In respect of machinery the total number inspected during the twelve months was 27,853, as compared to 25,111 for the year 1923–24, this being an increase of 2,742, which is distinctly satisfactory.

*Survey of Ships.*—During the year certificates were issued as follows: Seagoing vessels, 176; vessels plying within restricted limits, 594; sailing-vessels, 28: making a total of 798. There were also 155 vessels surveyed for seaworthiness and efficiency under section 226 of the Act. In addition, a number of vessels passed through interim surveys during the currency of their certificates. Forty-seven vessels, of which 7 are seagoing steamers and motor-vessels and 4 are sailing-vessels, were surveyed for the first time during the year. One of these vessels is the "Lake Takapuna," which was built in Auckland for the Takapuna Tramway and Ferry Company (Limited). She is a composite vessel, 132 ft. length by 32 ft. beam by 9·9 ft. depth. She is propelled by a set of triple-expansion engines supplied with steam from a boiler of the ordinary multitubular marine type. She is certificated to carry 1,265 passengers in river limits and 706 in extended river limits.

Another vessel which has just been built in Auckland is the auxiliary ketch "Miro." She is built of wood and is diagonally planked. Her dimensions are—Length, 64 ft.; beam, 20·5 ft.; depth, 5·9 ft. She is a staunch vessel, and has been built to carry explosives. She is propelled by a set of semi-Diesel oil-engines of 60 b.h.p.

Two scows have also been built in Auckland. One of these vessels is 66 ft. in length by 18·8 ft. breadth by 4·1 ft. depth, and is propelled by a set of two-cylinder semi-Diesel oil-engines of 20. b.h.p. The other is a sailing-vessel, 73 ft. in length by 22 ft. in breadth by 3·8 ft. in depth.

The scow is a type of vessel which is very suitable for trading in the waters around Auckland. The majority of these vessels have flat bottoms, square bilges, and centre-board keels, and load their cargoes whilst lying on beaches. Few of them have any hold, as they are specially built for the carriage of deck cargoes and in accordance with the Department's deck-cargo regulations. As the spaces below deck are not adapted for cargo and therefore have no freight-earning value, it has been the practice to bulkhead off large portions of these spaces and to claim them as water-ballast tanks. To enable a decision to be made as to whether this claim is a legitimate one, a full investigation was made during the year as to the adaptability of the spaces for such ballast, and as to the necessity for water-ballast tanks in the scow type of vessel to ensure sufficient stability, trim, and weatherly qualities under various conditions of loading. Inclining experiments were carried out on two vessels, one being a sailing-scow and the other an auxiliary scow.

Mention may here be made of two vessels built abroad and surveyed here for the first time. One of these is the motor cargo-vessel "Inaha," and the other is the cargo-steamer "Kairanga," which burns oil as fuel.

The "Inaha" is a twin-screw vessel of 250·7 tons gross and 115 tons register, and is built of steel. She is porpelled by two-cycle semi-Diesel oil-engines of 300 b.h.p. The "Kairanga" has a tonnage of 2,830 gross and 1,726 register. She is propelled by a set of triple-expansion surface condensing-engines supplied with steam from two multitubular marine-type boilers each of 2,050 square feet of heating-surface.

Of the surveys for seaworthiness a large number of the defects found were due to collisions and grounding. One overseas steamer was found to have seven furnaces in three boilers badly distorted.

The use of oil as fuel is increasing. The number of motor-vessels and of steamships burning oil fuel is becoming greater each year. Several steamers originally built to burn coal have been converted to burn oil. The arrival in New Zealand of the motor-vessel "Aorangi" was an event of marked interest in shipping circles, and the facilities kindly offered by the owners for a complete inspection of the vessel provided the opportunity for study by engineers of the great progress that has been made in the design of the internal-combustion engine. The engine-room of the vessel was particularly interesting for the reason that it has the largest engine to date of the two-cycle single-acting type of any passenger-vessel afloat. The "Aorangi" is an example of the confidence that is now placed in the internal-combustion engine. It is interesting to note that, based on Lloyds returns for the year 1923–24, nearly 19 per cent. of the tonnage built during that year was motor tonnage, and of the total tonnage recorded in Lloyds Register about 3 per cent. is motor tonnage. It has been stated that in Germany, Sweden, and Denmark, motor-vessels represent 78 per cent. of the total tonnage under construction.

It is not only the increase in popularity of the motor-vessel that accounts for the increased consumption of oil. Oil is being largely used in steamships as fuel instead of coal. It is estimated from Lloyds report for the year 1923–24 that nearly 28 per cent. of the total tonnage built that year is propelled by steam-engines either using, or fitted to use, oil fuel.

Unless the price of oil becomes unprofitably high in relation to that of coal we may expect the numbers of motor-vessels and oil-burning steamers to increase. There is doubt in some quarters as to whether the supply of petroleum will be equal to the demand. It has been predicted by an English university professor of science that there will be a petrol famine in five years, but another eminent authority is of the opinion that there is no occasion to worry about future supplies. It is generally agreed, however, that oil should not be extravagantly used. The doubt about future supplies appears to be due to the difficulty or impossibility of gauging the capacity of the oilfields. The consumption of petroleum in New Zealand for the year 1923 has been estimated by Mr. Homer S. Fox, the United States petroleum expert, to be 20·3 gallons per head of population. The corresponding figure for Australia is 9·2, and for the world 23·8.

The oil-burning steamer is in a better position than the motor-vessel to meet a scarcity of oil or an unprofitable rise in its price, as a change from oil-burning to coal-burning can be made at short notice and small expense.

In view of the increase in the use of oil fuel the Marine Department of the Imperial Board of Trade have issued a further circular on the precautions to be observed in the use of oil fuel. Attention