= Conte di Cavour @-@ class battleship =

The Conte di Cavour ? class battleships were a group of three dreadnoughts built for the Royal Italian Navy (Regia Marina) in the 1910s . The ships were completed during World War I , but none saw action before the end of hostilities . Leonardo da Vinci was sunk by a magazine explosion in 1916 and sold for scrap in 1923 . The two surviving ships , Conte di Cavour and Giulio Cesare , supported operations during the Corfu Incident in 1923 . They were extensively reconstructed between 1933 and 1937 with more powerful guns , additional armor and considerably more speed than before .

Both ships participated in the Battle of Calabria in July 1940 , when Giulio Cesare was lightly damaged . They were both present when British torpedo bombers attacked the fleet at Taranto in November 1940 , and Conte di Cavour was torpedoed . She was grounded with most of her hull underwater and her repairs were not completed before the Italian surrender in September 1943 . Conte di Cavour was scrapped in 1946 . Giulio Cesare escorted several convoys , and participated in the Battle of Cape Spartivento in late 1940 and the First Battle of Sirte in late 1941 . She was designated as a training ship in early 1942 , and escaped to Malta after Italy surrendered . The ship was transferred to the Soviet Union in 1949 and renamed Novorossiysk . The Soviets also used her for training until she was sunk when a mine exploded in 1955 . She was scrapped in 1957 .

= = Design and description = =

The Conte di Cavour ? class ships were designed by Rear Admiral Engineer Edoardo Masdea , Chief Constructor of the Regia Marina , and were ordered in response to French plans to build the Courbet @-@ class battleships . They were intended to be superior to the Courbets and to remedy Dante Alighieri 's perceived flaws of weak protection and armament . As upgrading a warship 's protection and armament on a similar displacement typically requires a loss in speed , the ships were not designed to reach the 24 knots (44 km / h ; 28 mph) of their predecessor . They were still given a 1 @.@ 5 to 2 knots (2 @.@ 8 to 3 @.@ 7 km / h ; 1 @.@ 7 to 2 @.@ 3 mph) advantage over the 20 @-@ to @-@ 21 @-@ knot (37 to 39 km / h ; 23 to 24 mph) standard of most foreign dreadnoughts . Foreign dreadnoughts were being designed with 340 @-@ millimeter (13 @.@ 5 in) guns , but the Regia Marina was forced to use 305 @-@ millimeter (12 in) guns in the Conte di Cavours because Italy lacked the ability to build larger guns . An additional gun , making a total of 13 , was added to offset this deficiency .

Taking advantage of the lengthy building times of these ships , other countries were able to build dreadnoughts that were superior in protection and armament , with the exception of the French . Construction was delayed by late deliveries of the 305 @-@ millimeter guns and armor plates as well as shortages of labor . The Italo @-@ Turkish War of 1911 ? 1912 diverted workers at the shipyards for repairs and maintenance of the ships participating in the war . The Italians imported the raw nickel steel for their armor from America and Britain and processed it into their equivalent of Krupp cemented armor , called Terni cemented , but there were problems with this process and suitable plates took longer to produce than planned .

= = = Basic characteristics = = =

The ships of the Conte di Cavour class were 168 @.@ 9 meters (554 ft 2 in) long at the waterline , and 176 meters (577 ft 5 in) overall . They had a beam of 28 meters (91 ft 10 in) , and a draft of 9 @.@ 3 meters (30 ft 6 in) . They displaced 23 @,@ 088 long tons (23 @,@ 458 t) at normal load , and 25 @,@ 086 long tons (25 @,@ 489 t) at deep load . The Conte di Cavour class was provided with a complete double bottom and their hulls were subdivided by 23 longitudinal and transverse bulkheads . The ships had two rudders , both on the centerline . They had a crew of 31 officers and 969 enlisted men .

