

= HMS Defence ( 1861 ) =

HMS Defence was the lead ship of the Defence class armoured frigates ordered by the Royal Navy in 1859 . Upon completion in 1862 she was assigned to the Channel Fleet . The ship was paid off in 1866 to refit and be re armed and was briefly reassigned to the Channel Fleet again when she recommissioned in 1868 . Defence had brief tours on the North Atlantic and Mediterranean Stations , relieving other ironclads , from 1869 to 1872 before she was refitted again from 1872 to 1874 . She became guard ship on the Shannon when she recommissioned . The ship was transferred to the Channel Fleet again in 1876 and then became guard ship on the Mersey until 1885 . Defence was placed in reserve until 1890 when she was assigned to the mechanical training school in Devonport in 1890 . She was renamed Indus when the school adopted that name and served there until sold in 1935 .

= = Design and description = =

The Defence class ironclads were designed as smaller and cheaper versions of the Warrior class armoured frigates . This meant that they could not fit the same powerful engines of the Warrior class ships and were therefore 2 knots ( 3 . 7 km / h ; 2 . 3 mph ) slower and had far fewer guns . The naval architect Sir Nathaniel Barnaby , a future Constructor of the Navy , considered that in terms of combat a Defence class ship was worth one quarter of a Warrior .

HMS Defence was 280 feet ( 85 . 3 m ) long between perpendiculars and 291 feet 4 inches ( 88 . 80 m ) long overall . She had a beam of 54 feet 2 inches ( 16 . 51 m ) and a draft of 26 feet 2 inches ( 8 . 0 m ) . The ship displaced 6 , 070 long tons ( 6 , 170 t ) and had a ram in the shape of a plough . The hull was subdivided by watertight transverse bulkheads into 92 compartments and had a double bottom underneath the engine and boiler rooms . Defence was 128 feet 8 inches ( 39 . 2 m ) shorter overall and displaced over 3 , 000 long tons ( 3 , 000 t ) less than the Warrior class ironclads .

= = = Propulsion = = =

The Defence class ships had one 2 cylinder trunk steam engine made by John Penn and Sons driving a single propeller . Four rectangular boilers provided steam to the engine . It produced a total of 2 , 343 indicated horsepower ( 1 , 747 kW ) . During sea trials on 10 February 1868 Defence had a maximum speed of 11 . 23 knots ( 20 . 80 km / h ; 12 . 92 mph ) . The ship carried 450 long tons ( 460 t ) of coal , enough to steam 1 , 670 nautical miles ( 3 , 090 km ; 1 , 920 mi ) at 10 knots ( 19 km / h ; 12 mph ) .

The ironclads were barque rigged and had a sail area of 24 , 500 square feet ( 2 , 276 m<sup>2</sup> ) . The lower masts and bowsprit were made of iron to withstand the shock of ramming . Defence could make about 10 . 5 knots ( 19 . 4 km / h ; 12 . 1 mph ) under sail and the funnel was semi retractable to reduce wind resistance while under sail alone . The ship 's propeller could be hoisted up into the stern of the ship to reduce drag while under sail . She was re rigged as a barque from September 1864 to April 1866 before returning to her original ship rig .

= = = Armament = = =

The armament of the Defence class ships was intended to be 18 smoothbore , muzzle loading 68 pounder guns , eight on each side on the main deck and one each fore and aft as chase guns on the upper deck , plus four rifled breech loading 40 pounder guns as saluting guns . This was modified during construction to eight rifled 110 pounder breech loading guns , ten 68 pounders and four breech loading 5 inch ( 127 mm ) guns . Both breech loading guns were new designs from Armstrong and much was hoped of them . Six of the 110 pounder guns were installed on the main deck amidships and the other two

became chase guns ; all of the 68 @-@ pounder guns were mounted on the main deck . Firing tests carried out in September 1861 against an armoured target , however , proved that the 110 @-@ pounder was inferior to the 68 @-@ pounder smoothbore gun in armour penetration and repeated incidents of breech explosions during the Battles for Shimonoseki and the Bombardment of Kagoshima in 1863 ? 64 caused the navy to begin to withdraw the gun from service shortly afterwards .

