

general geological structure of New Zealand. A revision has been undertaken of the stage divisions of the New Zealand Cretaceous and Tertiary rocks, and it is anticipated that this will be written up during the current year. Work has been continued on the systematic study and description of New Zealand Tertiary mollusca.

*Micropalaentology.*—The number of samples submitted for identification has been considerable. Of special interest are some twenty-five sections collected in Westland in order to establish the stratigraphy of that area in relation to its coal problems. Studies of the foraminifera have enabled classification and correlation to be carried out, in many cases for the first time. This work has given additional support to the desirability for a reclassification of the New Zealand Tertiary beds as a whole. Similar examinations of microfauna from the Dunedin and Pahau areas have also been made. Intensive microfaunal work has shown that the Awamoan stage is apparently missing in the North Island and that the Hutchinsonian is extremely rare, these being the periods during which the Mokau coal was considered to be in course of formation. A report on the microfauna of the Oxford chalk and the important Orbitoids and similar foraminifera from the Eyre River bed has been prepared for publication.

*Petrology.*—Numerous demands have been made for petrological reports on various samples submitted by Government Departments. Many rock and mineral identifications and grading analyses have been undertaken. During the latter part of the year a large number of specimens alleged to contain uranium- or thorium-bearing minerals have been examined.

Petrological work also covered the asbestos-bearing serpentinites of the Takaka Valley, the dune sands of the Wanganui-Wangaehu shoreline, the rock types of the Murchison district, the heavy minerals occurring in river gravels and beach sands of south-west Nelson and Westland, and a survey of the rock types of the coastline of the Southland fiords. In a search for radio-active minerals the structures of the schists, gneisses, and igneous rocks have been carefully mapped.

*Geophysics.*—Areas in the vicinity of the proposed dam-sites on the Waikato River have been investigated on behalf of the Public Works Department. Similar work has been in progress in the Whakamaru, Maraetai, and Karapiro districts, where hydro-electric generating-stations are in course of erection or in contemplation.

*Volcanology.*—On the 8th March, 1945, Mount Ruapehu became active and continued the eruption of rocks, dust, water, and steam over a large area. Its activity continued till January, 1946. During the whole of the period of active eruption the mountain was kept under observation and geophysical installations were made in order to get a more precise picture of the nature of the activity attending this eruption, which was of greater intensity on this occasion than at any earlier period during historic times.

*Miscellaneous.*—The year was characterized by the very large number of geological investigations of a miscellaneous type which officers were called upon to deal with. These included investigation of the Takaka asbestos deposit, the geology of the zone traversed by the new thirty-six-mile water-pipe line leading from the Hutt Valley to Wellington City, the water-supply of the coastal area between Foxton and Levin, and the water-supply of the lower Plimmerton Valley.

An orogenic history of the Cretaceous and Tertiary beds, together with their structure and stratigraphy, was completed, such information being a useful compilation of the information collected during the explorations for petroleum resources which have been made in New Zealand between 1937 and 1944.

Much attention has been given to clay deposits of the Dominion, and the mapping and sampling of those located in the Wellington region has been brought almost to completion. During a reconnaissance trip to the southern sounds an examination of that region was made for the occurrence there of radio-active materials and for mica deposits. A further section of the ironsand deposits at Waitara has been mapped.

The programme of drafting-work during the year was a very heavy one and staff limitations have rendered it difficult to keep abreast of the work. In addition to the preparation of maps for the Greymouth coalfield bulletin, over two hundred maps and diagrams have been prepared for publication in the Department's *Journal*.