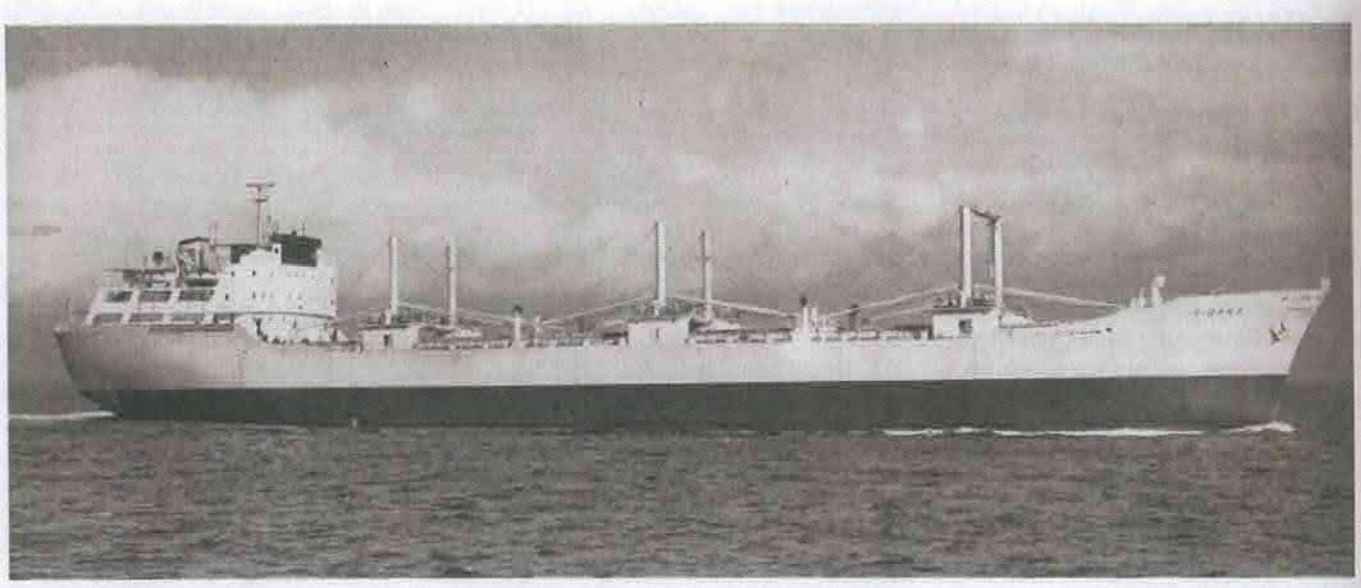


The 18,715-tons d.w. Norwegian-owned bulk carrier "Virana" leaving the River Wear for sea trials.

A Sunderland-built Bulk Carrier for Norway

Trials of the 18,715-tons d.w. "Virana," the Largest Ship Built by Short Brothers, Ltd.

LATER this year a 20,300-tons d.w. bulk carrier for the Niarchos Group is expected to run trials from the Pallion, Sunderland shipyard of Short Brothers, Ltd., but at the moment of writing the largest vessel ever to be completed at that yard is the M.S. "Virana" a single-deck bulk carrier of 18,715 tons d.w. for Sverre Ditlev Simonsen and Co., of Oslo.

The "Virana," which we were able to inspect on trials last month, is of the normal bulk carrier layout having the bridge and engines aft, a clipper stem of the soft-nosed type and a cruiser stern. She was built to the special survey of Det Norske Veritas and to Norwegian Sea Control requirements and is strengthened for Ore Class "T" and for navigation in ice.

The principal particulars are as follow:—

	ft.	in.
Length o.a.	530	3
Breadth, extreme	70	0
Depth, moulded to upper deck	44	0
Draught	31	7½
Deadweight	18,715 tons	
Service speed	13½ knots	
Cargo capacity, grain	860,000 ft³	

A cellular double bottom is employed and the bottom bilge tank which is common with the double bottom is suitable for ballast or fuel with all necessary valves and piping so arranged that each compartment may be independently filled or emptied from the engine-room. Troughed-type transverse bulkheads extending from the tank tops to the main deck divide the cargo space into six holds and under-deck ballast tanks extend from the engine-room forward bulkhead to the forepeak. All the under-deck tanks are provided with shipside sluice valves with controls at deck level in addition to the more usual engine-room controlled ballast valve system. All of these tanks with the exception of Nos. 1 and 4 have provision for grain shifting boards the remainder complying with M.o.T. and other certificates for the carriage of grain without shifting boards.