= = = Propulsion = = =

The original machinery for all three ships consisted of three Parsons steam turbine sets , arranged in three engine rooms . The center engine room housed one set of turbines that drove the two inner propeller shafts . It was flanked by compartments on either side , each housing one turbine set which powered the outer shafts . Steam for the turbines was provided by 20 Blechynden water @-@ tube boilers in Conte di Cavour and Leonardo da Vinci , eight of which burned oil and twelve of which burned both oil and coal . Giulio Cesare used a dozen each oil @-@ fired and mixed @-@ firing Babcock & Wilcox boilers . Designed to reach a maximum speed of 22 @.@ 5 knots (41 @.@ 7 km / h ; 25 @.@ 9 mph) , none of the ships reached this goal on their sea trials , despite generally exceeding the rated power of their turbines . They only achieved speeds ranging from 21 @.@ 56 to 22 @.@ 2 knots (39 @.@ 93 to 41 @.@ 11 km / h ; 24 @.@ 81 to 25 @.@ 55 mph) using 30 @,@ 700 to 32 @,@ 800 shaft horsepower (22 @,@ 900 to 24 @,@ 500 kW) . The ships could store a maximum of 1 @,@ 450 long tons (1 @,@ 470 t) of coal and 850 long tons (860 t) of fuel oil that gave them a range of 4 @,@ 800 nautical miles (8 @,@ 900 km ; 5 @,@ 500 mi) at 10 knots (19 km / h ; 12 mph) , and 1 @,@ 000 nautical miles (1 @,@ 900 km ; 1 @,@ 200 mi) at 22 knots (41 km / h ; 25 mph) . Each ship was equipped with three turbo generators that provided a total of 150 kilowatts at 110 volts .

= = = Armament = = =

As built , the ships ' main armament comprised thirteen 46 @-@ caliber 305 @-@ millimeter guns , designed by Armstrong Whitworth and Vickers , in five gun turrets . The turrets were all on the centerline , with a twin @-@ gun turret superfiring over a triple @-@ gun turret in fore and aft pairs , and a third triple turret amidships , designated ' A ' , ' B ' , ' Q ' , ' X ' , and ' Y ' from bow to stern . This was only one fewer gun than the Brazilian Rio de Janeiro , then the most heavily armed battleship in the world ; Rio de Janeiro 's guns were mounted in seven twin @-@ gun turrets . The turrets had an elevation capability of ? 5 ° to + 20 degrees and the ships could carry 100 rounds for each gun , although 70 was the normal load . Sources disagree regarding these guns ' performance , but naval historian Giorgio Giorgerini claims that they fired 452 @-@ kilogram (996 lb) armor @-@ piercing (AP) projectiles at the rate of one round per minute and that they had a muzzle velocity of 840 m / s (2 @,@ 800 ft / s) which gave a maximum range of 24 @,@ 000 meters (26 @,@ 000 yd) . The turrets had hydraulic training and elevation , with an auxiliary electric system .

The secondary armament on the first two ships consisted of eighteen 50 @-@ caliber 120 @-@ millimeter (4 @.@ 7 in) guns , also designed by Armstrong Whitworth and Vickers , mounted in casemates on the sides of the hull . These guns could depress to ? 10 degrees and had a maximum elevation of + 15 degrees ; they had a rate of fire of six shots per minute . They could fire a 22 @.@ 1 @-@ kilogram (49 lb) high @-@ explosive projectile with a muzzle velocity of 850 meters per second (2 @,@ 800 ft / s) to a maximum distance of 11 @,@ 000 meters (12 @,@ 000 yd) . The ships carried a total of 3 @,@ 600 rounds for them . For defense against torpedo boats , the ships carried fourteen 50 @-@ caliber 76 mm (3 @.@ 0 in) guns ; thirteen of these could be mounted on the turret tops , but they could be mounted in 30 different positions , including some on the forecastle and upper decks . These guns had the same range of elevation as the secondary guns , and their rate of fire was higher at 10 rounds per minute . They fired a 6 @-@ kilogram (13 lb) AP projectile with a muzzle velocity of 815 meters per second (2 @,@ 670 ft / s) to a maximum distance of 9 @,@ 100 meters (10 @,@ 000 yd) . The ships were also fitted with three submerged 45 @-@ centimeter (17 @.@ 7 in) torpedo tubes , one on each broadside and the third in the stern .

= = = Armor = = =

The Conte di Cavour @-@ class ships had a complete waterline armor belt that was 2 @.@ 8 meters (9 ft 2 in) high ; 1 @.@ 6 meters (5 ft 3 in) of this was below the waterline and 1 @.@ 2 meters (3 ft 11 in) above . It had a maximum thickness of 250 millimeters (9 @.@ 8 in) amidships

, reducing to 130 millimeters (5 @.@ 1 in) towards the stern and 80 millimeters (3 @.@ 1 in) towards the bow . The lower edge of this belt was a uniform 170 millimeters (6 @.@ 7 in) in thickness . Above the main belt was a strake of armor 220 millimeters (8 @.@ 7 in) thick that extended 2 @.@ 3 meters (7 ft 7 in) up to the lower edge of the main deck . Above this strake was a thinner one , 130 millimeters thick , that extended 138 meters (452 ft 9 in) from the bow to ' X ' turret . The upper strake of armor protected the casemates and was 110 millimeters (4 @.@ 3 in) thick . The ships had two armored decks : the main deck was 24 mm (0 @.@ 94 in) thick in two layers on the flat that increased to 40 millimeters (1 @.@ 6 in) on the slopes that connected it to the main belt . The second deck was 30 millimeters (1 @.@ 2 in) thick , also in two layers . Fore and aft transverse bulkheads connected the armored belt to the decks .

