"Miranda," built by Messrs Thornycroft in 1871. She was built of light steel, was 45 ft. in length, 6½ ft. beam and 2½ ft. draught, and attained a speed of 16∙4 knots with a single screw, the engine running at 355 revolutions per minute and indi­cating 58 H.P. The results obtained with her attracted much attention, and in 1873 Thornycroft launched for the Norwegian government a somewhat larger boat, armed with a spar torpedo, which attained a speed of 15 knots. Owing to the introduction of machine-guns in warships as a defence against torpedo-boat attack, it was recognized that there was a very slight chance of a boat approaching sufficiently near to a vessel to successfully attack her by means of a towing or a spar torpedo, and the Whitehead torpedo fired from a revolving tube on the deck was accordingly adopted as the armament of future torpedo-boats. This rendered it unnecessary for the torpedo-boat to approach nearer than say 400 yds., and also enabled the torpedo to be fired without stopping the boat, a point of great importance. The first torpedo-boat for the British navy was built by Messrs Thornycroft four years later; she was called the “ Lightning,” was 75 ft. in length and 34 tons displacement, had engines giving nearly 500 H.P., and obtained a speed of 19 knots. She was armed with a single torpedo tube. The boats which followed varied somewhat as regards size and speed, but on the whole pursued the usual course of growing larger and more powerful with each new design. By 1885 the length had gone up to 150 ft., the displacement to 125 tons and the speed to 20 knots. This last was not the highest that had been obtained, some of the earlier and smaller boats having reached 21½ knots; but the boats of 1885 carried a heavier armament, consisting of six 3-pdrs. and three torpedo tubes, and were more serviceable and seaworthy craft. A very notable boat of this date was the “ Swift,” after- wards known as No. 81, built by J. S. White of Cowes; she marked a great advance in seaworthiness and fighting power in combina­tion with high speed.

Messrs Yarrow built for the Austrian navy in 1886 the “ Falke,” 135 ft. in length and 95 tons displacement, which obtained a speed of 22∙4 knots on trial, and a similar boat for the British navy of 105 tons displacement, armed with 5 torpedo tubes and three 3-pdr. guns, which attained a speed of 23 knots on trial. About the same time Messrs Thornycroft built the “ Ariete ” and “ Royo ” for the Spanish navy. These vessels had twin screws and water-tube boilers. The former attained a speed of 26 knots on the measured mile and 24∙9 knots on a 2 hours’ run, and the latter 25∙5 knots on the measured mile and 24∙6 knots on the 2 hours’ run. In 1895 M. Normand built the torpedo-boat “ Forban ” for the French navy, which attained a speed of 31∙2 knots on trial, and the boats of the Normand type which followed her attained equally remarkable speeds. The maximum speeds for the British torpedo-boats up to the end of the 19th century were from 23 to 23½ knots. From 1901 to 1904 larger and faster types of torpedo-boats were constructed. These boats were 160 ft. to 165 ft. in length, 17 ft. to 18 ft. beam, 8½ ft. draught, 180 to 200 tons displacement, 2900 I.H.P., attained a speed of 25 knots and were armed with 3 torpedo tubes. In 1906 to 1509 boats of a new and still faster, type were built with turbine machinery and burning oil fuel instead of coal. These boats, 36 in number, vary from 166 to 185 ft. in length. 