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ORE DRESSING AND METALLURGICAL LABORATORIES.

Test No.186

The Concentration of the values in the pyrrhotite from the Columbia-Kootenay Mine, Rossland, B.C.
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A shipment of 56 pounds of ore was received September 5th. 1922 from the Columbia Kootenay Mine, Rossland, B.C. The chief mineral constituent was pyrrhotite, carrying small amounts of chalcopyrite, gold, and silver. It was in a weathered and oxidized condition. Tests were desired to determine if the copper and precious metal values could be concentrated to a marketable grade.

The ore was crushed to 4 mesh and a head sample cut out. This head sample gave upon analysis the following:

Gold	0.06 oz per ton
Silver	0.08 "
Copper	0.46%
Iron	36.35%
Sulphur	20.46%
Insoluble	22.40%

Tabling and Flotation

About 1400 grams of heads, -20 mesh was screened on 40 and 80 mesh. Each size was tabled separately on a small Wilfley table making a concentrate and a tailing. The table tailings were mixed, ground in a ball mill, and then floated in a small Ruth machine. All products were dried, weighed, sampled, and analyzed. The table concentrates averaged 0.07 oz gold per ton and 0.48 percent copper. The flotation concentrate ran 0.12 oz gold per ton and 2.65 percent copper

Flotation

Nine flotation tests were made on the heads, using different

oils and reagents. In the best test, the concentrate ran 3.02% copper and the copper recovery was 76.0%. The next best test gave a concentrate of 1.80% copper with a recovery of 84.5%. The other tests gave very much poorer results.

Flotation and tabling: Two tests were made to see if it would be possible to raise the grade of flotation concentrates by tabling. It was found that the table concentrate and tailing ran practically the same in copper.

Conclusions:

1. The material submitted contains:

Gold	0.06 oz/ton	at	$20 per oz.	=	$1.24 per ton
Silver	0.08 "	"	$6.25 "	=	$0.05 "
Copper	0.46%	"	$0.15 per lb	=	$1.38 "
Gross value					$2.67 "

This is a very low gross value and even if the ore could be treated satisfactorily it would not be rich enough to make it worth while to mine and mill.

2. If ore of higher grade was found on the property it would likely be amenable to flotation, for with a higher head a higher concentrate and recovery would be obtained.

3. Tabling seems of little value in treating an ore of this kind, as due to the large sulphide content 44% of the heads go into the concentrate when tabled.

4. Cyaniding at -200 mesh for 24 hours on the tails from the tabling and flotation test reduced them to a trace of gold and silver. With higher grade ore this method might be of use in treating flotation tails if they are too high in gold and silver to discard.