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Iron Mines of Manitoba.

The following paper was read at the recent immigration convention by F. Proudfoot:

In speaking of the iron mines of Manitoba it will not be necessary to go beyond the threshold of the province, for here on Black Island we have a deposit of iron ore which would justify the erection of a smelting plant. This deposit, or I may say these deposits, however, contain all the ore which may be required for the use of the province for all time to come. It will be my duty now to describe these iron ore deposits, and to make my remarks of as much practical utility as possible, by showing their value and importance as to the future of the province, and their influence upon the great question of immigration, if we can get on to the development stage and kindred manufactories. The main deposit of iron ore is composed of red hematite and is situated at the water's edge, on the south side of Black Island, in Lake Winnipeg, about four miles east from the southwest side of the island. The deposit on the north side of the island is also situated at the water's edge across the island and immediately north of the hematite, and is composed of an immense deposit of bog iron ore, which would be valuable to mix with the other ore to form different grades of pig iron. From a geological point of view the hematite deposit on the south side of the island is a most interesting one. It stands in a bank showing an outcrop of about eight feet in height, and extends along the shore for about six hundred feet—varying in richness but assaying from 40 to 62½ per cent of metallic iron, and the ore body can be distinctly traced—when the water is clear—for a long distance into the lake. The ore body at the outcrop is over-capped by a body of Silicious clay, Schistose and slaty rock with also a ledge of quartz, which said quartz contains a small percentage of gold, which has been assayed and found to contain from two to nine dollars per ton.

These ore deposits have undergone very close scrutiny by many competent experts who have estimated them to contain many millions of tons, and both as to quantity and quality there is nothing whatever left to doubt in this respect.

The hematite has been analyzed by expert analysts in Winnipeg, St. Paul, Chicago, Ottawa, Toronto, and Nova Scotia, and it has been experimented upon in bulk, at Chicago, and as to its purity and adaptability for various grades of iron and steel, the most satisfactory certificates have been made entirely from surface specimens of the ore.

Now, as to its accessibility. It is approachable by water from Selkirk by our largest lake steamers, the distance being seventy miles, and if the St. Andrew's rapids could be made passable (and this is a question of vital importance to Manitoba) the ore could be

brought all the way to Winnipeg by water, a distance slightly under 100 miles. The ore as tested so far, shows itself well up to a 50 per cent ore, and as it contains from 10 to 12 per cent of carbonate of lime (thus rendering it brittle), it could be mined most probably without the use of explosives.

Now, as to the practical value of these ore deposits to the province, I desire to put it very distinctly on record, that charcoal pig iron can be laid down in Winnipeg at \$10 per ton (counting in the government bonus of \$2 per ton). Here is the estimate, and the figures are upon a basis made by one of the most experienced authorities of the day, and further than this, the figures are capable of ample proof. The estimate is upon a basis of a 30 ton per diem output.

1. Cost of mining and hauling two tons of soft ore at Black Island, 50 cents per ton. \$1.
2. Small percentage of limestone required, 15c.
3. Eighty-five bushels of charcoal to smelt one ton of iron from this ore (scarcely requiring flux) 6c per bushel \$5.10.
4. Labor per ton at furnace \$1.45
5. Office expenses 40c, repairs 50c, 90 cents.
6. Interest and depreciation 80 cents.
7. Supplies and incidentals 40c.
8. Freight on ore to Selkirk, two tons, 60 cents.
9. Freight on pig iron to Winnipeg 60 cents.

Total \$11.00.
Deduct government bonus of \$2 and the total is \$9.

The items mentioned under 4, 5, 6, and 7 are taken from the figures of John Birkenbine as they exist at Duluth, but if any doubt should arise, we still have a margin of \$1 per ton (\$30 per day), so as to bring the total cost to \$10. In confirmation of these figures, let me say, that pig iron can be made and is made in Alabama at \$9.00, including all cost, labor, fuel, ore and all else.

In further proof of my estimate of cost, let me produce the figures taken in evidence before the Ontario mining commission at Iron-ton, in Wisconsin. They are based upon an actual smelting run of 59½ days. In that run they made 839½ tons of iron, the total cost per ton (less the ore) being \$8.28, and is made up as follows: 87.6 bushels of charcoal at 6c \$5.70; 674 pounds of limestone 25c; labor, office supplies and incidentals, \$2.33; cost of ore \$3.72; total \$12.

A valuable criterion for the work of smelting here, but mark the contrast between our position and that of Iron-ton, both as to ore and fuel where 674 pounds of limestone have to be added to each ton of ore in the furnace as it is smelted.

The Black Island ore (in a practical test at Chicago) was smelted in a common cupola without the addition of any flux at all save what was contained in the ore itself. If 87.6

bushels of charcoal were used (by actual practice with this large amount of lime stone) I am well within the mark by claiming eighty-five bushels as sufficient to smelt our soft ores here. Now let me make a few remarks about iron production in this Dominion of ours, to show how they are pushing their resources in the east. To begin with it may be a surprise to many of my hearers to know that from this Dominion of ours we are actually shipping Canadian made pig iron into England and Scotland, and also into the heart centre of iron in the United States, namely, into the city of Pittsburg. As may well be imagined there is some good cause for this, as this iron costs them at the city of Pittsburg \$40 per ton. I had these facts from Mr. George E. Drummond himself at Montreal, within the last week, for he made the shipments and he made the iron and the "good ground" was that this ore was good, and his iron made entirely from charcoal as the fuel.

The secret was discovered at Pittsburg, that in making car wheels (for chill and toughness in their make up) the charcoal iron made at the Drummond furnace had no peer in their country. I have it also from Mr. Drummond himself that he is going to make an aggressive bid to have his iron enter into the cutlery trade of Birmingham and Sheffield, and that speaks much for their enterprise in iron-making in the province of Quebec. Let me give some figures as to the production of pig iron in the eastern provinces.

In the year 1891 Canada imported 45,262 tons of foreign pig. We produced in that year 42,522 tons and that was 17,240 tons of home made iron over our importations from abroad.

In New Glasgow and Ferrona, N. S. they produced last year 19,410 tons of pig iron, they used ore 88,783 tons; of fuel they used 28,110 tons and of flux 16,304 tons. They employed in ore production steel works and furnace practice the labor of 800 men.

At Londonderry, N. S., in 1895 they made of coke iron 17,714 tons; used of ore 41,557 tons; of coke 25,261 tons; of coal 3,080 tons.

They made also of water piping 2,110 tons; labor employed 425 men.

Now, to be still nearer home, let me speak of the charcoal iron made by the Drummond Brothers of Rudnor, Quebec province. The figures are for a short time, but it was the last down to the end of 1895. They manufactured 6,598 tons of charcoal; used 16,203 tons of ore, and of fuel 651,361 bushels of charcoal. The labor employed by them at their furnace and at their car wheel works at Lachine was 600 men. Now just a word on the subject of charcoal making. The basis is upon the figure of one of the most eminent authorities, namely, Sir Wm. Lowesthan Ball, and the estimate refers to the cost in Wisconsin. To make it plain, suppose that

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