

LETTER OF TRANSMITTAL.

SIR,—

Geological Survey Office, Wellington, 30th July, 1921.

I have the honour to transmit herewith the fifteenth annual report of the Geological Survey Branch of the Mines Department. This report covers the work of the Geological Survey during the twelve months that ended 31st May, 1921. Various special reports, most of which have been abbreviated for publication, are appended.

I have, &c.,

P. G. MORGAN,

Director, New Zealand Geological Survey.

The Hon. G. J. Anderson, Minister of Mines, Wellington.

DIRECTOR'S REPORT.

SUMMARY OF FIELD OPERATIONS.

DURING the past field season detailed topographical and geological surveys have been conducted in the following districts:—

- (1.) Huntly-Kawhia-Hamilton district (Huntly-Kawhia Subdivision), under Dr. J. Henderson, Mining Geologist.
- (2.) Whangarei - Bay of Islands district (Whangarei Subdivision), under Mr. H. T. Ferrar, M.A., F.G.S., Geologist.
- (3.) Arowhana-Tokomaru district, north of Gisborne (Tokomaru Subdivision), under Mr. M. Ongley, M.A., B.Sc., Assistant Geologist.
- (4.) Tahora-Tangarakau-Ohura district (Tangarakau Subdivision), under Messrs. H. A. Ellis and H. M. Marshall, temporary officers.

Brief visits for various purposes were made by the Director to the following districts: Greymouth, Reefton, New Plymouth, Picton, Taimate (near Ward), Dannevirke, Waipatiki, Tangarakau (two visits), Palmerston North, Mangahao, Glenhope (Nelson), and Alexander River (Reefton district). Dr. J. Henderson made two special visits to the Arapuni Gorge (Waikato River) in order to inspect the dam-site proposed in connection with important hydro-electric works; he also visited the Talisman Gold-mine (Karangahake), Aratiatia Rapids, and Marakopa (Awakino County). Mr. H. T. Ferrar inspected a low-grade oil-shale deposit near Mangonui, North Auckland; and Mr. J. Marwick (Assistant Geologist) visited the Oamaru district in order to examine possible sources of stone for harbour-works.

PROGRESS OF AREAL SURVEY.

During the twelve months ended 31st May, 1921, an area of approximately 2,465 square miles was geologically surveyed in detail. Of this area 1,034 square miles was in the Kawhia-Huntly Subdivision, 754 square miles in the Whangarei Subdivision, 366 square miles in the Tokomaru Subdivision, and 311 square miles in the Tangarakau Subdivision. The following table gives the present state of the detailed areal survey, which was begun in 1905 under the direction of Dr. J. M. Bell:—

	Square Miles.
Surveys completed, and work published, on scale of 1 in. to the mile ..	8,803
Surveys completed, and work published, on scale of $\frac{1}{2}$ in. to the mile ..	325
Surveys completed, but work not yet published	5,246
Surveys in progress—area actually surveyed	677
Total area surveyed	15,051
Area in which work is suspended (Heaphy)	293
Area resurveyed (Whatatutu)	312

HUNTLY-KAWHIA SUBDIVISION.

During the past field season Dr. J. Henderson, Mining Geologist, and Mr. L. I. Grange, Assistant Geologist, geologically mapped the whole of six survey districts, forming what was originally to be called the Kawhia Subdivision. Owing to the geology of this area being very similar to that of the adjoining Huntly Subdivision, briefly described in last year's annual report, it has been decided to amalgamate the two areas and to write one detailed report upon the combined subdivisions. The area to be described contains the towns or villages of Huntly, Raglan, Kawhia, Pirongia, Ngaruawahia, Morrinsville, Te Awamutu, and Hamilton, and includes portions of seven counties—namely, Waikato, Raglan, Kawhia, Waitomo, Waipa, Piako, and West Taupo.

Huntly, where coal has been mined for nearly fifty years, is the most important coal-mining centre in the North Island. The fireclay beds of this neighbourhood have also been worked for many years. Recently the extensive limestone deposits have received attention, and two small plants have been built to supply the demand for pulverized and calcined limestone.