17½ to 19 ft. beam, 5¾ to 6¾ ft. draught and 243 to 308 tons in displacement. They have engines of 3600 to 4000 H.P. giving speeds of 26 and 27 knots, and are armed with two 12-pdr. guns and three torpedo tubes The first twelve ordered in 1905, were at first known as Coastal Torpedo-boat Destroyers, and given names such as the “ Cricket,” “ Gadfly ” and "Mayfly." They are now numbered throughout, *i.e.* from 1 to 36. The prefix O has been added to the numbers of such of the boats originally bearing these numbers as are still in existence, to distinguish them from the new type boats. Table XVIII. gives particulars of many of the most notable torpedo- boats built between 1871 and 1910.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Table XVIII. | | *—Particulars* | | *of Torpedo-boats,* | | | |  |  |
|  |  |  | **Principal Dimensions, *Sic.*** | | | | | |  |  |  |
| **Vessel’s Name.** | **CouQtry.** | **where Built.** | **υ a**  **tι ≈3** | 1 | **8**  **§** | Λ  ≡, | **∣⅛**  **a«** | υ ⅛  XJ υ ßö | **1**  **É** | **Speed.** | **Armament, &c.** |
|  |  |  | **≤Λ** | **JS** |  | **≡**  **Q** | .2 S A | 3 CO | **w** | **j⅛.** |  |
| **Toιpedo-boats—** |  |  |  | **Ft. In.** | **Ft. la.** | **Ft. In.** | **Tom.** |  |  | **Knots.** |  |
| **Miranda ist torpedo-boat built.** | **Great Britain** | **Messrs Thornycroft, London.** | **1871** | **45 0** | **6 6** | **a 6** |  | *I* | **58** | **16.4** | ***Nil.* Experimental boat.** |
| **Norway** | **Messrs Thornycroft, London.** | **1873** | **57 0** | **7 6** | **3 0** |  | *1* |  | **x50** | **I apar torpedo.** |
| **Lightning (after-** |  |  |  |  |  |  |  |  |  |  | **Single torpedo tube.** |
| **wards Noι T.B.)** | **Great Britain** | **Messrs Thornycroft, Loodoo.** | **1877** | **75 0** | **IO IO** | **5 0** | **34** | I | **477** | **28.5** |
| **No. to T.B. . .**  **Swift (afterwords** | **»** | **Messrs Thornycroft, London.** | **1880** | **90 6** | **IO IO** | **4 0** | **28** | X | **450** | **21.7** | **1 torpedo tube.**  **6—3 pdn-.t 3 tube\*.** |
| **No. 8ì T.B.) .** |  | **Messrs J. S. White & Co., Cowes.** | **1885** | **150 0** | **17 6** | **5 xi** | **x25** | **1** | **I3∞** | **20.5** |
| **Falke. . . .** | **Austria .** | **Messrs Yarrow, Loαdoα.** | **1886** | **US 0** | **13 0** | **5 »** | **9S** | **I** | **çoo** | **s2.4** | **a mach.-guns, α tubes.** |
| **ist class T.B. .** | **China .** | **Elbiag.** | **1886** | **144 4** | **16 5** | **7 6** | **128** | **1** | **14∞** | **24.2** | **4—1 pdrs., a tubes.** |
| **Forban . . .** | **Fraαce .** | **Messrs Normaad.** | **∣8ςs** | **144 2** | **JS 2** | **IO c** | **135** | **2** | **32∞** | **31.2** | **a—1 pdrs., a tubes.** |
| **No. 109 T.B.** | **Great Britain** | **Messrs Thornycroft, London.** | **x90a** | **166 0** | **Π 4** | **8 5** | **Xζ)4** | **1** | **29∞** | **25.0** | **3—3 P<lrs., 3 tubes.** |
| **No. xi T.B. . .** | m | **Messrs Yarrow, Loαdoo.** | **1906** | **172 0** | **18 0** | **5 0** | **263** | **3** | **3750** | **a 6.0** | **2—12 pdra., 3 tubes.** |
| **G0ya2 . . .**  **Gabbiano . .** | **Brazil .** | **Messrs Yarrow, London,** | **1907** | **152 6** | **IS 4** |  | **130** | **3** | **a6.5** | **2—3 pdra., a tubes.** |
| **Italy** | **Sρe2zia**  **Messrs Denny, Dumbarton.** | **1907** | **164 0** | **Π 5** | **7 0** | **2OO** | **a** | **3000** | **a 6.0** | **3—3 pdrs., 3 tubes.** |
| **No. *2g* T.B. . .** | **Great Britain** | **1908** | **180 0** | **18 0** | **S 9** | **278** | **3** | **4000** | **26. c** | **2—12 pdrs., 3 tubes.** |

