer and

the scout, the latter developing into

the fast cruiser of continually increasing size; while the submarine torpedo

boat has become a recognized sea-going

vessel, and is becoming comparable in

size with the gun-vessel or the small

cruiser. It is proposed to refer to these

in the order named. (See also Navy.)

*Battleships—*The destruction of the Turkish fleet at Sinope (30th November 1853) by the Russian fleet, the latter alone being armed with shell guns, and the combined experience of the British and French fleets before Sevastopol when engaging Fort Constantine, de- monstrated conclusively that for ships of the line armour protection had become essential. The French govern­ment immediately began to build five armour-plated vessels, or batteries, as they were called, for service in the Black Sea; and eight similar vessels were begun shortly afterwards by the British government for the same service.@@1 The British vessels did not arrive in time to take any part in the war; but three of the French batteries did, and were very favourably reported on by Admiral Bruat after an engagement with the Kinburn Forts on the 17th of October 1855. With the exception of these three French batteries, the whole of the fleets employed in the operations were composed of unarmoured wooden ships, and a large number of them were sailing line-of-battle ships. As the result of the engagement with the Kinburn Forts, the French began to armourplate sea-going vessels, and the first step in this direction was taken by the celebrated French naval architect M. Dupuy de Lome, who razeed the “ Napoleon,” a wooden two-decker, and fitted her with a complete belt of 5-in. armour on a backing of 26 in. of wood. This work was completed in 1859, and the ship, renamed “ La Gloire,” became the first sea-going armour-clad. Two other vessels of the same design, the “ Invincible ” and “ Normandie,” were also laid down, and with the “ Magenta,” “ Solferino ” and the “ Couronne,”

a few years later, formed the first fleet of French armour- clads.

In June 1859 the armour-plated iron frigate “ Warrior ” was commenced by the British government. Others quickly followed, including the “ Black Prince,” which was a sister ship to the “ Warrior,” and four other vessels, the “ Achilles,” the sister ships “ Minotaur ” and “ Agincourt,” and the “ Northumberland.” The distribution of the armour and other features of these vessels are shown in fig. 47. The “ Warrior ” and “ Black Prince ” were 380 ft. long and of 8830 tons displacement, had engines of 6000 I.H.P. and a speed of 14¼ knots; they were designed to carry thirty-six 68-pdr. 100-cwt. guns, but during construction the 7-1n. 6½-ton gun was introduced into H.M. Service, and the ships when completed for sea carried an armament of 28 of these 7-in. guns. They had a central citadel 213 ft. long, protected with 4½-in. iron armour extending from a few feet below the water-line to the height of the upper deck. Their outline was similar to the outline of the wooden frigates of the

day, and their rudder-heads and steering-gear were above water and unprotected against injury by shot and shell. In the four vessels which immediately followed, which were from 500 to 1500 tons more displacement, the overhanging bow, as will be seen from fig. 51, was given up, bows adapted for ramming were introduced, and some protection was afforded to the steering- gear by water-line belts of armour which extended the whole length of the vessel. In 1861 the British government began the construction of eleven armour-clads, six of which, including the “ Hector ” and “ Valiant,” sister ships of 6700 tons displacement and 3500 I.H.P., were iron vessels, and five, the “ Caledonia,” “ Royal Oak,” “ Ocean,” “ Prince Consort,” and “ Royal Alfred,” were wooden vessels of rather over 4000 tons.

The reconstruction of the British fleet was taken in hand in earnest in 1863, when Mr (afterwards Sir) Edward J. Reed was placed at the head of the Construction Department at the Admiralty, with Messrs Barnaby, Barnes, Crossland, Morgan and Wright—the last-named (afterwards Sir James Wright) holding the position of engineer-in-chief—as

@@@1 See letters of the earl of Rosse on this subject, *Transactions of Inst. of Naval Architects* for 1908.