

PROSPECTS FOR IRON-MAKING IN ONTARIO.

The last attempt to produce pig iron in Ontario appears to have been made in 1854, and since then the iron manufacturers of our province have been dependent upon outside sources for supplies of the material. Many attempts have been made during the forty intervening years to establish blast furnaces, but hitherto none have been successful. At the present time, however, a renewal of this important industry is in a fair way to be realized, and both Hamilton and Kingston have shown an interest in giving encouragement to capitalists with that end in view.

In Hamilton substantial progress has already been made, and the outlook is now favorable for the blowing in of a coke iron furnace before the close of the present year. The promoter of this undertaking is Mr. J. J. Moorehouse, of New York State, who has had large experience in iron-making in his own country, but more especially with charcoal iron furnaces in Connecticut. Having obtained satisfactory assurances of aid from Hamilton if works were located there, Mr. Moorehouse proceeded to organize a company of American and Canadian capitalists, with an authorized stock of \$1,000,000, and a charter for the Hamilton Iron and Steel Co. was taken out under the provisions of the Ontario Joint Stock Companies Act.

The officers of the company at the first were: William Foster, jr., of New York, president; John H. Tilden, of Hamilton, vice-president; William V. Reynolds, of New York, secretary, and J. J. Moorehouse, now of Hamilton, treasurer and general manager. These, with Robert Jaffray, of Toronto; John Milne, James Moorehouse and John G. Langdon, of Hamilton, and A. M. Card, of New York city, composed the board of directors; but it is understood that Mr. Tilden will soon succeed Mr. Foster as president, and that an effort will be made to interest a larger proportion of Canadian capital in the concern.

Hamilton has shown its good will to the company by granting a site of 75 acres, situated on Burlington Bay, adjoining the city limits, in the township of Barton, at a cost of \$35,000; together with a bonus of \$40,000 in city debentures payable when the furnace is completed, and a further bonus of \$60,000 for steel works if erected within a specified time. In addition to the site of 75 acres, the company is authorized to fill in and occupy the water front, out to a line of eight feet of water. As dumping ground for furnace slag this is a great convenience, and when the work is finished the area of the location will be not less than 150 acres.

A contract for erection of necessary buildings, stack, ovens, boilers and engines, and all works above the foundations, was let to the Philadelphia Engineering Works (Ltd.) on 28th October, 1893. In detail the contract calls for the following:

Blast furnace 16 feet in bosh and 75 feet high from floor of hearth.

Three fire-brick hot blast stoves, 19 ft. diameter and 60 ft. high.

Wrought iron hoisting tower.

One pair cross compound condensing blowing engines; steam cylinders 42 by 72 in. and 60 in. stroke; blowing cylinders 84 in. and 60 in. stroke.

Eight boilers 59 in. diameter, 24 ft. long with five 12 in. flues.

Draft stack for boilers 75 in. diameter clear and 125 ft. high, of steel plate lined with fire brick.

Cast house 50 by 160 ft.; engine house 47 by 65 ft.; boiler house 50 by 80 ft., and stock house 70 by 230 ft.

The contract provides that the furnace shall possess all modern improvements and be capable of smelting 200 tons of pig iron per day when using 60 per cent ore and Connellsville coke; that it shall be constructed in all respects to obtain the very best economy in consumption in fuel and handling of materials, both in production of iron and manufacture of steel; and that it shall be furnished with blowing engines of the most economical type. It also provides that the blast shall be heated by three fire-brick hot blast stoves, of the Gordon-Cowper-Whitwell patents, with casing and valves suitable for a working pressure of 20 lbs. per square inch, and all furnace construction and piping made suitable for this pressure.

The company began work on the foundations in November, 1893, and these were completed

for the furnace contractors to commence the erection of buildings and plant in October, 1894, all the iron work and machinery for which are manufactured ready to be put together at their Philadelphia shops. The brick walls of the cast-house, and the casings of the furnace stack and the hot blast stoves, were erected during the winter; but the casing of the furnace was overturned during a heavy gale in March, and it was decided to discontinue further operations until the completion of the spur making connection with the Grand Trunk Railway, when all heavy machinery can be cheaply and expeditiously delivered on the ground.

Under the original agreement the furnace should have been completed by 31st December last, but owing to unavoidable delays the time was extended to 1st July. A further extension has since been made to 1st October, 1895, as a consequence of the storm accident, and the officers of the company are sanguine that everything will be in readiness to blow in the furnace by that date. The total cost of the works, exclusive of the steel plant, will be over \$400,000. The following interesting reference to this enterprise is taken from the *New York Iron Age*, the chief authority on the subject of iron manufacture in America:—

"The situation of the furnace is an excellent one in many respects. It is just outside of the north-east limits of the City of Hamilton, and close to the harbor, while the track of the Grand Trunk Railway is but half a mile away, connection with which has already been made. Hence, when the furnace docks are completed, ore and fuel can be dumped close to the stack from ships or cars, and the pig iron can be shipped to the chief consuming points by an all water or an all rail route. About 60 acres of the 170 acre tract given by the city is solid ground with no obstacles to furnace operations; the remainder is swampy and can be filled in as needed.