The torpedo-boat thus established was primarily a weapon of offence, the only two elements of a protective nature in its design being those of small size and high speed ; but even these were also necessary for purposes of offence. The deadly nature of their attack, and the difficulty of meeting it in the ship attacked, led to the construction of special vessels intended, among other duties, to meet and destroy them. The French “ Bombe ” (1885) was one of the earliest of these; and the "Rattlesnake ” and three sister vessels, the first of the English torpedo gunboats, came closely after her. The “ Rattlesnake" was launched in 1886, was of 525 tons displacement, and had a speed of 19¼ knots. She carried a more powerful armament than the torpedo-boats, namely, one 4-in. gun, six 3-pdrs. and 4 torpedo tubes. She was followed in 1888 by the “ Sharpshooter, with ten sister vessels, still larger and more heavily armed. They were 230 ft. long and 735 tons displacement, had engines developing 3500 H.P., giving a speed of 19 knots, and carried two 4∙7-in. Q.F. guns, four 3-pdrs. and two torpedo tubes.

France built six vessels of the “ Bombe ” class, and the “ Leger ” (a slightly larger vessel), and in 1891 to 1896 built five other torpedo gunboats of about 900 tons and 21 knots. The last was named “ La Hire,” and was 241 ft. long, 27 ft. 6 in. beam, 12 ft. 9 in. draught, 890 tons displacement; was armed with six 9-ρdr. and six 3-ρdr. Q.F guns and was provided with engines of 6400 I.H.P. for 23 knots. These vessels have no torpedo tubes. The torpedo cruiser “ Fleurus,” laid down in 1891, was armed with four torpedo tubes as well as five 3∙9-in. and six 3-pdr. guns. She was also protected by a 1½-in. protective deck and fitted with a belt of cellulose 3 ft. thick in the vicinity of the water-line. Her dimensions were: length 230 ft., beam 29½ ft., draught aft 15 ft., displacement 1300 tons, I.H.P. 4000, and speed 18 knots.

The “ Niger ” class of 1892, which included eleven vessels (fig. 114, Plate XX.), were repeats of the “ Sharpshooters,” except that they carried an additional torpedo tube and three machine-guns, with certain hull additions and more durable machinery, the dis­placement being increased by these causes to 810 tons, and the speed being reduced by a quarter of a knot. In 1893 a fourth series of this class of vessel was begun, known as the “ Dryad ” class, and considerably larger than the “ Nigers,” being 250 ft. long and of 1070 tons displacement. They are of 3500 I.H.P., have a speed of 18¼ knots, and carry an armament of two 4∙7-in. Q.F. guns, four 6-pdrs., and three torpedo tubes. Five vessels of this class were built, the difference between their general appearance and that of the preceding classes being illustrated by fig. 115 (Plate XX.), which shows the “ Hazard," which in 1910 was employed on special service in connexion with the reception and trials of British sub- marines. In these thirty-one British vessels of the torpedo gunboat class the elements of strength and seaworthiness are developed at the expense of speed, and they combine in themselves some of the functions of the torpedo-boat with many of the most important features of the small cruiser. The successive increases of displacement are very largely due to additions to the hull, giving greater habitability and trustworthiness for continuous work at sea. It will be noticed that the speed shows a continuous falling off; but the “ Sharpshooter ” class and subsequent vessels have been refitted with water-tube boilers in lieu of the locomotive boilers originally fitted, and some of them are in addition re-engined, with the result that a speed of 21 knots was obtained; this, in the ordinary weather met with at sea, would probably enable them to overtake craft of lighter types possessed of considerably greater smooth-water speeds. These vessels have not been repeated, many of them have been sold, but all those remaining are actively employed on a variety of subsidiary but important services.