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BAUXITE AT MYALLA

Attention was directed to the possible existence of commercial bauxite at Myalla when Mr. E.W. Lohrey forwarded a sample from that locality to the Mines Department late in October, 1944. A visit was immediately made to the area for the purpose of inspection and pilot sampling. These samples were of an encouraging grade and a further visit was made, during the course of which two shallow shafts were put down and sampled. Surface samples were also collected from other points in the district.

The known outcrops are situated in the vicinity of a road which leaves the Bass Highway at approximately 10 miles westerly from Wynyard and thence runs southerly crossing the Flowerdale to Burnie railway at Myalla Railway Station. A plan, No. 9-913, has been prepared to show the known bauxite areas and sample localities.

The original sample was surface material from a small timbered hill lying to the west of the road on Lot 12029, H.E. Wells, owner. This sample assayed 49.2% of alumina and 1.0% of silica available to caustic soda solution. Pilot Departmental samples taken in the same area gave the following results:-

<u>Regd. No.</u>	<u>Description</u>	<u>Available Alumina</u>	<u>Available Silica</u>	<u>Igniti Loss</u>
486	Hard, blue-grey, yellow cavity in-fillings	52.7	1.2.	28.6
487	Hard, blue-grey, bands of yellow gibbsite	48.3	1.5	26.9
488	Selected bands, largely yellow cryptocrystalline gibbsite.	62.8	1.1	32.5
489	Hard, massive, grey-brown	50.4	0.9	27.3

It was then decided to sink two shafts to test the persistence of the material with depth. Shaft No. 1 penetrated 9'6" of bauxite which was sampled as follows:-

<u>Regd. No.</u>	<u>Description</u>	<u>Available Alumina</u>	<u>Available Silica</u>
537	0' - 1'0" Hard, with bands of yellow gibbsite	51.5	0.8
534	1'0"- 3'0" (Brown, largely hard but	48.3	0.8
535	3'0"-5'0" (with some earthy bands,	46.7	0.9
536	5'0"-7'0" (particularly towards (base; blebs and seams of (yellow gibbsite	47.9	1.0
581	7'0"-8'6" (Brown, mixed hard and soft	46.5	1.6
582	8'6"-9'6" (bands showing gibbsite	47.3	1.7
583	9'6"-14'6" (Soft; brown; sandy to clayey;	22.6	9.9
584	14'6"-20'0" (with white veins and black (carbonaceous patches.	18.3	12.1

From these figures, the average grade of the top 9'6" of the formation is 47.8% available alumina and 1.1% available silica. It will be noted from the description that the section includes earthy bands and these are of lower grade material. The hard, clean material is better represented by samples Nos. 486, 487, 489, 537 and 538. The last mentioned sample was composed of average hard, clean bauxite from the vicinity of 7 feet in the shaft, and assayed 55.4% available alumina and 0.9% available silica.

The average grade of these five samples of clean, hard material is 51.7% available alumina and 1.1% available silica. It is, therefore, probable that the bulk average grade could be raised by up to 4% of alumina by some simple washing process. The merit of such treatment would depend on the nature of the impurity so removed and the percentage of otherwise useful alumina included in the rejected fraction.

Shaft No.2 is situated 200 feet south of Shaft 1 and penetrated an entirely different formation in which the bauxite was represented by concretionary nodules occurring in a clayey matrix. The following samples were taken:-

<u>Regd.</u> <u>No.</u>	<u>Description</u>	<u>Available</u> <u>Alumina</u>	<u>Available</u> <u>Silica</u>
539	3'0" - 4'6" Mixed nodules in red soil overburden. Large and small. Mostly rounded, pisolitic and green in colour but some red, brown, yellow, etc.	46.5	0.9
577	4'6" - 9'0" Red and green clayey formation with mixed nodules similar to above.	30.5	3.1
578	4'6" - 9'0" Mixed nodules only without matrix	40.2	0.7
579	9'0" - 11'0" Angular, pale green pebbles and larger concretions in green to yellow matrix.	43.1	3.4
580	9'0" - 11'0" Mixed pebbles and boulders without matrix	53.4	1.7

Shaft No.2 was carried to 11'0" which appeared to be the bottom of the formation, but if further work is done in the area, it could be deepened a few feet to enable the section to be compared with that encountered in Shaft No.1.

