

= Iron Duke @-@ class battleship =

The Iron Duke class was a group of four dreadnought battleships built for the British Royal Navy before the First World War . The class comprised four ships : Iron Duke , Marlborough , Benbow , and Emperor of India . Launched from October 1912 to November 1913 , this was the third class of Royal Navy super @-@ dreadnoughts . The ships were essentially repeats of the King George V @-@ class battleships ; they retained the same ten 13 @. @ 5 inch ( 34 @. @ 3 cm ) guns in five twin gun turrets on the centreline . However , the Iron Dukes had improved armour and a more powerful secondary armament of 6 @-@ inch weapons instead of the 4 @-@ inch mounted on the earlier ships .

The four ships were the most advanced battleships in the Royal Navy at the outbreak of the First World War , though they were soon surpassed by the five ships of the Queen Elizabeth class . They all saw extensive service during the war with the Grand Fleet , where Iron Duke acted as the flagship for the fleet commander , Admiral John Jellicoe . Three of the ships , Iron Duke , Benbow , and Marlborough , were present at the Battle of Jutland ; the Emperor of India missed the battle by being in dock for periodic refit . The four Iron Duke @-@ class battleships saw limited active duty following the end of the war ; they were all demilitarised under the terms of the London Naval Treaty signed in 1930 . Iron Duke was reduced to a training and depot ship and lasted in that role until 1946 when she was scrapped . Benbow was scrapped in 1931 and Marlborough followed in 1932 . Emperor of India was sunk as a gunnery target in 1931 .

= = Design = =

= = = General characteristics = = =

The Iron Duke @-@ class ships were 622 feet 9 inches ( 189 @. @ 9 metres ) long overall , and had a beam of 90 ft ( 27 @. @ 4 m ) and a draught of 29 ft ( 8 @. @ 8 m ) . This was an increase of 25 ft ( 7 @. @ 7 m ) in length and 1 ft ( .3 m ) in width over the preceding King George V @-@ class ships . The Iron Dukes displaced 25 @, @ 000 long tons ( 25 @, @ 400 tonnes ) . This was some 2 @, @ 000 tons ( 2 @, @ 032 tonnes ) heavier than the preceding King George Vs , and was primarily due to the increase in calibre of the secondary battery .

The ships were powered by four @-@ shaft Parsons turbines . Steam was provided to the turbines by 18 Babcock & Wilcox or Yarrow boilers . The engines were rated at 29 @, @ 000 shaft horsepower and delivered a top speed of 21 @. @ 5 knots ( 39 @. @ 8 km / h ; 24 @. @ 7 mph ) . Iron Duke and her sisters had a fuel storage capacity of 3 @, @ 200 long tons ( 3 @, @ 300 t ) of coal and 1 @, @ 030 long tons ( 1 @, @ 050 t ) of oil . This enabled a maximum range of 7 @, @ 780 nautical miles ( 14 @, @ 410 km ; 8 @, @ 950 mi ) at a cruising speed of 10 kn ( 19 km / h ; 12 mph ) .

= = = Armament = = =

= = = = Primary battery = = = =

The Iron Duke @-@ class ships mounted a main battery of ten 13 @. @ 5 inch ( 34 @. @ 3 cm ) Mk V ( H ) guns in five twin gun turrets , all mounted on the centreline . Two turrets were placed in a superfiring pair forward ( " A " and " B " turrets ) , one turret amidships ? the " Q " turret ? directly after the two funnels , and two in a superfiring pair aft of the rear superstructure ( " X " and " Y " turrets ) . The gun houses used were Mk II turrets that weighed 600 tons ( 610 tonnes ) and allowed for depression to ? 5 ° and elevation to 20 ° . Despite this , the range dials on the gunsights at the time of construction were graduated to 15 degrees ; super @-@ elevating cams and prisms to allow the full elevation of the guns to be used were issued some time after the Battle of Jutland . The

forward and aft gun turrets could train 150 ° in either direction from the centreline , while the " Q " had a much more limited range . It could engage targets on an arc from between 30 ° to 150 ° from the centerline on either beam of the ship .

The guns had a rate of fire of between 1 @. 5 ? 2 rounds per minute . The Mk V " Heavy " gun fired a variety of shells , including high explosive and armour @-@ piercing rounds ; they all weighed 1 @, 400 lb ( 635 kg ) . The guns were loaded with MD45 propellant charges that weighed 297 lb ( 135 kg ) ; these were stored in silk bags . This provided a muzzle velocity of 2 @, 491 fps ( 759 meters per second ) . At maximum elevation of 20 ° , the guns had a range of 23 @, 740 yards ( 21 @, 710 m ) , though at the maximum effective elevation of 15 ° , the range was somewhat shorter , at approximately 20 @, 000 yd ( 18 @, 290 m ) . At a range of 10 @, 000 yd ( 9 @, 144 m ) , the gun could penetrate up to 12 @. 5 in ( 318 mm ) of Krupp cemented steel armour , the type used on contemporary German dreadnoughts .

