

esting metallurgical field. The result was that a number of Canadian smelters erected plants for the treatment of these ores. For a time the increase in ore production was greater than the increase in smelter capacity, but that time has passed, and the smelters are now looking for ore. At the present time most of the high grade ore is treated by these Canadian smelters, the balance going to the United States and to Europe.

In the early days the mining operator was dependent entirely on marketing his ore to the smelter, and it was simply a question of calculating the freight and smelter charges to find what ores would pay for shipment, and all below that point had to be held for a possible future treatment. The low grade ores were not seriously considered, but as time went on it was realized that these low grade ores were destined to play an important role in the life of Cobalt. As a consequence, mills sprang up rapidly, till now there are seventeen in the camp, and their operation has become a vital part of the industry. Through their operation thousands of tons of ore have become available for shipment, that previously could not be realized upon. During 1911 the low grade ore milled in Cobalt amounted to 382,000 tons, and from present appearances this amount is likely to be materially increased in 1912.

The accompanying schedule shows the freight rates that have been in force for the last two years. On looking over these freight rates, it will be found that, considering the value of the shipments, the rates on high grade ore are very reasonable, but on low grade material the rates are comparatively high, which is a necessary consequence of the long hauls to the smelters.

Freight Rates on Silver Ores from Cobalt.

From Cobalt to North Bay—	per 100 lbs.
Below \$49.00 per ton.....	10 cents.
Above \$49.00 per ton, billed to Canadian points.....	14 cents.
Above \$49.00 per ton, billed to outside points.....	16 cents.

Silver Ore, Carloads, Minimum 30,000 lbs.

From North Bay to	Rate in cents per 100 lbs.			
	A	B	C	D
Marmora, Ontario.....	18	20	27	34
Copper Cliff, Ontario.....	10	12	16	21
Orillia, Ontario.....	11	13	17	21
Thorold, Ontario.....	14	16	21	26
Toronto, Ontario.....	12	14	19	24
*Denver, Colorado, U.S.A..	40	46	54	62½

Application of Rates.

- Group A.—Rates apply when valuation is under \$50 per net ton.
 Group B.—Rates apply when valuation is under \$50 and under \$100 net ton.
 Group C.—Rates apply when valuation is under \$100 and under \$500 net ton.
 Group D.—Rates apply when valuation is under \$500 and over per net ton.

When shipments are made to Eastern United States points, a through rate is not quoted, but cars are billed to the frontier, to Buffalo, Black Rock, or Suspension Bridge, N.Y. From there new rates and ratings apply.

Silver Ore, Carloads, Minimum 40,000 lbs.

From North Bay to	Rate in cents per 100 lbs.			
	A	B	C	D
Buffalo, Black Rock, or Suspension Bridge, N.Y., U. S. A.....	12½	15	19½	24½

*The splitting point for values in the application of rates in the case of Denver is one dollar below that given above, and the minimum carload is 40,000 lbs.

Application of Rates.

Group divisions A, B, C and D apply on same valuation as in previous table.

Silver Ore, Carloads, Minimum 50,000 lbs.

From Buffalo, Black Rock and Suspension Bridge, N.Y., to

	Rates in cents per 100 pounds.			
	A	B	C	D
Bergen Junction, N.Y.....	13	16	22	28
Carnegie, Pa.....	10	11½	18	25½
Chrome, N.J.....	13	16	22	28
Newark, N.J.....	13	16	22	28
New York, N.Y.....	13	16	22	28
Perth Amboy, N.J.....	13	16	22	28

Group A.—Rates apply when valuation is under \$100 per net ton.

Group B.—Rates apply when valuation is over \$100 and does not exceed \$800 per net ton.

Group C.—Rates apply when valuation is over \$800 and does not exceed \$2,000 per net ton.

Group D.—Rates apply when valuation is above \$2,000 per net ton.

The lowest grade of Cobalt silver ore on which any of the smelters will bid must contain 60 ounces per ton, and this also approximately marks the low limit where ore can be shipped and still leave a slight profit above freight and treatment charges. With the introduction of milling nothing assaying that low has been shipped, because by jigging and hand picking, such material could be reduced possibly 50 per cent., yielding a high grade concentrate and leaving a product that could yield a further good profit by milling. This has been illustrated well in the last two years, for while the shipments in 1910 contained two cars of low grade to one high grade, this proportion was reversed in 1911. The decrease of the low grade shipments due to the introduction of milling does not have such a marked effect on the total shipments from the camp as might be expected, for this deficit is made up in part by the mills making the ore available for milling whose values lie below 60 ounces and above 12 ounces.

While it is true, and for the above reasons, that the shipments from Cobalt are on the decline as regards tonnage, the increase in value per ton has been such that the value of the total shipments shows a steady increase. From present indications the value of the total shipments from Cobalt for 1912 will show a material increase over 1911, which was up to that time the banner year.

A later development that is still further reducing the shipments from the district is a process introduced by the Nipissing Mining Company during 1911, for the treatment of high grade ores. This is a combination amalgamation and cyanide treatment, and the resultant product is silver bars 999 thousandths fine. This high grade mill has a daily capacity of five tons, so that the freight shipments will be reduced by this amount as the resultant silver is shipped out by express. A similar mill is now nearing completion for the Buffalo mine, which will mean the further reduction of freight shipments.