

The trial survey for a deviation of the Wellington-Woodville line between the Upper Hutt and Woodside Station was completed during the year; the length is 21 miles 51½ chains.

A deviation two miles and a half long was surveyed from 31 m. to 33½ m. on the Tadmor Section of the Midland Railway.

The most important survey-work in hand during the year was that for the permanent location of the line of the Arthur's Pass Tunnel on the Midland Railway. Mr. Dobson was instructed to make trial surveys for two alternative lines for the summit tunnel and some minor alternative lines between the Otira Station and the Otira end of the tunnel. Unfortunately, the level of the Otira Station is too low for lines on 1-in-37 grades leading out of it, and the location is further complicated by attempting to get a road-and-railway bridge combined, with the necessary approach roads, over the Otira.

The length of tunnel between the Otira and Bealey, by the most direct route, crossing the Otira just above the station, would be 6 miles 8 chains on a maximum grade of 1 in 37·5 (approximately). The alternative route to this crosses the Otira a second time and runs up the Rolleston for a length of 45 chains to Moyes Creek. If the tunnel exit be taken at the same point at the Bealey end the grade would be about 1 in 39, and the length of the tunnel 5 miles 68 chains, approximately, but if the 1-in-37 grade is adhered to on this route the tunnel would be about 5 miles 55 chains.

Had the Otira Station been at a sufficiently high level to give an absolutely safe crossing of Goat Creek, and if the idea of a combined road-and-railway crossing of the Otira were abandoned, a line could be got crossing the Rolleston only by the Moyes Creek route. The grade obtainable would be about the same as on the first route, and leaving out the cost of raising the station-yard and the line below this would be the cheapest route, but it is doubtful if the saving in cost would cover the expense of building a road-bridge and altering the existing line.

The survey is proceeding on the first route above described, as there is only a doubtful chance of saving £5,000 to £10,000 on the Moyes Creek route, while the extra length of line to be worked would be 35 chains. The survey has been practically finished from the Otira Station to the Otira end of the tunnel. And a considerable amount of work has been done for the triangulation necessary to determine the length of the tunnel, and one base line has been measured in the Otira Valley.

The permanent survey for the Reefton-Inangahua Section of the Midland Railway was begun in March last, and is finished for a distance of five miles and a half. Some trial lines to determine the cost of taking the line through Reefton are nearly completed.

A survey for a short branch line from Ngahere Station, on the Midland Railway, to near the Blackball Coal-mine was done during the year.

A land-plan survey for the first 23 miles 54 chains of the Waipara-Cheviot survey has been finished.

A land-plan survey for the Otago Central has been made from 79 m. to 105½ m., and the plans are nearly ready. The land-plan survey for the extension of the Catlin's line beyond Owaka is in progress. The land-plan survey for the first six miles of the Orepuki-Waiau survey has been finished.

A permanent survey has been made for the extension of the Windsor-Livingstone Railway from Tokarahi to Pukeraro, a distance of 4 miles 15 chains.

The permanent survey of the extension of the Waipahi-Heriot Railway was reinstated for a distance of two miles. Most of the original survey had been obliterated.

The permanent survey for the extension of the Seaward Bush Railway has been completed for a length of 15½ miles, and several miles of trial-line survey have also been done.

The permanent survey for the extension of the railway from Orepuki to Waiau has been extended to a point across the Waiau River distant 13 miles 32 chains from Orepuki Township.

SLEEPERS.

A large number of contracts and agreements for the supply of sleepers were current during the year ending the 31st March last, and the deliveries made in the districts from which they were obtained were as follows:—

Auckland District: 15,570 totara, 1,616 puriri.

Hunterville District: 12,607 totara.

Wellington District: 137 ironbark.

Westport District: 221 totara, 15,693 silver-pine.

Westland District: 3,501 totara, 40,846 silver-pine.

Waipara District: 2,308 black-birch.

Otago District: 214 ironbark, 742 totara, 4,100 matai.

Details of contracts current during the year ending 31st March last will be found in Appendix D.

ROADS, BRIDGES, ETC.

A report on the Nihotapu water-supply was made for Auckland City by the District Engineer. Reports were furnished to the Mines Department on the following roads, tracks, bridges, &c. in the Westport district, by the Resident Engineer, Westport: Mokihinui Road; Virgin Flat Road; Fairdown-Beach Road; Paparoa River Track; Karamea Mud-flat Road; Fenian Creek Road; suspension bridge over Buller below Lyell; Land of Promise Road; Promised Land Road; Orawaiti Bridge; Reefton-Maruia Road; Mangle's Valley Road; road, Long Tunnel-Addison's Flat; road, Coalbrookdale to Cedar Creek; Millerton Road; Deadman's Creek-Brighton Road; Nile Suspension Bridge-Bradshaw's Terrace Road; Wilson Lead Road; Lyell-Ryan's Road; Lyell to Eight-mile Road; Charleston-Brighton Road; Millerton-Mine Creek Road. The com-