In so far, however, as the necessity of maintaining the Imperial validity of our certificates will permit, applications for examination from lads whose apprenticeship has been served in good faith in workshops which, previous to the recent reclassification were classed as fully qualifying for marine examination purposes, but which have subsequently been reduced in status, will receive the utmost consideration, each case being dealt with on its merits.

This is, to a limited extent, justifiable owing to the fact that our apprentices are legally required to serve five years as against four years in the United Kingdom, although, in fact, the Home apprenticeship usually covers a period of five years.

In proof of the need for the aforementioned reclassification, the cases of two lads—holders of the third-class certificate issued by this Department—whose apprenticeship was served in the Dominion, and who, after having performed the requisite sea service, presented themselves for examination for the second-class certificate in the United Kingdom, may be cited. On making application for examination, these candidates were informed by the Board of Trade Examiners that, as the workshop service which they had performed was not of the quality prescribed by the Board of Trade, they could not be examined there for that certificate. These cases clearly indicate that the discretionary powers which we may exercise in this connection are not unlimited.

The Department is now engaged in the preparation of rules for the examination for a certificate, first and second class, to be known as coastal motor, which, as its name implies, will be available for use only in home-trade motor-ships. Before a candidate can qualify to sit for examination for the unrestricted motor certificate he must have served in a motor-ship of not less than 373 b.h.p. for second-class certificate and 560 b.h.p. for first class. There are few such ships running in New Zealand waters, and, therefore, a minimum of opportunity to obtain the requisite sea service. If, therefore, this restricted certificate were not provided for, a considerable number of our own men would be denied the opportunity of entering into this employment. The prescription of a manning scale for these coastal motor-vessels is also under consideration.

Inspection of Boilers and Machinery.

Boilers and Pressure Vessels.

The following is a statement of the number of inspections made during the year, the corresponding figures for the previous year being shown in parentheses :—

	Number.
Boilers and steam-pressure vessels inspected for the first time ..	261 (286)
Air-receivers inspected for the first time	193 (293)
Total inspections of all boilers and pressure vessels	8,144 (7,925)

The air-receiver regulations have now been in force for a little over two years, and the majority of the receivers in the Dominion have been inspected.

Among designs of the new boilers submitted for the consideration of the Department there were several of low-pressure miniature boilers, a type now being developed for use on dairy-farms. The dairy-farm, in the early days of machine milking, was generally equipped with a steam plant. Firewood was plentiful; and, in addition to driving the milking machinery, the boiler supplied steam for the complete sterilization of cans and plant. As the farms became cleared and firewood scarce, the boiler was replaced by the oil-engine, to be replaced in its turn, in many districts where electric power became available, by the electric motor. Without the aid of steam the sterilization of his plant has always been a problem for the dairy-farmer, and to satisfy this want, the low-pressure miniature boiler has lately been developed. Six designs were submitted during the year, two of which, by an ingenious arrangement of a head of water, although open to the atmosphere, generate steam at slightly above atmospheric pressure. One type, described as an electric-heat storage generator, is made for use in districts where electric power is available. Power is used at periods of the day when a low rate for consumption can be obtained, and oil, contained within the boiler, is heated to a high temperature. When steam is required water is admitted to the generator, and, being rapidly heated by the oil, is available as steam in a few minutes. This apparatus is convenient to use and is stated to give very satisfactory results.

An amendment to the land-boiler rules made during the year limits the use of the lap seam in a shell or drum subject to tension stresses. The amended rule applies to new construction only. The lap seam may be used for boilers not exceeding 36 in. diameter and 100 lb. working-pressure. Where this diameter or working-pressure is exceeded the double-strapped butt joint must be used. The amended rule was determined from data compiled from records of all lap-seam failures known to have occurred in the Dominion. Of ten failures during recent years, nine boilers had a working-pressure over 100 lb. per square inch, and one boiler had a working-pressure of 100 lb., but the shell diameter was over 36 in. The compiled information of the Department's experience with lap seams was issued in circular form to all Inspectors of Machinery and, at the request of those interested in boiler-design, a few copies of the circular were distributed to leading boilermakers, boiler-owners, and surveyors to classification societies in the Dominion.

In June of last year a serious mishap occurred to a Lancashire boiler. The boiler was of the usual Lancashire type with double furnaces, and was one of a battery of three used for power-generation and general purposes in a large freezing-works. On an afternoon shift shortly after a change of watch-keepers the crowns of both furnaces collapsed. The plates were badly deformed, but the material proved of good quality and fortunately did not rip. The damage when examined by an Inspector of Machinery was found to be confined to the second, third, and fourth sections of each furnace, and gave every indication of having been caused by the overheating of the plates due to