

Waipukurau Substation.—The relay equipment has been received, and the erection is practically complete.

The O.C.B. for the Dannevirke line has been received and put into service.

Napier Substation.—The relay system has been installed and was ready for final testing before being put into service when the destruction of the battery by the earthquake prevented the system being put into operation. Further work at the station is referred to in the report on the earthquake experienced on 3rd February, 1931.

Gisborne Substation.—An additional pumping-set was installed for the cooling-water supply for the transformers.

Hawera Substation.—Preliminary design work and arrangements have been finalized.

Stratford Substation.—Preliminary design work and arrangements have been finalized.

New Plymouth Substation.—Preliminary design work and arrangements have been finalized.

Melling Substation.—The name of this substation was changed from "Belmont" to "Melling." The Hutt Valley Power Board will receive supply from this substation. Contract for erection of buildings has been completed. Contracts for permanent equipment have been let. A temporary substation, comprising a wood-pole structure carrying an air-break switch, transformer-bank on crib-work pedestal, and 11 kv. metering-cubicle, have been completed. Transformers have been dried-out and are ready for service.

Khandallah - Melling 110 kv. Transmission - line.—Survey has been finalized, and construction will be completed early in July.

Wanganui-Stratford 110 kv. Transmission-line.—(a) Wanganui-Hawera Section: A contract for the cartage, delivery, and erection of main-line structures and telephone-poles was let in November. Two steel towers have been erected for the Wanganui River crossing.

Wiring of this section commenced in May, and to date thirteen miles of transmission-line and fifteen miles of telephone-line have been completed.

(b) Hawera-Stratford Section: A contract has been let for the pole-erection, and a start made.

Stratford - New Plymouth 50 kv. Line.—Two extensions of this line have been surveyed, and an early start will be made with erection.

Upper Development, Waikaremoana.—Work of considerable interest is at present being carried out around the outlet as a preliminary step to the second scheme.

A comprehensive study of the country around the outlet of the lake has been in progress during the year. This includes surface-surveys, surveys of underground chambers, a more intensive geological study, and investigations to determine the location and character of the rocks and underground passages through which the water escapes from the lake.

V. LOAD.

During the year Mangahao and Waikaremoana generating-stations have run very well in parallel, Waikaremoana taking the base load and Mangahao supplying power during peaks.

The only occasions when standby stations came into operation were—

- (1) On peaks when Mangahao was out of commission during the Christmas-New Year holidays for overhaul of valves:
- (2) During an arranged shutdown on the Mangaore-Wellington lines for repairs to the lines:
- (3) During the period subsequent to the earthquake on the 3rd February while the Tuai-Napier line was out of commission, and while the load was greater than the capacity of Mangahao Power-station.
- (4) While a machine at Waikaremoana was under repair and test, Wellington City steam plant was brought in for a total running-time of approximately 307 hours.

Wanganui-Rangitikei Power Board steam plant was called on for 64½ hours' running.

Hastings Borough, whose plant was undamaged during the earthquake, carried their own load thereafter until the Hawke's Bay Power Board's system was sufficiently repaired to enable them to supply power to the borough.

Through having Wellington City and other plants available, it was possible to avoid restrictions on the use of power whilst the Napier-Tuai line was being repaired after the earthquake.

The maximum load on the system was 44,660 kw., and the total number of units generated during the year was 210,373,650. The total connected load was 279,053 kw.

WAITAKI ELECTRIC-POWER SYSTEM.

1. POWER-HOUSE - GLENNAVY TRANSMISSION-LINE.

A start was made on tower erection in May, 1930, and good initial progress was made, but running shingle and water met with on river-terrace demonstrated the necessity for extra pumping equipment.

Towards the end of March, 1931, a start was made on transporting insulators and cable to tower-sites in readiness for stringing of conductor, which began about the middle of April.

At the end of March, 1931, nineteen towers remained to complete this section of the work, and in April a start was made on stringing conductor.

At the end of June one circuit was completed and livened up for power-supply from the Lake Coleridge system.