

GEOPHYSICAL WORK

Mr. N. Modriniak made magnetic and seismological observations in the Whakatane district in an investigation of the possibility of obtaining volcanic heat near the sea. He also visited Whale Island. Mr. E. O. Macpherson prepared reconnaissance geological maps of the Whakatane district and Whale Island. Mr. Modriniak extended the magnetometer work already undertaken at Rotorua.

Mr. Modriniak continued the investigation of possible dam-sites on the Waikato River upstream from Arapuni Lake. Only magnetometer work was possible.

At Huntly an attempt is being made to ascertain the shape and structure of the coal-basin concealed by the sands and silts of the Waikato north of the present mines.

The geophysical drill has been found most useful in boring for serpentine and water in North Auckland and for coal at Huntly.

SPECIAL EXAMINATIONS

Phosphates.—The prospecting of the Clarendon deposit of phosphatic rock continued throughout the year, Mr. R. W. Willett taking samples and advising as the work progressed. Mr. E. O. Macpherson, in a report, discusses the origin of the rock, and suggests that similar deposits may occur in other parts of the South Island.

Serpentine.—Mr. J. Healy and Mr. C. A. Fleming investigated the known bodies of serpentine in the Kaukapakapa district and some of those in the Wellsford district with the magnetometer, post-hole digging and boring with a power-drill. The rock-bodies were found to be disappointingly small, but a quantity of at least 100,000 tons of reasonably-accessible serpentine was proved.

Limestone.—Mr. R. W. Willett continued the estimation and sampling of the limestone deposits of Southland within easy reach of transport. Mr. M. Ongley was in Masterton on two occasions, once to report on and sample a limestone deposit proposed for crushing as agricultural lime, and again to report on a new sink-hole in gravel probably overlying limestone.

Chalk.—Mr. H. W. Wellman reported on the deposit of chalk at Oxford, North Canterbury.

Diatomite.—Mr. C. A. Fleming mapped and bored a small deposit of diatomite at Morningside, Auckland.

Flint.—Mr. H. W. Wellman examined the deposits of flint near the mouth of Clarence River, Marlborough.

Mica. Messrs. H. W. Wellman and R. W. Willett visited Henry Pass between George Sound and the middle arm of Lake Te Anau where a lenticular dyke of pegmatite was mined for mica many years ago. The body of rock seems to have been worked out and no other was found during a hurried reconnaissance of the neighbourhood. Some miles from the sea, however, a dyke of feldspar was noted on the south side of George Sound.

Clay.—Clay deposits in widely-separated districts were mapped and sampled. A number of students, under Mr. Healy's supervision, mapped and sampled with post-hole diggers a volcanic dome of partly-decomposed dacite at McLeod Bay, Whangarei Harbour. The same party, assisted by Mr. C. A. Fleming, worked on clay deposits in the Bay of Islands district and near Kaikohe.

Mr. H. W. Wellman sampled and mapped clay deposits at Waimangaroa and Charleston on the West Coast, and at Mount Somers at Kakahu in Canterbury.

Fuller's Earth.—Mr. R. W. Willett directed the locating, prospecting by trenching and post-hole digging, and sampling of deposits of Fuller's earth in the Gore-Mataura district. Some regional mapping was necessary in this geologically little-known region.

Water-supply.—Mr. M. Ongley discussed the Hutt artesian basin and the Gisborne town supply with waterworks engineers.

Mr. J. Healy was consulted on subsurface water-supplies by the military and county authorities, municipalities, State Departments, commercial firms, drillers, farmers, and others. He selected many well-sites with good success, chiefly in North Auckland and about Auckland City, but went as far afield as Tairua, Rotorua, Morrinsville, and Raglan on this business.

There are substantial areas of low relief in North Auckland suitable for close settlement, except for shortage of water for stock during continued dry weather. At a few points good underground water has been tapped, but in general such supplies have not been found even by fairly-deep drilling. At Mr. Healy's suggestion several bores were drilled in the Silverdale-Dairy Flat district. These had to be abandoned, owing to caving, without striking water; the deepest was 715 ft.

Hot Water.—Messrs. Macpherson, Healy, and Modriniak at different times visited Rotorua to report on how the extensive drilling for hot water by the municipality, hotels, and others was likely to affect the supply for public baths. The last-mentioned officer located the position of many of the wells on a map and collected some data on their depth, discharge, and temperature. A large part of the ground water under Rotorua is heated by magmatic gases, and no worth-while opinion as to the effects of the bores on the discharge of the springs can be given without systematic observations over a number of years.

Mr. Modriniak also reported on the lowering of the hot pools at Whakarewarewa feeding the Spout and Blue baths, and suggested means to maintain the supply.