The frontal armor of the gun turrets was 280 millimeters (11 @.@ 0 in) in thickness with 240 @-@ millimeter (9 @.@ 4 in) thick sides , and an 85 @-@ millimeter (3 @.@ 3 in) roof and rear . Their barbettes also had 230 @-@ millimeter armor above the forecastle deck that reduced to 180 millimeters (7 @.@ 1 in) between the forecastle and upper decks and 130 millimeters below the upper deck . The forward conning tower had walls 280 millimeters thick ; those of the aft conning tower were 180 millimeters thick . The total weight of the protective armor was 5 @,@ 150 long tons (5 @,@ 230 t) , just over 25 per cent of the ships ' designed displacement . The total weight of the entire protective system was 6 @,@ 122 long tons (6 @,@ 220 t) , 30 @.@ 2 per cent of their intended displacement .

= = Modifications and reconstruction = =

Shortly after the end of World War I , the number of 50 @-@ caliber 76 mm guns was reduced to 13 , all mounted on the turret tops , and six new 40 @-@ caliber 76 @-@ millimeter anti @-@ aircraft (AA) guns were installed abreast the aft funnel . In addition two license @-@ built 2 @-@ pounder AA guns were mounted on the forecastle deck abreast ' B ' turret . In 1925 ? 26 the foremast was replaced by a tetrapodal mast , which was moved forward of the funnels , the rangefinders were upgraded , and the ships were equipped to handle a Macchi M.18 seaplane mounted on the center turret . Around that same time , one or both of the ships was equipped with a fixed aircraft catapult on the port side of the forecastle .

The sisters began an extensive reconstruction program directed by Vice Admiral (Generale del Genio navale) Francesco Rotundi in October 1933 . This lasted until June 1937 for Conte di Cavour and October 1937 for Giulio Cesare , and resulted in several changes . A new bow section was grafted over the existing bow which increased their length by 10 @.@ 31 meters (33 ft 10 in) to 186 @.@ 4 meters (611 ft 7 in) and their beam increased to 28 @.@ 6 meters (93 ft 10 in) . Their draft at deep load increased to 10 @.@ 02 meters (32 ft 10 in) for Conte di Cavour and 10 @.@ 42 meters (34 ft 2 in) for Giulio Cesare . All of the changes made during their reconstruction increased their displacement to 26 @,@ 140 long tons (26 @,@ 560 t) at standard load and 29 @,@ 100 long tons (29 @,@ 600 t) at deep load . The ships ' crews increased to 1 @,@ 260 officers and enlisted men . Only 40 % of the original ship 's structure remained after the reconstruction was completed . Two of the propeller shafts were removed and the existing turbines were replaced by two Belluzzo geared steam turbines rated at 75 @,@ 000 shp (56 @,@ 000 kW) . The boilers were replaced by eight superheated Yarrow boilers with a working pressure of 22 atm (2 @,@ 229 kPa ; 323 psi) . On her sea trials in December 1936 , before her reconstruction was fully completed , Giulio Cesare reached a speed of 28 @.@ 24 knots (52 @.@ 30 km / h ; 32 @.@ 50 mph) from 93 @,@ 430 shp (69 @,@ 670 kW) . In service their maximum speed was about 27 knots (50 km / h ; 31 mph) . The ships now carried 2 @,@ 550 ? 2 @,@ 605 long tons (2 @,@ 591 ? 2 @,@ 647 t) of fuel oil which provided them with a range of 6 @,@ 400 nautical miles (11 @,@ 900 km ; 7 @,@ 400 mi) at a speed of 13 knots (24 km / h ; 15 mph) .

