= HMS Minotaur (1863) =

HMS Minotaur was the lead ship of the Minotaur @-@ class armoured frigates built for the Royal Navy during the 1860s . They were the longest single @-@ screw warships ever built . Minotaur took nearly four years between her launching and commissioning because she was used for evaluations of her armament and different sailing rigs . The ship spent the bulk of her active career as flagship of the Channel Fleet , including during Queen Victoria 's Golden Jubilee Fleet Review in 1887 . She became a training ship in 1893 and was then hulked in 1905 when she became part of the training school at Harwich . Minotaur was renamed several times before being sold for scrap in 1922 and broken up the following year .

= = Design and description = =

The Minotaur @-@ class armoured frigates were essentially enlarged versions of the ironclad HMS Achilles with heavier armament , armour , and more powerful engines . They retained the broadside ironclad layout of their predecessor , but their sides were fully armoured to protect the 50 guns they were designed to carry . Each was equipped with a plough @-@ shaped ram that was also more prominent than that of Achilles .

The Minotaur @-@ class ships were 400 feet (121 @.@ 9 m) long between perpendiculars and 411 feet (125 @.@ 3 m) long overall . They had a beam of 58 feet 6 inches (17 @.@ 8 m) and a draft of 26 feet 10 inches (8 @.@ 2 m) . The ships displaced 10 @,@ 627 long tons (10 @,@ 798 t) . The hull was subdivided by 15 watertight transverse bulkheads and had a double bottom underneath the engine and boiler rooms .

Minotaur was considered " an excellent sea @-@ boat and a steady gun platform , but unhandy under steam and practically unmanageable under sail " as built . Steam @-@ powered steering improved her maneouvring qualities significantly when it was installed in 1875 and she was judged " one of our very best manoeuvrers we have in the Navy " by Vice Admiral Philip Colomb in 1890 . The ship 's steadiness was partially a result of her metacentric height of 3 @.@ 87 feet (1 @.@ 2 m) .

= = = Propulsion = = =

Minotaur had a two @-@ cylinder trunk steam engine , made by John Penn and Sons , that drove a single 24 @-@ foot (7 @.@ 3 m) propeller . Ten rectangular fire @-@ tube boilers provided steam to the engine at a working pressure of 25 psi (172 kPa ; 2 kgf / cm2) . The engine produced a total of 6 @,@ 949 indicated horsepower (5 @,@ 182 kW) during the ship 's sea trials on 10 May 1867 and Minotaur had a maximum speed of 14 @.@ 33 knots (26 @.@ 54 km / h ; 16 @.@ 49 mph) . The ships carried 750 long tons (760 t) of coal , enough to steam 1 @,@ 500 nmi (2 @,@ 800 km ; 1 @,@ 700 mi) at 7 @.@ 5 knots (13 @.@ 9 km / h ; 8 @.@ 6 mph) . Minotaur was reboilered in 1893 and reached 14 knots (26 km / h ; 16 mph) with 6 @,@ 288 ihp (4 @,@ 689 kW) .

The ship had five masts and a sail area of 32 @,@ 377 square feet (3 @,@ 008 m2) . Because her propeller could only be disconnected and not hoisted up into the stern of the ship to reduce drag , Minotaur only made 9 @.@ 5 knots (17 @.@ 6 km / h ; 10 @.@ 9 mph) under sail . Both funnels were semi @-@ retractable to reduce wind resistance while under sail . Admiral George A. Ballard described Minotaur and her sisters as " the dullest performers under canvas of the whole masted fleet of their day , and no ships ever carried so much dress to so little purpose . " In 1893 ? 4 , after her withdrawal from active service , Minotaur had two masts removed and was re @-@ rigged as a barque .

