

work for about seven months, and has shifted over 18,000 cubic yards, but the section of line between 16 m. and 17 m. 10 ch. is much the worst for slips in the whole length, and will fully occupy at least two shovels for a considerable time. In fact, it would have been exceedingly difficult to keep the line open without the steam-shovels. The shovel-work has been somewhat hampered by the shortage of wagons, but the position has been considerably eased by the arrival of some of the American dump wagons recently ordered, fourteen of the latter being now in commission, in addition to a number built locally. Four small Dinky locomotives have also been received, and are working in conjunction with the steam-shovels, enabling the work to be carried out more expeditiously and efficiently. A considerable amount of stone and tile drains will be required to drain the various slips and cuttings before finality is reached in this work. Fifty single huts and twelve married men's houses have been built.

WAIPU BRANCH RAILWAY.

Ruakaka Section (0 m. to 9 m. 20 ch.; length, 9 miles 20 chains).—Formation was well in hand on this section, and an Erie steam-shovel was engaged in completing the banks across the mud-flats between 0 m. and 2 m. 45 ch. when work was stopped. This work has, however, been recently restarted.

NORTH AUCKLAND MAIN TRUNK RAILWAY.

Paparoa Section (88 m. 21 ch. to 92 m. 6 ch.; length, 3 miles 65 chains).—The formation of this section has been completed, and all pipes, culverts, &c., are also completed. The big bank at 91 m. 30 ch. which gave so much trouble last year has now consolidated, and no further movement took place this winter. The excavation and lining of the Huarau Tunnel has been finished under very adverse conditions, the last section of lining being heavily reinforced to withstand the pressure, and conditions all through being such that progress was necessarily slow. The permanent rails have been laid to the end of the section, but the Paparoa station-yard sidings are still in hand. Ballasting operations were resumed during the period, and a first lift of ballast placed up to 92 m. 6 ch., omitting the bank at 91 m. 30 ch. Two platelayers' cottages were completed and occupied, and arrangements were entered into for four additional cottages and the Stationmaster's house.

Mareretu Section (92 m. 6 ch. to 96 m. 45 ch.; length, 4 miles 39 chains).—Trial surveys of these alternative tunnel routes and deviations beyond Golden Stairs and permanent surveys of the approved deviation were completed and plans submitted. A considerable amount of fencing on various portions of the section was erected, and arrangements were made with the settlers to enable work to be put in hand as far as 96 m. 2 miles 12 chains of service road was constructed to serve the Golden Stairs Tunnel, and 40 chains of this will ultimately be used as the Golden Stairs to McCarroll's Road. Good progress has been made with the formation and culverts, but great difficulty has been experienced in keeping the section between Paparoa Station and Golden Stairs Tunnel free from slips and open for the service-train traffic. The clearing of slip at 92 m. 30 ch. and formation of bank at 92 m. 55 ch. is being carried out with a Marion steam-shovel; this work is almost complete, and the machine will then be transferred to cutting at 96 m. 37 ch. An Osgood shovel is being assembled, and will be utilized at 94 m. 25 ch. Platelaying is now complete to 93 m. 41 ch.; ballasting operations were recommenced during April, and a contract let for procuring metal from the Hoteo quarry; a first lift of ballast has been placed from 92 m. 13 ch. to 93 m. 41 ch. During the year forty-nine 8 ft. by 10 ft. huts, a new boardinghouse to seat fifty men, a recreation-hall, canteen, and water-supply have been constructed at Golden Stairs.

Waikiekie Section (96 m. 45 ch. to 107 m. 28 ch.; length, 10 miles 63 chains).—Work has, as far as possible, been concentrated on this section during the year, and good progress has been made. From 100 m. to 102 m. 25 ch. the formation is practically complete, though several slips are developing, and will require removal. From 102 m. 41 ch. to the end of the section the formation, with the exception of the widening of the Waikiekie station-yard, has been completed. The cutting at 104 m. 18 ch. has, however, slipped badly, but a Marion shovel has been placed here and will soon have it cleaned up. Between 102 m. 40 ch. and 103 m. 5 ch. a Marion shovel has dug 21,000 cubic yards, and is still occupied on slips. A Bucyrus has been occupied at 106 m. 72 ch. in order to complete the bank to the Waiotira station-yard, but slips have again been troublesome.

Every endeavour was made to finish the Waikiekie Tunnel during the period, and it was finally completed in April. Very great difficulty was experienced throughout in the construction of this tunnel, the ground being treacherous and unstable for the whole length. Owing to heavy slips at the northern end it became necessary to adopt a special reinforced section to enable the timber-work to be started, and particularly close and heavy timbering had to be used throughout. All material for the south end of the tunnel and for works ahead was hauled over the top of the tunnel by means of a rope tramway. This proved economical, and enabled preparations to be put in hand for the Mareretu Tunnel. As soon as the north end of the Waikiekie Tunnel was completed a start was made with the Mareretu Tunnel; and, as preparatory work and accommodation, including boardinghouse, recreation-hall, and water-supply, were well in hand, it was possible to transfer the men on the north end of Waikiekie to Mareretu while the men on the south end of the former were completing the last length. At the end of the period 3 chains of the Mareretu Tunnel were completed, and it is anticipated that the remaining 13½ chains will be completed by the end of next June. A certain amount of difficulty was experienced in driving through the soft ground near the approaches, and it was necessary to use two sections for the concrete lining, but as both headings are now in fairly soft ground no further trouble is anticipated.

The piers for bridges at 104 m. 1 ch. and 104 m. 35 ch. have been completed, and temporary superstructures placed pending the arrival of the steel girders, which will be placed in position as soon as received. Preparatory work for the erection of bridges over the Mangawai River and Kikowhiti Stream is in hand.