

MANUHERIKIA SCHEME.

Intake Tunnel.—Only $4\frac{1}{2}$ chains of the tunnel, which will divert the Manuherikia River water into the main race, remain to be done.

Operations were proceeding with machine drills, three shifts working at each end, up to the end of May, when the power plant unfortunately was destroyed by fire. Owing to the high cost of purchasing and running machinery, together with the difficulty of obtaining experienced workmen for its efficient use, it was decided to proceed by hand. This method continued till August, when the shortage of labour necessitated the curtailment of work to one end only, where two shifts were continued for the remainder of the year.

Race-construction.—During the first half of the year work was confined to the first 2 miles of the rocky Manuherikia Gorge.

At the end of September scooping operations were recommenced on the construction of the main race, and work has been continued on both sections to the end of the year.

The main race has been completed from 4 miles to 7 miles 19 chains, and a bench has been excavated for a distance of 3 miles 11 chains on the sidling out of which the race proper will be excavated.

Chatto Creek Siphon.—Pipes have been purchased from a gold-mining company, dismantled, and carted to the site.

HYDRO-ELECTRIC SUPPLY.

DEVELOPMENT OF WATER-POWER.

North Island Schemes.

The surveys of the Mangahao and Waikato Rivers and Lake Waikaremoana have been completed to a point enabling definite proposals to be submitted for the development of each of these sources of power. After a very exhaustive investigation of the alternative methods of general distribution a complete scheme has been drawn up for the North Island, consisting of a network of high-tension transmission-lines covering practically the whole Island, with 50,000, 33,000, and 11,000 volt reticulations to all the main centres, and supplying the country districts *en route*.

This system will ultimately be supplied with power from the three main power-houses at Mangahao (24,000 horse-power), Arapuni (96,000 horse-power), and Waikaremoana (40,000 horse-power), with connections to the existing power-stations—Horahora Rapids (8,400 horse-power) and Wairua Falls (3,300 horse-power).

During the year the surveys have been carried on of the transmission-lines from Mangahao to Wellington, Wanganui, Dannevirke, and Wairarapa, and from Arapuni to Auckland.

The work at Mangahao was commenced with the construction of the roads, and at Arapuni by driving trial levels and shafts to thoroughly explore the foundations of the proposed dam.

South Island Hydro-electric-power Developments.

The extension of the reticulation of Lake Coleridge to the districts surrounding Christchurch has been pushed on to the limited extent permitted by the restricted amount of power available, but plans are in hand for further extensions as soon as the war restrictions permit, particularly to the Akaroa Peninsula and to South Canterbury, Ashburton, and Timaru.

An exhaustive scheme for the supply of the South Island on the same lines as that laid out for the North Island is in hand, but owing to pressure of work and the limited staff available it has not yet been completed. A preliminary investigation has been made indicating the main lines on which it will be laid out.

Regulations for Electric Lines.

Revised regulations for the control of electric lines have been drawn up after very exhaustive investigation which has extended over the whole year. Owing to the rapid evolution which is taking place in the development of electric supply this matter has been given very careful attention.