for the remainder of the crew is available on the main and lower decks aft.”

The tabulated particulars given in Parl. Paper Cd. 3048 for the designs approved are shown in Table XIV.

It is interesting to note that the distribution of armament finally adopted in the “ Dreadnought ” was nearly that of a design considered by Sir Nathaniel Barnaby at the Admiralty in 1874, which was a combination of the “ Devastation ” and “ Inflexible ” designs. The armament was an all-one-calibre big gun armament of 16-in. 80-ton guns carried in pairs in turrets above the upper deck, one pair being placed at each extremity on the middle line, and two pairs on the broadside *en échelon,* having training on each broadside as well as ahead and astern, thus giving a fire of six guns ahead, six astern and eight on each broadside. The scheme was considered inadmissible on account of the great displacement involved, 16,000 tons. The arrangement of eight heavy guns then contemplated was actually adopted in the “ Invincible ” design, but it was not considered that four pairs of 12-in. guns was a sufficiently heavy armament for the battleships of the “ Dreadnought ” class; a proposal to place a fifth pair of guns on the middle line between the broad- side guns and the aftermost pair of guns was finally adopted, the turrets on the broadside being placed abreast of each other instead of *en échelon* on account of the great increase of length and displacement involved.

The main features in which the “ Dreadnought ” differed from the “ Lord Nelson ” are:—(1) The all-one-calibre big gun armament in place of the mixed armament of 12-in. and 9∙2-in. guns. (2) The increase of 3 knots in speed. (3) The height of freeboard provided forward to enable the vessel to fight her bow guns at high speed in a sea way. (4) Great increase in manoeuvring power due to fitting twin rudders behind propellers.

The weight of the armament of the “ Dreadnought ” is the same as that of the “Lord Nelson”; it is 30% greater than that of the “ King Edward VII.,’’ the 1400 tons increase of displacement (about 8% of the displacement of the “ Lord Nelson ’’ and “ King Edward VII.’’) being used in obtaining the increase of 3 knots of speed.

The general arrangements of guns and armour of the “ Dread­nought ” are shown in fig. 63, and on Plate XIII., fig. 64, a photograph of the vessel is given. She was built and tested as rapidly as possible, her keel was laid on the 2nd of October 1905, she was launched on the 10th of February 1906, King Edward VII. himself performing the christening ceremony and starting the vessel down the ways; and she went to sea, for steam, gunnery and torpedo trials, on the 1st of October 1906, one year after the laying of the keel. The" whole of the trials were completed without hitch of any kind, the machinery realized the expectations as to power and smoothness of running, and a speed of 21∙6 knots was obtained on the measured mile, with an expenditure of power well within the capacity of the boilers. She left England for a long experimental cruise on the 5th of December 1906.

Immediately after the trials of the “ Dreadnought,’’ three other vessels, the “ Bellerophon,” “ Temeraire ” and “ Superb ’’ of 18,600 tons were begun, the additional 700 tons in displacement being absorbed in additional armour protection and an improved anti-torpedo-boat armament consisting of sixteen 4-in. guns. In 1907 and 1908 the “ St Vincent,” “ Collingwood ” and “ Vanguard ” of 19,250 tons displacement were begun, in which further additions to the armour protection were made. These were followed by the “ Neptune,” “ Hercules ” and “ Colossus,’’ of about 20,000 tons displacement, laid down in 1909, the additional 800 tons lengthening the ships and enabling the 12-in. guns on the broadside to be placed *en échelon* and the second pair of guns from aft to be lifted high enough to fire over the aftermost pairs of guns; the whole of the main armament being thus able to fire on either broadside and eight guns to fire astern. Each of these vessels was completed in two years from the date of laying the keel. See Table XV.

On the 29th of November 1909 the “ Orion,’’ the leading vessel of what in 1910 was the most recent group of

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| Table XIV. | Indomitable. | Armoured Cruiser  Sir Philip Watts, K.C.B. 1st March 1906, Fairfield Ship­building and Engineering Co., Glasgow  1908-1909  530 ft.  78 ft. 6 in.  26 ft.  9,660 tons  17,250  Fairfield Shipbuilding and Engineering Co., Glasgow  1000 tons  ₤1,730,733 |
| Inflexible. | Armoured Cruiser  Sir Philip Watts, K.C.B.  ***ì*** 5th Feb. 1906, Messrs John ∖ f Brown & Co., Glasgow )  1908-1909  530 ft.  78 ft. 6 in.  26 ft.  9,660 tons jf 17.250 „  Messrs John Brown & Co., Glasgow  1000 tons  /1,726,990 |
| Invincible. | Armoured Cruiser  Sir Philip Watts, K.C.B. 2nd April 1906, Sir W. G.  Armstrong, Whitworth & Co.,  NewcastIe-on-Tyne  1908-1909  530 ***ft.***  78 ft. 6 in.  26 ft.  9,660 tons  17.250 tons  Messrs Humphreys, Tennant & Co., Deptford  1000 tons  £1,736,645 |
| Dreadnought. | Battleship  Sir PhiIiρ Watts, K.C.B.  2nd Oct. 1905, Portsmouth J  1906-1907  490 ft.  82 „  26 ft. 6 in. ιι, 100 tons  17.900 „  Messrs Vickers, Sons & Maxim, Barrow-in-Furness  23,000  21 knots.  900 tons  Ten ***i2ff*** B.L. and twenty-seven small Q.F. guns  £1,558,683  125,614  1,684,297  113,200  ι.797.497 |
| Name of Ship | CIass and type  By whom designed ,  When and where laid down  Date of completion . . .  Length  Breadth  Mean load draught  Weight of hu∏ including armour and backing .  Displacement at load draught  Makers of machinery j  Estimated horse-power (naturaI draught) .... Corresponding estimated speed at load draught, smooth )  water, clean bottom (naturaI draught) . . J  Coal capacity at Ioad draught . . ...  Armament, not induding machine guns or torpedoes j  Estimated first cost  Estimated proportion of incidental charges  TotaI estimated cost, excluding guns and ordnance stores  Estimated cost of guns  TotaI estimated cost, including guns |