

## NORTH AUCKLAND MAIN TRUNK RAILWAY.

*Rangihua Section* (24 m. 45 ch. to 38 m. 34 ch.; length, 13 m. 69 ch.).—The first eight miles of this section traverse hilly country, which has proved to be of a very unstable and treacherous nature. The batters of every cutting in this length have slipped, partially filling the cuttings with a loose water-soaked mass of clay, which has had to be removed by means of steam-shovels. Five shovels have been employed on the section, and without them the cost of removing the slips by hand would have been prohibitive. Where there have been fillings of over 10 ft. the weight has been too much for the country underneath, which, though apparently solid, is actually incapable of bearing much weight. To get over these difficulties it has been necessary either to deviate the line or put in drainage-drives under the bank-foundations.

The remaining seven miles of the section traverses the floor of the Waihou Valley. This country is more stable, but the cuttings, when opened up, have been found to consist of soft pug, in which it has been found necessary to revert to the old-fashioned hand methods of cutting out this tenacious material by means of a piano-wire with handles attached, which is used to cut through the material and separate it into blocks, similarly to the methods used for cutting soap.

The formation has been completed from 28 m. 30 ch. to 32 m. 0 ch., a distance of 3 m. 50 ch., thus giving a total completed distance of 7 m. 60 ch. beyond Okaihau. A further length of 4 m. is in hand.

Fences have been erected on both sides of the railway reserve from 32 m. 30 ch. to 34 m. 35 ch., a total length of 330 ch. of fence. Twenty concrete culverts have been built, varying from 2 ft. to 8 ft. in diameter and seven concrete-pipe culverts.

33 m. 37 ch. of permanent-way have been laid, from 26 m. 44 ch. to 30 m. 1 ch., and  $1\frac{1}{4}$  m. of rails for a tram-line to ballast-pit at Okaihau. This ballast-pit is being opened up, and ballasting will be put in hand during the coming year.

Three workmen's camps have been built along the route of the railway and one at the quarry. These have been equipped with bathhouses, cookhouses, and other conveniences, and a standard Y.M.C.A. hut has been erected at Okaihau and is well patronized by workmen and settlers.

*Kirikopuni Section* (107 m. 0 ch. to 121 m. 0 ch.).—The principal work during the year on this section has been the general cleaning-up of the whole section, the clearing of slips, and completion of bridges, station-yards, and buildings.

At the end of last winter considerable trouble was caused by slips in the cuttings generally and subsidence of banks, but by the end of the summer the work was well consolidated and in first-class order for handing over to the Railway Department in May last. Six steam-shovels were fully occupied in removing slips.

Both the Omana and Tokatoka Tunnels have been strengthened in places to resist the very heavy pressures which developed since they were completed.

At Waiotira the platform was converted to an "island" type, points and crossings were laid at the north and south ends, and a double siding constructed on the west side of platform. At Pikiwahine Station a goods-shed was erected and the yard cleaned up and completed. Three standard 16 ft. gates were erected at Omana, and the metalling of access roads has been completed. All buildings, gates, cattle-stops, and fences were completed at Pukehuia, and metalling laid. At Kirikopuni Station all buildings, with the exception of one platelayer's cottage, which is in hand, were erected, and a sheep-drafting race and yards have been constructed at the south end of the yard, having access from the stockyard approach road.

The metal for the Parakao Road is still being unloaded at Kirikopuni Station, and for this a temporary siding has been laid and hopper erected; this will remain until the metalling is completed.

All bridges on the section, of which there are fourteen railway and four overbridges, have been erected.

At 113 m. 66 ch. it was found necessary, owing to the erosion of the banks, to construct stone bases between centre piers to a width of about 80 ft. and a depth of 5 ft. 6 in. The most important bridge, that over the Wairoa River at 118 m. 77 ch., is 765 ft. long, and consists of two 106 ft., two 45 ft., and fifteen 30 ft. steel spans on three concrete cylinder piers and seventeen timber piers. This was completed during the period.

At 120 m. 1 ch. considerable difficulty was experienced with the piles owing to the subsidence of the banks and ground-movements, and to counteract this raker piles were driven and stone packing placed under the full length of bridge to a width of 21 ft. and a depth of from 3 ft. to 15 ft., with twin 2 ft. concrete pipes embedded to take the normal flow of the creek.

All culverts on the section have been completed, the wing walls and parapets between 111 m. and 121 m., which had been left over until aggregate could be brought in by train, being the main construction items under this heading for the period.

Platelaying was completed from 118 m. 77 ch. to 121 m. 0 ch., and three lifts of ballast were placed between 107 m. 25 ch. and 121 m. 0 ch.

In order to provide a water-supply for the Kirikopuni Station a concrete dam and reservoir were erected, and connections were made to platelayers' cottages, 6,000-gallon vat, latrines, station buildings, and water-troughs in the stockyards. A metered connection was also made to the new butter-factory at the north end of the station. The necessary land was taken and fenced at intake, and reservoir and 25 links right-of-way surveyed along pipe-end.

Approximately 6 acres of silver-poplar cuttings and young gum-trees have been planted in reserves at Pikiwahine, Omana, and Pukehuia station-yards, and at the bottoms of various slips.

A 40-acre reserve between Waiotira and Tauraroa was fenced and planted in mixed trees. This planting was carried out mainly to stabilize the slopes adjoining the railway, but it is anticipated that the timber will also have a future value.