

This supply was given at the request of the respective local authorities, on account of shortage of water at their power-stations, and it was necessarily frequently interrupted to enable construction work to be carried on. Towards the end of February, 1932, the gear used to give temporary supply to New Plymouth was dismantled, and early in March permanent supply was given to South Taranaki Electric-power Board.

Since the permanent supply was inaugurated there were two accidental interruptions to supply, totalling 53 minutes, which were due to trouble on the Power Board's system. Two prearranged shutdowns, totalling 3 hours 17 minutes, took place, one of these, of 58 minutes, being at the request of the Power Board. The remaining one, of 2 hours 19 minutes, was required for work on the structure.

All apparatus has given good service.

*Stratford.*—At this substation power is reduced from 110,000 volts to 50,000 volts, and supplied to the New Plymouth substation at the latter voltage.

One prearranged shutdown, of 2 hours 11 minutes, was required during the year for work on the structure and connecting in the 50,000/230 volt local service transformer.

*New Plymouth.*—At this substation all apparatus is erected at the power-house of the New Plymouth Borough Council, the only consumer fed from this source.

As the Borough Council maintains its own staff for power-house operation, it has been arranged that this staff also carries out any necessary switching-operations on our apparatus, thus obviating the necessity for a special attendant.

Periodical inspection is carried out by the attendant from Stratford Substation.

Since the supply commenced, one prearranged shutdown, of 2 hours 11 minutes, occurred, which was required for work at Stratford.

*Masterton.*—From this substation power is supplied to the Wairarapa Electric-power Board. Under the new contract with the Wairarapa Power Board their Kourarau plant is now used solely as a standby.

During the year there were twenty accidental interruptions, totalling 15 hours 6 minutes, of which nine interruptions, of 2 hours 17 minutes, were due to the failure of a coach-screw in the stay on a pole near Masterton. Coach-screws in cross-arm stays are now being replaced by through bolts on all lines, during their annual overhaul.

During the year there were thirteen prearranged shutdowns, totalling 18 hours 45 minutes, of which ten, of 16 hours 32 minutes, were required for line-maintenance and one, of 13 minutes, for altering main transformer-tappings. The remaining two, of 2 hours, were at the request of the Power Board. These prearranged shutdowns took place at times when the Board's plant could carry all the load.

*Mangamaire.*—From this substation power is supplied to the Tararua Electric-power Board. There were seventeen accidental interruptions during the year, totalling 2 hours 30 minutes.

There were twenty-one prearranged shutdowns during the year, of a total time of 34 hours 30 minutes, twelve of these, totalling 26 hours 52 minutes, being required for line-maintenance. Two shutdowns were due to connecting up a temporary supply of power for drying out the condenser. Two shutdowns, of 4 minutes, were required to parallel Mangahao and Tuai after interruptions for work on other sections of line. One shutdown, of 2 hours 18 minutes, was required for changing the current-transformers in the metering-cubicle and making alterations to the relays on the main 11,000 volt O.C.B., and two, of 5 minutes, for carrying out the acceptance tests on the new relays at Woodville.

There was a breakdown on the synchronous condenser during the year. The protective apparatus saved the machine from serious damage. The cause of the breakdown was undoubtedly due to condensation of moisture during idle periods. Special doors have now been fitted on the inlet and outlet ducts and heaters installed to keep the machine dry.

*Woodville Switching-station.*—All apparatus functioned satisfactorily throughout the year.

Two prearranged shutdowns, of 5 minutes, were caused to Mangamaire supply to enable acceptance tests to be carried out on the new relays.

Early in the coming year it is proposed to install synchronizing equipment at this station so that Mangahao and Tuai can be paralleled here without causing interruptions to Mangamaire and Masterton Substations.

*Dannevirke.*—From this substation supply is given to the Dannevirke Electric-power Board.

During the year there were four accidental interruptions, totalling 7 minutes, none of these being due to faults in the substation apparatus.

Of the prearranged shutdowns, numbering eleven and totalling 13 hours 27 minutes, three, of 4 hours 15 minutes, were required for substation maintenance; five, of 2 hours 24 minutes, for line-maintenance; two, of 4 hours 37 minutes, for construction work; and one, of 2 hours 11 minutes, was at the request of the Power Board.

Owing to the failure of the insulation in the synchronous condenser at Mangamaire, due to the collection of moisture in the windings, the synchronous condenser at Dannevirke Substation has been dried out, and precautions taken to prevent the condensation of moisture on the windings.

*Waipukurau.*—From this substation power is supplied to the Central Hawke's Bay Electric-power Board.

Six accidental interruptions to supply, totalling 12 minutes, occurred during the year.

Of the eight prearranged shutdowns, totalling 14 hours 54 minutes, three, of 6 hours 59 minutes, were required for substation maintenance; one, of 1 minute, for Mangahao and Tuai to parallel after insulator-changing operations; and four, of 7 hours 54 minutes, for construction work.

All apparatus has functioned well during the year.

*Napier.*—From this substation power is supplied to the Hawke's Bay Electric-power Board. Five interruptions to supply, totalling 9 minutes, occurred during the year.