REPORT 1943/28

DEPARTMENT OF SUPPLY AND SHIPPING.

Mineral Resources Survey Branch.

Report No. 1943/28.

PHOSPHATE DEPOSITS IN TASMANIA.

INTRODUCTION.

The following information regarding calcium phosphate deposits or phosphate rock in Tasmania has been obtained from the following sources - published reports and typewritten reports of the Tasmanian Mines Department and my own personal knowledge gained while Government Geologist of Tasmania.

IGNEOUS DEPOSITS.

Igneous deposits of phosphate rock are restricted to those formed by the mineral apatite which is a fluor-phosphate of calcium and when pure contains 42.3% P_2O_5. The chlor-apatite variety contains 40.9 per cent P_2O_5.

In Tasmania, apatite has been found only in microscopic crystals in some igneous and metamorphic rocks. There are, therefore, no phosphate deposits of this type.

SEDIMENTARY DEPOSITS.

This type of deposit includes beds of more or less pure calcium phosphate, phosphatic limestones, phosphatic limestones in which the phosphatic content has been enriched by secondary processes and deposits in which the phosphate content has been introduced from adjacent organic deposits. Of the above, the only types known to occur in Tasmania are phosphatic limestones and deposits formed adjacent to guano deposits.

Phosphatic Limestones. The phosphate content of Tasmanian limestones is low. A Lower Palaeozoic limestone from Blenkhorn's quarry at Railton was proved by analysis to contain 1.02% P_2O_5, or 2.2% calcium phosphate. A limestone containing a somewhat higher percentage is a Permo-Carboniferous one situated four miles south from St. Mary's. An analysis showed 5.12% P_2O_5. The limestone beds in that district have a thickness of 50 to 100 feet and large quantities would be available. It is not known, however, whether the above sample is representative of the whole of the beds, and the average phosphate content would have to be determined by a systematic sampling campaign. As to whether such work was conducted would depend, of course, upon the desirability or otherwise of attempting to prove deposits as low in grade as is indicated by the above analysis.

Phosphate Rock Deposits Formed by Adjacent Guano Deposits. Deposits of this type are most readily formed where the underlying rock is limestone. While there are deposits (of small size) of guano on islands around the coast of Tasmania, as far as is known, the rocks upon which they rest are not limestones, but either granite or dolerite. The minerals in the latter two rocks are not as easily replaced by phosphate solutions as are those in limestone - as a matter of fact, the minerals are difficult to replace and as a result deposits of this type are limited in size and of low grade. Small deposits of this type occur on White Rock Island, off the east coast, on Garden Island in Norfolk Bay and possibly on Slopen Island in Frederick Henry Bay and Sea Elephant Rock or Councellor Island, off the east coast of King Island. The rocks on White Rock and Councellor Island are granite, that on Garden Island is dolerite and those on Slopen Island are Permo-Carboniferous sedimentary rocks.

The following assays have been quoted, but it is not known whether the materials assayed were phosphate rock or the residual guano deposits.

		P_2O_5 %
Councellor Island	.....	11.00
White Rock Island	.....	13.00
White Rock (sand)	.....	3.10
Slopen Island	.....	13.56

