

A very great proportion of the new vessels surveyed each year are fitted with oil-engines. Special precautions are necessary on oil-engine vessels to minimize the risk of fire. Oil-tanks should sit on a metal tray or on a metal-lined wooden casing. The deck round the filling and vent pipes should be sheathed with lead. The motors should stand in a substantial metal tray, or the bilges should be cemented underneath to form a bed. The motor-room must be efficiently ventilated. These are only a few of the precautions necessary. Prospective launch-owners should consult the Engineer Surveyor of Ships in their district before installing the oil-engines in ships. The greatest safeguard of all, however, is cleanliness. Bilges and woodwork should be kept free of oil, and all joints kept perfectly tight.

The total number of steamships and auxiliary-powered vessels surveyed was 722. There was only one vessel over 25 tons gross built in the Dominion this year. This is the o.e.v. "Tuhoe," which has a gross tonnage of 186 and register tonnage 98. She was built to plans and specifications which were submitted to the Department for approval before the building of the vessel was commenced. The vessel is a light-draught scow, built of wood on the diagonal principle. Her registered dimensions are—Length, 97·8 ft.; breadth, 24·7 ft.; depth of hold, 6·5 ft. She is propelled by two sets of semi-Diesel oil-engines of 60 b.h.p. each. There are two cylinders to each engine, 9 in. diameter and 13 in. stroke.

It was found necessary to install new propelling-engines in thirteen vessels, and new cylinders in three vessels. One vessel was fitted with a new main boiler, and the pressure of the main boilers of two vessels, and also the donkey-boiler pressure of two vessels, had to be reduced. Renewals were also made as follows: New tail-shafts to fifty-seven vessels; new propellers to nine vessels; new propeller-blades to five vessels; and new propeller-bosses to one vessel. Three vessels had new crank-shafts or parts of crank-shafts fitted, and new main steam-pipes were fitted to two vessels. Three vessels were converted from sailing-vessels to oil-engine vessels and one from oil to sail. One vessel was converted from steam to oil and one from oil to steam. One vessel was converted from a steamship to a sailing-vessel.

The following is a list of a few vessels selected from those which have received more or less extensive repairs, and also a description of the repairs:—

S.s. "Canopus."—The chief repairs to this vessel were made to the hull. A new bulkhead was fitted between Nos. 3 and 4 tanks, and a plate in No. 3 tank was renewed. Two sheathing-plates, each 13 ft. by 4 ft. by $\frac{3}{8}$ in., were fitted under the donkey-boiler, and five floors in the tank under the boiler were stiffened with 3 in. by 3 in. by $\frac{3}{8}$ in. angle-bars. In the after-peak tank a 4 ft. by 16 ft. by $\frac{3}{8}$ in. plate was riveted to the tank-ceiling, and a new bulkhead-stiffener, new beam, and two new gusset-plates to the beam were also fitted. Two deck-plates, one on each side of the foremast, have been sheathed. The forecastle has been enlarged to give increased accommodation for the crew. Ordinary running repairs were made to the main engines. Some stays and rivets in the main boilers received attention and wasted parts were built up. A Lowmoor iron patch was riveted on the bottom of the port furnace and the combustion-chamber of the donkey-boiler. The boiler was afterwards tested by hydraulic pressure. The worn parts of the steering-gear were renewed and the steering-chains were also annealed. A new flying derrick to No. 1 hatch and a new foretopmast-head were fitted.

S.s. "Hina."—This vessel received a very thorough overhaul at the annual survey. About 83 ft. of planking on the port side, and about 222 ft. on the starboard side, were renewed. A piece of the keel, 8 ft. 6 in. long, and a piece of the sternpost, 2 ft. 6 in. long, were also renewed. A new false keel has been fitted, and the hull sheathed with totara, and new rolling-chocks fitted on both sides. New fastenings in the keel and keelson under the boiler have been put in, new lining has been fitted in the holds, and new bunker-casings have also been fitted. In the list of repairs to the propelling machinery are included new high-pressure and low-pressure crosshead pins and brasses, high-pressure ahead eccentric strap, link-motion pins, feed-pump plunger and eccentric strap, bilge-pump plunger, and suction and discharge valves, air and circulating pump rod, and circulating-pump bucket. New holding-down bolts were fitted in the engine-bed, and a patch was put on the after end of the condenser-door at the back. New bolts were also put in the boiler-seating. A new end was welded on the propeller-shaft, and a new liner also fitted on. New blades were fitted to the propeller. The vessel's two boats were provided with new provision-tanks, and all the buoyancy tanks were repaired and tested.

Steam Dredge "Kaione."—This dredge was built in 1917 at Paisley for the Wanganui Harbour Board. She arrived in Wellington about September last, and was surveyed for a restricted-limits certificate. The leading dimensions of the vessel are: Length, 190 ft.; beam, 35 ft.; depth (moulded), 16 ft. 6 in.; gross tonnage, 876; net tonnage, 368. She is fitted with four sets of compound engines having cylinders 13 in. and 26 in. diameter by 15 in. stroke, and supplied with steam from two boilers of the usual marine type, 12 ft. 8 in. diameter by 10 ft. long, working at a pressure of 130 lb. per square inch. At the survey, two additional main injection-valves were fitted to the bottom of the vessel and connected to the Gwynne pump in the engine-room. A new mast aft, with boom and topsail, new steering-compass and stand, and 135 ft. of new fire-hose were also fitted on board.

S.s. "Kapuni."—The main keelson for a length of 27 ft. where it runs under the main boiler of this vessel has been renewed. The new length is of ironbark, 14 ft. by 12 ft. Two new 14 in. by 10 in. boiler-beds extending into the fore hold have been fitted. A stay has been renewed in the port combustion-chamber of the main boiler. The high-pressure cylinder was bored out, new piston and rings were fitted, and the piston-rod was skimmed up. The thrust and intermediate shafts were lined up, and new bolts have been fitted to the thrust-shaft couplings. The tail-shaft was replaced by a spare one. The fair-lead blocks for the steering-gear have been rebushed and new pins fitted. The tiller has been replaced by a quadrant.