	(1.)	(2.)	(3.)	(4.)	(5.)
Insoluble in hydrochloric acid	3·11	..	..	..	..
Silica (SiO_2)	..	2·66	0·86	0·14	0·17
Iron oxide and alumina (Fe_2O_3, Al_2O_3) ..	0·20	0·51	0·25	0·21	0·20
Lime (CaO)	53·10	52·64	54·30	55·87	55·60
Magnesia (MgO)	0·64	0·65	0·30	0·10	0·10
Carbonic anhydride (CO_2)	42·50	41·36	42·50	42·76	43·26
Sulphur	0·03	..	..	..	..
Water and organic matter	..	0·80	0·47	0·30	0·30
Alkalies and undetermined	0·42	1·38	1·32	0·62	0·37
	100·00	100·00	100·00	100·00	100·00
Iron pyrites (FeS_2)	0·06	n.d.	0·04	0·01	0·025
Free carbon	n.d.	0·06	n.d.	n.d.	0·05
Specific gravity in water at 15·5° C.	n.d.	2·705	2·68	2·715	2·715

(1.) Typical sample from Marble Creek quarry (selected by Dr. J. Allan Thomson).
(2.) Dark fine-grained marble from Marble Creek quarry.
(3.) White coarse-grained marble, Messrs. Hugonin and Henderson's land.
(4.) White marble from quarry on Mr. Hobson's land.
(5.) Grey marble from quarry on Mr. Hobson's land.

Literature.

The chief references to the geology of the Sandy Bay district will be found in the following publications:—

1. Cox, S. H.: "On Certain Mines in the Nelson and Collingwood Districts, and the Geology of the Riwaka Range." Rep. Geol. Expl. during 1879 80, No. 13, 1881, pp. 1–12 (with map).
2. Park, James: "On the Geology of Collingwood County, Nelson." Rep. Geol. Expl. during 1888–89, No. 20, 1890, pp. 186–243 (with map).
3. McKay, Alexander: "On the Crystalline Limestones and so-called Marble Deposits of the Pikikiruna Mountains, Nelson." Rep. Geol. Expl. during 1890–91, No. 21, 1892, pp. 38–43 (with map and section).
4. Bell, J. M., Webb, E. J. H., and Clarke, E. de C.: "The Geology of the Parapara Subdivision, Karamea, Nelson." N.Z.G.S. Bull. No. 3 (N.S.), 1907. This report deals with the small portion of the Pikikiruna Range in Waitapu Survey District, some distance to the north-west of Sandy Bay.
5. Park, James: "The Geology of New Zealand." 1910. On pp. 55, 384, 390 are brief references to the Riwaka district.
6. Marshall, P.: "Geology of New Zealand." 1912. Brief references to the Pikikiruna Range marble are made on pp. 49 and 138.
7. Thomson, J. Allan: "Possibility of obtaining Granite and Marble suitable for Building-stones in the Sandy Bay District, Nelson." N.Z.G.S., Seventh Ann. Rep., C.-2 (Mines Report), 1913, pp. 131–33.

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4. A PRELIMINARY INVESTIGATION OF PHOSPHATE OCCURRENCES IN NORTH AUCKLAND AND WAIKATO DISTRICTS.

(By P. G. Morgan, Director.)

In accordance with instructions given during the latter part of 1914, on the 11th January last I left Wellington for the north, in order to investigate the possibility of rock-phosphate deposits being found in various localities. Visits were made to Kaipara Flats, Warkworth, Maungaturoto, Whangarei, Kawakawa, and Bay of Islands, in the North Auckland Peninsula, and also to Onewhero, Lower Waikato district. On the 28th January I returned to Wellington.

Reasons for Investigation.

The land of New Zealand as a whole is somewhat deficient in phosphoric acid, a necessary constituent of a fertile soil. The large amount of meat and other agricultural products consumed in the towns, and more especially exported, causes a reduction in the available phosphoric acid that in the course of a generation or less will have serious consequences if the loss is not made good by a supply of phosphatic fertilizers.

Up to the present time, however, in only one New Zealand locality—namely, Clarendon, Otago—has phosphate rock been found in any quantity, and this notwithstanding a considerable amount of search during the past twelve or thirteen years. Occasionally, however, samples of phosphatic minerals have been forwarded to the Dominion Laboratory. Most of these were of poor quality, whilst others merely represented concretions, and were therefore not strongly indicative of commercial deposits. Of the few samples affording some promise, one or two came from the Whangarei district, and another from the Hoteo River, Kaipara district. The last-mentioned sample had a curious history. It was collected many years ago (probably in December, 1879, or January, 1880) by Mr. S. H. Cox, then Assistant Geologist, and labelled by him as "firestone." In 1904 Mr. Alexander McKay, then Government Geologist, suspecting the character of the specimen, submitted it to the Dominion Laboratory