

*Industrial Developments.*—Owing to the overloaded condition of the plant and the delay in getting the fifth generator into service restrictions were still in force at the end of the year, but were entirely removed on the final test of the fifth generator in April, 1922, which brought the plant capacity up to 9,000 kw. (12,000 h.p.). Since then supply has been given to the Canterbury Frozen Meat Company (making the fourth large freezing-works connected to the mains), Kempthorne-Prosser's new super-phosphate-works, the new woollen-mill erected by the Kaiapoi Woollen Company at Woolston, and several other consumers who had been waiting for supply. Moreover, the restriction on the use of ironing and heating points was removed, resulting in an increase of the city demand from 3,750 kw. to 4,290 kw.

*Future Extensions.*—In addition to the extensions now in hand, which will bring the plant up to the full capacity of the existing headworks—viz., 12,000 kw. (16,000 h.p.)—plans and specifications are in hand for a further extension, consisting of an additional tunnel, 11 ft. in diameter (as compared with the present 8 ft. tunnel), and an extension of the power-house to take at first two and finally three units each of 7,500 kw. (10,000 h.p.). This extension will provide for the whole of the water available from Lake Stream, the Harper River, and the Acheron River—in fact, the whole of the economical capacity of the site—and involves raising the lake-level from the present overflow level of 1,667.5 ft. to 1,670 ft. by means of a small outflow weir.

*Third Pipe-line Contract.*—A valuable experience was gained during the year in a new form of contract for this work. During the war a great many works were let on the basis of 10-per-cent. commission on the cost. This is an undesirable form of agreement, in that it gives the contractor every inducement to wasteful and extravagant expenditure. For the erection of the third pipe-line a tender was received in the following form: The Department to pay the actual cost (estimated in the tender at £8,500), and the contractor to receive a commission of £850, reducible by 15 per cent. of any excess in the actual cost over £8,500, and increased by 15 per cent. of any saving below £8,500 in the actual cost of the work. As the next lowest tender was very much higher, and as the above arrangement gave the contractor every inducement to do the work at the lowest possible cost, it was accepted. The actual result was that a very hearty degree of co-operation was attained between the Department and the contractor, both being interested in keeping down the cost to a minimum; and, after all services offered by the Department, such as electricity, transport, &c., had been charged up, the actual cost worked out at £7,184—a saving of £1,316 on the estimate—thus increasing the commission to the contractor accordingly, and giving a result eminently satisfactory to both parties.

#### WAIKATO ELECTRIC-POWER SUPPLY.

The Horahora power plant has now completed its second complete year of operation since it was purchased from the Waihi Gold-mining Company, and the results have been very satisfactory indeed.

The capital outlay at the end of the year under review was £353,808, as compared with £249,499 at the beginning of the year, an increase of £104,309. Of the total the sum of £212,500 represents the amount paid to the Waihi Gold-mining Company for the power-house and transmission-line to Waihi and substation at Waikino as taken over, and the balance, the amount expended on new lines to supply Hamilton, Cambridge, and Te Awamutu. The result of the year's operation shows a revenue of £28,207, against which are chargeable £7,986 working-expenses and £17,699 to cover interest and depreciation, leaving a net profit of £2,522, as compared with a loss of £6,282 in the previous year. The revenue has been derived as follows: Three mining services, £19,779; four dairy factories, £2,455; four Power Boards, £3,208; one borough, £1,391; rents, &c., £1,374: total, £28,207. This satisfactory result is due largely to an increase of over £5,000 in the revenue from the mines, due mainly to the supply given to the Grand Junction Company at a very small additional capital outlay, and to the energy of the district staff in getting additional business elsewhere.

But the provision of the 50,000-volt lines and substations necessary to supply future requirements entails considerable additional capital cost. It is expected that the general demand, apart from the mining load, in the district will increase sufficiently in a year or two to pay the additional capital charges, as well as the additional maintenance and working-expenses involved in these extensions; but for the current year the revenue from the mining load has fallen off at a rate of £300 per month as compared with last year. The revenue from other consumers can hardly be expected to increase sufficiently to offset this as well as the increased charges referred to above, so that unless the mining load and revenue recover the financial results for the current year will probably be less favourable.

Arrangements have been made to supply the Railway Department with 400 h.p. to 600 h.p. for its large house-building factory at Frankton.

Tenders, closing about the end of the year, are being called for an extension of the power-house capacity by 4,000 kw., making a total installed capacity of 10,300 kw., which is sufficient to utilize the minimum low-water flow in dry years and allow one spare unit. To enable the whole of the low-water flow of the river to be taken through the head-race the extension of the existing weir across the river has been put in hand. It is proposed to reserve 2,000 kw. of this for supply to the Auckland Power Board. Sufficient material is on hand to enable the construction of the line to Auckland to be gone on with.

The maximum load on the power-house has been 5,800 kw., which dropped, owing to reduction in the mining load, to 5,000 kw. at the end of the year. If the mining load increases again it is probable that the plant will be overloaded before the extensions above can be installed, but the supply contracts entered into with five of the large consumers who had previously installed their own steam plants permit the Department to make use of these plants if required, and if necessary to call on them to feed back up to 3,000 h.p. of steam power, so that there is no need to fear a shortage before the extensions now in hand are completed.