

take up a considerable time of a Surveyor, and great care has to be exercised at survey to see that all parts of such a vessel are completely inspected. Cargo-vessels are liable to straining conditions when driven under light conditions in bad weather. A great many of these vessels are of large tonnage, and employed in the coal and general-cargo trades in the New Zealand and intercolonial trades.

The only steam-vessel built and completed this year was the steel screw steamer "Waipu," particulars of which are given below. There is at present under construction in the Auckland District a wooden lighter, which is to be propelled by oil-engines. It should be completed shortly. Plans and specifications of extensive alterations to the dredge "Progress," owned for many years by the Oamaru Harbour Board, have been submitted and approved of. This vessel is having the dredging-gear and hopper removed, and she will be fitted up as a cargo-steamer.

The s.s. "Waipu" is a twin-screw vessel of the following registered dimensions: Length, 101 ft.; breadth, 22 ft.; depth, 7 ft. 6 in. Her gross tonnage is 205.4, and her registered tonnage 76.3 tons. The vessel was designed and built at Dunedin, and is of the raised-quarter-deck type, with bridge amidships. She has accommodation for thirty-two seagoing passengers, and has a cargo-hold forward of the machinery space. The hull is built of steel plating, and has a flat plate keel, and deep floors in the machinery space. The propelling-engines have cylinders $7\frac{1}{4}$ in., $11\frac{1}{2}$ in., and 19 in. diameter by 9 in. stroke, and are fitted with Bremme valve gear. They indicate about 250 h.p. The boiler is of a rare type, being a combination of a locomotive and a multitubular boiler. It consists of two shells, about 9 ft. long, one above the other. The bottom shell outside is similar to that of a locomotive-boiler, but the heat gases are conducted from the firebox to the end of the shell through a corrugated furnace-tube. Placed above this shell and connected to it by two neck-pieces is a shell similar to that of an ordinary underfired multitubular boiler. All plates and stays of the boiler are made of steel, and the working-pressure of the boiler is 190 lb. per square inch. The plans and specifications of the hull, boilers, and machinery of this vessel were submitted to the Department and approved of before the construction was commenced.

Sixty-four vessels had new propeller-shafts fitted, and twelve had new propellers fitted; two had new propeller-bosses fitted, and six had new propeller-blades fitted; twenty vessels had new engines fitted, one had new cylinders to main engines fitted, and three had new crank-shafts fitted. It was found necessary to reduce the working-pressure of the main boilers in four vessels, and the pressure of the donkey-boiler in one. Three vessels were converted from sailing-vessels to oil-engine-driven vessels.

The extent of the repairs which it was necessary to make to some vessels and particulars of two vessels surveyed in New Zealand for the first time are given below:—

O.E.V. "Arawa."—The following parts of this vessel have been renewed: Keel, three strakes of planking on each side for the full length of the keel; two sister keelsons, 16 ft. long; deadwood and stern-bush, propeller, and shafting.

S.S. "Cowan."—This vessel originally belonged to Sydney owners. She was brought to Auckland to be used in the fishing industry. The vessel has a gross tonnage of 67.4, and the register tonnage is 30.3. The hull is of wood, and is of the following dimensions: Length, 83 ft. 6 in.; breadth, 18 ft. 4 in.; depth, 10 ft. 1 in. The propelling-engines have cylinders 12 in. and 24 in. diameter and 16 in. stroke, and are supplied with steam at 120 lb. pressure. The boiler is of the marine tubular type, 9 ft. in diameter and 8 ft. 6 in. long.

S.S. "Hina."—The hull of this vessel was strengthened by fitting 10 in. by 3 in. birch stringers to the topsides from stem to stern. All the fastenings throughout the vessel were examined, and those on the iron beams were replaced by new fastenings $\frac{1}{2}$ in. larger in diameter. All fastenings in the chain-plates and belting were also renewed. Two new planks were fitted on the starboard quarter, and one amidships was repaired. A new forward bulkhead has also been fitted. The repairs to the machinery include the turning-up of the high-pressure piston-rod, the removal of ridges in high-pressure cylinder, new valve-spindles, new key to propeller-boss, rebushing of the stern-tube, and the renewal of valves and plunger of the feed-pump.

S.S. "Kahu."—At the annual survey of this vessel considerable repairs were made to the main boiler. All the ordinary and stay tubes were renewed, and the bottom manhole-door was repaired. On completion of repairs the boiler was tested by hydraulic pressure.

P.S. "Koputai."—This vessel has been sold to Australian owners after having been laid up for three years. The vessel was surveyed for a foreign-going certificate. A temporary deck-house was erected for the officers' accommodation. An additional compass and a set of boat-davits were fitted. A temporary mizzenmast was stepped to carry a lugsail. The hull, engines, and boiler were overhauled. The boiler was retubed, and a great many new tubes were fitted to the condenser.

O.E.V. "Kura."—The hull of this vessel received a thorough overhaul throughout. The following parts of it were renewed: 15 ft. by 4 ft. of planking on the port side amidships; two 15 ft. and one 30 ft. lengths of stringers on the port side; 8 ft. by 4 ft. of the planking on the starboard side aft. All planking was refastened and caulked where required. The rudderhead was refastened.

S.S. "Mararoa."—The repairs it was found necessary to make to this vessel were fairly extensive. Besides repairs to the bunkers, deck-plating, and funnel-casing, several scantlings were renewed in the machinery-space as follows: The top and bottom angles and top plating of two sister keelsons under the forward boilers, two sections of floor-plates, twelve intercostals, sections of reverse angles on ten floor-plates, and the plating on top of the floors under the two after boiler-seats. In the way of the after stokehold eight floor-plates and sections of the top plating of keelson 5 ft. long were sheathed with one plate 20 ft. by 4 ft. by $\frac{1}{2}$ in., two 20 ft. by