

In the economic and engineering geology field, a preliminary survey was made of the black sand deposits north of New Plymouth. Investigations were made on the occurrence of manganese at Clevedon, asbestos at Takaka, slate at Oamaru, bentonite, and other minerals. Assistance was given in the collection of materials for the trials on electric smelting of ironsands. Bridge and dam sites were examined for the Ministry of Works and local bodies.

COAL

Work was done in four coalfields—Invercargill, Mataura, Balclutha, and Greymouth—and plans were prepared for work at Huntly, Ohura, and Mokau. This included the mapping of the extent and structure of the fields, correlation of the seams, and estimation of the quantity and quality of the coal.

With the limit of our coalfields becoming better known, the fuller utilization and further supplementing of our supply grow more urgent. Recent work shows that there is no workable coal in the coal-measure of west Southland along the south-east of Fiordland. To prove the extent of the lignite that can be worked, open-cast drilling was commenced in Mataura. In Kaitangata, recent work indicated that the coalfield does not extend beyond Tuakitoto in the west and Taratu in the north. Murchison has been re-examined, and no new coalfields found. The coal in the Garvey Creek field has been estimated, and Reefton is being examined. Heaphy, Karamea, and Collingwood have been re-examined.

In the search for limestone suitable for dusting the coal-mines, the limestones of the West Coast have been examined. Seams, mines, and drill cores are being systematically sampled.

VOLCANOLOGY

The collection of data on temperature, composition, acidity, pressure, and flow of water and steam from bores and natural vents has continued.

Observations were carried out at National Park when Ngauruhoe erupted on the 30th April, 1948, and again on the 8th February, 1949. On the 9th February lava flowed at intervals from the crater and reached to within 50 ft. of the flats at the foot. Many *nuées ardentes* accompanied explosions during the first two weeks. On the 28th February only small quantities of steam issued from several small vents in the debris-filled crater, but on the 5th March the crater was deepening again, and had a small patch of new lava in the bottom.

Geophysical measurements have been made to determine the best sides for drilling for hot water in the Wairakei area. Tests have also been carried out on the use of geophysical methods in prospecting for areas for development of thermal power.

HYDROLOGY

Water-supply problems have been investigated, particularly in Canterbury, where important results have been obtained. Geophysical methods have been used to determine the depth to the ground water on the Canterbury Plains in the hope that the position of the main water-table, and any perched water-tables that might be present, could be defined.

PALAEONTOLOGY

Fossils have been identified for the field geologists. In order to survey the coal resources more efficiently by distinguishing the coal-seams, a start was made on the study of palaeobotany and spores. Micropalaeontological research has continued on foraminifera and on their importance in stratigraphy.