

In view of restricted imports of phosphate for use in the manufacture of soluble phosphate fertilizers a geological examination was undertaken of Garden Island where phosphatic material was known to occur, in order to determine the possibilities of obtaining additional supplies of phosphate.

The island, situated in Norfolk Bay about four miles south of Dunnally, occupies an area of approximately 145 acres. It is owned by Barclay Grey and is used for grazing purposes, in conjunction with his "Fulham" estate.

The island is composed wholly of typical Mesozoic dolerite overlain in part by a thin layer of sand and in part by fluvio-glacial boulder beds, most probably of Pleistocene age.

The area exposed, where weathering of the dolerite has proceeded to any extent is strictly limited; elsewhere the dolerite is massive and unweathered.

The sand which attains a maximum depth of a few feet overlies at least two thirds of the total area of the island and appears to be derived from the sandy beds associated with the boulder beds.

The boulder bed is exposed at one place only, a small bay on the eastern shore of the island, where a section, several feet thick, can be seen overlain conformably by a grey, loosely consolidated sandstone.

Owing to the low porosity and the limited amount of available lime in the normal dolerite, little increase in the phosphatic content is possible, whereas analyses of the weathered dolerite indicate a marked increase by phosphatization. The area exposed, where the weathering of the dolerite has proceeded to any extent, is strictly limited, elsewhere the dolerite is massive and fresh.

It is most probable that the phosphatic content in the weathered dolerite is organic in origin and is derived from overlying guano deposits by percolation. The phosphate content of the overlying sands, as indicated by analysis, supports this mode of origin.

Samples taken from locations indicated on the accompanying sketch, and tested in the Department of Mines laboratory, Launceston, serve to indicate the grade of material available.

From the brief examination, it is apparent that the greater part of the rocks constituting Garden Island, with their low lime content, do not present favourable conditions for phosphatization by percolation. The areas where weathering has made conditions more favourable are so limited both horizontally and vertically, and the phosphate content is so low, that little hope can be entertained for the development of commercial supplies of phosphate rock.

SAMPLE RESULTS

Registered Number	Constituents	Per Cent $\text{Ca}_3\text{P}_2\text{O}_8$
1139	No. 1 - "Water Hole, Western Shore" P_2O_5 1.78	3.88
1140	No. 2 - "Southern Waterhole" P_2O_5 1.81	3.95
1141	No. 3 - "Mutton Bird Rookery" (S.E. End) P_2O_5 0.20	4.35
1142	No. 4 - "10 Chains North of No. 3 Sample" P_2O_5 3.95	8.61
1143	No. 5 - "Prospect Bay" P_2O_5 1.98	4.32
1144	No. 6 - "Thin Cap on very weathered Dolerite" P_2O_5 2.59	5.65
1145	No. 7 - "20 Chains South of Jetty" P_2O_5 6.13 SiO_2 42.16 Al_2O_3 17.20 Fe_2O_3 11.78	13.36
1146	No. 8 - "Near Jetty" P_2O_5 6.96 SiO_2 42.36 Al_2O_3 11.94 Fe_2O_3 17.93	15.17
1147	No. 9 - "Prospect Bay" P_2O_5 2.39 SiO_2 53.32 Al_2O_3 11.36 Fe_2O_3 9.18	5.21

FIELD GEOLOGIST

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