

Substitute values for R in formula (1)

$$\frac{a-b}{c-b} \times \frac{c-a}{a-c} = 1$$

That is metal extracted ÷ metal not extracted = 1
= metal in ore.

In ore dressing operations there are often intermediate products, or 'middlings,' to be treated again. Such products will complicate the formulae given above. Mr. C. W. Wright in the Mining Magazine of July, 1911, gives the following derived formula.

$$E = 100 \times \frac{Wc \times Aa}{(Wa \times Aa) + (Wb \times Ab) + (Wd \times Ad)}$$

where E=extraction per cent.

Wa=weight of ore feed, of assay value=Aa.

Wb=weight of tailing, of assay value=Ab.

Wc=weight of concentrate, of assay value=Ac.

Wd=weight of middling, of assay value=Ad.

Percentage recovery may be checked graphically, and the graphs or curves, obtained by several successive recovery tests, will enable percentage recovery to be determined directly. Graphical treatment has been dealt with by Mr. Sharwood in the Mining Magazine for December, 1910.

True extractions are usually difficult to obtain, and, when submitted, are frequently misleading, owing either to omission of products or by the intention of interested parties.

ORE SHIPMENTS FROM COBALT SILVER DISTRICT IN 1913.

According to the Cobalt Nugget, the shipments from Cobalt mines during 1913 amounted to 20,916.26 tons, a decrease of 500 tons from the shipments for 1912. Taking into consideration the amount of concentration and bullion reduction of the Cobalt mines this reduction is noteworthy, and, as compared with a 500-ton reduction in the 1912 figures from the 1911 figures, it shows a steady shipment from Cobalt during the last year.

The list shows two new shippers during the year, the Lumsden and the Gould, although a number of old faces have passed away and new ones substituted. In place of Silver Queen, Aladdin appears. Caribou-Cobalt appears for the Drummond shipments for the year Orion supplants Silver Cliff, and York Ontario the old King Edward. In addition Lost and Found or General mines made a shipment from a North Cobalt group of properties early in the year. The silver Bar shipped its first carload, although on two previous occasions the name has appeared with test shipments.

The general average of the various mines was about on a par with last year, with one or two specific decreases and a corresponding number of increases. Seneca-Superior, which stepped into the shipping class late in 1912, appears last year with a heavy total. Buffalo, always a heavy shipper in the past, now reduces the silver into bars and ships by express, showing a decrease in the tonnage from the camp. Of the larger mines, Nipissing shipped slightly in excess of the previous year residue from the high-grade mill, rich in cobalt and nickel oxides, but low in silver values, predominating. La Rose shows a decrease of some 200 tons, while McKinley shows an increase of a couple of hundred tons. Coniagas' decrease was 500 tons, but to

offset this, Cobalt Townsite increased shipments by 800 tons.

Other mines show slight fluctuations, both decreasing and increasing tonnage, and this, together with the fact that the bullion shipped was much greater and increased concentration, argues well for 1913 as a banner year in Cobalt.

Last year 27 mines appeared on the shipping list; this year there are 31 mines, an increase of four. Mines which appeared this year and not on last year's figures included Green Meehan, Lumsden, Gould, Silver Bar, Orion (Silver Cliff), and York Ontario (King Edward), while the Hargraves and Provincial do not appear on the list.

The following figures compare the shipments by months of 1912 and 1913:

	1913.	1912.
January	1,657.83	1,235.07
February	1,718.06	2,063.63
March	1,980.09	1,678.13
April	1,601.76	1,782.79
May	1,839.50	1,928.72
June	1,649.07	1,707.37
July	1,494.77	1,669.55
August	1,586.30	1,980.12
September	1,603.56	1,871.48
October	1,423.11	1,775.61
November	2,268.48	1,608.48
December	2,093.73	2,380.84
	20,916.26	21,631.79

By years the tonnage from the Cobalt camp is as follows:

	Tons.
1904	158.55
1905	2,336.01
1906	5,836.59
1907	14,851.34
1908	25,362.10
1909	29,942.99
1911	33,976.97
1911	24,921.71
1912	21,631.79
1913	20,916.26
	179,934.31

PEAT.

The peat deposits of Canada are quite extensive and constitute an important reserve of fuel that has as yet been but little utilized. The most important areas so far as known are those found in the Provinces of Quebec and Ontario. A number of these have been systematically examined and surveyed by the Mines Branch with a view to determining their character and extent. The Branch has also carried out a comprehensive investigation of the fuel values of peat, having built a plant in Ottawa for demonstrating the feasibility of the manufacture and use of peat gas in gas engines. During the past two years air dried peat fuel from the Government bog at Alfred was sold in Ottawa, and peat from a privately owned bog at Farnham, Quebec, was disposed of in Montreal. In both cases the fuel was in considerable demand for use in open grates and in kitchen ranges. The Alfred bog is now being operated as a private enterprise and a considerable production is anticipated.