
Mineral Wealth Along the Temiskaming and Northern Ontario Railway

The above figures may be expressed in another form in the statement that the Cobalt District is now producing silver at the rate of $2\frac{1}{4}$ tons per working day, or going back fourteen years, it has produced over two tons of pure silver for every working day since the camp was discovered in 1903.

The silver ores of Cobalt are complex and there was no place in Eastern Canada to treat them, so that all the early shipments went to smelters in the Eastern United States, only the richer ores being shipped. The ores contained other valuable constituents besides silver, and soon a number of Canadian enterprises were started, of which the two largest are now operating on an extensive scale, producing not only refined silver, but refined arsenic, cobalt and nickel, either as metals or in other saleable forms. The principal source of cobalt oxide used to be New Caledonia, but since these Canadian refineries have entered the market, they have driven out all competitors.

The silver bearing veins are narrow, but as they were taken out and mining development became more extensive, it was found that there still remained a large tonnage of low grade silver-bearing material that could not pay the high freight and smelter charges without previous treatment. The first concentrating mill started operations in 1907 and others quickly followed, till at the present time there are fifteen operating mills. The tonnage of ore treated increased from 50,000 in 1907 to 635,000 tons in 1916. The average reduction in weight due to concentration is from 45 to 1, and as the percentage of values recovered is about 80, the increased value per ton of the concentrate is about 36 times that of the original ore. An important metallurgical advance has been made by the introduction of Oil-Flotation. It is not likely that this method of concentration will supersede the standard method already in use in the camp, but in many cases it can be made a valuable addition to the existing plants and the extraction bettered with only a small additional cost.

The principle of oil flotation may be briefly stated as follows. If to a finely ground pulp in water certain oils are added in small quantities and then aerated it is found that the oils have an affinity for the metallic particles which they do not have for the gangue. The foam made by the oil carries off the metallic particles thus making a concentrate which while not by any means perfect is still quite valuable to the Cobalt Camp, as silver is one of the metals that will thus float. The oils mostly used in Cobalt are Pine Oil, Creosote and Coal Tar. Recently it has been found the expensive pine oil which has to be imported can be replaced by hardwood creosote oil of Canadian production. The adoption of oil flotation will not only make available for treatment large tonnages of tailings now being produced by the mills, but many tailings-dumps will also be retreated at a profit. The tonnage of such old tailings dumps will amount to about $2\frac{1}{2}$ million tons. If
