

*Gisborne.*—Supply is given at this substation to the Poverty Bay Electric-power Board, there being seven interruptions during the year, of a total duration of 40 minutes.

The deposition of mineral matter as a scale on the inside of the transformer cooling-tubes has occasioned a considerable amount of work in removing the deposit. Investigations are now in hand to determine the feasibility of installing an air-cooling system on these transformers in place of the water-cooling system at present in operation.

*Wairoa.*—The Wairoa Electric-power Board takes supply from this substation, and during the year there were five interruptions to supply, of a total duration of 5 hours 46 minutes. The earthquake of the 16th September last was responsible for one interruption of 5 hours 18 minutes. Another shock during the following month interrupted supply once for a period of 25 minutes.

*Substations, General.*—Indicating lamps have been fitted in the potential circuits to the 110,000-volt relay equipment at all stations to indicate definitely the blowing of potential fuses.

At all substations platforms have been installed for the attendants to stand on when operating switches, in order to provide a definite safeguard under all conditions of operation.

The routine maintenance of the substation apparatus is being carried out according to a schedule. This ensures that all apparatus is regularly inspected, that fire-extinguishers are in good condition, and first-aid outfits fully stocked.

#### *Transmission-lines (110,000 Volt).*

*Mangaore-Khandallah Duplicate Line.*—Power is transmitted over this line to Khandallah and Melling Substations, and this supply was well maintained throughout the year, only two outages having occurred, neither of which were due to line defects.

*Khandallah-Melling Line.*—This line operated satisfactorily throughout the year.

*Mangaore-Bunnythorpe Duplicate Line.*—This line gave no trouble during the year. Two outages occurred during the year, neither of which caused any interruption to supply, and neither of which were due to line defects.

*Bunnythorpe-Marton-Wanganui Line.*—This line caused no interruptions to supply at any of the substations it supplies, though it was necessary to shut it down on several occasions for maintenance work.

*Wanganui-Hawera-Stratford Line.*—This line gave very good service during the year, having caused no interruptions to supply.

*Bunnythorpe-Woodville-Dannevirke Line.*—The only trouble experienced on this line during the year occurred close to Dannevirke Substation at a point where a long jumper to one of the substations switches was connected to the line.

*Woodville-Mangamaire-Masterton Line.*—There were four outages on this line during the year, of a total duration of 15 hours 19 minutes. The greater part of this time was accounted for by one outage of 14 hours 32 minutes, when two poles on the Mangamaire-Masterton Section broke off during a gale.

Owing to risk of damage to one of the poles in the Mangatainoka River during floods, arrangements have been made to have it reinforced with piles.

*Dannevirke-Waipukurau-Napier.*—The breaking of a pole on this line during a gale caused two interruptions to supply at Waipukurau substation, totalling 17 minutes, and the Dannevirke-Waipukurau Section of the line to be shut down for repairs for a period of 15 hours 5 minutes.

During a heavy flood in the Avoca River near Waipukurau several telephone-poles were washed out and some of the main line poles endangered, and to make them safe against future floods all the poles in the river-bed were reinforced with piles.

*Tuai-Napier Duplicate Line.*—The line operated very well during the year, the only outages being due to lightning storms. There were three of these outages, but no interruption to supply was caused through any of them.

#### *Transmission-lines (50,000 Volt).*

*Stratford-New Plymouth Line.*—The only outages on this line were due to lightning, there being two such outages, totalling 11 minutes, both of which interrupted supply to New Plymouth. The resultant flash-over due to one of the above lightning storms caused one of the poles to be shattered to such an extent that it was necessary to replace it. A considerable number of breaks have occurred in the telephone line due to vibration, and experiments have been carried out with a view to developing a damper which will eliminate these effects.

*Tuai-Gisborne Line.*—Two outages on this line occurred during the year, one of 2 minutes due to lightning. The other outage occurred during the earthquake of 16th September, 1932, when the line was severely shaken, as evidenced by the disturbance of the earth and the leaning of many of the poles. Power was again available at Gisborne almost immediately after the first heavy shock.

*Tuai-Wairoa Line.*—The operation of this line during the year has been quite satisfactory, there having been no outages due to line-failures. During the earthquake of the 16th September, 1932, many of the poles were thrown out of alignment. These were jacked back into place and re-rammed.

#### *Transmission-lines (11,000 Volt).*

*Mangaore-Shannon Line.*—This line is operated and maintained by the Horowhenua Electric-power Board, and has given very good service throughout the year.

*Khandallah-Hutt Valley Power Board Duplicate Line.*—Power is supplied over this line to the Hutt Valley Electric-power Board. Three interruptions, totalling 9 hours 55 minutes, occurred during the year, involving the outage of both circuits, two of these, totalling 9 hours 54 minutes, being due to a severe fault on the Power Board's section of the lines and a coincident fault on the direct-current supply to the relay system.