

be turned to commercial account, the operating expenses being thus distributed over a greater number of tons and reducing the cost of mining to \$2 per ton, while the costs of crushing and concentrating should not exceed 50 cents and the loss of oil about 15 cents. Taking Le Roi ores containing values of \$4.75 per ton, at present market rates, a saving of 80 per cent. and a concentration of 10 into 1 would give one ton of the concentrate product worth \$38, the charges against this single ton being ten times the cost of mining and concentration, or about \$26.50, plus freight, smelting, metallurgical losses, interest and refiner's charges and deductions which amount to \$11 per ton, making a total charge of \$37.50 per ton, leaving a profit of 50 cents on the ten tons mined, although this does not include depreciation of plant or royalties to the inventor, yet it is safe to say that \$5 ore will clear expenses, and a profit can be made upon all ores above that value.

Meanwhile a small quantity of the Le Roi ores has already been tested by this process, but not on a large enough scale to demonstrate beyond a doubt that it will be a financial success; however, the test indicated a saving of 80 per cent., which is certainly ground for hope and encouragement.

Mr. Mackenzie concluded his speech as follows:

"Although we may not live to see as was once predicted, a continuous line of concentrates between Rossland and Trail, we may reasonably expect the mines of Rossland to produce an unbroken line of dividends to the pockets of some of the now discouraged shareholders, convincing the most skeptical that dividends can be produced from the low grade ores of the camp."

Another speaker in the course of the evening, Mr. Bernard McDonald, manager of the Le Roi No. 2, was equally optimistic and hopeful—only rather more so. After expressing in general terms his confidence in the future of all Rossland mines, he then referred to the great possibilities in the way of economic treatment of Rossland ores by oil concentration:

"Exhaustive tests made of the ores of this camp show that the Elmore process can concentrate what is now considered waste rock, that is, ore running $\frac{1}{2}$ per cent. copper, or, to be accurate, 52 per cent.—12 tons into 1, making a product containing 6 per cent. copper, and eliminating at the same time a large percentage of the silica and aluminum, that now constitutes the chief expense and difficulty in smelting these ores. The resulting product, that is, the concentrates, will require less than one-half of the fluxes and not more than one-half of the coke now required to smelt a ton of the crude ore. All the costs of concentration by this process should not exceed \$1.00 per ton, including freight to the works. So you can see at a glance, without any further figures, the favourable position the mines of this camp occupy at the present time, and how silly and foundationless are the rumors which have recently gained circulation about them. The mines of Rossland have produced in the past precious metals and useful metals having a value of \$15,000,000, and as yet the surface has hardly been scratched. This production is only an earnest of the results to be obtained in the future."

But for the cyanide process, the Rand mines could not have been made to pay, and it may be, therefore,

that through the introduction of oil concentration, the British Columbia mines will work out their salvation. So far as the big Rossland mines are concerned, however, where it becomes a question of treating 1,000 tons daily, the initial expense of installing plant will naturally be very heavy, and as the Le Roi, for example, has already an indebtedness largely in excess of its assets, the reconstruction of the company reducing the capitalization and at the same time providing adequately for future working expenses would seem to be not only an inevitable but a judicious step.

COPPER SMELTING ON VANCOUVER ISLAND.

THE establishment of a custom smelting plant of large capacity on the Pacific Coast in British Columbia has been "under discussion" for some years past. Various proposals, to each of which a bonus requisition was attached, have been presented for the consideration of the City Councils of both Victoria and Vancouver, but since last January the supplying of this need was decided upon and arrangements immediately entered into in a practical way by practical smelter men without any flourish of trumpets or requests for financial assistance. Messrs. Breen & Bellinger, than whom there are no better known metallurgists in the West, after thoroughly investigating conditions and ascertaining the amount of ore supplies available, proceeded to select a suitable site and at once started the constructive work with a view to the commencement of smelting operations about the 1st of July of the present year. As a base for ore supplies a contract was entered into with the Lenora Mining Co., of Mount Sicker, and the location selected was the new townsite of Crofton, which had been acquired by Mr. Henry Croft, for the ocean terminus of his ore railroad.

The prospects for obtaining a sufficient supply of ore to keep a smelter of a large enough capacity in continuous operation to produce satisfactory commercial results were also investigated, with the result that apparently when the claims and prospects in course of development on the East and West Coasts of Vancouver Island and in the adjacent Mainland districts, were taken into consideration, it was determined to build a smelter with a capacity to treat about 800 tons of ore per day.

In deciding upon the erection of works of so large a capacity as those projected, the promoters of this enterprise were influenced by the following favourable conditions:

(1) The geographical situation is such that not only the mines of British Columbia can be reached, but also the rapidly developing portions of Alaska to the extreme northern limit, as well as the entire Pacific Coast to the southern portion of South America.

(2) The deep water harbour at Osborne Bay on the shore of which Crofton is located, with the channels which lead into that harbour, and which are navigable for the largest vessels afloat, provided for the transportation of ores and fuel at the lowest possible cost for freight.

(3) The fact that in the past the very large ma-