The center turret and the torpedo tubes were removed and all of the existing secondary armament and AA guns were replaced by a dozen 120 @-@ millimeter guns in six twin @-@ gun turrets and eight 102 @-@ millimeter (4 in) AA guns in twin turrets . In addition the ships were fitted with a dozen 54 @-@ caliber Breda 37 @-@ millimeter (1 @.@ 5 in) light AA guns in six twin @-@ gun

mounts and twelve 13 @.@ 2 @-@ millimeter (0 @.@ 52 in) Breda M31 anti @-@ aircraft machine guns , also in twin mounts . The 305 @-@ millimeter (12 @.@ 0 in) guns were bored out to 320 millimeters (12 @.@ 6 in) and their turrets were modified to use electric power , a fixed loading angle of + 12 degrees , and the guns could now elevate to + 27 degrees . The 320 mm AP shells weighed 525 kilograms (1 @,@ 157 lb) and had a maximum range of 28 @,@ 600 meters (31 @,@ 300 yd) with a muzzle velocity of 830 m / s (2 @,@ 700 ft / s) . In 1940 the 13 @.@ 2 mm machine guns were replaced by 65 @-@ caliber 20 @-@ millimeter (0 @.@ 8 in) AA guns in twin mounts . Giulio Cesare received two more twin mounts as well as four additional 37 mm guns in twin mounts on the forecastle between the two turrets in 1941 . The tetrapodal mast was replaced with a new forward conning tower , protected with 260 @-@ millimeter (10 @.@ 2 in) thick armor . Atop the conning tower there was a director fitted with two rangefinders , with a base length of 7 @.@ 2 meters (23 @.@ 6 ft) .

The deck armor was increased during reconstruction to a total of 135 millimeters (5 @.@ 3 in) over the engine and boiler rooms and 166 millimeters (6 @.@ 5 in) over the magazines , although its distribution over three decks , each with multiple layers , meant that it was considerably less effective than a single plate of the same thickness . The armor protecting the barbettes was reinforced with 50 @-@ millimeter (2 @.@ 0 in) plates . All this armor weighed a total of 3 @,@ 227 long tons (3 @,@ 279 t) .

The existing underwater protection was replaced by the Pugliese system that consisted of a large cylinder surrounded by fuel oil or water that was intended to absorb the blast of a torpedo warhead . It lacked enough depth to be fully effective against contemporary torpedoes . A major problem of the reconstruction was that the ships ' increased draft meant that their waterline armor belt was almost completely submerged with any significant load .

= = Ships = =

= = Service = =

Conte di Cavour and Giulio Cesare served as flagships in the southern Adriatic Sea during World War I , but saw no action and spent little time at sea . Leonardo da Vinci was also little used and was sunk by an internal magazine explosion at Taranto harbor on the night of 2 / 3 August 1916 while loading ammunition . Casualties included 21 officers and 227 enlisted men killed . The Italians blamed Austro @-@ Hungarian saboteurs , but unstable propellant may well have been responsible . The ship was refloated , upside down , on 17 September 1919 and righted on 24 January 1921 . The Regia Marina planned to modernize her by replacing her center turret with six 102 @-@ millimeter (4 in) AA guns , but lacked the funds to do so and sold her for scrap on 22 March 1923 .

In 1919 , Conte di Cavour sailed to North America and visited ports in the United States as well as Halifax , Canada . Giulio Cesare made port visits in the Levant in 1919 and 1920 . Conte di Cavour was mostly inactive in 1921 because of personnel shortages and was refitted at La Spezia from November to March 1922 . Both battleships supported Italian operations on Corfu in 1923 after an Italian general and his staff were murdered on the Greco @-@ Albanian border ; Benito Mussolini was not satisfied with the Greek Government 's response so he ordered Italian troops to occupy the island . Conte di Cavour bombarded the town with her 76 mm guns , killing 20 and wounding 32 civilians .

Conte di Cavour escorted King Victor Emmanuel III and his wife aboard Dante Alighieri , on a state visit to Spain in 1924 and was placed in reserve upon her return until 1926 , when she conveyed Mussolini on a voyage to Libya . The ship was again placed in reserve from 1927 until 1933 . Her sister became a gunnery training ship in 1928 , after having been in reserve since 1926 . Conte di Cavour was reconstructed at the CRDA Trieste Yard while Giulio Cesare was rebuilt at Cantieri del Tirreno , Genoa between 1933 and 1937 . Both ships participated in a naval review by Adolf Hitler in the Bay of Naples in May 1938 and covered the invasion of Albania in May 1939 .