== Secondary battery ==

The secondary battery consisted of twelve 6 @-@ inch ( 15 @. 2 cm ) Mk VII guns mounted in casemates in the hull around the forward superstructure . These guns were chosen because the 4 @-@ inch ( 10 @. 2 cm ) guns on earlier battleships were deemed to be too weak and have too short a range to effectively combat torpedo boats with newer , more powerful torpedoes . Admiral Jackie Fisher had opposed the idea of increasing the secondary battery , though he retired from the post of First Sea Lord in 1910 . As a result , the Iron Dukes , which were designed in 1911 , received the larger 6 inch gun .

These guns fired 100 lb ( 45 @. 4 kg ) shells at a rate of between 5 ? 7 per minute . The shells were fired with a muzzle velocity of 2 @, 775 fps ( 846 mps ) , though the guns were capable of higher velocities . It was reduced in order to standardize the performance of all the 6 inch guns in Royal Navy service , which would simplify range calculations for guns of the calibre . The guns could elevate to 20 ° , which enabled a maximum range of 15 @, 800 yd ( 14 @, 450 m ) .

There were some significant problems with the casemate guns early on , however . They were equipped with hinged plates that were designed to close off the casemate opening in heavy seas . The plates were easily washed away , though , and without them , water easily entered the ship and caused significant flooding . This problem was compounded by the fact that they had been mounted too low in the hull , which subjected them to heavier pounding from rough seas . The problem was eventually corrected by the addition of dwarf bulkheads in the gun houses and rubber seals to the hinged plates .

== Other armament ==

Iron Duke was the first British battleship to be mounted with anti @-@ aircraft weaponry . In 1914 , two 3 in ( 7 @. 62 cm ) QF guns were fitted to the aft superstructure , primarily to defend against German airships . The guns fired between 12 ? 14 rounds per minute , and were expected to fire approximately 1 @, 250 shells before replacement or repair was necessary . The shells fired were 12 @. 5 lb ( 5 @. 67 kg ) with a high @-@ explosive warhead . They were manually operated , and had a maximum effective ceiling of 23 @, 500 ft ( 7 @, 160 m ) .

As was customary for capital ships of the period , the Iron Duke @-@ class ships were equipped with submerged torpedo tubes . The ships carried four 21 in ( 53 @. 3 cm ) tubes , two on each beam . These launched Mk II torpedoes that carried a 515 lb ( 234 kg ) TNT warhead . They had two speed settings ; 31 kn ( 57 km / h ; 36 mph ) and 45 kn ( 83 km / h ; 52 mph ) . At 31 knots , the range was 10 @, 750 yd ( 9 @, 830 m ) , though at 45 kn the range was considerably reduced , to 4 @, 500 yd ( 4 @, 110 m ) .

== Armour ==

The Iron Duke @-@ class battleships had an armour belt that was 305 mm ( 12 @. 0 in ) thick in

the central area of the ship , where the ammunition magazines , machinery spaces , and other vital parts of the ship were located . The belt tapered down to 102 mm ( 4 @. @ 0 in ) towards the bow and stern . The barbettes that contained the main gun turrets were 254 mm ( 10 @. @ 0 in ) on the sides and 75 mm ( 3 @. @ 0 in ) on the rear , where shells were less likely to hit . The turrets themselves were 280 mm ( 11 in ) thick on the sides . The ships ' armoured deck was between 25 ? 65 mm ( 1 ? 2 @. @ 5 in ) thick . After the battle of Jutland in May 1916 , some 820 tonnes of armour was added to the ships , primarily to thicken the deck around the main battery turrets , as well as to increase the bulkheads in the ammunition magazines .

= = Construction = =

Iron Duke was laid down on 12 January 1912 in the Portsmouth Dockyard . She was launched exactly 10 months later , on 12 October 1912 ; fitting out work commenced thereafter , and was finished by March 1914 . She was then commissioned into the British Home Fleet , as the flagship of Admiral George Callaghan . Marlborough was the second ship of the class to be built . She followed Iron Duke by nearly two weeks ; Marlborough was laid down at the Devonport Dockyard on 25 January 1912 and launched on 24 October 1912 . Fitting out work proceeded somewhat slower on the ship , which wasn 't finished until June 1914 .

