

A QUIET SEA
RMS TITANIC



BLACK GANG

TITANIC: BLACK GANG

INTRODUCTION

It took the skill and brawn of the men firing the boilers to keep coal-powered transatlantic liners on schedule. No matter what orders came from the officers on the bridge, the ship's speed depended on the endurance of the men who made steam. Known at the time as the "black gang," this hardy group, working 4 hours on, 8 off, consisted of trimmers, coal passers, water tenders and firemen (or stokers). Although overseen by the engineering officers, it was the leading firemen who cultivated the knowledge and discipline to keep the propellers turning. Working with the firemen were the trimmers, who toiled in the bunkers where the coal was stowed. Their job was to rapidly load coal when in port and maintain the supply of coal to the firemen through coal passers pushing loaded wheel barrows. Trimmers made sure that the coal was evenly consumed to keep the ship in trim, or level. They were always vigilant for spontaneous coal bunker fires. To ensure proper steam generation, water tenders maintained the correct amount of water in the boilers. Leading fireman kept the black gang operating efficiently and were well paid, an acknowledgement of their difficult and exacting work.



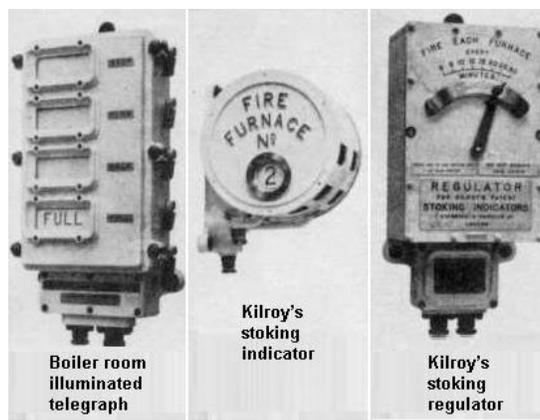
Firing the boilers
Credit: Pinterest



Trimmers loading coal in port, SS Rotterdam 1908
Credit: Alamy

FIRING OPERATIONS

There were 13 leading firemen, 163 firemen and 73 trimmers working in Titanic's boiler rooms. Each fireman was assigned 3 furnaces. Making steam pressure for the machinery required much more than simply throwing coal into the furnaces. A timing device (Kilroy's Stoking Indicator, invented by William Kilroy around 1902) set the time allotted for each boiler operation: slicing, raking and stoking. Slicing, done with a 10-foot-long iron bar, was thrust between the fire grates and burning coal. When repeatedly lifted up and down, clinkers and impurities would be brought to the surface, then raked out onto the stokehold floor and hosed down. Then the coals were raked smooth to receive skillfully pitched and evenly distributed shovelfuls of coal into the furnace. Slicing, raking and stoking were repeated dozens of times a watch. The Stoking Indicator timed the end of each operation with a loud gong, ordering the stoker to move on to the next step. The greater the speed, the more frequent the gong and the faster the pace. The Stoking Indicator also ensured that furnace doors on the opposite end of a boiler weren't opened at the same time. This could cause a blow-back, with flames shooting across the stokehold floor and robbing efficiency by needlessly letting cool air into the furnaces.



(L to R) Kilroy's Telegraph, Indicator and Regulator
 Credit: Wiki Fandom

To make them more visible, gauges were marked with a line of red paint to show where the steam pressure should be held for full speed. This was called "keeping her on the blood." Efficiently burning coal kept smoke from the funnels to a minimum, lest the passengers and decks become polluted with cinders. Rough weather brought its own difficulties to the black gang; slamming shut furnace doors kept the coal from cascading out on the stokehold floor as the ship pitched into a sea. At the end of the watch, the ashes were hauled and disposed overboard. Covered with sweat and coal grime, seared and dehydrated and with red-rimmed eyes, firemen worked in 120-degree heat and lived with the cacophony of grating shovels, clanging furnace doors, the roar of the boilers devouring air, and, above all, the endless knell of the infernal Stoking Indicator. It could be said that the great coal-powered ocean liners were moved by hand. Still, the men took pride in their brutal work, and competition was fierce to see in which watch the ship would cover the most miles. Wealthy and impatient businessmen provided further incentive by lowering whiskey bottles down ventilators or standing drinks all 'round if the ship arrived ahead of schedule.



