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O T T A W A March 11th, 1943.

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ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1366.

IR/1366

Concentration Tests on a Sample of Scheelite Table Concentrate from the Delnite Mine, at Timmins, Ontario.

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Shipment:

A shipment of 198 pounds of table concentrate was received on December 17th, 1942.

The shipment was submitted by J. Beattie, Manager, Delnite Mines Limited, Timmins, Ontario.

Location of Property:

The property at which this shipment originated is located in Deloro township, in the Porcupine mining district of Ontario.

Sampling and Assaying:

The product was a table concentrate finer than 48 mesh. It was sampled, assayed, and reported as follows:

Gold	-	2.32 oz./ton.
Silver	-	0.38 "
Tungsten trioxide	-	32.78 per cent
Iron	-	19.68 "
Sulphur	-	10.90 "
Arsenic	-	16.10 "
Insoluble	-	5.80 "

Experimental Tests:

Preliminary examination and assays showed that the chief impurities in this sample were arsenopyrite, pyrite, and gangue. The sulphides appeared to be free from the scheelite and at least a part of the gangue was free. It was therefore decided to float the sulphides from the sample without further grinding and, if necessary, to retable the flotation tailing to remove some of the excess gangue. The sulphides were floated with the following reagents with and without grinding:

Soda ash	-	2.0 pounds per ton.
Amyl xanthate	-	0.60 " "
Reagent No. 208	-	0.20 " "
Pine oil	-	0.15 " "

The flotation tailing assayed as follows and represents the grade of product that may be expected from flotation alone:

		Per cent
Tungsten trioxide	-	61.56
Insoluble	-	9.20
Arsenic	-	0.19
Sulphur	-	0.51
Tin	-	Trace.
Phosphorus	-	0.018

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(Experimental Tests, cont'd) -

The flotation tailing was then treated on a table, the table concentrate assaying as follows:

		Per cent
Tungsten trioxide	-	68.64
Insoluble	-	7.20
Arsenic	-	0.15
Sulphur	-	0.30
Tin	-	Trace
Phosphorus	-	0.012

This test was conducted on a small table and it is possible that a large table might eliminate gangue more efficiently, giving a higher-grade final product.

Summary of Results:

Product	Weight, per cent	Assay per cent WO_3	Distribution of WO_3, per cent
Sulphide conc.	49.40	2.28	3.37
Table conc.	43.19	68.64	88.75
Table tailing	7.41	35.50	7.88
Feed (cal.)	100.00	33.40	100.00

CONCLUSIONS:

The final product is a little low in WO_3 and just above the allowable limit in arsenic. However, since the daily production is so small, the product can be treated here and mixed in with other lots going through our circuit.

The sulphide concentrate should assay four ounces per ton more in gold and could be returned to the company for further treatment. The tailings from sulphide flotation would then be treated on our tables with the table middling being reground and sent to scheelite flotation. In this way, perhaps as much as 95 per cent of the scheelite in the product could be recovered.

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