

A list of the earthquakes recorded at Christchurch during the year by Milne seismograph No. 16 is contained in the Director's report.

Seismic activity was pronounced during the year 1922 in this Dominion, particularly in the districts north-east of Lake Taupo, where a great number of local shocks were felt. The most notable of the thirty-eight shocks recorded at Christchurch was that which occurred off the Chilian coast on the 11th November. I had the privilege of witnessing the record of this earthquake on the instruments of the Riverview Observatory at Sydney. The destructive shock which took place at North Canterbury on the 25th December is not recorded, as the seismograph was immediately thrown out of adjustment by the first waves of the shock. A map of the area affected by the North Canterbury shock is in course of preparation.

A study of earthquakes is very important to a country contemplating hydro-electric or irrigation schemes, as valuable information will be obtained as to the conditions in their vicinity.

The Director of the United States Coast Survey, in his annual report for 1922, referring to the value of seismological investigations, states: "These involve the life and security of great numbers of people and the safety of vast property. If through ignorance of conditions a great dam were placed across an active fault it would be completely destroyed by a major earthquake."

#### PROPOSED OPERATIONS FOR THE YEAR 1923-24.

*Geodetic Triangulation.*—The field-work of this survey will be conducted by Mr. A. C. Haase, surveyor. The observations will be made by means of an 8 in. geodetic theodolite at the stations of the scheme on which signals have been erected, and when the observations of a sufficient number of triangles have been completed an analysis of the results will be made to test whether the 8 in. theodolite is sufficiently powerful to give satisfactory closures.

*Standard Surveys.*—Mr. H. M. Kensington, District Surveyor, will complete the standard survey of Gisborne early in the year, after which he will attend to reinstatement of a number of blocks in the City of Auckland, and then take up the standard survey of Hamilton. Rural standard traverses will be continued, during periods of slackness in the settlement work, in the vicinity of Christchurch by Mr. F. H. Waters, District Surveyor, and in the Clutha district in Otago by Mr. S. T. Burton, District Surveyor. Standard surveys are asked for by various local bodies, and those at Whangarei, Invercargill, Dunedin, and Cobden will be undertaken as soon as trained surveyors are available.

*Settlement Surveys.*—The work may be summarized as follows: 373,383 acres rural survey, 330,826 acres Native-land survey, 274 miles road survey, 44½ acres town survey, and 156 square miles minor triangulation. The details of the field-work are shown in Table 4.

*Topographical Survey.*—One topographer will continue the work in Nelson District to provide maps which will assist the officers of the Cawthron Institute in the soil-survey being conducted by them. A complete party will commence operations in the vicinity of Rotorua and survey the thermal region.

*Miscellaneous.*—In addition to the above-mentioned works, there is the customary inspection of surveys, the work of computing the tide-tables, measuring the curves of the magnetic elements, the preparation of geodetic tables, and the drawing and compilation of the maps for publication.

#### GENERAL.

*Proclamation of Roads, &c.*—A number of applications for the proclamation of road-lines laid off by the Native Land Court pursuant to sections 48, 49, 50, and 52 of the Native Land Amendment Act, 1913, were dealt with during the year under review. The statutory notices were duly served on the local authority of the district in terms of section 15 of the Native Land Amendment Act, 1914, and in the large majority of cases no objections were raised to the proclamation of the roads. The statutory provisions referred to are proving very useful in providing legal access to Native and other lands hitherto without road facilities.

Under the Land for Settlements Act, 1908 (section 80), the old road-lines traversing recently acquired estates and not required in connection with the subdivision thereof were duly closed and incorporated in the area available for disposal.

Under the Land Transfer Act a large number of warrants for the issue of titles were duly certified in terms of section 13 of the Act, and in addition several applications to bring land under the Act were examined and approved in terms of section 19.

Full details of the personnel of the staff, both field and office, are given in the report by the Under-Secretary for Lands.

In conclusion, I am pleased to place on record the appreciation by the various Chief Surveyors of the manner in which their officers, both permanent and temporary, have carried out their duties during the year, and I desire to convey my thanks to the whole of the Survey staff for their good work.

**Table 1.**—RETURN OF FIELD-WORK EXECUTED BY HEAD OFFICE STAFF FROM 1ST APRIL, 1922, TO 31ST MARCH, 1922.

Land District.	Standard Surveys.				Rural Standard Surveys.				Primary Triangulation.		Other Work.
	Completed.		In Progress.		Completed.		In Progress.		Completed.	In Progress.	
	Miles.	Total Cost.	Miles.	Total Cost.	Miles.	Total Cost.	Miles.	Total Cost.			
Auckland ..	..	£	..	£ s. d.	..	£	..	£	Acres.	Cost.	£
Wellington	..	..	..	..	72	2,000	..	..	Secondary Triangulation.	£1,533 14 8	140 5 8
Hawke's Bay	..	..	..	3,004 6 4	..	..	..	..	..	..	..