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SHOULD BE ADDRESSED TO THE DIRECTOR.

DIVISION OF ORE DRESSING AND
METALLURGY

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REPORT OF ORE DRESSING & METALLURGICAL LABORATORIES

Test No. 120.

(Final Report).

A shipment of pyrite ore weighing 10 tons was received April 1, 1919, at the testing plant of the Ore Dressing and Metallurgical Division, from the Grasselli Chemical Co., Limited, Cleveland, Ohio. The ore was from the Caldwell Mine, Flower Station, Ont., and consisted of iron pyrites in a quartz gangue.

A concentration test was desired on this ore to produce a product running 40% sulphur or over, and to obtain as high a recovery as possible.

A test was made upon one-half of the shipment, and a preliminary report, describing this test, and giving the data obtained from it, was submitted.

In the first test, the grade of concentrate was high and the recovery low. With the idea of increasing the recovery by producing a lower grade of concentrate, the following test was made :-

One -quarter of the shipment was put through a breaker crushing to a little over 2", and then through rolls set at 2". A head sample was cut out by an automatic sampler, and the remainder of the ore was screened on $\frac{1}{2}$ " and $1\frac{1}{2}$ " screens, the oversize being passed to a picking belt, where it was washed by passing under a spray, and the high grade material picked out. The slime from washing the ore on the belt was collected

and

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and dried, and the discard from the belt and the $1\frac{1}{2}$ " size were crushed in rolls to pass $\frac{1}{2}$ ". The hand picked material was weighed and sampled. The belt discard and $1\frac{1}{2}$ " size, after being reduced to $\frac{1}{4}$ " were mixed with the slime from the picking belt, and the $\frac{1}{4}$ " size, weighed and sampled.

The mixed product was then jigged, making 2 concentrates, 2 hutches and a tailing, all of which were dried, weighed and sampled. The weight and assay of the slime lost in jigging were figured by difference.

The data obtained from the above test is given in the following tables :-

P Y R I T ECRUSHING, SCREENING & PICKING.

PRODUCT.	Wet Wt. Lbs.	Moisture		Dry Wt. Lbs.	Sulphur %	Sulphur Lbs.	% Total S. value	% Total Wt
		%	Lbs.					
Hand picked	979.	0.13	1.3	977.7	40.75	398.41	26.60	23.30
M i x e d	3242.	0.70	22.7	3219.3	34.15	1099.39	73.40	76.70
TOTAL				4197.0	35.69	1497.80	100.00	100.00
Head sample	670.	0.42	2.8	667.2	35.15			
H E A D S	4910.	0.42	20.6	4889.4	35.15			
				- JIGGINE -				
#1 Conc.				703.5	46.01	323.68	21.62	16.77
# 2 Conc.				140.0	33.42	46.79	3.12	3.34
#1 Hutch				1041.0	49.70	517.38	34.56	24.81
#2 Hutch				98.0	36.93	36.19	2.42	2.34
Tails				1095.0	12.45	136.33	9.11	26.10
Slimes				140.3	27.45	38.51	2.57	3.34
TOTAL	3240.5	0.70	22.7	3217.8	34.15	1098.88	73.40	76.70

-- S U M M A R Y --

PRODUCT	% Total S. Value.	% Total Wt.	Sulphur %.	% Fines - 20 m.
Hand picked	26.60	23.30	40.75	0.00
# 1 Conc.	21.62	16.77	46.01	0.00
# 2 Conc.	3.12	3.34	33.42	0.00
# 1 Hutch	34.56	24.81	49.70	40.29
# 2 Hutch	2.42	2.34	36.93	70.40
Total Conc.	88.32	70.56	44.67	16.50
Tails	9.11	26.10	12.45	
Slimes	2.57	3.34	27.45	
Total Tails	11.68	29.44	14.16	

CONCLUSIONS:-

1. The grade of concentrate produced, 44.67% sulphur, is good.
2. The recovery 88.32% is very good.
3. The rate of concentration is as 10 is to 7.
4. The fines under 20 mesh are 16.50% of the combined concentrates. This is rather high, but by crushing in stages, and picking and jigging the ore in slightly larger sizes, this would be kept down to 10%, which would be fair.