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1949/21.

PRESENT STATUS OF THE SEARCH FOR BAUXITE
IN THE NORTHERN TERRITORY, NOVEMBER, 1949.

by

H.B. Owen
Senior Geologist.

CANBERRA, A.C.T.

23rd November, 1949

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(This report has been compiled to bring together and place on record a body of information gained by the writer from various sources including private communications and contained in carbon copies of correspondence in bound letter-books not in convenient form for filing in the usual manner).

The presence of bauxite in the Territory was first reported by H.Y.L. Brown, Government Geologist for South Australia in a Parliamentary Paper published in Adelaide in 1908. This supposed bauxite occurrence at Mounts Roe and Bedwell at the head of Port Essington was examined and sampled by the writer in June, 1949, with negative results which have been recorded in a report of this series. (Owen, 1949).

*Not
found
at
Mount
Roe
negative
results
in
1949*

Subsequent to the visit to Port Essington, many specimens of lateritic material from the northern portion of the Territory have been received. Some were collected from inland localities by geologists of the Bureau, and others by Capt. F.E. Wells of the Northern Territory Patrol Service and members of his crew from various points on the Arnhem Land coast and adjacent islands.

Many of the specimens submitted were rejected on visual examination, others from the Wave Hill locality and the north coast were forwarded to the laboratory for preliminary testing. With the exception of three samples, all showed a very high silica content.

The results of the three positive samples are given here, and the remainder are contained in an appendix.

*Poor bauxite
from
Truant
Island
to North
Wessel
Island*

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	Ign. loss	Avail. Al ₂ O ₃	Na ₂ O [±] loss Cwt.
	%	%	%	%	%	%	
1.	2.9	43.5	26.6	2.3	23.8	40.8	0.67
2.	7.6	-	-	-	24.6	34.6	1.31
3.	6.7	-	-	-	21.4	39.9	0.97

1. Pisolitic bauxite from Truant Island.
2. Pisolitic bauxite from North Wessel Island.
3. Tubular and massive bauxite from North Wessel Island.

Both samples 2 and 3 were slightly contaminated with fine quartz sand.

[±] "Na₂O loss" is the amount of alkali, as Na₂O lost per ton of alumina extracted, and is a measure of the amount of reactive, or alkali-soluble silica in the ore.

All three analyses are within the grade limits laid down by the Australian Aluminium Commission. For com-

parison, the average grade of economic bauxite proved by the Commission elsewhere is given -

	Avail. Al_2O_3 %	Na_2O loss Cwt.
Ouse, Tasmania	36.5	1.1
Wingello, N.S.W.	31.6	0.86
Inverell, N.S.W.	33.7	1.00

What reserves of bauxite these samples may represent is not known with any degree of accuracy, but Capt. Wells has stated that the deposit on Truant Island "is not extensive", and that the Wessel Island occurrence is estimated to be bigger than that at Mounts Roe and Bedwell. This estimate was made by D. Waalkes, the seaman who accompanied the writer to the Port Essington laterite bodies and assisted in measuring them, and so may be regarded as having some significance. If it is correct it means that the bauxite deposit on Wessel Island contains more than about 900,000 long tons.

The samples received from Wessel and Truant Islands were too far altered to permit the nature of the parent rock to be stated, but the massive bauxite from Wessel Island bore a strong resemblance to parts of the Mount Roe laterite which is derived from shale of the Mullaman group.

One specimen of partly lateritized rock from Margaret Bay, Malay Roads, was identified as being volcanic, probably a basaltic tuff.

Other specimens from South Goulbourn Island and one stated to be from Truant Island were readily recognisable as partly lateritized arenaceous rocks similar to the siliceous laterite seen at Mt. Kuru and Victoria, Port Essington.

To summarize the foregoing, it may be stated that it is now established that bauxite of economic grade exists on two islands adjacent to the Arnhem Land coast, and, secondly, it is now known that volcanic rock, presumably a satisfactory parent for bauxite, occurs on the mainland near the bauxite localities.

The Australian Aluminium Commission's alumina plant and smelter are to be established at Bell Bay on the Tamar estuary, Tasmania, and all supplies of bauxite other than from Tasmanian sources must be brought in by sea, consequently the Commission is desirous of obtaining bauxite reserves adjacent to the coast anywhere in Australia or even as far afield as Malaya.

Under these circumstances the potential bauxite resources at Wessel and Truant Islands should be investigated and an examination of adjacent islands and mainland coast carried out.

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23rd November, 1949.
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Rept. No. 1949/41.

APPENDIX

	Locality	Mark	SiO ₂ %	Ign. loss %	Remarks
1.	Helen Springs	-	63.8	8.1	Lateritised volcanics 20% Al ₂ O ₃ . Coll. by D.M. Traves.
2.	Mt. Samuel	-	3.4	9.3	80.0% Fe ₂ O ₃ . 62% Al ₂ O ₃ Coll. by H.B. Owen
3.	South Goul- bourn Is.	-	31.2	11.8	Coll. by F.E. Wells
4.	Margaret Bay	-	24.9	10.5	Coll. by F.E. Wells
5.	Dorisdale	-	22.6	10.9	Sub-pisolitic ferruginous laterite. Coll. W.C. Smith
6.	Willeroo Stn.	{ C.10	70.0	6.2)	Siliceous laterite
7.		{ C.11	70.4	6.0)	
8.		{ C.12	46.4	7.7)	Ferruginous pisolitic and tubular laterite
9.		{ C.13	44.3	6.5)	
10.		{ C.30	26.9	12.0	Surface to 6 feet
11.	32 miles	{ C.31	27.0	11.5	6 feet to 9 feet
12.	south of	{ C.32	27.0	11.6	9 feet to 12 feet
13.	Wave Hill	{ C.33	30.0	11.2	6 feet to 10 feet
14.	Station.	{ C.34	58.2	8.1	Palud Zone
15.	65m. S. of Wave Hill	C.35	51.9	11.1	Grab sample
16.	54 miles	{ C.38	33.7	9.3	0-2ft. sub-pisolitic ferruginous 2-5ft. Tubular, red and white 5-6ft. ditto. 6-11ft. Pisolitic and earthy, red. 11-12.5ft. ditto. lighter colour.
17.	west of	{ C.39	43.2	8.9	
18.	Wave Hill	{ C.40	42.5	8.9	
19.		{ C.41	37.6	9.0	
20.		{ C.42	46.0	10.0	
21.	1 mile	{ C.48	54.3	9.9	Weathered volcanic rock
22.	east of	{ C.49	51.9	11.1	Weathered volcanic rock
23.	Birrindudu	{ C.50	55.4	8.6	Weathered volcanic rock

Samples 6-23 collected by D.M. Traves.