= = = Armament = = =

The armament of the Minotaur @-@ class ships was intended to be 40 rifled 110 @-@ pounder breech @-@ loading guns on the main deck and 10 more on the upper deck on pivot mounts . The

gun was a new design from Armstrong , but proved a failure a few years after its introduction . The gun was withdrawn before any were received by any of the Minotaur @-@ class ships . They were armed , instead , with a mix of seven @-@ inch (178 mm) and nine @-@ inch (229 mm) rifled muzzle @-@ loading guns . All four nine @-@ inch and 20 seven @-@ inch guns were mounted on the main deck while four seven @-@ inch guns were fitted on the upper deck as chase guns . The ship also received eight brass howitzers for use as saluting guns . The gun ports were 30 inches (0 @.@ 8 m) wide which allowed each gun to fire 30 ° fore and aft of the beam .

The shell of the 14 @-@ calibre 9 @-@ inch gun weighed 254 pounds (115 @.@ 2 kg) while the gun itself weighed 12 long tons (12 t) . It had a muzzle velocity of 1 @,@ 420 ft / s (430 m / s) and was credited with the ability to penetrate a 11 @.@ 3 inches (287 mm) of wrought iron armour at the muzzle . The 16 @-@ calibre 7 @-@ inch gun weighed 6 @.@ 5 long tons (6 @.@ 6 t) and fired a 112 @-@ pound (50 @.@ 8 kg) shell . It was credited with the ability to penetrate 7 @.@ 7 @-@ inch (196 mm) armour .

Minotaur was rearmed in 1875 with a uniform armament of 17 nine @-@ inch guns , 14 on the main deck , two forward chase guns and one rear chase gun . The gun ports had to be enlarged to accommodate the larger guns by hand , at a cost of £ 250 each . About 1883 two 6 inches (152 mm) breech @-@ loading guns replaced two 9 @-@ inch muzzle @-@ loading guns . Four quick @-@ firing (QF) 4 @.@ 7 @-@ inch (120 @-@ mm) guns , eight QF 3 @-@ pounder Hotchkiss guns , eight machine guns and two torpedo tubes were installed in 1891 ? 2 .

= = = Armour = = =

The entire side of the Minotaur @-@ class ships was protected by wrought iron armour that tapered from 4 @.@ 5 inches (114 mm) at the ends to 5 @.@ 5 inches (140 mm) amidships , except for a section of the bow between the upper and main decks . The armour extended 5 feet 9 inches (1 @.@ 8 m) below the waterline . A single 5 @.@ 5 @-@ inch transverse bulkhead protected the forward chase guns on the upper deck . The armour was backed by 10 inches (254 mm) of teak .

= = Construction and service = =

HMS Minotaur was originally ordered on 2 September 1861 as HMS Elephant , in honour of the ship once commanded by Nelson seventy years before , but her name was changed to Minotaur during construction . She was laid down on 12 September 1861 by the Thames Ironworks in Blackwall , London . She was launched on 12 December 1863 , commissioned in April 1867 and completed on 1 June 1867 . The lengthy delay in completion was due to frequent changes in design details , and experiments with her armament and with her sailing rig . The ship cost a total of £ 478 @,@ 855 .

Minotaur finally commissioned in Portsmouth as the flagship of the Channel Fleet , a position which she retained until 1873 . In 1868 the ship nearly rammed the ironclad HMS Bellerophon as they were leaving Belfast Lough . Minotaur lost her bowsprit and fore topgallant mast , but Bellerophon only suffered some minor flooding . She paid off for a long refit in 1873 and resumed her position in 1875 when she rejoined the Channel Fleet . Minotaur became the first ship in the Royal Navy to receive a permanent installation of an electric searchlight in 1876 . The ship was the flagship of Vice Admiral Sir William Hewett , who had earned the Victoria Cross in the Siege of Sevastopol in 1854 , during Queen Victoria 's Golden Jubilee Fleet Review on 23 July 1887 . Minotaur was paid off at the end of 1887 in Portsmouth and assigned to the Reserve until 1893 when she became a training ship at Portland . She was renamed HMS Boscawen II in March 1904 and transferred in 1905 to Harwich as part of the HMS Ganges training school . The ship was renamed 11 June 1906 as HMS Ganges and then to Ganges II on 25 April 1908 . She was sold on 30 January 1922 for scrap .