

Justice Department.—A new Courthouse has been built at Invercargill.

Post and Telegraph Department.—New telephone-exchanges were erected at St. Heliers and Mount Albert, and post-offices built at Katikati, Mount Maunganui, and Invercargill. Line stores and garages were constructed at Stratford and Hawera. Extensive alterations were made to the Chief Post-office, Auckland.

Internal Marketing.—A large cool store was built at Hastings and a cool store provided at Nelson.

Industries and Commerce.—Linen-flax factories were completed at Woodlands and Gore.

Departmental Buildings.—At Auckland the new building known as "Jean Batten Place" was finished, and the new Stout Street building at Wellington was temporarily completed for urgent occupation.

I have, &c.,

R. A. PATTERSON, A.N.Z.I.A.,
Government Architect.

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:—

NORTH ISLAND ELECTRIC-POWER SYSTEM.

1. *Capital Outlay.*—At the close of the year 1941-42 the total capital outlay was £10,808,381 representing assets in operation, and £1,887,176 representing assets not in operation, giving a total capital outlay of £12,695,557.

2. *Financial Results.*—The total revenue for the year amounted to £1,597,981. Working-expenses were £674,164, resulting in a gross profit of £923,817, equal to a return of 9.04 per cent. on the average capital in operation (£10,214,397).

3. *System Operation.*—Arapuni and Horahora Power-stations were normally run continuously in parallel with Waikaremoana and Mangahao, and assistance was obtained from King's Wharf, Evans Bay, and the smaller stations as required.

Control of Lake Taupo became effective on 4th September, 1941, when the new gates at the outlet were put into operation, enabling the flow of the Waikato River to be regulated to suit the power-system requirements.

Approximately 74,550 tons of coal were used at King's Wharf Steam Station, and approximately 26,470 tons of coal and 9,840 tons of oil were used at Evans Bay Steam Station.

Transmission-line losses were considerably reduced by the putting into service of new 110 kV. transmission-lines, the most important of these being the Ongarue-Bunnythorpe line.

The maximum half-hourly load on the system was 252,400 kW. at 17.30 hours on Monday, 23rd June. The maximum load in the northern area was 137,500 kW. and in the southern area 116,800 kW.

The units generated and purchased totalled 1,306,838,519. Units sold totalled 1,182,020,169, and units otherwise accounted for 14,017,257. The balance, 110,801,093, represents transmission and distribution losses amounting to 8.5 per cent. of the total output.

The late delivery of new generating plant on account of the war has made it necessary to restrict load to a certain extent and has also necessitated very close control of the existing stations by load despatching.

4. *Construction.*—Arapuni: No. 6 tunnel and about half the length of No. 5 tunnel have been lined.

Karapiro: Work was continued for some time on excavation for the dam, power-house, and spillway, and on excavations and concreting for the diversion tunnel. Construction work has now been largely suspended.

Waikaremoana Main: New exciters and new voltage regulators were installed on Nos. 1 and 2 generators. A start was made on the erection of new outdoor 110 kV. switchgear.

Waikaremoana Lower: Construction work on this new station has proceeded throughout the year, but late delivery of essential equipment has delayed progress. The erection of one machine is well advanced and it is hoped to have this unit in operation early in the spring.

Substations: New transformers and switchgear were installed at a number of substations. Transfers of transformers between various substations were carried out. New substations at Te Kiri, Greytown, and Mataroa were put into service.

Transmission-lines: Arapuni-Penrose No. 2 double-circuit tower-line, Penrose-Henderson double-circuit tower-line, and Ongarue-Bunnythorpe and Woodville-Napier 110 kV. lines were completed and put into service. The Penrose-Henderson line is being used at 50 kV. temporarily.

Stratford-Te Kiri 50 kV. and Mataroa-Waiouru 11 kV. lines were completed and put into service. The Henderson-Takapuna 50 kV. line was deviated and rebuilt over a large part of its length to enable a harbour crossing near Hobsonville Aerodrome to be eliminated.