

BANK OF MONTREAL

Established 100 years (1817-1917)

Capital Paid up	\$16,000,000
Rest	\$16,000,000
Undivided Profits,	\$1,901,613
Total Assets	\$558,413,546

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assuming that electric power costs \$15 per k.w. year, pig iron could be produced at a price of \$29.75 per long ton. If, on the other hand, power would need to be purchased from the existing companies at the offered rate of one-half cent per k.w. hour, then the cost of producing pig iron would be approximately \$40.50 per ton, which leaves little margin under the probable conditions which will exist shortly, and, under the estimate of \$35 per ton for the next few years, would preclude its economic operation.

On the other hand, Dr. Stansfield submits the possibility of the treatment of the ore with the concentration of its iron content by means of the electro-magnetic process, and in this connection makes the following four-headed statement:

1. If the ore is of such a nature that, after breaking down to a size of about one inch, the ore can be concentrated magnetically so as to reject a large part of the gangue, it will usually pay to do this before smelting.

2. If the ore is so finely grained that it is necessary to crush it to a sand before magnetic dressing, there will be involved the cost of the fine crushing and also the cost of briquetting or sintering the concentrates to make them suitable for smelting.

3. In the case of an ore that does not contain over 50 per cent. of iron, if the ore lends itself readily to magnetic concentration so that very fine grinding is unnecessary and a clean separation can be obtained, the saving in the cost of smelting will probably pay for the cost of crushing, magnetic dressing, and sintering with sawdust on a Dwight-Lloyd machine. The ore will, incidentally, be improved by the removal of phosphorus and sulphur, and will be left in a condition more favorable for smelting.

4. If preliminary reduction of the ore is employed, the ore will have to be crushed to a coarse powder, and magnetic concentration will then form an essential step in the process; being applied either before or after the reducing operation.

Under these conditions the electric power needed for the final smelting of metallic powder would be less than one-third of that required for smelting the iron ore by existing methods, and it seems quite possible that the preliminary production of the ore, using waste wood or other cheap fuel, can be effected so cheaply that there will be a substantial saving on the whole process. In this regard it will be seen that but one operation will be necessary for the conversion of iron ore into steel, eliminating the intermediate step of pig iron. He estimates that the metallic powder could be produced at a cost of from \$15 to \$16 per ton and that foundry pig iron could be produced at a cost of from \$25 to \$26 with ingot steel at about \$30 per ton.

Dr. Stansfield continues: If it is found possible in practice, even to approach these estimates it will be clear that an electric iron industry can be undertaken immediately in British Columbia and in some other parts of Canada, and that the plants that are now employed for the electric smelting of iron ores may have to be remodelled. I must repeat, however, that, although the results indicated appear to me to be very probable, I have not as yet enough information to speak with entire certainty, and further experimental work must be undertaken before it would be safe to proceed to the erection of a plant.

The metallic powder can be made into steel equally easily, by smelting in electric furnaces, and steel ingots could be produced at a cost only a little higher than that of foundry iron—say at about \$30 per ton. This would render possible a large steel industry in British Columbia.

In view of the abnormal prices of products and supplies and the high cost and uncertainty of labor, it is almost impossible, at the present time, to arrive at any reliable conclusions with regard to the commercial side of a new industry. The high prices obtainable for iron and steel make the present time appear suitable for undertaking the

(Continued on page 17.)

The Royal Bank of Canada

INCORPORATED 1869

Capital Authorized	\$ 25,000,000
Capital Paid Up	14,000,000
Reserve and Undivided Profits	15,535,757
Total Assets	427,512,983

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