Cargo Handling Gear

Norwegian hydraulic deck machinery of the Bergen-Norwinch type is installed throughout, the outfit consisting of 12 five-ton machines each having a 24-in. long, 20-in. diameter centre barrel and an 18-in. diameter warping end, and a 10-ton warping winch situated at the after end of the poop deck with 18 in. diameter warping ends 18 ft. apart. The hydraulic power for all the deck machinery is provided by four Norwinch pump units. Self-stayed-type derrick posts are employed and these are all equipped with five-ton-capacity derricks.

Each of the six cargo holds is equipped with a MacGregor single-pull hatch cover.

Accommodation and Emergency Equipment

A successful attempt has been made to ensure that the layout and equipment of the accommodation matches that normally found on modern Norwegian-built ships of this class. Special attention has been paid to the interior decoration and furnishing, particularly in the public rooms. A cafeteria system based on the hot and cold counters of a Lemkuhl cafeteria and a three-unit Beha galley range is employed, care having been taken in the layout of the messing arrangements to ensure good service even at the busiest periods.

Much of the furniture and equipment in the cabins and public rooms is of simple and practical design, many items being of Continental origin. Veneers have been superseded by colourful hard-wearing plastics panelling and by Norwegian tapestry based on a chemically treated straw fabric. A good-sized permanent swimming pool is installed at the after end of the boat deck and in addition provision is made for cinema shows on board.

All accommodation is mechanically heated and ventilated by a system installed by Steels Engineering Installations Ltd., of Sunderland.

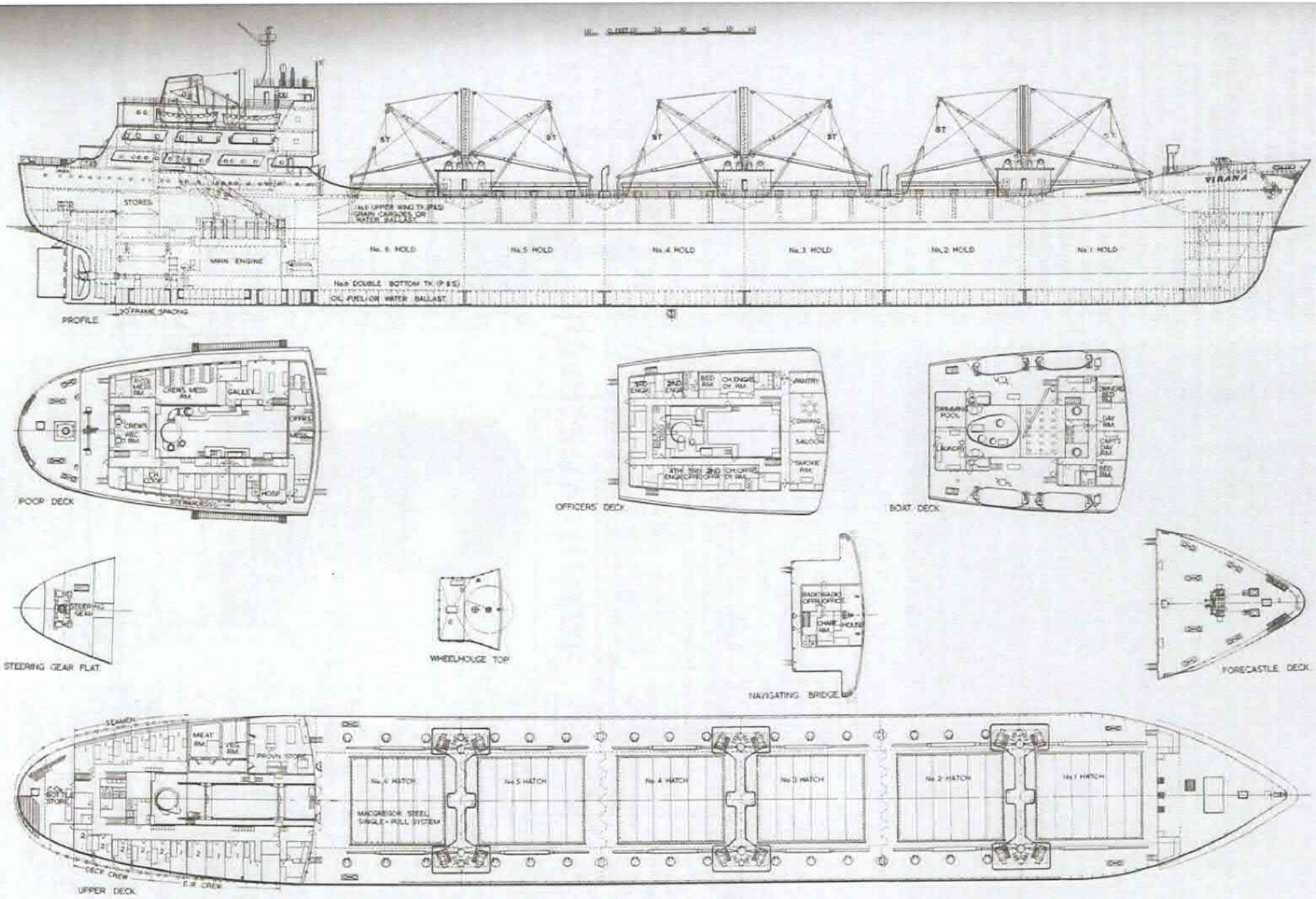
Welin-MacLachlan davits are employed for the three aluminium alloy Norwegian lifeboats. A 14-ft. workboat is also carried on board. Other safety precautions include a CO_2 fire-extinguishing and smoke-detection system with total-flood for the engine-room.

