The capital outlay at the end of the year was £671,608, as against £499,957 at the beginning of the year. The revenue for the year was £56,814, being £1,498 in excess of all charges, including interest at 4¾ per cent. and depreciation at 2 per cent. Financial results of operation and load records are given in Table A herewith.

The power-house maximum load reached 7,600 kw. on a rated plant capacity of 6,000 kw.—*i.e.*, 26·7 per cent. overload—and an increase of 2·5 per cent. over the previous year. The output reached 37,929,750 units, an increase of 4·5 per cent. on that of the previous year. The annual load factor was 57·3 per cent., and the average weekly load factor was 62·9 per cent. The growth of load since the inception of the installation is shown in Fig. 5.

Generating-costs per unit still show an upward tendency, being 0·02d. in excess of the previous year's cost; but this increase should not recur, as it was more than accounted for by expenditure on maintenance of the temporary diversion of the Harper River and the demands made on the steam standby plant as a result of breakdown of two of the turbines.

Extensions.—The erection of the third pipe-line was completed in July, and preliminary runs on the fifth unit made the following month, but, owing to trouble with the foundations and turbine, this unit was not put into service until April last. A contract was let for the fourth pipe-line of 52 in. diameter, and work commenced on it in November. Very satisfactory progress was made: the pipe-line has since been completed. A three-unit exciter of 330 h.p. capacity was completed and put into operation in October. Work on the erection of the switching-station at Windwhistle for the Timaru line tap-off was proceeded with, and orders placed for all the necessary switching equipment. In November a contract was let for the erection of the transmission-line poles from Windwhistle switch-station to Timaru, a distance of eighty-five miles, and this work has since been completed. A third transmission line, from the power-house to Hororata, was put into service in February, and a commencement made on the reconstruction of the south main transmission-line from Lake Coleridge to Christchurch.

The permanent diversion of the Harper River was commenced in the middle of August, a staff of thirty men being employed on this. This work is now completed.

A 1,500 k.v.a. synchronous condenser was installed at Addington substation in December, with great improvement to the service in general. In fact, without this it would have been impossible to carry the heavy overloads experienced.

Power Boards were created to reticulate Banks Peninsula and Springs-Ellesmere Counties. The former completed and put into service the first portion of its system in December, and by the end of the year had completed the reticulation over fully one-half of the district. To supply this Board a 33,000-volt line has been run from Tai Tapu to Motukarara, and put into service temporarily at 11,000 volts. The Springs-Ellesmere Power Board has also commenced reticulation, and is already giving a partial supply. The 11,000-volt feeder was extended from Lincoln to the Selwyn River to supply this Board.

A Power Board to reticulate and supply Ashburton district has also been formed, and is proceeding apace with the development of the reticulation. It will take supply from the Timaru line at Methven and at Ashburton.

The Department's 11,000-volt reticulation has been increased during the year from 77¼ miles to 82¼ miles.

Connected Load.—The total connected load increased to 39,957 kw., as set out in Table D herewith, an increase of 16½ per cent. on that of the previous year. The maximum demand on the substation was 6,720 kw., showing a diversity factor of 5·94.

Operation.—The plant has been heavily overloaded throughout the year, the position being considerably accentuated by the breakdown of two of the turbine-casings. On the 24th October a crack developed in the casing of one of the 1,500 kw. units, and during repair the available plant capacity was reduced to 4,500 kw., the steam standby plant being called into service.

On the 8th November the new 3,000 kw. set was put into operation, but on the 27th it developed a crack almost identical with that which had occurred on the 1,500 kw. set. The steam standby plant was again called into operation, and in the meantime the casing of the first set sent to Christchurch for repairs. These were completed, and the set put into operation on the 21st December, when the whole load was again carried by the station. The casing for the sixth unit (3,000 kw.) arrived early in March, and was immediately installed in place of No. 5, and put into operation on the 30th of that month, bringing the capacity of the station up to 9,000 kw.

Throughout the whole period of trouble the public bodies and wholesale consumers co-operated loyally with the Department in its endeavour to maintain the service, and only this co-operation made it possible for the Department to carry out its obligations with a minimum of inconvenience to the general public.

Transmission-system.—Three complete interruptions to service occurred during the year, on each occasion the south line failing whilst the north line was under repair. The breakdowns in question occurred—(1) 16th July, from 7.30 p.m. to 11.45 p.m.; (2) 30th August, from 8.53 a.m. to 12.40 p.m.; (3) 26th February, from 5.18 a.m. to 8.51 a.m. The total period of complete interruption in supply for the year was thus eleven hours and a half, of which only four hours and three-quarters occurred between 8 a.m. and 5 p.m.—the ordinary industrial day. On each occasion the Tramway Board's standby plant of 2,000 h.p. was called upon and essential services were maintained.

In addition to these three complete interruptions, single-line breakdowns took place on forty-three occasions, involving the replacement of ninety-five insulators, or 1·8 per cent. of those in service and a breakage of the line wire on five occasions. Compared with experiences elsewhere, ranging from 10 to 20 per cent. of insulator failures per year, this record is satisfactory. With the replacement of the balance of the original insulators, manufactured in 1913, by modern types of insulators, and the replacement of the aluminium wire by copper wire of a larger section (19/13 S.W.G.), it is anticipated that these accidental interruptions will be reduced to a minimum.