

## LABORATORY INVESTIGATIONS

Laboratory work connected with the mining industry has been undertaken by the Dominion Laboratory along similar lines to that reported in previous years.

In addition to the numerous routine analyses and assays of prospectors samples, special investigations carried out during the year included the following:—

- (a) Detailed examination of clays from the Charleston, Waimangaroa, Whangarei, and Kaka districts:
- (b) Processing of Porangahau bentonite:
- (c) Investigation of the efficiency of locally prepared soda-lime for use in mine-rescue apparatus:
- (d) Examination of a very large number of scheelite concentrates for export for content of tungsten, sulphur, tin, and arsenic, and in some cases for gold and silver:
- (e) Examination of stone dusts, mine airs and gases, and mine dusts for health hazard:
- (f) Analyses of coal and other fuel samples and a large amount of investigational work in connection with fuel problems carried out by the Coal Survey Division of the Laboratory, in addition to systematic work on the physical and chemical survey of the coal resources of the Dominion:
- (g) Other samples examined included manganese-ores, ganister, serpentines for addition to superphosphate, glass-sand, mica, feldspar, yellow ochre, polishing-earths, magnesite limestones, as well as numerous rock and mineral samples analysed for the Geological Survey.

## GEOLOGICAL SURVEY

During the year ended on the 31st March, 1944, officers of the Geological Survey were chiefly engaged in examining, sampling, and prospecting deposits of mineral substances of possible value to industry. Mapping was carried out only to further this work, which was undertaken at the request of State Departments, industrial firms, and private persons.

Several officers devoted their whole time to the detailed examination of the Greymouth and Nightcaps-Ohai coalfields. The preparation of the report of the former is now in hand. The detailed mapping of the Westport field has begun. Other officers visited the Kawakawa, Huntly, Mangapchi, Tatu, and Waitewhena areas of the North Island, and Reefton and Elliotvale of the South.

The search for oil in Taranaki and North Westland involved the identification of many macro- and micro-fossil faunas by the Departments palaeontologists as well as the determination by the petrologist of the mineral content of heavy residues from many rock samples from both districts.

Reports were prepared on gold and scheelite mines and on two manganese prospects. Geologists also explored the area about Henry Pass where many years ago a little mica was mined.

A geologist made a number of visits to the deposit of phosphate rock at Clarendon and advised on the extensive drilling operations. He also sampled and estimated the more readily accessible masses of limestone in Southland. In North Auckland two geologists, occupied for months in prospecting serpentine bodies in the Wellsford and Kaukapakapa districts with magnetometer, post-hole digger, and power drill, proved 100,000 tons of reasonably accessible rock. The serpentine-quarry at Blackridge, Southland, was visited several times.

The petrologist examined ganisters for the Railway Workshops and advised on the occurrence of dunite in Nelson and on how the highly refractory forsterite bricks could be prepared from this rock. A report on the fireclays and ganisters of New Zealand was also issued.

Officers sampled and estimated deposits of pottery clay in the Bay of Island, Whangarei, Waimangaroa, Charleston, Mount Somers, and Kakahu districts. In the first two districts extensive post-hole prospecting was undertaken. Sampling and boring was also carried out on beds of Fuller's earth in the Gore-Mataura district. A small deposit of diatomite near Auckland was mapped and bored.

Supplies of underground water are being increasingly sought, especially in the Auckland District, and the geologist at Whangarei has selected many bore-sites with good success. The military authorities, State Departments, municipalities, industrial concerns, farmers, drillers, and others have asked his advice. Most of the drilling was in Auckland Peninsula and about Auckland City, though he was asked to select sites as far afield as Raglan, Morrinsville, Tairua, and Rotorua.

Officers visited Rotorua to report on how the extensive drilling for hot water is likely to affect the supply for public baths. It is, however, impossible to give a definite answer until data of flow, temperature, and content of spring and bore waters have been collected over a number of years. Electrical and magnetic measurements were made over and near parts of the more active areas.

## SCHOOLS OF MINES

The expenditure on the Schools of Mines for the year ended 31st March, 1944, was £3,381, as compared with £3,695 for the previous year. At the annual examination held in November, 1943, two scholarship candidates presented themselves for examination. Scholarships were awarded to these candidates, who were both from the Otago School of Mines.

The dearth of candidates is due mainly to war conditions, and has not been offset by the fact that the value of the scholarships offered annually by the Department for competition among students attending Schools of Mines within the Dominion has been increased to £65 per annum in the case of students who have to reside away from home while attending the University of Otago, and to £45 in the case of students who are able to reside at home while attending the University. It is now becoming increasingly apparent that the greatest field of mining education in New Zealand lies in the coal-mining division.