Olympic boilers in the shop
 Credit: Wiki Commons

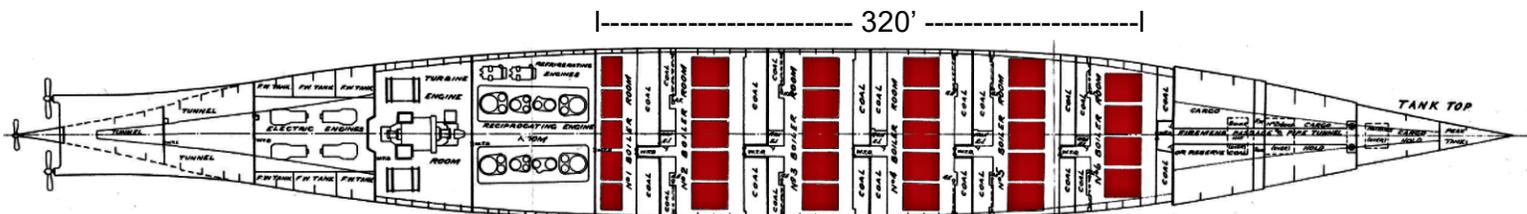


Hoisting a double-ended boiler on board
 Credit: Images Imgur

BOILER PARTICULARS

Titanic was equipped with 29 boilers, 24 double-ended, with 6 furnaces, and 5 single-ended with 3 furnaces for a total of 159 furnaces. The coal bunkers ran across the ship, and the bunker doors were placed adjacent to the boilers. Titanic could load more than 6,600 tons of coal in her capacious bunkers, and at her service speed of 21.5 knots, consumed about 825 tons of coal a day. While this was a huge amount of fuel, the furnaces of faster and smaller liners, such as Lusitania, consumed

more than 1,000 tons of coal a day. Titanic's somewhat lower speed and economical propulsion system consumed nearly 1,000 tons less coal on a typical Atlantic crossing. This could be as much as 15-20,000 tons of coal per year; a considerable savings. A coal strike was ending when Titanic was readied for her maiden voyage, and every effort was made to provide her with cleaner-burning, low-ash Welsh anthracite coal, even raiding other White Star liners to supply her bunkers. Titanic's 6 boiler compartments occupied about 320 feet of her length. Separated by bulkheads, free access was provided through watertight doors that were normally left open.



Titanic Boiler Rooms, Nos. 1-6, (L to R)
Credit: Shipbuilder 1911

The maiden voyage of a vessel is a “break in” period, during which her new machinery is gradually worked up to full power by adding to the number of boilers on line and incrementally increasing engine revolutions. Titanic's reciprocating and turbine machinery was closely monitored by the engineers and lubricated by 33 greasers. Of Titanic's 29 boilers, only 24 were lit upon departure. The remaining 5 smallest boilers, in Boiler Room 1, were to be fired a day or two before arriving in New York. It was expected that the additional boilers would increase the speed from slightly less than 25 mph to more than 26 mph.

ON TITANIC

Leading fireman Fredrick Barrett was hired on Titanic on April 6, 4 days before the maiden passage began, and was assigned to Boiler Room 6, the farthest forward.



Leading fireman, Frederick Barrett
Credit: Wikipedia

In Barrett's watch were 8 firemen, 4 trimmers and junior assistant engineer Jonathan Shephard. (Shephard, previously employed on Titanic's sister ship Olympic, heroically closed the latter's aft watertight doors when she was rammed by HMS Hawke in 1911.)

Near midnight on April 14, Barrett was talking to Second Engineer Hesketh just as their watch was ending. Suddenly, the control lights that signaled speed orders from the bridge flashed red and the alarm bells rang wildly, calling for a full stop. Barrett ordered the dampers to the boilers shut, to cut off their air supply. Before all the dampers were closed, a great rumbling sound filled the space, the starboard side of the ship opened up and water surged in, swirling around the pipes and boiler foundations. Trimmer George Cavell found himself buried under a landslide of coal that came tumbling out of the bunker. The black gang thought Titanic had run aground. Barrett and Hesketh made their way into Boiler Room 5, where they found water coming through the ship's side into the coal bunker. With engineers Shephard and Herbert Harvey, they began setting up pumps and opening manholes in the double bottom to get access to the valve controls. With the engines stopped, steam pressure in the boilers had nowhere to go, and the safety valves lifted to vent the excess steam up the funnel pipes. To keep from stressing the boilers, the fires had to be drawn in boiler rooms 5 and 6. The firemen raked out and extinguished the coals, making the atmosphere heavy with steam. While rushing to set up the pumps in Boiler Room 5, Shephard fell into an open manhole and broke a leg. He was retrieved, carried clear and made as comfortable as possible. With the boiler fires drawn in the two boiler rooms, the firemen were ordered to the boat deck. Barrett remained to assist the engineers with pumping in Boiler Room 5, then the lights went out. Pumping continued and was gaining on the flooding, while the electricians got the lights back on. Spirits were high, and order seemed restored. Then the bunker bulkhead ruptured, and water flooded into the boiler room. As Barrett and the engineers evacuated the space, Harvey went to rescue Shephard. Barrett saw both men disappear under the torrent of water.



