

A dam-site has been surveyed in the Taieri River, about a mile and a half above the mouth of the gorge below Styx. This is to raise the river to a height sufficient to command the country fit for irrigation on the right side of the Taieri River down to Waipiata, with the idea of saving some miles of heavy race-construction. From this dam-site contours have been run at heights of 1,450 ft. and 1,350 ft. as far as the Sowburn, and another contour at 1,250 ft. for about four miles in the same direction.

Contour-lines have been run between Totara Creek and P.R. No. 1 on Waitoi Creek, at heights of 1,450 ft., 1,350 ft., and 1,250 ft., and also lines have been chained and levelled between trigs. on the lower country. The contour 1,450 ft. practically runs at the foot of the rocky hills, there being little or no irrigable country at a higher level for the distance mentioned. Races at or below the level of 1,450 ft. will be cut at a small fraction of the cost of the originally projected upper race, as they will be all in earthwork, with practically no gorges.

A site for a small reservoir has been surveyed just above the stock-bridge over the Taieri River at the Patearoa—Paerau Road crossing.

The Taieri River was traversed and levelled from the Styx down to the mouth of the gorge, about 10½ miles of rough country.

The total length of traverses and levelled lines done during the year amounts to over 400 miles.

Plans and sections have been drawn of the Serpentine Reservoir, the reservoir at Canadian Flat, the Sutton Race, the Loganburn race and dam sites, the Serpentine dam and contours, the Poolburn reservoirs, and a plan showing various contours and traverses between Styx and Linnburn.

Some information was obtained regarding irrigable areas along the Clutha River from Cromwell to Hawea Lake, including a few barometric heights.

Early in the present year a commencement was made with the investigation of the Roaring Meg River as a source of electric power for irrigation and other purposes. Reservoir-sites were surveyed in the Plankburn, Tinselburn, and the Roaring Meg itself, also pipe-line, and canal to utilize the tail-water for irrigating the Cromwell Flat. This canal is 10 miles 28 chains in length. Contours, levels, and sections have been taken at the three reservoir and dam sites, power-house site, and on the Cromwell Flat. Plans of these are now being prepared. High-flood sections of the Roaring Meg were taken to ascertain the maximum discharge for waste-weir calculations.

STEWART SETTLEMENT IRRIGATION-WORKS.

Plans, specifications, and contract papers were prepared, and tenders invited, for the first section of this work; but as the tenders were considerably above the estimate they were declined, and it was decided to carry out the undertaking by co-operative contract. The first portion of the work is nearing completion, and the cost so far would appear to indicate that the total cost of the main race and distributaries will be within the estimate.

OHINEMURI SILTING.

Plans were prepared and data obtained for the use of the Royal Commission appointed to report on this matter. A considerable amount of survey-work was necessary in cross-sectioning the river.

SEACLIFF MENTAL HOSPITAL WATER-SUPPLY.

An engineering survey was made in connection with a scheme to bring in water from a stream near Waitati, a distance of 7¼ miles. Plans are being prepared.

NEW RIVER ESTUARY RECLAMATION SCHEME.

The proposal to reclaim by prison labour a large portion of the New River Estuary, Invercargill, has been investigated, and report and estimate furnished. An engineering survey has also been made for extension of the Otatara Tramway, in order to obtain material for the reclamation-work.

OTEKAIKE SPECIAL SCHOOL.

The construction of a new system of water-supply and drainage is now practically completed.

MARINE.

Matakana Harbour.—The question of improving some of the bends of the river, instead of improving the facilities for turning at the wharf, has been investigated, and a report prepared. It has now been decided to improve the bends in the river and remove rocks. This work will be undertaken when the winter level of the river lowers.

Mangere Beacon, Manukau Harbour.—The beacon has been re-erected.

Tokatoka Wharf.—This structure, which is falling into disrepair, has been examined, and report and estimate prepared for lengthening and repairing same.

Bickerstaffe Wharf.—This wharf, which is being threatened by movement of the ground at the root, has been examined, and a report and recommendations for overcoming the difficulty are being prepared.

Cape Brett Lighthouse.—The cast-iron tower was received from the contractors in July and August, and has been erected on the site. A dry-store and oil-store have also been erected, and the land belonging to the lighthouse fenced in. Erection of the crane on concrete base has been finished, and the tramway and water-cisterns completed. During November the lantern and light apparatus arrived. The fitting of this is being attended to by the Marine Department light-house artificer.

Nelson Harbour.—A plan was prepared showing the correct position of leading-lights in relation to the new entrance.