

FIG. 1—ADMIRALTY ARTIST'S IMPRESSION OF DREADNOUGHT SHOWING POSITION OF MAIN COMPARTMENTS

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| 1. REACTOR COMPARTMENT | 9. RUDDERS | 18. OFFICERS' ACCOMMODATION |
| 2. REACTOR CONTROL COMPARTMENT | 10. AFTER HYDROPLANE | 19. ELECTRIC SPACE |
| 3. AUXILIARY MACHINERY | 11. SURFACE NAVIGATING BRIDGE | 20. FORWARD HYDROPLANE |
| 4. DIESEL GENERATOR | 12. PERISCOPE | 21. TORPEDO SPACE |
| 5. ESCAPE HATCH | 13. RADAR AND RADIO AERIALS | 22. TORPEDO TUBES |
| 6. MAIN CONDENSER | 14. SNORT | 23. STOWED ANCHOR |
| 7. MAIN PROPULSION TURBINES | 15. CONTROL ROOM | 24. GALLEY |
| 8. ELECTRIC PROPULSION MOTOR
(ALTERNATIVE DRIVE) | 16. BATTERIES | 25. STORE ROOMS AND REFRIGERATING
SPACE |
| | 17. CREW'S ACCOMMODATION | |



LAUNCH OF H.M.S. DREADNOUGHT

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The Barrow-in-Furness shipyard of Vickers-Armstrongs (Shipbuilders) Ltd. was the scene of perhaps the most significant launch since the war, when on October 21, Her Majesty the Queen named H.M.S. *Dreadnought* the first nuclear-powered submarine for the Royal Navy, and indeed for any European power. Some 12,000 people attended the ceremony. The platform party included Vice-Admiral Hyman G. Rickover, U.S.N., Head of Nuclear Propulsion Division, Bureau of Ships, Washington.

The *Dreadnought* has a length of 266 ft, a beam of 32 ft, and a surface displacement of about 3,500 tons. The hull is of British design as regards structural strength and the hydrodynamic features from amidships to aft are based on the U.S. Navy's *Albacore* Class conventionally-propelled submarine and the later *Skipjack* Class nuclear-powered submarines. The forward end of the boat is wholly British in concept. The *Dreadnought* was launched from one of the two open-air submarine slipways at Barrow, and it was noted that the older covered submarine slipways are in course of demolition.

Unusual Shape

The new ship's 32-ft diameter pressure hull made a striking contrast with the conventional 16-ft diameter shell of a new O Class submarine building on the adjacent slipway. The first impression of H.M.S. *Dreadnought* was one of surprise, for her shape was not the expected sleek cigar. Instead her appearance was reminiscent of a sperm whale with a blunt nose, hemispherical below the centre line and a smoothed-off cone above. This 'bull-head' shape merges into a vestigial casing which tails away to the bare pressure hull at about three-fifths of the length from the bow. The fore part was not concealed by flags as is U.S. Navy practice, but was plated up to cover any bow gear. An official artist's impression reveals multiple torpedo tubes arranged in a horizontal line below the centre line and a screen for underwater detection devices above. There are two rudimentary fins arranged like ears well forward, no control surfaces on the tall narrow conning tower and a pair of fins and rudders forward of the single

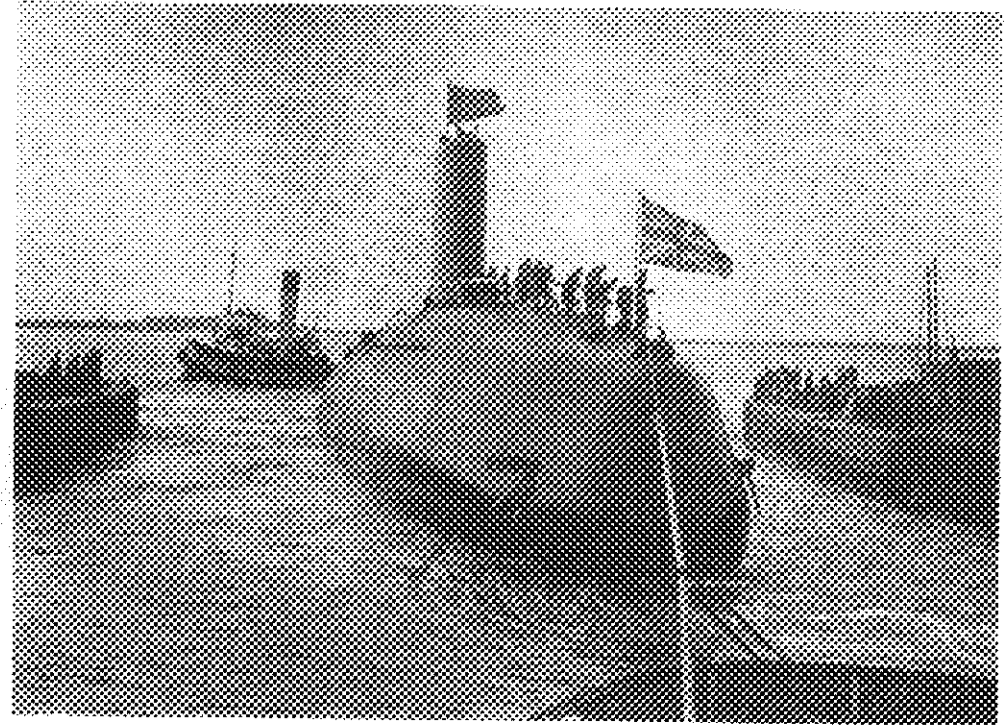
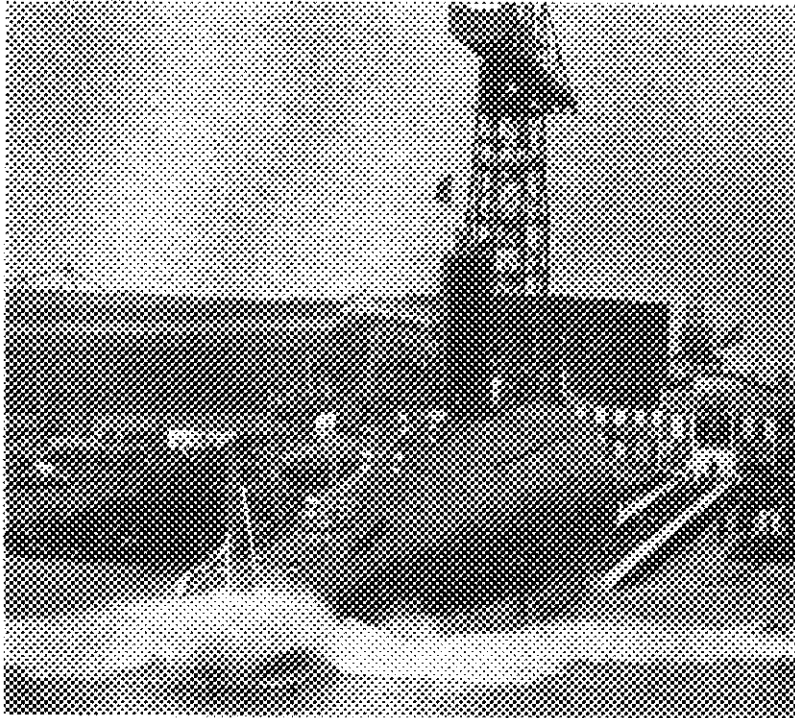


