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HISTORICAL METALLURGY NOTES

The early history of iron in Canada

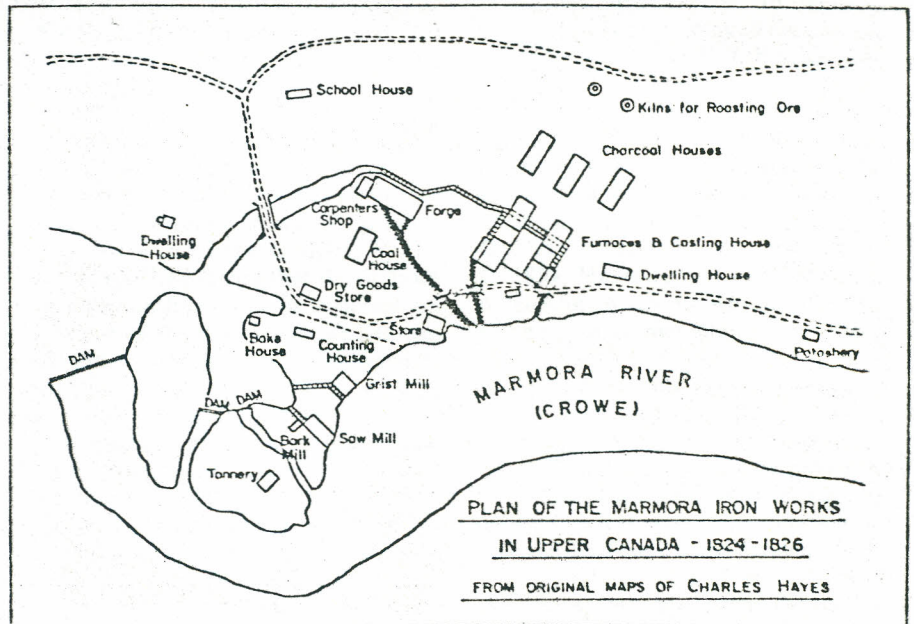
by Arthur D. Dunn



The story of ironworking in Canada begins with the crude attempts made by the Norsemen, circa 1000 A.D., who appear to have formed iron

artifacts on the site that we know today as l'Anse aux Meadows, in Newfoundland. Although bog iron, or limonite, has been found in the vicinity, there seems to be little evidence as yet that the Norsemen ever attempted to reduce iron from this ore. It would seem that their attempts were solely directed toward the forging of some necessary implements either from bar iron brought with them or from unneeded tools or weapons.

The next and most notable efforts were made at the site currently being excavated by Parks Canada at Ste. Maurice, a few miles north of Trois Rivières in Québec. This ironworks was started by the Government of France to provide supplies to the settlers, but from the accounts that are available to us it appears that from its inception in 1730, or thereabouts, until about 1793 the ironworks was managed in a very casual way, although it did produce bar iron, stoves, and occasional cannon and ammunition. In 1793, Matthew Bell became the manager, and from that time onward until about 1845 the Forges de Ste. Maurice progressed at a phenomenal rate producing iron bars, ploughshares, potash cauldrons, kettles, tools and anvils, but especially heating stoves, which were very much in demand. About 1846, Bell lost his rights to mine the bog ore and the rights were taken up by others. The source of bog ore was, however, being rapidly depleted and shortly afterward the operations were closed down or



transferred to other locations.

Meanwhile, Upper Canada was beginning to be settled and, although the numbers of immigrants in Upper Canada in 1800 were relatively small—some 60,000 distributed largely along the waterfront of the St. Lawrence, Lake Ontario and Lake Erie—efforts were already being considered and requests were being made to the Government of Upper Canada for Land Grants for the setting up of an ironworks.

In 1798, two attempts were made: one at Furnace Falls, now called Lyndhurst, just north of Brockville, and one at Chippawa on the Niagara River. The former ironworks appears to have been solely a "bloomery" furnace, possibly using the "direct process", and seems to have operated for a period of about two years before the buildings burnt down in 1802. Various attempts

were made to reinvigorate it without success, and by 1810 the buildings were largely in ruin. The Chippawa Ironworks (Bridgewater Works) of Robert Randall first appear in the records in 1798, when he requested permission to construct an ironworks. A year later, he was still petitioning the Government for permission and saying that it would take some time to import the necessary equipment from the United States and to train personnel. There is no definite informa-

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tion that production was ever achieved. Randall seems to have been a person who was very careless in handling his own affairs, and was involved in some lengthy and complex legal actions.

