

*(b) Substations.*

*Addington Substation.*—Two new 20,000 kVA. 66/11 kV. transformer banks, which are replacing two of the three existing 12,000 kVA. banks, were received, and work is proceeding on their drying out and installation.

*Hororata and Point Substations.*—No construction work was done.

*Ashburton Substation.*—Four 110 kV. O.C.B.'s were installed, in place of the existing 66 kV. O.C.B.'s.

*Timaru Substation.*—Six 110 kV. O.C.B.'s were installed in place of the existing 66 kV. O.C.B.'s.

A new 7,500 kVA. 110/11 kV. transformer bank was also installed. This replaced the existing 5,300 kVA. 66/11 kV. bank.

Pending the shifting of the auto-transformers to Hororata, this substation has been arranged with the top bus at 110 kV. and the bottom bus at 66 kV., while a temporary 66 kV. bus has been erected to allow separation of the two transmission lines to Ashburton if required.

*Glenavy Substation.*—An induction regulator was installed to control the local supply.

*Oamaru Substation.*—One new staff cottage was erected complete and is now in occupation.

*Palmerston Substation.*—Work on this substation was commenced during the year, and completed as follows: Two four-pole structures in Oamaru-Dunedin line, each with line air-break and earthing-switches. Pole-structure with transformer air-break switch and 110 kV. liquid fuses; 2,250 kVA. 110/11 kV. transformer bank with automatic tap-changing gear. 11 kV. O.C.B. in outdoor cubicle, metering-gear, and temporary induction regulator.

Supply was given through this station to the Otago Electric-power Board in May, 1939, and serves in part of their northern area, in particular to Macrae's Flat and Ranfurly. All the Power Board's northern supply will be drawn from this substation when their contract with the Dunedin City Council expires in 1941.

*Half-way Bush Substation.*—The erection of a new bay of steelwork to provide for the line to Southland was completed. As well, two 110 kV. O.C.B.'s, new control and relay panels, and a 110 kV. potential transformer were installed. Supply was given through this station to Gore on 3rd January, 1939, and, after minor adjustments, to Southland.

Two new cottages were erected complete and are now in occupation.

*Smith's Road Substation.*—This 33 kV. substation, which supplies power to the Springs-Ellersmere Power Board, was completed during the year and lived up in December.

*Motukarara Substation.*—This substation, also at 33 kV., was completed and lived up in February for supply to the Banks Peninsula Power Board.

*Southbrook Substation.*—A new O.C.B. structure was erected in connection with the 33 kV. line to North Canterbury.

*(c) Transmission-lines.*

The main transmission-line work has been in connection with the lines to the West Coast. This is detailed under section (g) below.

Work was commenced on the new 33 kV. line from Southbrook to Culverden, and at the end of May, 1939, 211 poles, or 18 miles of the 50 miles, had been erected completed except for wiring.

Poles were distributed at different stations along the route, and all other material is on order for the new Timaru-Ashburton 110 kV. line.

*(d) Telephone System.*

No new construction work was done, except on the West Coast, which is detailed below.

*(e) Test Department.*

66 kV. and 11 kV. O.C.B.'s, together with their protective equipment and control panels, were installed at Dobson and Arahura. 66/11 kV. tap-changing transformer banks were also installed at Dobson and Blackwater.

Control equipment for supply to a dredge was installed at Kanieri.

Two voltage regulators were installed for temporary regulation of voltage to the Grey Electric-power Board.

The major breakdown of switchgear at Coleridge Power-station in June involved urgent repair and reconstruction of equipment, and this was done as expeditiously as possible.

Protective equipment was installed, tested, and put into operation on the supply to Southland and the West Coast.

During the year 326 tests and reports were made and 100 drawings completed.

A total of 70 repair and test orders were executed on behalf of other Government Departments and local supply authorities.

*(f) Survey.*

The location and final pegging of the Southbrook-Culverden 33 kV. line was completed.

Preliminary locations of the routes for the new transmission-lines from Highbank to Hororata and the second Timaru-Ashburton lines are in hand.

A 3.3 kV. line was pegged from Sumner to Godley Head, a distance of three miles, ready for erection for the Defence Department.

*(g) West Coast Electrification.*

In March, 1939, the West Coast system was paralleled with the Waitaki-Coleridge system, and, apart from minor interruptions, the two have been running together quite satisfactorily ever since.