

Retail Supply (Southland).—During the year 56 miles of additional distribution-lines were erected to afford supply of electricity to 370 new consumers. The year's increase in connected load amounted to 3,965 kW.

Total units sold totalled 41,791,294, as compared with 37,142,587 for the previous year, an increase of $12\frac{1}{2}$ per cent. Sales to coal-mines increased by 42 per cent., from 1,412,816 units to 2,018,838 units, and sales for domestic purposes increased by 13 per cent. to 10,413,713 units. The demand from lime-works, however, was less than last year.

3. CONSTRUCTION

(a) *Power-stations*

Highbank Station was brought into operation on 8th June, 1945, and ran in parallel with the system until 28th November, when it was shut down for the summer. It took up load again on 28th March, 1946.

Tekapo.—Progress on this work has been disappointingly slow, especially in the tunnel. Apart from certain mechanical troubles this has been largely due to a test drive put in about six years ago. The timbers have failed and the shingle fallen in. No satisfactory progress can be expected until the end of the drive is reached. A second shield is nearly ready at the lake end of the tunnel, and it is hoped better progress will be made from there.

Little progress, other than the tunnel, has been made on permanent works, but a start has been made towards installing the intake structure, which will be floated out and sunk in the lake.

(b) *Substations*

An additional 7,500 kVA. bank of transformers was installed at Timaru Substation, and a 10,000 kVA. 66/33 kV. bank was installed at Addington. A start was made on the 4,500 kVA. auto reclose substation at Milton which will provide a second supply point for the Otago Electric-power Board. The South Canterbury Power Board commenced taking supply from Temuka Substation on 7th October, 1945.

(c) *Transmission-lines*

The survey of the line connecting the Cobb River system with the West Coast has been continued during the year.

Work was done on the Gore-Invercargill line consequent upon the decision to raise the working voltage from 66 kV. to 110 kV.

NELSON-MARLBOROUGH SECTION

1. SYSTEM OPERATION AND LOAD DESPATCH

Load.—The maximum load on the system was 7,180 kW., an increase of 33 per cent. compared with last year's peak of 5,400 kW. The peak load on the Cobb generators was 6,980 kW. on 10th July, 1945. Of the 34,288,308 units generated, 33,464,800 were from the Cobb Power-house, the balance being divided among six auxiliary stations. 5.2 per cent. of the units generated were "lost," and the system annual load factor was 54.5 per cent.

Reliability of Supply.—There were eight faults on the Department's system which caused interruptions of supply to consumers during the year. Of these, three were confined to the 11 kV. line supplying power to the asbestos works and to the Works Department at the dam.