FIG. 2--TWO VIEWS OF H.M.S. DREADNOUGHT SHOWING THE CONTRAST BETWEEN THE BLUNT FORWARD PART AND THE SMOOTH AFTER PART OF THE HULL. THE PROMINENT CLIPS AT THE FORE END ARE FOR THE DRAG CHAINS

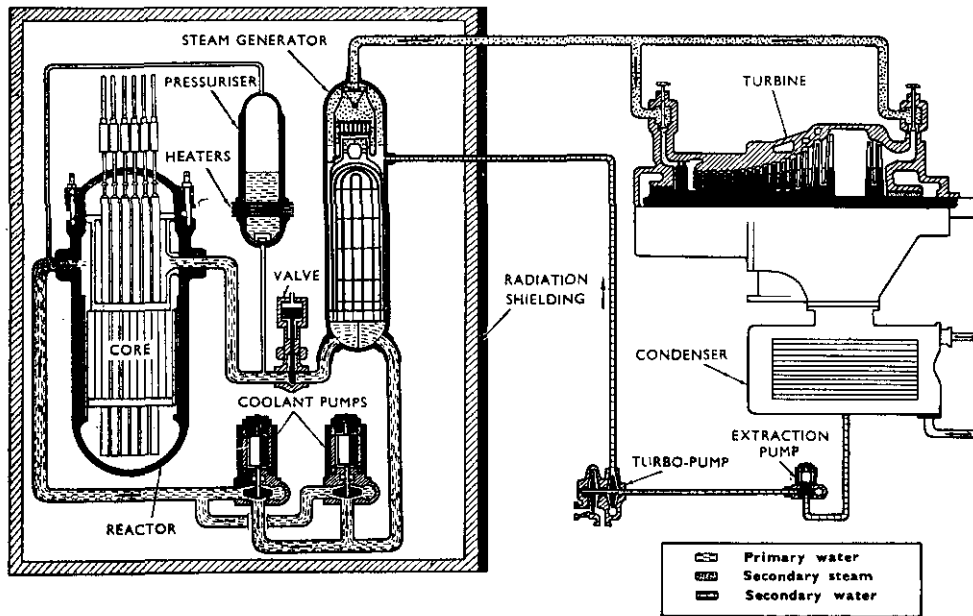


FIG. 3—A SIMPLIFIED CYCLE DIAGRAM OF THE MAIN PROPULSION SYSTEM

propeller right aft. It must be remembered that the *Dreadnought* is intended to operate fully submerged as she has no need for atmospheric oxygen.

The ship will be fitted with an inertial navigation system and with means of measuring a depth below ice. Her primary role is as a submarine hunter-killer, and for this reason her underwater weapons and detection equipment are the most advanced yet available.

It was originally intended that the *Dreadnought* should have a British-designed-and-built nuclear reactor, but the considerable lead time necessary for this course led, in 1958, to the conclusion of an agreement with the U.S. Government for the purchase of a complete set of propulsion machinery, similar to that fitted in U.S.S. *Skipjack*. This enabled the launch to take place far earlier than would otherwise have been possible.

The main propelling machinery has been bought from the Westinghouse Electric Corporation of the U.S.A. by Rolls-Royce Associates Ltd., the group which comprises Rolls-Royce Ltd., Vickers Ltd. and Foster Wheeler Ltd., and which is also responsible for the nuclear plant for the Royal Navy's second nuclear submarine. Rolls Royce will produce the reactor cores for the second submarine as well as the replacement cores for H.M.S. *Dreadnought*.

The main machinery consists of steam turbines driving a single shaft through reduction gearing, the steam being derived from heat exchangers. The primary source of heat is the nuclear reactor and the transfer medium is pressurized water. A high degree of duplication of instruments and controls is being installed to overcome the possibility of breakdown.

The accommodation will be of a standard hitherto impossible in a conventional submarine, as the boat is designed for extended operation fully submerged. An improved water distilling plant will, for the first time, provide unlimited fresh water for showers and washing—this being a secondary benefit of nuclear propulsion.