Jonathan Shephard
Credit: Fandom



Herbert Harvey
Credit: Encyclopedia Titanica

Barrett was ordered topside and came across lifeboat 13. While the boat was being lowered, the boatswain put Barrett in charge. When the boat reached the sea, it was nearly swamped by water discharging from the ship's side. The flow of water prevented boat 13 from being released from the davit hooks. At the same time, boat 15 was descending on top of them. Luckily, Barrett and seaman Hopkins had knives and cut the rope falls. Finally free, they were able to pull boat 13 away from the ship. Barrett was wearing only his thin boiler room clothes and suffered severely from hypothermia. A woman in the boat covered him with a cloak, and he put someone else in charge before passing out. The boat was picked up by the rescue ship Carpathia shortly before dawn. Afterward, William Barrett provided valuable testimony to the British and American Wreck Inquiries. He died of tuberculosis in 1931 at age 48.

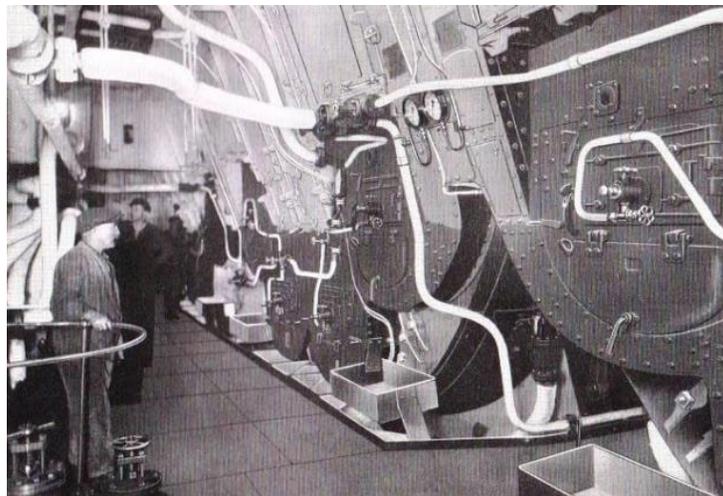


Memorial to Heroes of the Marine Engine Room
Credit: Wikipedia

Most of Titanic's trimmers and firemen died when she sank. Whole blocks of families in Southampton suffered the loss of fathers, uncles, brothers and sweethearts. In 1916, a 48-foot-tall memorial was erected in Liverpool for those lost in the engineering spaces. One portion is dedicated to the black gang.

EPILOGUE

Titanic was one of the last transatlantic liners fueled with coal. In the coming years, coal was supplanted by heavy oil, or Bunker C, the thick, viscous oil that remained after crude oil was refined into other products. It was easy to transport by barge and to pump into a ship's fuel tanks. Gone was the dreaded coal dust that permeated internal spaces during bunkering. Once in the tanks, the oil was heated and sprayed under pressure into the furnaces, creating the intense heat required to make steam. The vigorous physical labor needed to handle and burn coal was replaced by watching gauges and water levels, monitoring temperatures and minding fuel pumps. The boiler crews became drastically smaller, and practically overnight, boiler rooms became spaces of relatively quiet, clean order. The punishing work and the stalwart, seagoing black gang became relics of the past.



Cunarder Mauretania oil fired boilers, 1920s
Credit: Earl of Cruise

Sources: The only way to cross by John Maxtone-Graham, Encyclopedia Titanica, History Press, A Night to Remember by Walter Lord, British and American Wreck Inquiries, BBC News, Wikipedia, News Tribune