

It is quite unusual to have to report such a serious defect as has been discovered in one of the longitudinal seams of the shell-plates of the main boiler of the tug "Dunedin." The boiler is of the Inglis patent marine type, 14 ft. in mean diameter and 11 ft. long. The shell-plates are $1\frac{3}{8}$ in. thick, and the longitudinal seams treble-riveted, double butt-strap joint, giving a percentage strength of 84.2 of the solid plate. The boiler had only been in use about four years when leakage at the butt straps was detected. Further examination revealed numerous small cracks in the cover-plates, butt straps, and shell-plates under the butt straps. A defect of this nature has never before been known in New Zealand, but similar defects appear to have been found in marine boilers in other parts of the world. The cause of the failure of the plates is at present somewhat obscure. Portions of the defective material have been forwarded to the Board of Trade, London, who, with Lloyd's Register, have kindly consented to investigate the matter.

The total number of steamships and auxiliary-powered vessels surveyed was 729. Of vessels over 25 tons gross there were only two built in the Dominion during the year. Their names were "Orini" and "Te Tui," both oil-engine vessels, particulars of which are given below.

It has been proposed to build a large wooden vessel in the Northern Wairoa. The plans and specifications were drawn up by naval architects in Australia, and submitted to the Department for approval. I understand that the proposal has now been abandoned.

In common with other parts of the world, New Zealand has added to the number of her seagoing vessels some hulks which it was thought at one time had finally ended their careers as traders on the high seas. The hulk "Lilla" is now the s.s. "Opihi"; the hulk "Dartford" is now a barque of the same name; the hulk "County of Anglesey" is now the barque "Gladbrook"; and the hulk "Northern Chief" is now a three-masted schooner of the same name. An old iron steamer built in 1876, the s.s. "Stella," which had been laid up since 1912, was thoroughly overhauled and again put into commission. Particulars of the alterations and repairs to these vessels are given elsewhere in this report.

A new main boiler was fitted into the tug "Hipi." It was constructed in New Zealand of scantlings approved by the Department, and is of the usual marine multitubular type.

The following is descriptive of the new vessels "Orini" and "Te Tui":—

O.E.V. "Orini."—The dimensions of the vessel are—Length, 86 ft.; breadth, 25.2 ft.; depth, 5.2 ft. The gross tonnage is 85.11, the register tonnage 19.18. The vessel is a light-draught auxiliary schooner of the scow type, and is employed in the home trade, carrying deck cargo only. She is propelled by two sets of four-cycle oil-engines, each of 60 brake horse-power, giving her a speed of about 8 knots. Plans and specifications of the hull and machinery were submitted for approval before the work of building the vessel was commenced. The hull was built on the diagonal principle, and the wood used was chiefly kauri. The bottom was sheathed with totara.

O.E.V. "Te Tui."—This vessel is used to carry cargo in Kaipara Harbour. She is 39 tons gross and 30.5 register, the propelling machinery consisting of two sets of oil-engines each of 16 brake horse-power. The plans and specifications were approved by the Department. The vessel has three skins, the two inner ones ranged diagonally and the outer one fore-and-aft.

Forty-eight vessels had new propeller-shafts fitted, eleven had new propellers, and three had new propeller-blades. Seven vessels were fitted with new engines, and one with a new main boiler. The working-pressures of the main boilers of three vessels, and that of the donkey boilers of three vessels, were reduced to ensure safe working. New crank shafts were fitted to the main engines of four vessels. Four sailing-vessels were converted into oil-engine vessels, and the engines of one oil-engine vessel were removed, and she is now dependent on her sails only.

Many vessels have been extensively repaired, and the following list gives the names of some of these vessels and the nature of the repairs made to them:—

S.S. "Aorere."—This vessel was at one time engaged in the home trade. She has now changed ownership, has been repaired, and carries cargo in Wellington Harbour. The following parts of the hull have been renewed: sister keelsons, side stringers from after end of engine-room to forward end of bunkers, beams at fore and after ends of forward hatchway, four carlines of jarrah on after deck at the engine-room, bunkers and bunker-coamings, boiler-chairs, funnel, and fore and main rigging. A piston-valve and new ahead eccentric strap were fitted to the high-pressure cylinder. A new condenser-door on the port side and a new intermediate stop-valve were also fitted. The bottom of the main boiler was patched in two places. Extended patches were fitted on the back and bottom of the combustion-chamber and at the back end of the furnace of the boiler. Twenty-four screwed stays, two bar stays, and two stay-tubes were renewed in the boiler. The boiler was afterwards tested by hydraulic pressure to 150 lb. per square inch.

O.E.V. "Breta Tui."—Originally employed within restricted limits, this vessel is now running in the home trade. A 10 in. by 8 in. beam, 18 ft. long, has been bolted on top of the keelson where it was cracked. The stern-post has been bored out, and a new liner has been fitted to make the stern-tube a tight fit. All running-gear and most of the rigging has been renewed. The propelling-engines were thoroughly overhauled, and three cylinders and the greater part of the engines were renewed.

S.S. "Cygnets."—The hull of this vessel received a thorough overhaul. On the outside several plates were renewed, and several where sheathed. New top and centre gudgeon-pins and thirteen new rivets were fitted in the rudder. Inside the hull the repairs and renewals were more extensive. In the holds, bunkers, and stokehold a number of floors, intercostals, reverse frames, and stringers were renewed. The keelson angles aft and in the stokehold were also renewed. A number of frames and deck-beams were strengthened. Several new stays were fitted in the bunkers and the engines and boiler were overhauled.

S.S. "Defender."—This vessel has been well strengthened with renewals to her keelson: 32 ft. of the main keelson aft, 43 ft. of the rider keelson amidships, 42 ft. of the bilge keelsons amidships each