

near future. The fourth face, at the south end of Waikoura tunnel, was delayed until a heavy approach cutting could be completed, but tunnelling is expected to start inside a few weeks.

A further gain in the rate of tunnelling is confidently expected as far as the concrete lining is concerned. Special pumps have been imported which will pump the concrete directly into place in the footings, walls, and arches at a very much faster rate than it could be placed by the old laborious hand-shovelling process, or even by the compressed-air-operated concrete-gun method employed in the Tawa Flat tunnels.

The 46 ch. Coast tunnel situated between the two longer ones passes through some weaker rock formations. For this reason, and also because all possible spoil is needed for a filling at one end, a 10 ft. by 8 ft. bottom heading is being driven right through. Already 16 ch. have been driven, and the whole tunnel should be completed by the more conservative method before schedule date.

All tunnels are well lit with electric light, ventilated by adequate power-driven fans, and provided with air-compressing plant and machine drills for rock-drilling.

Bridges: Altogether there are twenty-two bridges to be built. Work has been much impeded by the scarcity of steel. Only two are of more than medium dimensions. One is a crossing of the Kopuawhara Stream, 7 miles from Waikokopu, which is 500 ft. long and 125 ft. high. So uncertain is the position regarding steel-supplies that the adoption of a reinforced-concrete-arch design is being seriously considered in place of the original all-steel-viaduct proposal.

The other major structure is the Waipaoa River bridge 5 miles from Gisborne. This consists of steel spans on reinforced-concrete pile piers, the total length being 720 ft. Good progress has been made with the pier-construction, over 60 per cent. of the pile-driving being finished, as well as one-third of the piers.

Steel for the spans, however, is an uncertain factor here also, and it is possible that completion of the bridge structure will be held up pending its arrival.

A notable feature in connection with this bridge is the use for the first time in New Zealand of a tetrahedral concrete-block apron for protecting one of the river-banks from erosion. As far as can be judged from the moderate flood tests to which it has been subjected so far, it is giving highly successful results.

On four small bridges between this point and Gisborne pier construction has been finished, while construction of bridges south of the Waipaoa River has been commenced.

Platelaying: The laying of permanent rails has been commenced on a small scale from Gisborne in order to provide access to a storage-site for bulk materials at Matawhero Station Yard situated 3 miles out. Platelaying, however, will not be able to advance very far from Gisborne until completion of the Waipaoa River bridge in the early part of next year. Similarly at the Waikokopu end non-arrival of steel for bridges threatens eventually to delay platelaying, but this would not in any case be put in hand for about six months, pending completion and consolidation of earthwork on the Waikokopu Bluffs Section.

*South Island Main Trunk Railway.*—The average number of men employed on this work during the period was 900.

When work was closed down in October, 1931, the railheads were at Wharanui on the north end and Parnassus on the south end, and the length of the uncompleted section was 76 m. 28 ch. Formation work was in hand on the north end between Wharanui at 56 m. and the Ohau Bluff at approximately 85 m., and on the south end from Parnassus at 44 m. to Claverley at 59 m., a total distance for both ends of approximately 44 miles, while platelaying and