Inspection of Machinery.

The following statement shows the number of inspections of fired boilers, unfired steam-pressure vessels, and air-receivers made during the year, the corresponding figures for the previous year being shown in parentheses:—

Fired boilers	4,553	(4,778)
Unfired steam-pressure vessels	4,329	(4,245)
Air-receivers	2,127	(1,078)
Total inspections	11,009	(10,101)

The inspections include 89 new power boilers, aggregating 1,789 horse-power, manufactured within the Dominion, and 22 new power boilers, aggregating 602 horse-power, imported from abroad. They also include 189 new steam-pressure vessels and 50 new air-receivers manufactured within the Dominion and 216 new steam-pressure vessels and 29 new air-receivers imported from abroad. The total number of new boilers, pressure vessels, and air-receivers put into service during the year was 595, against 654 for the previous year. The figures for inspections show a comparatively large increase in the number of inspections of air-receivers. This is due to an alteration in the method of reporting air-receivers of 5 cubic feet capacity or less. Hitherto small receivers of this class were included in the general report of a machinery plant and in the certificate issued for a plant. In a new fees schedule gazetted in June, 1940, separate fees were charged for small air-receivers, and since 1st July, 1940, they have been separately reported and certificated.

No explosions of boilers, pressure vessels, or air-receivers certificated by the Department occurred during the year.

Machinery.

The following statement shows the number of inspections of machines, machinery plants, lifts, hoists, cranes, and tractors made during the year, the corresponding figures for the previous year being shown in parentheses:—

Machines not driven by steam power in 10,920 (11,233) plants	76,406	(77,450)
Machines driven by steam power in 2,036 (2,219) plants	10,211	(10,987)
Electric-power-supply stations	151	(150)
Lifts	3,323	(3,398)
Cranes	500	(513)
Hoists	1,618	(1,599)
Tractors	371	(360)
Total inspections	92,580	(94,457)

Included in the inspections are forty-one lifts and forty power cranes inspected for the first time. Among the new lifts, it is interesting to note, were two full automatic passenger-lifts designed and manufactured in New Zealand. They were the first lifts of this type to be made in the Dominion.

The numbers of accidents reported during the year in connection with boilers, pressure vessels, and power-driven machinery were 5 fatal and 101 non-fatal. The corresponding figures for the previous year were 4 fatal and 129 non-fatal accidents. In each case the circumstances of the accident were fully reported by a district Inspector of Machinery, and the matter was not closed until the Department was satisfied that all practicable steps had been taken to improve safeguards and eliminate hazards likely to cause accidents with the machine or similar machines. It is unfortunate that in many cases the accidents were due to lack of care or inexperience on the part of the operators, and no practical improvements could be made. The following are brief accounts of the five fatal accidents compiled from the reports:

(1) A flock-teasing machine was altered to suit the owner's requirements and, during the trial run, a cast iron drum burst when revolving at a speed of 800 revolutions per minute. A portion of the flying material struck a workman on the leg and caused injuries which led to death. The peripheral speed of the drum at the time of the accident was unsafe for material of cast iron, and the owners were advised that if a machine of similar design were made, the drum must be of cast steel.

(2) A typical breaking-down saw used in New Zealand sawmills consists of twin circular saws, one of which is arranged to work directly above the other. The saws are exposed, but there is little danger in normal working as the operators stand at the side well clear of the machine. In a northern mill the steam-engine had just been stopped, but before the machinery had come to rest a workman passed between a log on the platform of the breaking-down machine and the saws. The lower saw caught a portion of his clothing and drew him to the blade, with fatal results. There are no practical mechanical means of safeguarding an accident in such circumstances.

(3) During oil-well-boring operations in Hawke's Bay a rotary drill jammed. The machinery was stopped, and with the aid of a large spanner endeavours were made to reverse the motion and release the drill. Unfortunately a pawl within the power-transmission mechanism became disengaged under the unusually heavy load, and the spanner, swinging round, struck a workman and caused instant death. The pawl was a little worn at its leading edges, and failure may have been due partly to its condition and partly to the abnormal load it was carrying at the time of the accident. At the same time, it is not known whether the pawl was properly home. Steps were taken to recondition the pawl and to ensure that the pawl would, in future, drop properly into position.

(4) During roadmaking operations a large stone jammed in the lower portion of the hopper of a power-driven stone-crushing plant. The attendant attempted to clear the obstruction with a steel bar when a portion of the stone, split by the action of the crusher hammers, flew back through the