APPENDIX D.

ANNUAL REPORT OF THE CHIEF ELECTRICAL ENGINEER.

The Chief Electrical Engineer to the Hon. the Minister of Public Works.

Sir,—

I beg to report on the position of the development of electric power in the Dominion for the past year as follows:—

GOVERNMENT SCHEMES IN OPERATION.

LAKE COLERIDGE ELECTRIC-POWER SUPPLY.

The year ending 31st March, 1928, represents the thirteenth year of operation of the Lake Coleridge scheme, and the results of the year's working must again be considered very satisfactory.

The attached tables (A, C, and E) give the analysis of results obtained for the year's operations, connected load details appearing in Table D.

Financial Results.

The capital outlay at the end of the year was £1,561,081, as against £1,538,569 for the previous year, showing an increase of £22,512, and is analysed in Table B. The total revenue for the year was £171,127, as compared with £150,240 for the year ending 31st March, 1927, and after payment of all charges, including interest and depreciation, but not sinking fund, a surplus of £25,580 was shown. This amount has been credited to the Sinking Fund Account, bringing that fund to a total of £61,023, to which, however, must be added accrued interest earned of £1,442, bringing the total amount to the credit of the sinking fund to £62,465. The arrears of sinking-fund contributions as at 31st March, 1928, are now reduced to £42,122, and it is hoped that these arrears will be wiped out completely in the next few years. Table A shows particulars of financial results and load records.

The total cost per unit generated was 0·372d., being a decrease of 0·007d., due to increased output with little increase in capital charges. Total operating-costs have increased by £9,326, due to increased proportions of generating and management costs chargeable to operation consequent on small amount of capital expenditure during the year. Particulars will be found in Table C.

Connected Load.

The total connected load at the end of the year was 136,364 kw., being an increase of approximately 21·5 per cent. on that of the previous year. Details of connected load are given in Table D.

Power-house Load and Operation.

The maximum output from the power-house for the year was 21,020 kw., representing an increase of 24·5 per cent. over the previous year's output. This increase is abnormal in that unlimited supply was not available during 1926 until July, and also that a general reduction in heating and cooking rates was made at the same time by the Christchurch City Council. The effect of these two factors was not felt until the winter of 1927. Units output from the power-house totalled 93,853,759, as against 78,342,797 for the previous year, an increase of nearly 20 per cent. The maximum units generated in any one day was 318,540, and the maximum weekly output exceeded for the first time the two-million mark, being 2,023,495. The annual load-factor was 51 per cent., or 2·4 per cent. lower than that of the previous year.

With the full capacity of the plant (27,000 kw.) available, there was no overload experienced, and no calls were made on the tramway stand-by plant for this reason, or due to any interruption to supply.

During the period from 31st March to 30th June, 1928, the maximum demand on the power-house reached 24,370 kw.—viz., on 21st June. This figure is unlikely to be exceeded during the year ending 31st March, 1929, and the percentage increase—viz., 16 per cent.—is considered more normal.

Transmission-lines.

With the object of changing all lines between Lake Coleridge and Addington from 7/·135 aluminium to 19/13 S.W.G. copper, work was commenced on the remaining ten miles of the north line between the power-house and Hororata. This when completed will complete the change-over on all three lines between the power-house and Hororata. There will remain a section of twenty-four miles of the north line between Hororata and Christchurch, and the work of converting this portion from aluminium to copper will be put in hand during the ensuing year. The automatic sectionalizing of lines by means of relay-controlled oil circuit-breakers is proceeding, and when completed will add considerably to the continuity of supply at all points.

Excellent progress has been made in live-line insulator-testing and operation. During the year the whole of the insulators on the transmission-lines and substations were tested under live-line conditions; 317 insulators were located as faulty on the 66 kv. lines by this means and seventy-one