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REPORT OF ORE DRESSING & METALLURGICAL LABORATORIES

Test No. 122.

A sample of barite weighing 10 pounds was received May 3rd, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from T.B. Caldwell, Lanark, Ont.

The barite contained argentiferous tetrahedrite and a little azurite and malachite.

Tests were desired on this sample to determine if it would be possible to recover the silver and copper in a concentrate, and produce a clean, high-grade barite.

The whole sample was ground to pass 100 mesh, and a sample was cut out for analysis. This sample gave the following :-

Barium Sulphate	96.25%
Copper	0.52%
Silver	1.80 ozs / ton.
Antimony	present.
Arsenic	present.

Four flotation tests were made upon the material ground to pass 100 mesh, the procedure in each test being as follows :- Five hundred grams of the ore were put into a small ballmill along with the required amount of oil and enough water to make a thick pulp. The mill was then revolved for 5 minutes to mix the oil into the ore. The mixed charge was then washed into a small Janney flotation machine and agitated for 5 minutes. During the agitation the froth

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the froth was skimmed off as it formed.

The oils used in the tests were as follows :-

Test #	1.	pine oil	0.1 c.c.	coal tar	0.1 c.c.	coal tar, creosote	0.3 c.c.
" #	2.	Oil # 26	0.2 c.c.	"	"	0.05 c.c.	" " " 0.2 c.c.
" #	3.	Oil # 27	0.2 c.c.	"	"	0.05 c.c.	" " " 0.2 c.c.
" #	4.	Oil # 29	0.125 c.c.	"	"	0.05 c.c.	" " " 0.3 c.c.

Test No. 1 gave a good amount of fair froth, and tests Nos 2, 3, and 4 gave a good amount of slightly gummy froth.

The results obtained from the four tests are given in the following table :-

----- B A R I T E T R A N S D R I T E -----

Product	Wt. Gms.	% Cu.	Oz. Ag.	Cu. Gms.	Wt. Gms. x Ozs. Ag.	% Cu. Value.	% Ag. Value.
# 1 Conc.	33.6	6.05	10.92	2.033	366.9	78.2	40.8
# 1 Tails	466.4	.11	1.14	.513	531.7		
# 1 Heads	500.0	.51	1.80	2.546	898.6		
# 2 Conc.	60.2	3.40	6.02	2.047	362.4	78.7	40.3
# 2 Tails	439.8	.09	.19	.396	83.6		
# 2 Heads	500.0	.49	.89	2.443	446.0		
# 3 Conc.	44.1	4.50	10.12	1.984	446.3	76.3	49.6
# 3 Tails	455.9	.07	.05	.319	22.8		
# 3 Heads	500.0	.46	.94	2.303	469.1		
# 4 Conc.	32.0	5.80	14.08	1.856	450.6	71.4	50.1
# 4 Tails	468.0	.07	.20	.328	93.6		
# 4 Heads	500.0	.44	1.09	2.184	544.2		
H E A D S	500.0	.52	1.80	2.600	900.0		

The tailings from Test No. 3 were assayed and found to be 97.75% barium sulphate.

CONCLUSIONS

1. The grade of barite produced is very good as shown by the tails of test No. 3. These tails are clean and white, and run 97.75% barium sulphate.
2. The recovery of the copper is fair, approximately 80%.
3. The recovery of the silver is fairly low, approximately 50%.
4. The work conducted on this sample was only of a preliminary nature, and although the results are encouraging, the sample was too small and was used up before any final results could be determined .