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SUPPLEMENTARY REPORT

on the

BLACK SAND DEPOSIT

FRASER RIVER, KING ISLAND

The writer examined and furnished a report on this deposit towards the end of the year 1926.

Apart from an attempt in the way of an experiment to treat a quantity of the material on the spot by grading and sluicing, and the concentration of a few hundredweight of the sand in a plant at Renison Bell, nothing has been done towards the exploitation of the deposit.

It is quite unnecessary to refer here to the extent and character of the sand deposit, full particulars of which have been described in the report referred to.

In dealing with the investigation of a deposit of this description, the essential factors to be decided are:

1. Quantity of material available
2. Proportion of valuable constituents
3. Mode of treatment.

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1. From the apparent dimensions of the deposit carrying appreciable quantities of tin oxide the estimated quantity available is approximately 7000 cubic yards. An estimated quantity of 1000 cubic yards has been treated which has been allowed for in determining the quantity available.

Actual tests made prove that a cubic yard of Ilmenite Sand contains two tons in weight.

2. From data available the estimated quantity of tin oxide contained in the sand and computed as being slightly under 0.5 per cent.

Before any further expenditure is incurred in the way of productive work it is recommended that the area be checked bored on the lines recommended in the report above referred to. This work could be carried out rapidly and without difficulty by means of an auger bit and casing to prevent the sand from falling into the hole during the boring process. A small pump of similar diameter to the auger bit ($1\frac{1}{2}$" to 2") should be included with the boring outfit to raise the sand if too wet to adhere to the auger.

The productive work carried out many years ago proved conclusively that the sand is amenable to simple concentration for the separation of a marketable grade of tin oxide. With improved facilities a higher percentage extraction would result and a better grade product recovered.

The assay results of many samples taken from the deposit show a fairly wide variation in tin content ranging from a 0.1 to $\frac{1}{4}$% tin.

A sample of about 1 ton in weight sent over last year for experimental purposes assayed at the Geological Laboratory Launceston returned 0.72 per cent tin equal to approximately 0.96 per cent. tin oxide.

– Portions of the deposit contain more ilmenite than others, the dilution by white sea sand increases towards the sea shore. The tin oxide is most abundant where concentrations of ilmenite have occurred.

Small quantities of gold are associated with tin oxide but the relative value of this metal compared to the tin is small.

3. A sample of about one ton containing 0.72 per cent. tin was sent over to Tasmania for experimental treatment. Of this lot 3 cwt. were delivered direct to a reciprocating concentrating table for separation of the tin oxide. The result was not satisfactory, the heavy coarse particles of ilmenite obscuring the tin ore rendering a separation impossible.

A similar quantity passed through a 5ft. grinding pan prior to concentration gave a product which reflected well to treatment on a Wilfley concentrator. The tin oxide recovered contained 65.4 per cent tin.

These tests were made in a crude way, but nevertheless were sufficient to prove that grinding the sand is essential to ensure the best results.

A sample of the sand representing the ton lot referred to tested by the Acting Chief Government Chemist and Assayer proved that practically all the tin concentrate passed through 120 mesh (lineal) screen.

The problem of the separation of the tin ore from the sand is not a difficult one, but to obtain the best results more experimental work is necessary, particularly with regard to the elimination of the coarser particles of sand from the finer and valuable material by screening, prior to grinding and concentration.

It is recommended that a representative bulk sample of at least 10 tons be treated in a concentrating plant such as that on the Renison Bell Mine. In treating a lot of that weight, it would demonstrate beyond doubt if the sand could be profitably handled.

It is not inferred that the Renison Bell Mine is entirely suitable for treating the sand, improvements could undoubtedly be made on the initial work of a plant designed to deal with it.

In treating a lot of 10 tons in an established plant, even if only partially successful, would give confidence to the operators in the matter of providing the necessary plant to deal with the sand on the spot.

In addition to the tin ore contained in the sand the ilmenite is of potential value. Each year sees an improvement in the manufacture of titanic oxide pigment. That contained in the King Island deposit is a little below the required standard; with improved methods of treatment this deposit owing to its accessibility may become valuable for its titanic oxide content alone.

Costs of Treatment -

Providing the quantity and value of the deposit in tin oxide have been proved sufficiently to warrant the erection of a plant to deal with the sand, the question of treatment costs is one that should be considered. A good deal will depend upon experimental operations in the way of eliminating the coarse particles of sand from the valuable constituents by screening and classification.

As a fair basis of estimation, the cost should not exceed 5/- per ton.

Assuming the tin oxide recovered to be worth 1/3 per lb. on this basis to cover working expenses the deposit would have to yield only 4 lbs. per ton, equal to 1/5 of 1 per cent. (0.2%) tin oxide.

A number of assay results representing samples of the sand from this deposit were obtained from the Government Geological Laboratory Launceston. These samples were taken by former investigators in the year 1923. The results in tin representing "bulk" samples are much lower than many tried subsequently. The variable results obtained only demonstrate the necessity of systematic sampling of the whole area supplemented by the experimental treatment of a 10 ton representative sample.

In view of the data already obtained relative to the value and treatment of the sand, the deposit fully warrants further investigation on the lines indicated.

(Signed) J. B. SCOTT
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