

suitable process of low-temperature carbonization (say at 550° to 600° C.), when such becomes commercially available, would be the best means of "up-grading" these coals; because, in addition to yielding satisfactory amounts of fuel oils, the residues, which would be free-burning and smokeless in their combustion, could readily be used either as pulverized fuels for steam generation and the like or as briquetted fuels."

Further investigation as to the commercial and economic value of coal in the Dominion is being made, and to this end a sample of Waikato coal has recently been forwarded to Messrs. Vickers Limited, London, for preliminary test by low-temperature carbonization at that firm's laboratories at Dartford to determine the yield of oil, gas, and coke, also the properties of oil obtained.

A private syndicate, for whom Messrs. Dansey and Co. (Limited), Engineers, Auckland, are acting, are also having experiments made with Waikato slack, and have sent a parcel of 75 tons of this coal to Antwerp for treatment by distillation process by Messrs. Head, Wrightson, and Co. (Limited), Stockton-on-Tees, England, in conjunction with a Belgian firm with works at Antwerp. In order to ascertain the merits and details of this process the Government has been fortunate in obtaining the services of Sir Richard Redmayne, at one time Chief Inspector of Mines and Chairman of Governors of the Imperial Mineral Resources Bureau, to report fully thereon.

GEOLOGICAL SURVEY.

During the field season ended 31st May last surveys of the Motueka district in Nelson and of the Kaitangata - Green Island district in eastern Otago were completed, and detailed reports on these areas are now being written. A survey of the country in North Auckland north of the Dargaville district was begun, but the geologist in charge (Mr. H. T. Ferrar) had to be diverted to urgent soil-survey work in Central Otago, and consequently the North Auckland survey was temporarily discontinued.

The soil-survey in Central Otago is necessary in order to determine the general character of the soils in areas that are now being irrigated or about to be irrigated, and to assist the irrigation engineers in the solution of drainage problems, one of which is the dispersal or avoidance of accumulations of harmful salts in low-lying places. The cost of soil-survey in comparison with the large sum that has necessarily to be spent on irrigation works is trifling.

Owing to the activity displayed in oil-prospecting during the past year the Geological Survey was frequently called upon to supply information on districts supposed to be oil-bearing.

Valuable work of a specialized nature is being done in the palæontological branch of the survey. The fossil collections being examined are mainly Tertiary. As in former years, help has been given by outside workers, both in New Zealand and abroad, and the Geological Survey, so far as possible, reciprocates.

During the year Bulletin No. 27 (The Geology of the Whangarei - Bay of Islands Subdivision) and the Nineteenth Annual Report of the Survey were published. Bulletin No. 28 (The Geology of the Huntly-Kawhia Subdivision) was ready for issue at the end of May. Detailed reports on Cretaceous and Tertiary foraminifera and on Triassic fossils are now in an advanced stage of printing and will shortly be published. Geological maps of the Waiapu Subdivision (East Cape district) have been published, and the report thereon is nearly ready for the printer.

The detailed report on the Egmont Subdivision is now in the printer's hands, and several other reports are almost ready for publication.

STATE AID TO MINING.

As in previous years, considerable use was made of the Government prospecting-drills. They were hired by seven parties, and a total of 9,403 feet was drilled.

For the year a total of £9,795 6s. 7d. was expended in subsidies for prospecting, and 106 persons were employed in connection therewith.

£6,033 was expended by way of direct grants and subsidies for roads and tracks.

The expenditure on schools of mines amounted to £4,004, against £3,501 11s. 3d. during the previous year.