GEOLOGICAL SURVEY BRANCH.

REPORT OF DIRECTOR (Dr. J. Henderson).

During the year ended 31st May, 1937, the Director made official visits to Te Aroha, Ohura, Porangahau, and Featherston in the North Island and to Reefton, Kotuku, Wakaia, Glenorchy, and Bendigo in the South. Accounts of the examinations made at the two last-mentioned localities are included in this report, and a note on the Te Aroha Springs will be published in the *New Zealand Journal of Science and Technology*.

Mr. M. Ongley was chiefly engaged in collecting data for the report on the underground water-supplies of the Napier-Hastings flats published below. He supervised and assisted the field-work in the Dannevirke Subdivision and also helped in the Wakaia Subdivision in which persistent bad weather had retarded mapping.

Messrs. A. M. Quennell and D. A. Brown worked throughout the season in the Dannevirke Subdivision, where a considerable area was mapped in detail.

Mr. E. O. Macpherson, assisted by Mr. M. Gage, continued the examination of the Reefton auriferous lodes and their neighbourhood. Exceptionally unfavourable weather so delayed him that the gold-bearing areas of Kirwan's Hill and the Alexander River have still to be covered. Mr. Macpherson also advised on geological points arising from geophysical work at Reefton and Kotuku.

Messrs. J. Healy and R. W. Willett finished the field-work of the Wakaia Subdivision. In order to complete the mapping of the subdivision they were obliged to stay in the field till the end of June. Mr. Healy paid a short visit to Moeraki on his return to Wellington from Southland. During last winter he had a three weeks' abortive trip in the "Matai" on her visit to the southern lighthouses. This was in an attempt to visit the oil-seepages reported on the coast a few miles north of Milford Sound. Unfortunately the sea was too rough to permit a landing either at Madagascar Beach or Martin Bay. He also made a hurried inspection of a deposit of manganese ore near Otau, twenty miles south-east from Auckland.

Dr. J. Marwick and Mr. H. E. Fyfe assisted Dr. L. I. Grange to write part of the bulletin on the Rotorua district, The former also read the proofs of this report as well as those of the bulletin describing the Wangaloa fossils. He paid a short visit to Wanganui, where he examined the locality from which the Wanganui Museum obtained such well-preserved moa bones. His description of the deposit will appear in the *New Zealand Journal of Science and Technology*. He also named the fossil collections the field officers made in their work.

Mr. H. E. Fyfe was chiefly engaged in a rather detailed examination of the Blackburn section of the Westport coalfield and a preliminary investigation of the Greymouth coalfield. More exact estimates of the quantity and quality of the coal in the ground are now necessary and the work Mr. Fyfe has begun will extend over many years.

Mr. G. E. Harris prepared five photolitho drawings of the Wairoa Subdivision, some thirty sections, graphs, &c., for reproduction, and thirty-three field sheets. He also made tracings, coloured prints, lettered plans, drew diagrams, and did other miscellaneous work, much of it for other branches of the Department.

The thirty-first annual report was published during the year, as well as Palæontological Bulletin No. 15, "The Wangaloan and Associated Molluscan Faunas of Kaitangata-Green Island Subdivision," by H. J. Finlay and J. Marwick. Short papers in the *New Zealand Journal of Science and Technology* were contributed by members of the staff. These were: "Natural Pozzolanas in New Zealand" (J. Henderson); "The Geology of Waimumu Goldfield and Notes on Quartz Conglomerates in Southland" (E. O. Macpherson); "The Wairoa Earthquake of 16th September, 1932 (M. Ongley and others); and "Displaced Limestone Blocks" (N. H. Taylor). Most members of the staff of the Geological Survey attended the meeting of the Australian and New Zealand Association for the Advancement of Science held in Auckland last January. Several contributed papers and the excursions during and after the meeting were enjoyed.

A large correspondence on matters more or less connected with the work of the Geological Survey was dealt with, and samples of ore, rock, and mineral examined. The usual periodicals and other publications were received on exchange and some text-books were purchased for the library.

DANNEVIRKE SUBDIVISION.

By A. M. Quennell and D. A. Brown.

The field-work of the second season on the subdivision was carried out between 10th November, 1936, and 30th May, 1937, by the writers, assisted by Mr. B. H. Mason, B.Sc., of Canterbury College, from 23rd November until 12th February, a total of 175 square miles being mapped in detail. Porangahau, Motuotaraia, and Blackhead survey districts have been nearly completed, while Mangaotoro, Takapau, and Pourerere survey districts have been surveyed in part.

Structure and Physiography.

The structural features of the area can be summarized as follows: Porangahau Range (mainly of Cretaceous rocks) fronts the east coast and extends from the south boundary to opposite Blackhead, a distance of fourteen miles. It decreases in width from six miles in the south to two miles near Blackhead, but the original six-mile-wide structural belt continues north-eastward as a folded and faulted zone in the Tertiary sediments. West of this is the Akitio Syncline, six miles wide, and showing Tertiary sediments only. Its axis extends from the south-west corner of Porangahau Survey District,