The usual comprehensive range of navigating aids is installed in the wheelhouse and separate chartroom, this including:—

Sperry gyro-compass with bridge-wing repeaters.
Simrad echo sounder.
S.A.L. log.
Henry Browne "Sestrel" magnetic compass.
Raytheon "Mariners Pathfinder" 16-in. radar.
Chadburn bridge/E.R. telegraphs.
Siemens rudder indicator.
Mackay (U.S.A.) radio direction finder.

Main Machinery and other Engine-room Equipment

Although John G. Kincaid and Co., Ltd., are now in the process of building



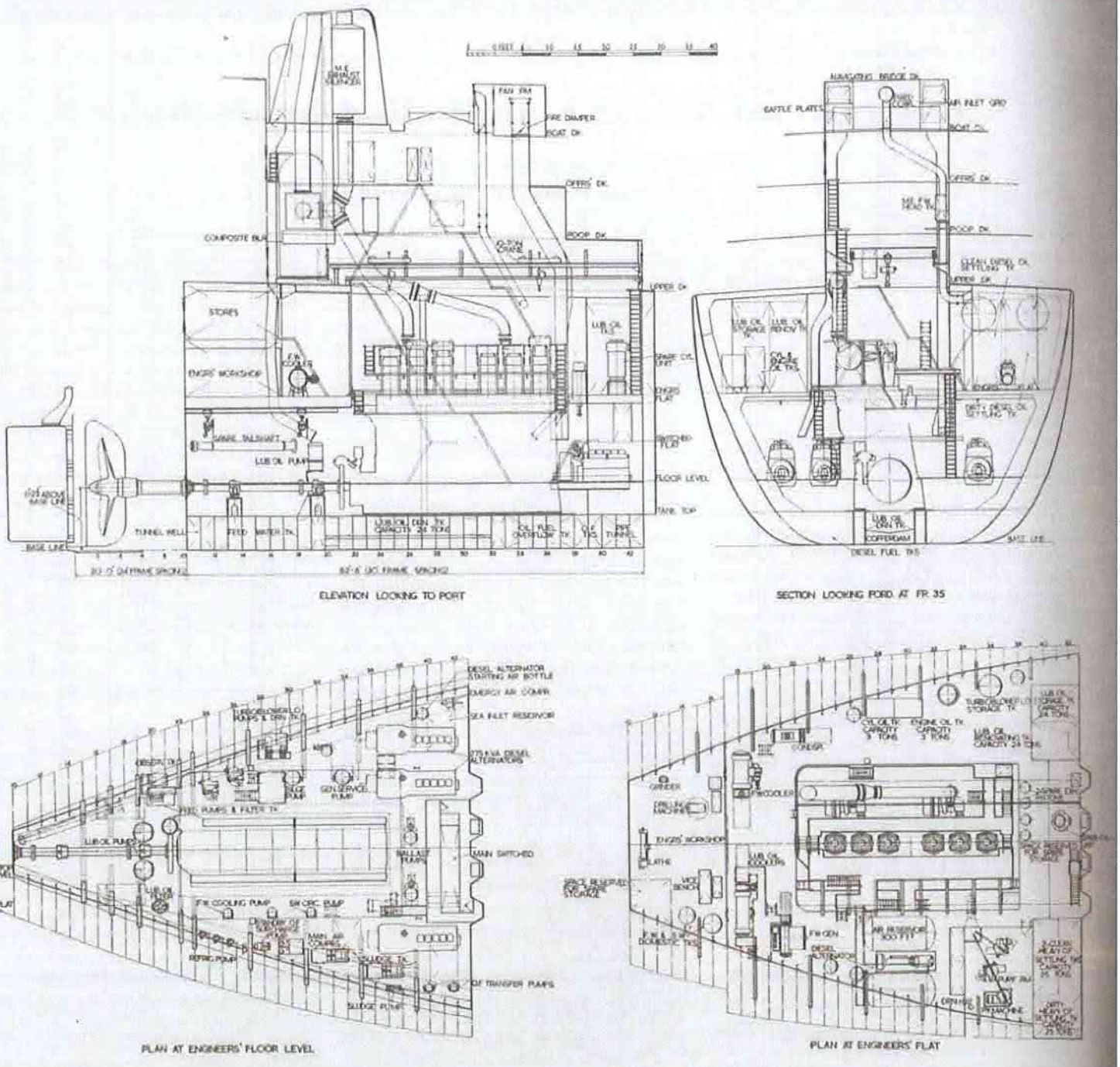
GENERAL ARRANGEMENT PLANS OF THE 18,715-TONS D.W. BULK CARRIER "VIRANA."

Owners : Sverre Ditlev Simonsen and Co., Oslo. Shipbuilders : Short Bros. Ltd., Sunderland.
Engine builders : John G. Kincaid and Co. Ltd., Greenock.

the Burmeister and Wain two-stroke engines of the poppet-valve type the main machinery in the "Virana" is a six-cylinder Kincaid-built unit of the B. and W. opposed-piston design having a main cylinder bore of 620 mm. and an exhaust cylinder bore of 622 mm., the main and exhaust pistons having strokes of 1,400 mm. and 470 mm. respectively. Two Napier MS.500 turbochargers are employed for pressure-charging and there is a Thrige motor-driven auxiliary blower for low-speed scavenging. The engine is arranged for heavy oil operation and is capable of developing 5,900 b.h.p. at about 120 r.p.m. in normal service, 6,500 b.h.p. at 123.5 r.p.m. at maximum service output and 6,800 b.h.p. at about 127 r.p.m. on trials for a one-hour period. Low speed running characteristics include the ability to operate at about 40 r.p.m. for extended periods.

Standard fabricated steel plate construction is employed for the main engine bedplate and frames and a single-collar Michell-type thrust block is incorporated in the after end of the bedplate. Kirkhams T. and K. mechanical cylinder lubricators of the constant-flushing type are fitted and provision is also made for injecting small quantities of paraffin or other suitable fluids through the upper piston lubrication fittings to assist in preventing gumming-up of the piston rings. There are two one-pint capacity tanks with a hand-operated plunger pump on the engine and from each pump the oil passes through 4-mm.-diameter copper piping to cock-controlled distributor fittings, thence through the lubricator points on each cylinder.

Fresh-water cooling is employed for the engine cylinder jackets and lubricating oil for the pistons; the turbochargers are also cooled by fresh water from a branch of the engine cooling water system but are lubricated by an entirely separate gravity feed system using Shell Talpa 10 oil. Provision is made so that the main engine cannot be started until this turbocharger lubricating system is at 6 p.s.i. pressure at the blowers. Each turboblower delivers to the scavenge belt at 5 to 6 p.s.i. after the air has been



ENGINE-ROOM PLANS OF THE KINCAID-B. AND W.-ENGINED 5,900-B.H.P. BULK-CARRIER "VIRANA"

passed through a Serck sea-water-circulated air cooler.