Benbow was laid down at Beardmore on 30 May 1912 , more than 5 months after her older sisters . She was launched on 12 November 1913 and completed by October 1914 . Emperor of India , the last of the four battleships , was originally ordered under the name Delhi . She was laid down at Vickers the day after Benbow , on 31 May 1912 . She was launched on 27 November 1913 , and completed by November 1914 .

= = Ships = =

= = = Iron Duke = = =

Upon commissioning , Iron Duke was assigned to the Home Fleet as the fleet flagship . After the outbreak of the First World War , the Royal Navy was reorganized ; the Home Fleet and the Atlantic Fleet were combined to form the Grand Fleet ; Iron Duke retained her position as fleet flagship , under John Jellicoe . The ship took part in all of the major fleet actions , though only one of them ended in combat ? the sortie on 31 May that resulted in the Battle of Jutland . At Jutland , Iron Duke was assigned to the 3rd Division of the 4th Battle Squadron , and was stationed in the centre of the British line .

Following the end of the war , Iron Duke was transferred to the Mediterranean Fleet . During 1919 ? 20 , the ship operated in the Black Sea in support of the White Russians during the Russian Civil War . The Washington Naval Treaty of 1922 mandated that Iron Duke be removed from the active roster . However , she remained with the fleet for a short time , having been transferred to the Atlantic Fleet in 1926 . This duty assignment lasted 3 years , after which she was removed from active service . She was demilitarised , to be used as a training ship . Two of her gun turrets and a good deal of her armour were removed , and her speed was reduced to 18 kn ( 33 km / h ; 21 mph ) through the removal of some of her boilers . She was later used as a depot ship in Scapa Flow , starting in 1939 . After the outbreak of the Second World War that year , her remaining guns were removed to be used in shore defences . Luftwaffe bombers attacked her on 17 October 1939 ; while they scored no direct hits , several near misses caused significant damage . After repairs were effected , the ship resumed her duties as a depot vessel until the end of the war . She was finally sold for scrapping in 1946 .

= = = Marlborough = = =

Marlborough was the most heavily engaged ship of the class during the battle of Jutland ; she fired

a total of 162 heavy @-@ calibre shells , out of a total of 292 for the entire class . She was assigned to the 6th Division of the 1st Battle Squadron , towards the rear of the British line . She served as the flagship of Vice Admiral Cecil Burney . During the battle , she was hit by a torpedo amidships ; the torpedo tore a hole that was 21 m by 6 m ( 70 ft by 20 ft ) . Despite the damage , she was able to keep her position in the line , though her speed was reduced to 17 kn ( 31 km / h ; 20 mph ) . Marlborough continued to fire her main guns until the list increased to the point that prevented her guns from being effectively employed . The ship eventually withdrew to the Humber , where she undertook 3 months of repairs .

Post @-@ war , Marlborough joined Iron Duke in the Mediterranean , where she remained until 1926 . She was then transferred to the Atlantic Fleet ; her tour of duty there lasted until 1929 , at which point she was withdrawn from active duty . The ship was sold for scrapping in 1932 .

= = = Benbow = = =

Like her sisters , Benbow was assigned to the Grand Fleet for the duration of the First World War . She was assigned to the 4th Battle Squadron on 10 December 1914 . Benbow was the flagship of Admiral Doveton Sturdee , the commander of the 4th Division of the 4th Battle Squadron , during the battle of Jutland . The 4th Division was directly ahead of the 3rd Division , where Admiral Jellicoe commanded the fleet from Benbow 's sister Iron Duke . Throughout the battle the ship remained undamaged . Like Iron Duke and Marlborough , Benbow was transferred to the Mediterranean in 1919 , and she provided artillery support to White Russian forces in the Black Sea . She followed Marlborough to the Atlantic Fleet in 1926 ; she too was stricken in 1929 and sold for scrap .

= = = Emperor of India = = =

Emperor of India was also assigned to the 4th Battle Squadron , in December 1914 . She missed Jutland because she was in dock for a periodic refit . After the end of the war , she was transferred to the Mediterranean along with the other three ships of the class . Emperor of India returned to England in 1922 for a refit , after which she resumed her duties in the Mediterranean . She likewise joined the Atlantic Fleet in 1926 , alongside her sisters , and stricken in 1929 . Instead of being scrapped , however , she was used as a gunnery target , and sunk in 1931 . She was raised shortly thereafter and sold to ship breakers on 6 February 1932 .