

from Power Boards (over 35 per cent.) and of £2,500 from other sources has more than made up for the decrease from the mines.

The growth in revenue from the Power Boards (35 per cent.) has been accompanied by a growth in the sum of their maximum loads from 3,038 kw. (4,050 h.p.) to 4,523 kw. (6,050 h.p.), or 49 per cent.

For the present year it is estimated that the mining load will be about the same; there will be an increase in the load and revenue from Power Boards and other consumers. On the other hand, there will be a considerable increase in capital charges on the extensions at Horahora, and additional transmission-lines, so the net revenue in this year will probably be about the same as in the year just ended.

It is intended that supply will be given during the present year to the Auckland, Waitomo, Franklin, and Waitemata Power Boards, and to Rotorua Borough.

Working-costs during the year are shown in Table K. These show—

- (1.) Decrease in generating-costs per unit, owing to less work done on maintenance of power-house machinery and headworks:
- (2.) Decrease in transmission costs per unit:
- (3.) Increase in costs per unit at main substations, due partly to increased maintenance, and partly to the fact that this is the first full year of operation of one of the substations:
- (4.) Increase in cost of management. This is due principally to increase in general office expenses, largely owing to a fire in the office, and to increase in the amount of work done for consumers and paid for by them, but included for the accounts under the heading of "Management."

Extensions during the Year and Future Extensions.

General, Additional Consumers, and Connected Load.—No additional large consumers have been supplied during the year. The total system supplied from Horahora (on 31st March) consisted of 86 miles of 50,000-volt lines and 38 miles of 11,000-volt lines belonging to the Department, and 403·5 miles of 11,000-volt lines, 469 miles of 3,300-volt lines, and 398·5 miles of 400-volt lines belonging to local authorities. The above are "route miles" of lines. If account is taken of lines of different voltage on the same poles—i.e., of circuit miles—the total would be considerably increased.

The connected load has increased during the year from 25,123 kw. to 31,757 kw., an increase of 6,634 kw., or 26·4 per cent.

The increase in maximum load has been 200 kw. on Horahora and 900 kw. on the system (supplied by Horahora and the Grand Junction plant). The diversity has increased from 3·395 to 3·83.

Arrangements have been made to get additional power (1,800 kw. for eight hours a day) from the Tauranga Borough's new plant at McLaren's Falls. This, with extensions at Horahora to 10,300 kw. capacity, should provide for a maximum load of 12,100 kw. on the system at ordinary times, and of 10,300 kw. in case of extreme low water at Horahora.

Arrangements have also been made whereby power, if available from the Auckland Power Board's steam plant, will be purchased by the Department for general distribution over the system to the point where it may be required; and by the end of the year 1925-26 all plants in the district, at Horahora and Auckland, with smaller plants at Thames, Te Aroha, McLaren's Falls, and Rotorua, should be connected together by 50,000-volt and 11,000-volt or 6,600-volt lines, giving supply at the following points: Horahora, Waikino, Waihou, Ngongotaha, Hamilton, Te Awamutu, Hangatiki, Bombay, Penrose, Takapuna, and one other point in the Waitemata Board's district.

Extensions at Horahora.—The extensions to the power-house building, and alterations to the head-race and tail-race, were completed during the year, and one of the two new 2,000 kw. units was installed and ready for service in November. Owing to the breakage of a casting on the Auckland wharf, which casting had to be replaced by the makers in England, the other unit has only recently been completed.

Delay in the arrival of the switch-gear prevented its being installed until towards the end of March, preventing any use being made of the new unit until that time.

The erecting of two motor-driven exciters, a new bank of 5,000/50,000-volt transformers, and new 50,000-volt switch-gear, was completed during the year.

Considerable progress has been made on the construction of a new concrete weir across the river above the head-gates, to ensure making the whole low-water flow of the river available for power purposes.

Additional Transmission-lines.—The wood-pole 110,000-volt line, Hamilton to Penrose (to be operated at 50,000-volt to supply the Auckland and Franklin Power Boards) was almost completed during the year, and has since been put into operation, enabling Horahora to run in parallel with the Auckland Power Board's steam plant.

Considerable progress has been made on the 50,000-volt lines to Ngongotaha (Rotorua) and Hangatiki (Waitomo), which should both be completed at a very early date.

Surveys are in hand of the following lines: Arapuni-Penrose steel-tower line, 110,000 volts; Katikati-Waikino (completed), 50,000 volts; Penrose-Takapuna (almost completed), 50,000 volts; Waikino-Bombay (commenced), 50,000 volts; Bombay-Pukekohe, 11,000 volts; Hangatiki-Waitomo, 11,000 volts.

The future line-construction programme is as follows: Te Awamutu-Hangatiki (completion, September, 1925), 50,000 volts; Arapuni-Rotorua (completion, September, 1925), 50,000 volts; Katikati-Waikino (completion, October, 1925), 50,000 volts; Penrose-Takapuna (completion, June, 1926), 50,000 volts; Waikino-Bombay (completion, June, 1926), 50,000 volts; Arapuni-Penrose (completion, August, 1927), 110,000 volts.