Exhaust gases from the main engine are utilized in a Cochran composite-type boiler of 8 ft. 6 in. diameter and about 22 ft. 6 in. high. This has about 1,700 ft² surface on the bank of exhaust-gas tubes and is capable of an evaporation rate of 3,200 lb/hr. when the main engine is running under normal service conditions. The oil-fired section of this boiler occupies about 550 ft² of heating surface and also produces about 3,200 lb/hr. of steam from feed at 60° F.

Norwegian Auxiliary Engines

Electrical requirements are met by three constant-voltage Thrige alternators of the Autovolt type each generating alternating current at 440 volts, three-phase, 60 cycles, and arranged for parallel running. Each alternator is powered by a five-cylinder Bergen Diesel engine of the RTG5 type, these being turbocharged four-stroke fresh-water-cooled machines of 250 mm. cylinder bore and 360 mm. stroke and each capable of generating 275 kVA. at 514 r.p.m.

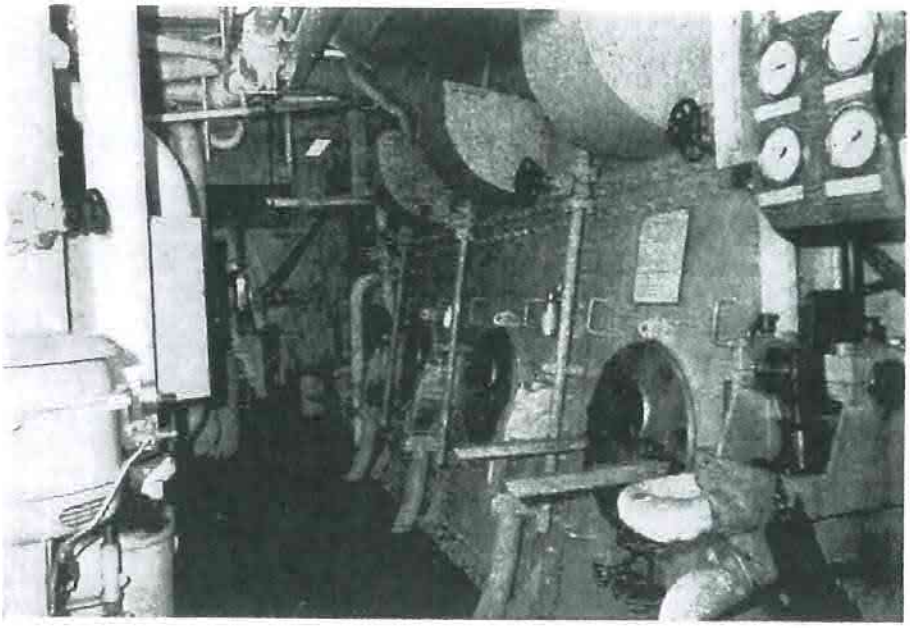
For emergency and harbour electrical generation an industrial type Dorman 6LC four-stroke Diesel engine is installed. This comparatively lightweight machine runs at 1,800 r.p.m. and is directly coupled to a 67-kW. 440-volt Stamford alternator.

There are two Mirrlees "Imo" vertical rotary screw-type forced lubricating pumps each driven by a Thrige electric motor and motors and starters of the same make are employed for most of the other engine-room pumps which include Dawson and Downie and Drysdale reciprocating and centrifugal units.

A Turbulo oily water separator of 50 tons/hr. capacity is installed and fuel, Diesel and lubricating oil purification is undertaken by a battery of De Laval centrifuges which includes a machine of the self-cleaning type.

There are, unusually, two engine-room cranes of the Carruthers type and each incorporating a 10-ton capacity Atlas Copco air hoist, these machines being supplied at 100 p.s.i. from the main air reservoirs via a reducing valve. Lifting beams are arranged over each auxiliary engine and two 1-ton worm-geared pulley blocks have been supplied for use on these beams.

There is the usual well-equipped workshop and a comprehensive range of main and auxiliary spares.



View from the control position along the front of the 5,900-b.h.p. Kincaid-B. and W. main engine.