

grout curtains for sealing the country has been demonstrated in the vicinity of the diversion tunnel, where extensive drilling and grouting has been carried out at the intersection of the tunnel and grout curtain line on the left bank. On the region being opened up during tunnelling-operations, good penetration of grout into the rock crevices has been observed.

Excavation in rock for the unloading-bay and workshop sections of the power-house on the right bank of the river has been completed to floor-level. The excavated rock has been stacked ready to place in the down-stream coffer-dam later.

Excavation for the lift-shaft and adits at power-house floor and roof levels is complete. Concrete lining of the shaft and construction of the superstructure above ground-level are under way.

Excavation is complete for the head and tail tower tracks for the two $7\frac{1}{2}$ -ton cableways required for dam and power-house construction. The concrete track piers and the piers for the tail-tower bridge are finished.

The sawmill started cutting in May, 1947, and already 1,100,000 superficial feet of timber have been produced. The logs for milling are obtained from pinus plantations situated below the level of the future Maraetai Lake. Thirty acres have been cleared so far. The sawn timber is being used for accommodation, works buildings, and general purposes; and having the mill on the job has been a great asset.

The number of men employed has increased to 802, the average for the twelve months being 704.

Waikato River Hydro-electric Development Investigations.—Again during the past year investigation work has been largely concentrated at Whakamaru, 6 miles up-river from Maraetai. The Whakamaru area is complicated geologically, which fact has necessitated subsurface investigations extending over an area of 900 acres and has required an extensive rotary drilling programme of 400 holes averaging 170 ft. in depth. In addition, over 30 shafts have been sunk, one to a depth of 120 ft.

Two possible dam-sites at Whakamaru have been investigated previously, and a third site (down-stream of the other two) has been investigated during the year. The work has resulted in a fairly detailed picture of subsurface conditions not only at the proposed site for the dam, but also in the areas likely to be adopted for diversion tunnel, cut-off walls, head-race, and power-house. Holes are now being drilled from a barge covering the whole area of the river-bed for a length extending 200 ft. up-stream from the third dam-site and 400 ft. down-stream.

During the year, 3 miles of temporary road have been completed, giving access to the area to be investigated for the Waipapa Development. Waipapa is at the head of Arapuni Lake, 5 miles down-stream from Maraetai. A camp has been built to accommodate 30 men engaged on the investigations. Preliminary drilling locations have been set out and a barge for river drilling has been brought in.

The preliminary geophysical survey of the area in which the Atiamuri Development will be sited has reached an advanced stage. A $2\frac{1}{2}$ -mile access road has been formed to connect two dead-end roads and so provide a direct line of communication between Atiamuri and Whakamaru and Mangakino. A camp has been established at Atiamuri to accommodate personnel of the investigation and geophysical survey parties. Preliminary drilling locations have been set out and access tracks are being formed to these positions.

Waikaremoana Upper Development.—Construction has been pushed ahead against natural difficulties, and the intake channel was flooded in March when water was supplied to turn over the first generator.

The main work during the year has been the excavation of the intake channel. Excavation was started at the tunnel entrance and proceeded towards the lake. The excavation area was surrounded by a coffer-dam consisting of spoil removed from above lake-level, but, due to the open nature of the country being excavated, leakage up to 200 cusecs has had to be dealt with. Nevertheless, very considerable progress has been