

(c) TRANSMISSION-LINES.

Melling-Masterton.—The location and survey of the transmission and telephone lines was practically completed by the end of June.

The final location of the portion of the transmission-line crossing the Rimutaka Range was checked by an aeroplane flight over the route, this being the only feasible method of ensuring that the best route had been selected over very broken country.

Bunnythorpe-Woodville.—The duplicate line between Bunnythorpe and Woodville was completed and put into service during the year.

Tuai-Gisborne.—The duplication of the Tuai-Ruakituri section of this line is well advanced, thirteen out of seventeen miles of poles being erected. Wiring is to be commenced almost immediately, and it is anticipated that the line will be ready for service in October, 1936.

General.—Owing to the unsatisfactory nature of the pole foundations on the Tuai-Ruakituri duplication, a considerable amount of work was carried out in order to decide on a satisfactory method of guying the poles, and a suitable design has now been approved.

(d) TELEPHONE SYSTEM.

Owing to the risk of lengthy disruption of telephone communication which may be occasioned by gales and earthquakes, a decision was made to install radiophone transmitting and receiving-sets at Mangahao and Tuai Power-houses. After much investigation the receivers at both power-houses have now been installed in permanent locations, and fairly satisfactory communication is obtained except in the middle of the day, when reception is poor at either end. The question of increasing the power of the transmitting-sets is being considered.

A double-circuit line was run on railway property between the new offices at Palmerston North and Bunnythorpe Substation. The telephone board at Bunnythorpe was completely reconstructed, and automatic selector equipment added, so that the new office now has instantaneous access by telephone to all parts of the system and *vice versa*, two conversations being possible simultaneously.

(e) TESTING.

In conjunction with the shifting of the district office to Palmerston North, the test-room was shifted from its old location in the Power-house at Mangahao to more spacious quarters on the ground floor of the new office. Shortly after the shift to Palmerston North, the new testing-equipment came to hand, and has been put into operation. This equipment, which includes current and potential generators with sine wave characteristics, greatly facilitates the testing of meters and relays.

In connection with the expansion of the activities of the testing staff in the field, designs were prepared for a new transport-vehicle, which has now come to hand. This vehicle includes special compartments so that the various instruments may be carried conveniently, in addition to providing ample space for loose equipment.

2. OPERATION AND MAINTENANCE.

(a) POWER-STATIONS.

Mangahao Power-house and Headworks.—As a result of the wet season the water-supply was well maintained during the year. At No. 1 dam the rainfall amounted to 175.04 in., rain being recorded on 216 days. A particularly wet period was experienced towards the end of October, and the Arapeti Dam overflowed for the first time since the system went into operation, water flowing over the crest to a depth of 8 in. The total amount of waste water recorded for the year at No. 2 dam was 10,628,000 cubic feet.

The access road was blocked on numerous occasions by slips, some of which were of considerable magnitude, and during the gale on the 2nd February, 1936, many large trees were blown across the road. The telephone and indicator lines between Nos. 1 and 2 dams suffered very severely and had to be completely dismantled. A new line is being erected on the same poles as the power-supply.

The General Branch established a camp at the headworks, and, after erecting a new reinforced-concrete bridge at Tramline Creek, proceeded with the work of concreting the Cushion Pool below No. 2 dam. In spite of indifferent weather, the work proceeded smoothly and was completed early in April.

Sandblasting of the bus-pipes in the power-house was completed and Nos. 1, 2, and 3 turbines and governors were completely overhauled. Comprehensive governor tests were then carried out on all three machines, the generators being loaded on the test tank for the purpose.

In continuance of the policy of improving the working-conditions in the switch-gallery, a sound-proof cover has been fitted over the voltage regulators. Investigations were also made with regard to the lighting, and these resulted in a big improvement being effected by excluding all direct daylight, thus reducing very considerably the glare from the black polished panels and the glass faces of the instruments.

Following the removal of the district office to Palmerston North, the old office building was converted into a social hall, while the old test-room in the power-house building was fitted up as a storeroom.

Work was continued on the strengthening of the power-house earthing-system, which is being brought up to present-day standards.

Waikaremoana Power-house and Headworks.—Due to a very wet season, the lake has been at a higher average level this year than for many previous years. The lake-level in August, 1935, was just under 2,020 ft., and the lake level varied over a range of 7 ft. during the year. The average measured discharge was 590 cusecs, and the rainfall for the year 87.78 in.