

The junction between the new and existing tunnels is being prepared, and special arrangements have been made to break through and make the connection with no more than a few hours' shutdown of the Cobb Power-house.

Excavation for the spillway to the dam has progressed as far as is possible without endangering the present pipe-line in the valley floor, and 23,000 cubic yards of material have been excavated in a cut at the downstream end of the spillway system.

In the meantime the assembly and erection of quarry and concreting plant is well forward and exploration of borrow areas has proved the material available for the dam.

Examination of the foundation conditions for the dam has been carried out in shafts and excavations over the dam-site.

The average number of men employed during the year was 160.

Lake Tekapo Development.—The 20-ft.-diameter tunnel over a mile long was holed through on 8th October, 1948, and by March, 1949, the last ring of lining-blocks was in position and the removal of the second shield well advanced. Grouting behind the tunnel blocks is now proceeding and is about 25 per cent. complete. A contract for the steel tunnel lining and for the penstock has been let and the contractor has started at the site.

Excavation of the surge chamber was 75 per cent. complete and excavation for the conduit drains and gate shaft at the surge chamber was completed and the penstock formation prepared for the contractor.

The construction of the power-house by direct labour has now reached turbine-floor level and over 5,000 cubic yards of concrete have been placed.

Excavation at the site of the switchyard and office block was complete and preliminary concrete placed.

The tailrace has been excavated and about half the concrete lining placed.

Work remaining on this scheme includes completion of the works above described, together with the construction of the intake at the lake, which will be started very shortly.

Construction of the dam at the lake outlet has not yet been started, but some preparatory work has been done for site investigation. This dam will be required for lake-control purposes, and is not necessary for initial production of power. It will be built in the dry after the lake is lowered.

Two hundred and forty men are employed at the site.

Lake Pukaki Control.—Excavation on the dam-site for this work encountered difficulties due to the presence of pug in layers and pockets over the area. These troubles have been for the most part overcome and 90 per cent. of the foundation preparation has been completed. This enabled the placing of the core and shoulders of the dam to start, and 20 per cent. of this work was completed.

The main excavation for the spillway has been completed and a contract let for the construction of this work in December, 1948.

Machinery for the operation of the sluice gates and spillway gates is on order.

The efficacy of the coffer-dams was tested in a severe flood which occurred in February, when the lake level rose 6 ft. in three days. The recently completed sluices were operating full open during this period.

The average number of men employed at the site was 329.

Highbank Power-station.—A special screen-cleaning gear of a new type has been installed at the intake at Highbank to overcome choking of the screens due to debris brought down by the headrace.

Some protection work was also done in the tailrace to reduce erosion.

Construction of Substations

Otahuhu.—The piled foundations for the condenser building were completed. This involved the casting and driving of 227 reinforced-concrete piles 18 in. square and 70 ft. to 75 ft. long. The building area is now being excavated and prepared in readiness for the commencement of construction on the building superstructure.