"The Hamilton furnace will have several advantages over all prospective competitors, which comprise the coke furnaces of Nova Scotia and of the United States, the competition of the American iron having practically driven out Scotch iron from Ontario. In Hamilton itself there is a large quantity of pig iron consumed, and the town lies within about 100 miles of most of the other places in Ontario which afford an important market for this commodity. Hence, in freight on the pig iron shipped there will be an average of about \$5 per long ton advantage for the Hamilton plant over its Nova Scotia competitors. It will also have an advantage in freight charges over its nearest American rivals, although a small one. But against American competition it will have the more substantial advantage of the duty and bounty of \$4 and \$2 per short ton, respectively, or, together, \$6.72 per long ton. This sum in itself is almost equal to the whole cost of making pig iron in some sections of the United States at the present time. There is still another advantage which a blast furnace in Ontario is offered, or at least will have an opportunity in sharing, over other pig iron establishments, not only in foreign lands, but in all other provinces in Canada. This is the bounty offered by the Ontario Parliament at its last session. This bounty is payable to the miners or producers of iron ore in the province, but as the conditions require that, in order to secure the bounty, the ore shall also be smelted in the province, it will be seen that the furnaceman's position will enable him to obtain much if not all of the benefit, especially if there be competition in the production of the ore. The sum of money appropriated for these iron bounties is \$125,000, and is available for a period of five years from July 1st, 1894. The miners or producers are to be paid the equivalent of \$1 per short ton of the pig metal produced from their ores, but not more than \$25,000 is to be paid in any one year. If more ore is mined and smelted than the \$25,000 at \$1 per ton of pig would be sufficient to meet, the payments are to be on a *pro rata* basis per ton. Consequently, if 25,000 short tons of pig iron be

• This statement is not quite accurate. The track has been graded nearly all the way, but completion of it was stayed by the refusal of the owner of a lot to sell the right of way over it at a price that was considered reasonable. This difficulty has been settled however, and it is hoped that connection with the Grand Trunk will soon be made. I was informed by officers of the company that the engines and all other necessary parts of the plant are boxed and ready for shipment from Philadelphia as soon as the spur line is built.

made in one year from Ontario ores, the makers will possibly enjoy in the reduced price of ore the equivalent of a bounty of \$1 per short ton of pig iron; if 50,000 tons of iron be similarly produced in one year, the bounty would be equivalent to 50 cents per ton of smelted iron.

"From the ore going it will be seen that it is possible for the Hamilton furnace to enjoy for several years the equivalent of a protection of \$7.84 per long ton on its product against British and foreign competition, and of \$1.12 per long ton against Nova Scotian iron, besides the additional great advantage over the latter in freight for central Ontario markets. Great as these advantages seem to be in these days of keen competition, they are offset more or less by the conditions attaching to the supply of ore and fuel. With regard to the latter article, all its important competitors are more favorably situated than the Hamilton furnace. It will have to depend on Pennsylvania coke, which at the lowest prices can scarcely be delivered at Hamilton below \$4 per ton. (Coke is in the free list of the new tariff.) But the important matter of ore supply has yet to be settled. That there are extensive deposits of rich iron ores in Ontario has long been known. Many of the deposits have been worked, and when prices were high thousands of tons of ore were shipped to the United States, the users bearing testimony to its excellent quality. But nearly all the discoveries and the mining have been of magnetite. To obtain a sufficient supply of hematite to mix with the magnetite, in order to produce good foundry iron, will probably be the first difficulty to be overcome by the completed Hamilton furnace. As iron ore is also on the Canadian free list, it may even be found profitable at the extremely low prices prevailing for Lake Superior ores for the Hamilton company to use the product of the Michigan and Minnesota mines in whole or in part, at least until more extensive ore developments are made in Ontario. But these questions will have to be answered with regard to the conditions prevailing some months hence. It is scarcely necessary to add that when the Hamilton furnace is completed and started the results of its operation will be watched with keen interest by Canadian iron men and metallurgists, and by some American furnacemen near the border, who marketed 24,951 short tons of pig iron in Ontario in the fiscal year 1894."

The projected blast furnace and steel works at Kingston have not yet got beyond the stage of negotiation with the promoters, but hopes are entertained that they will go on if the city will grant aid along certain lines, the principal ones being a temporary loan to the promoters and a free site.

In the session of 1894 the Legislature of Ontario made provision for the purpose of encouraging miners to open up and work the iron deposits of the province, conditioned upon the ore being also smelted in the province. For this object a sum of \$125,000 has been set apart as an Iron Mining Fund, out of which the treasurer may pay "to the miners or producers of ore upon all iron ores which shall be raised or mined and smelted in the province for a period of five years from the first day of July, 1894, the equivalent of one dollar per ton of the pig metal product of such ores." It is provided, however, that should a larger quantity of ore be raised or mined and smelted in any one year than the sum of \$25,000 will be sufficient to meet the payments for at the rate here mentioned, then payments to the miners or producers of ore shall be made upon a *pro rata* basis, so that no more than \$25,000 shall be paid for the produce of ores in any one year. It is also provided that payments out of the fund shall cease at the end of five years from the first day of July, 1894, and that any balance of the fund remaining after payment of earnings to that date shall be returned to the treasury of the province. The aid thus provided, together with the bonus of \$2 per ton granted by the Dominion Government and the customs duty of \$4 per ton, is equivalent to an advantage of \$7 per short ton (or \$7.84 per long ton) over all foreign competitors, a sum that is more than half the cost of the selling price of pig iron in the United States and Great Britain. For the supply of local markets in Hamilton, Toronto, London, Brantford, etc., there is the further advantage over foreign makers of iron which the cheaper freight affords.—*Fourth Report of the Bureau of Mines, Ontario, Archibald Blue, Director. Transmitted to the Legislative Assembly April 9th, 1895.*