

Report No. 230

The concentration of a copper-lead-zinc ore from  
Albert County, N.B.  
by C. S. Parsons  
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Shipment: Two samples of copper-lead-zinc ore were submitted by John E. Teahan Sr. Kerry P.O., N.B. The samples were obtained from a property situated in New Ireland in the parish of Alma, Albert Co. N.B.

Sample No. 1 was of three pounds; sample No. 2 of 116 pounds was received at the Ore Testing Laboratories June 8, 1925 and was taken across a thirty foot face, five feet below the surface.

Purpose of Experimental Tests: The samples were submitted for analysis and also to determine a method of concentration into commercial shipping products.

Character of the ore: The ore consisted of sulphides of iron, copper, lead, and zinc, finely crystalline and intimately associated. It also carried values in silver and gold.

Analysis of samples: Analysis of the two samples showed them to contain:

	<u>Sample No. 1</u>	<u>Sample No. 2</u>
Copper	11.86 %	2.35 %
Arsenic	3.57	0.76
Lead	2.62	1.26
Zinc	7.44	14.27
Gold	0.44 oz/ton	0.03 oz/ton
Silver	14.94 "	3.91 "
Antimony		trace

Experimental Test: The experimental work was conducted on sample no. 2. This sample taken across a face of 30 feet of ore five feet below the surface was considered to more truly represent the class of concentrating ore to be expected from the development of the property. A selective flotation test was conducted making three products, namely a copper-lead concentrate, a zinc concentrate, and a tailing.

1000 grams of the ore, previously crushed to 14 mesh was ground for 40 minutes in a ball mill. The following reagents were used to obtain a separation of the copper and lead from the zinc:

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Soda ash	10 lbs/ton	Added to ball mill
Thiocarbamilide	0.25 "	" " "
Sodium cyanide	0.24 "	" " "
Fine oil	2 drops	for lead-copper flotation
Copper sulphate	1.5 lbs/ton	for zinc flotation
Xanthate	0.3 "	" " "

The results obtained are given in the following table:

Product	Weight		Analyses					Percent of values				
	gms	%	Cu %	Pb %	Zn %	Au oz	Ag oz	Cu	Pb	Zn	Au	Ag
Cu-Pb conc.	169.7	17.0	12.32	6.62	13.86	0.08	14.76	90.3	93.3	16.3	41.6	70.0
Zn "	231.0	23.0	0.56	0.25	49.6	0.04	3.0	5.5	4.2	80.5	29.1	19.6
Tailing	600.0	60.0	0.16	0.05	0.7	0.015	0.56	4.1	2.5	3.0	28.3	9.5

**Summary & Conclusions:** The results of the above test show that the ore can be concentrated into two marketable products, namely a copper-lead product and a zinc product. The copper-lead concentrate obtained represented 17% by weight of the ore; assayed 12.32% copper, 6.62% lead, 13.86% zinc, 14.76 oz/ton silver, and 0.08 oz/ton gold. No attempt was made to reclean this concentrate to eliminate some of the zinc, which would be done in practice. This concentrate contained 90% of the copper values in the ore, 93% of the lead, 70% of the silver, and 42% of the gold.

The zinc concentrate obtained represented 23% by weight of the ore; assayed 49.6% zinc, with very small amounts of copper and lead, and is a good shipping product. This concentrate contained 80% of the zinc values in the ore.

The tailing representing 60% by weight of the ore carried very little values. It would seem, however, from the analysis and loss of values in the tailing that the gold values were to some extent associated with the iron sulphides, which reported in the tailing.

The test is an interesting one, showing what can be done by selective flotation on an intimate mixture of minerals in an ore.



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TEAHAN ORE

Two samples of a copper-lead-zinc ore, carrying silver and gold values, were received from John E. Teahan, Esq., Albert Co. N.B. Sample No. 1 was a small sample of about three pounds; sample no. 2 weighed 116 pounds and was received at the Ore Testing Laboratories June 8th. 1925.

The analyses of the samples was as follows:

	<u>Sample No. 1</u>	<u>Sample No. 2</u>
Copper	11.86%	2.35 %
Arsenic	3.57	0.76
Lead	2.62	1.26
Zinc	7.44	14.27
Gold	0.44 oz/ton	0.03 oz/ton
Silver	14.94 "	3.91 "
Antimony		trace

The following test was conducted on Sample No. 2

Test No. 1 1000 grams ore -14 mesh ground 40 minutes in ball mill. The following reagents were used:

Soda ash	10.0 lbs/ton	Added to ball mill
Thio carbanilid	.25 "	" " "
Sodium cyanide	.24 "	" " "
Pine oil	2 drops	For Lead-copper flotation
Copper sulphate	1.5 lbs/ton	For zinc flotation
Xanthate	0.3 "	" " "

The results of this test are given in the following table.

Product	Weight		Analyses					Percent of values				
	gms	%	Cu%	Pb%	Zn%	Au	Ag	Cu	Pb	Zn	Au	Ag
Cu-Pb conc.	169.7	17.0	12.32	6.62	13.86	.08	14.76	90.3	93.3	16.3	41.6	70.0
Zinc "	23.0	23.0	0.56	0.25	49.60	.04	3.0	5.5	4.2	80.5	291	19.6
Tailing	600.0	60.0	0.16	0.05	0.7	.05	0.56	4.1	2.5	3.0	28.3	9.5

Mar 18/25