Early in World War II , the sisters took part in the Battle of Calabria (also known as the Battle of

Punta Stilo) on 9 July 1940 , as part of the 1st Battle Squadron , commanded by Admiral Inigo Campioni , during which they engaged major elements of the British Mediterranean Fleet . The British were escorting a convoy from Malta to Alexandria , while the Italians had finished escorting another from Naples to Benghazi , Libya . Admiral Andrew Cunningham , commander of the Mediterranean Fleet , attempted to interpose his ships between the Italians and their base at Taranto . Crew on the fleets spotted each other in the middle of the afternoon and the Italian battleships opened fire at 15 : 53 at a range of nearly 27 @,@ 000 meters (29 @,@ 000 yd) . The two leading British battleships , HMS Warspite and Malaya , replied a minute later . Three minutes after she opened fire , shells from Giulio Cesare began to straddle Warspite which made a small turn and increased speed , to throw off the Italian ship 's aim , at 16 : 00 . At that same time , a shell from Warspite struck Giulio Cesare at a distance of about 24 @,@ 000 meters (26 @,@ 000 yd) . The shell pierced the rear funnel and detonated inside it , blowing out a hole nearly 6 @.@ 1 meters (20 ft) across . Fragments started several fires and their smoke was drawn into the boiler rooms , forcing four boilers off @-@ line as their operators could not breathe . This reduced the ship 's speed to 18 knots (33 km / h ; 21 mph) . Uncertain how severe the damage was , Campioni ordered his battleships to turn away in the face of superior British numbers and they successfully disengaged . Repairs to Giulio Cesare were completed by the end of August and both ships unsuccessfully attempted to intercept British convoys to Malta in August and September .

On the night of 11 November 1940 , Conte di Cavour and Giulio Cesare were at anchor in Taranto harbor when they were attacked by 21 Fairey Swordfish torpedo bombers from the British aircraft carrier HMS Illustrious , along with several other warships . One torpedo exploded underneath ' B ' turret at 23 : 15 , and her captain requested tugboats to help ground the ship on a nearby 12 @-@ meter (39 ft) sandbank . His admiral vetoed the request until it was too late and Conte di Cavour had to use a deeper , 17 @-@ meter (56 ft) , sandbank at 04 : 30 on 12 November . In an effort to lighten the ship , her guns and parts of her superstructure were removed and Conte di Cavour was refloated on 9 June 1941 . Temporary repairs to enable the ship to reach Trieste for permanent repairs took until 22 December . Her guns were operable by September 1942 , but replacing her entire electrical system took longer and she was still under repair when Italy surrendered a year later . The Regia Marina made plans to replace her secondary and anti @-@ aircraft weapons with a dozen 135 @-@ millimeter (5 @.@ 3 in) dual @-@ purpose guns in twin mounts , twelve 64 @-@ caliber 65 @-@ millimeter (2 @.@ 6 in) , and twenty @-@ three 65 @-@ caliber 20 mm AA guns . Her hulk was damaged in an air raid and capsized on 23 February 1945 . Refloated shortly after the end of the war , Conte di Cavour was scrapped in 1946 .

Giulio Cesare participated in the Battle of Cape Spartivento on 27 November 1940 , but never got close enough to any British ships to fire at them . The ship was damaged in January 1941 by a near miss during an air raid on Naples ; repairs were completed in early February . She participated in the First Battle of Sirte on 17 December 1941 , providing distant cover for a convoy bound for Libya , again never firing her main armament . In early 1942 , Giulio Cesare was reduced to a training ship at Taranto and later Pola . She steamed to Malta in early September 1943 after the Italian surrender . The German submarine U @-@ 596 unsuccessfully attacked the ship in the Gulf of Taranto in early March 1944 .

After the war , Giulio Cesare was allocated to the Soviet Union as war reparations in 1949 , and renamed Novorossiysk , after the Soviet city on the Black Sea . The Soviets used her as a training ship when she was not undergoing one of her eight refits in their hands . In 1953 , all remaining Italian light AA guns were replaced by eighteen 37 mm 70 @-@ K AA guns in six twin mounts and six singles . They also replaced her fire @-@ control systems and added radars , although the exact changes are unknown . The Soviets intended to rearm her with their own 305 mm guns , but this was forestalled by her loss . While at anchor in Sevastopol on the night of 28 / 29 October 1955 , she detonated a large German mine left over from World War II . The explosion blew a hole completely through the ship , making a 4 @-@ by @-@ 14 @-@ meter (13 by 46 ft) hole in the forecastle forward of ' A ' turret . The flooding could not be controlled and she later capsized with the loss of 608 men . Novorossiysk was stricken from the Navy List on 24 February 1956 , salvaged on 4 May 1957 , and subsequently scrapped .

= = See Also = =

List of ships of the Second World War
List of ship classes of the Second World War