The 7 @. @ 9 @-@ inch ( 201 mm ) solid shot of the 68 @-@ pounder gun weighed approximately 68 pounds ( 30 @. @ 8 kg ) while the gun itself weighed 10 @, @ 640 pounds ( 4 @, @ 826 @. @ 2 kg ) . The gun had a muzzle velocity of 1 @, @ 579 ft / s ( 481 m / s ) and had a range of 3 @, @ 200 yards ( 2 @, @ 900 m ) at an elevation of + 12 ° . The 7 @-@ inch ( 178 mm ) shell of the 110 @-@ pounder Armstrong breech @-@ loader weighed 107 ? 110 pounds ( 48 @. @ 5 ? 49 @. @ 9 kg ) . It had a muzzle velocity of 1 @, @ 150 ft / s ( 350 m / s ) and , at an elevation of + 11 @. @ 25 ° , a maximum range of 4 @, @ 000 yards ( 3 @, @ 700 m ) . The 110 @-@ pounder gun weighed 9 @, @ 520 pounds ( 4 @, @ 318 @. @ 2 kg ) . All of the guns could fire both solid shot and explosive shells .

Defence was rearmed during her 1867 ? 68 refit with fourteen 7 @-@ inch and two 8 @-@ inch ( 203 mm ) rifled muzzle @-@ loading guns . The new guns were heavier so fewer could be carried . The shell of the 15 @-@ calibre 8 @-@ inch gun weighed 175 pounds ( 79 @. @ 4 kg ) while the gun itself weighed 9 long tons ( 9 @. @ 1 t ) . It had a muzzle velocity of 1 @, @ 410 ft / s ( 430 m / s ) and was credited with the ability to penetrate a nominal 9 @. @ 6 inches ( 244 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 pounds ( 50 @. @ 8 kg ) shell . It was credited with the nominal ability to penetrate 7 @. @ 7 @-@ inch ( 196 mm ) armour .

== Armour ==

The Defence @-@ class ships had a wrought iron armour belt , 4 @. @ 5 inches ( 114 mm ) thick , that covered 140 feet ( 42 @. @ 7 m ) amidships . The armour extended from upper deck level to 6 feet ( 1 @. @ 8 m ) below it . 4 @. @ 5 @-@ inch transverse bulkheads protected the guns on the main deck . The armour was backed by 18 inches ( 460 mm ) of teak . The ends of the ship were left entirely unprotected which meant that the steering gear was very vulnerable . They were , however , sub @-@ divided into many watertight compartments to minimize any flooding .

== Service ==

HMS Defence was laid down on 14 December 1859 by the Palmers Shipbuilding and Iron Company in Jarrow . She was launched on 24 April 1861 , commissioned on 4 December 1861 and completed on 12 February 1862 . After completion she served in the Channel Fleet until 1866 , when she paid off in Plymouth for refit and re @-@ armament . The ship returned to the Channel Fleet in 1868 , and in 1869 she was sent to the North America station to relieve HMS Royal Alfred . She served with the Mediterranean Fleet from 1871 to 1872 under the command of Captain Nowell Salmon , who had earned the Victoria Cross during the Indian Mutiny in 1857 . While recovering items lost when the ironclad HMS Lord Clyde grounded off Pantelleria , Defence damaged her propeller and rudder when she briefly grounded in the trough of a wave , and was nearly blown ashore herself in March 1872 . She was paid off again for a lengthy refit in Plymouth between 1872 and 1874 and became the guard ship on the Shannon until 1876 . The ship then rejoined the Channel Fleet until 1879 and was transferred with most of that fleet to the Mediterranean while the Mediterranean Fleet patrolled the Dardanelles during the Russo @-@ Turkish War of 1878 . Defence replaced her sister ship HMS Resistance as guard ship in the Mersey until 1885 , after which she saw no further sea @-@ going service . On 20 July 1884 the ship collided with HMS Valiant in Lough Swilly , damaging her bow and flooding some compartments . In 1890 she was converted into a floating workshop at Devonport , and was renamed HMS Indus in 1898 . She was sold for scrap at Devonport in August 1935 .