It is apparent from the above results that there is a considerable variation in the quality of both nodules and matrix. The commercial separation of nodules from matrix would not be difficult and it may even prove possible to classify the nodules themselves to permit of the rejection of those carrying an excessive concentration of iron.

This is a problem upon which useful research work could be undertaken, but it would be advisable to first sink several more shafts for the purpose of estimating the quantity of this kind of ore likely to be available, the relative proportions of nodules to matrix and the variations in grade of both.

The nodular, or concretionary, portion of the Myalla formation appears to be similar in many respects to the deposits being worked on Bintan Island, in Netherlands India, which are described in Economic Geology, Vol. XXXVI, No. 6, pp. 630 et seq. It is probable that beneficiation methods of the type employed at Bintan would be effective at Myalla also.

Since there is insufficient data on which to base a reliable quantity estimate, the following is to be regarded as a tentative indication only. On surface evidence, the deposit appears to have an area of about 12,500 square yards, and the

average thickness of useful material may be in the vicinity of 6 feet. Using a conversion factor of 1.6 long tons per cubic yard, the available quantity would be 40,000 tons. The average grade may be from 48% to 52% available alumina with 1.0% to 1.5% available silica. The overburden is likely to average less than 3 feet.

There is another occurrence of bauxite on a small hill 25 chains to the south. This is situated just east of the road on Lot 14156 close to the boundary of Lot 12029, and is on land held under purchase agreement by E.W. Lohrey. As indicated on the plan, the apparent area is small.

This material is of a dense, brittle, bluish-grey, concretionary nature with patches showing brown iron-oxide staining. A grab sample, No. 17 (Reg. 586) assayed 47.7% available alumina and 4.7% available silica. There is no available evidence as to the depth or persistence of the formation.

At the boundary of Lots 12029 and 10547, thin seams of bauxite are exposed in the road cutting. The assay result here was poor and the material may contain some only partially altered parent rock. The sample was No. 7 (Reg. 576) with 36.3% available alumina and 7.0% available silica.

Twenty-two chains further north, sample No.16 (Reg. 585) was broken in another road cutting in Lot 10547, C.A. Bramich, owner. The material here is similar in appearance to that represented by Sample No. 17 and assayed 58.2% available alumina and 3.8% available silica.

Samples Nos. 7 and 16 were broken in situations which would admit of the formations extending away from the road over appreciable areas. There is no direct evidence that this occurs, but the indications definitely justify prospecting on both sides of the road. Most of the land in question is cultivated for flax or potatoes and part was actually in crop at the time of inspection. Prespecting work could, therefore, only be carried out by arrangement with the owner.

Another sample was made up from surface stones on Lot 10007. This material comprised hard, red-brown concretions and the sample No. 18 (Reg. 587) assayed 52.8% available alumina and 1.6% available silica. There is no evidence of a solid formation as the surface is covered by red soil passing, in a northerly direction, under grey sand.

This is essentially a preliminary report, and it is not proposed to discuss at length the general geology of the area. The land surface is mainly composed of basaltic soils derived from a series of flows, and in some places reasonably fresh basalt outcrops. Older rocks are represented principally by the Pre-Cambrian quartzites of the Sisters Hills which rise above the general level of the lava field in a number of places. The bauxite is a member of the volcanic suite and is the first occurrence in Tasmania recognised as being derived from Newer Volcanic rock. It is possible that the bauxites of certain areas have a like origin, but in those cases the associations are more obscure.

In view of its superior quality, the Myalla bauxite may be of considerable importance in relation to the

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proposed establishment of aluminium production in Tasmania. The area is definitely one which merits intensive prospecting, but the work would be attended by difficulties not experienced in the other bauxite areas of Tasmania.

These difficulties arise partly from the fact that most of the land concerned is used for cultivation, which makes its acquisition for mining purposes a matter of negotiation between owner and mining operator. Another factor is that outcrops in the area are generally indefinite and large numbers of shafts or bores may be necessary to prospect for and define relatively small deposits.

From the foregoing account, it will be realised that, while good quality bauxite has been proved to occur at a number of localities in the vicinity of Myalla, no reliable definition of available tonnages or grades is as yet practicable. The discovery is regarded as one of considerable importance, but until the position with regard to property rights is clarified and much prospecting carried out, it will not be possible to place any commercial valuation on the deposits.

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EXTENSION OFFICER

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