

Some advance appears to have recently been made in Sweden in the manufacture of nitrate of lime by hydro-electric plant. It is stated that so long as the cost of electric energy does not exceed about £2 per horse-power year that the Birkenland-Eyde process is a commercial success, and that it will be successful for many Swedish power schemes where energy is not expected to cost quite £1 per horse-power year. If this is so the process should be successful in New Zealand, where power could, in many cases, be obtainable at power-stations at rates not exceeding those quoted, and in the more favourable cases as low as the lowest.

Should a process such as this prove successful, and the demand for nitrate fertilisers increase to the extent that some authorities expect, then districts in the southern west coast of the Middle Island now practically uninhabited will in time become centres of important, and, so far as can now be judged, permanent industries, and yield great wealth.

Surveys should be made at Waikaremoana to determine more fully the works required to convey the water to suitable power-station sites, and also to ascertain what works would be required to close if possible the underground outlets, though works might be avoided by freezing-devices worked by current from any power-station erected. In any case, freezing would probably be necessary to enable works to be constructed to stop these outlets were any such works found to be possible.

A survey should be made of the Mangawhero-Wanganui scheme, at Galatea, and some lesser alternative schemes possible on the Mangawhero. A survey also is required for a power scheme to serve the Southland District.

All these surveys will take a considerable time to do.

IRRIGATION.

Information is being collected, and preparations are being made to start a survey for an extensive irrigation scheme for Central Otago.

DEFENCES

AUCKLAND.

With the exception of an alteration to the mine-loading shed, only maintenance-work was done at the harbour defences.

At the rifle range, Mount Eden, a butt for testing ammunition was constructed, and a shed for testing guns was erected at the Penrose Rifle Range.

GREYMOUTH

Some valuations of land taken for rifle range were made. Plans and specifications for an explosive-magazine were prepared, and survey of land for site made.

WELLINGTON.

At Watts Peninsula one road was extended, the rest were improved and repaired. Tenders are invited for extending the wharf at Mahanga Bay. At Fort Kelburne the barrack-room was renovated inside. Minefield survey-marks were erected. A new minefield-cable was laid. A few general maintenance-works at forts on the peninsula were executed. New lightning-conductors were fixed on magazines at Kaiwarra. At the armourers' workshop a forge was built, and boilers for browning gun-barrels were fitted up. Radiators for heating were fitted up in Alexandra Barracks during year. A few minor additions were made to fittings. The trimming-up of grounds was continued.

At Trentham two new rifle ranges were constructed and used at the annual meetings, and some general maintenance-work carried out.

NELSON.

The drill-shed was enlarged and repaired; offices for staff and orderly rooms added. The Mud Flats rifle range was put in order, and a new firing-point erected.

CANTERBURY.

At Lyttelton a retaining-wall is being built at the Sumner Road Parade-ground. The wharf at Erskine Point has been extended and repaired. The new drill-shed at Christchurch has been inspected and reported on.

OTAGO.

A magazine for small-arms ammunition is being erected at St. Clair, and the officers' quarters at this place were repaired and painted. At Taiaeroa Heads the erection of new workshop and smithy was completed, a kitchen was fitted up for night-watchman, and some repairs were carried out. At Point Harrington fort-construction has been continued.

I have, &c.,

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Engineer-in-Chief.