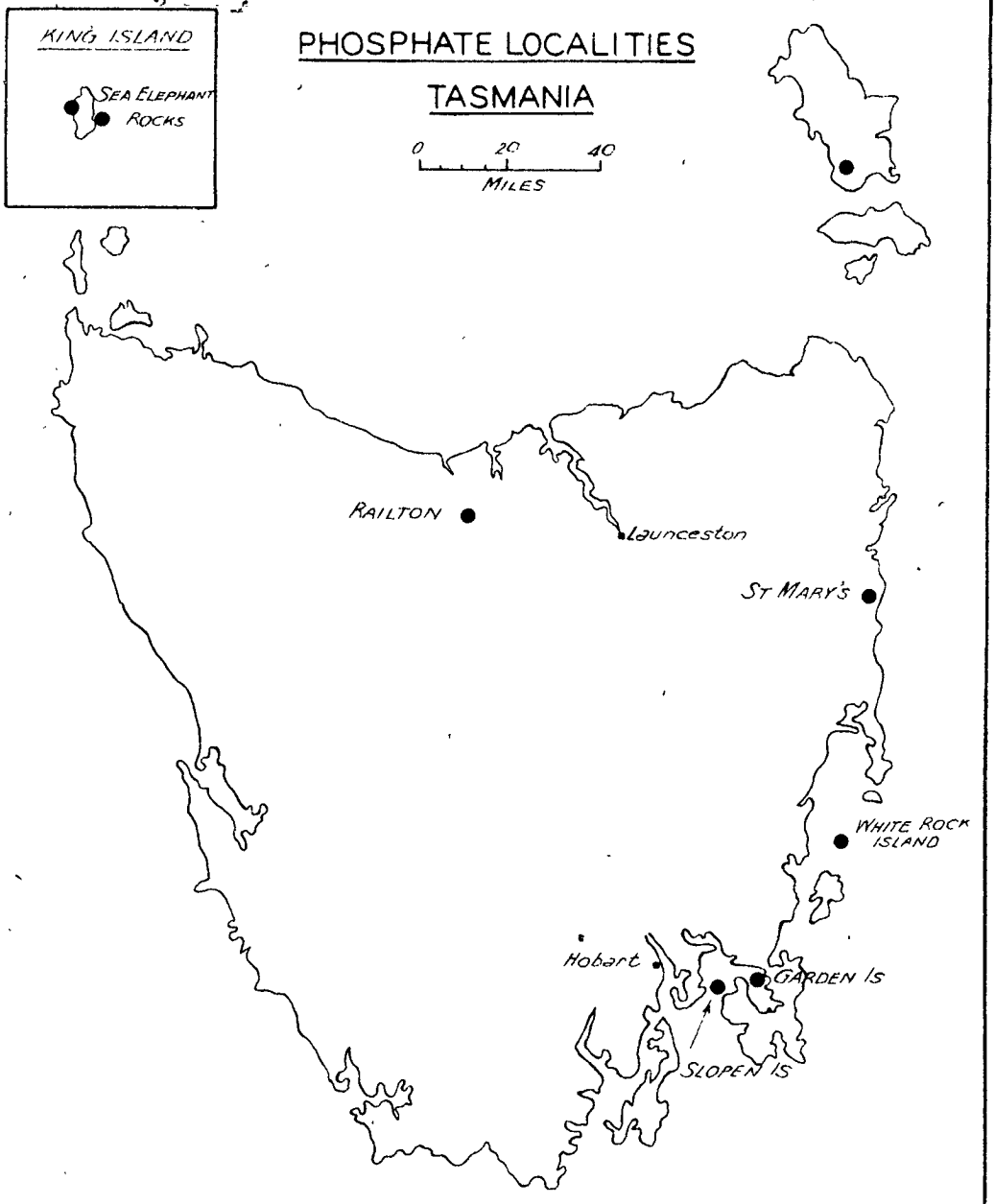
Assays of the material from Garden Island yielded the following results for the percentage of P_2O_5 - 1.78, 1.81, 0.20, 3.95, 1.98, 2.59, 6.13, 6.96, and 2.39.

GUANO.

As already stated above, small guano deposits have existed on White Rock, Slopen, Garden and Councellor Islands. No analyses of the material are available except in so far as some may have been included in those quoted in the previous section. The general information available indicates that the deposits are of small extent. It is believed that small quantities may have been removed in the past from some of the above Islands, but there are no statistics of any such production.

CANBERRA, A.C.T.
14th July, 1943

P. B. NYE,
Assistant Director.


KING ISLAND
SEA ELEPHANT ROCKS
PHOSPHATE LOCALITIES
TASMANIA
0 20 40
MILES
RAILTON
Launceston
ST MARY'S
WHITE ROCK ISLAND
Hobart
GARDEN Is
SLOPEN Is