The next effort to reduce iron took place at the site now known as Normandale by Samuel (or John) Mason, who it is rumoured arrived in America on the first boat to bring the news of the Battle of Waterloo. Mason seemed to have been a most energetic, but neurotic, individual. His efforts to construct and operate a furnace were abortive, and it appears that the furnace failed on the first attempt to blow it in. There have been various reasons suggested as to why it failed, but considering Mason's neurotic nature it is quite feasible that he tried to bring it to operating temperature too rapidly, or had failed to provide the necessary drainage to ensure that the lower parts of the furnace were dry when blown in. Shortly afterward, Mason died and the site was sold to a consortium from the United States.

All these efforts were not lost on the Government of Upper Canada. As the population grew very rapidly, and with the largest functioning unit, the Forges de Ste. Maurice, operating at considerable distance from the market in Upper Canada with the not inconsiderable transportation costs involved, it was desirable that an alternative source of considerable capacity be found. The War of 1812 added to the concern, as did the weather in 1816, known as "the year without a summer", when there was ice and snow on the ground for every month of the year, followed closely by 1818, which had somewhat similar characteristics. These events caused the Government to consider sources for armaments and heating stoves as well as for the other needs of the settlers.

Naturally, the Government wanted the proposed ironworks located in a part of the country which had ample water power, hardwoods for the manufacture of charcoal and an unlimited source of

ore. The site should be relatively inaccessible to attack by American forces and should be managed by persons loyal to the Crown.

When Sir Percival Maitland became Lieutenant Governor of Upper Canada in 1818, he made known his wish to have an ironworks constructed in Upper Canada. In 1819, Charles Hayes, a wealthy linen merchant of Dublin, accepted the challenge, and with the aid of an unknown person who must have had a considerable knowledge of the business recruited men and procured materials for the establishment of an ironworks. By the end of 1820, Hayes had established himself in a temporary location in Sydney Township, and had commenced to cut a "road" through what must have then been dense forest to the site of the proposed ironworks, now known as Marmora. The cutting of this road proceeded throughout that winter, and in the spring the clearing of the village site and the setting up of the first requirement, a saw mill, took place.

By 1822, there is every indication that the ironworks were in full operation, supported by a community of some 200 to 300 persons. A supply of ore had been collected and brought to the furnaces, immense amounts of hardwood had been converted into charcoal and the two furnaces were "blown in" producing pig iron and some castings. By this time, Hayes had found that the orebody originally outlined was insufficient for the needs of the works, and he had carried out a survey of the surrounding countryside and had located a large body of ore some three miles away.

By this time, some two hundred tons of products, including at least two cannon castings, had been produced. Of what size these cannons were we are uncertain, but it does seem that the first attempts to produce cannons were abortive, as one was found on boring to "have imbibed too much air," and had to be rejected. In addition to the two blast furnaces, there was also a forge with two sets of water-powered ham-

mers, and two finery and two chaufferie hearths for the production of iron bar. The installation of rolling mill equipment was projected for the near future.

The Marmora Ironworks was at that time the largest in Canada, and was about twice the size of that at the Forges de Ste. Maurice, having two furnaces to Ste. Maurice's one. It was also a self-supporting community. As well as the iron-making facilities, it had a tannery to provide protective clothing for the workers, a saw mill with a bark mill to provide tanbark for the tannery, a grist mill, a bake house, a potashery for the manufacture of soap, a blacksmith shop, a general store, a dry-goods store and a schoolhouse. A plan of the site accompanies this article.

Unfortunately, because of the failure of the Government to honour its promises for military contracts, Hayes found himself in financial difficulties and was forced to contract a loan. This appears to have made his position very precarious. He decided to return to England in 1825, hoping to obtain a considerable loan from British financial institutions, but arrived at an inappropriate time when business was at a very low ebb and many of the banks from which he had hoped to borrow had closed their doors. Hayes repeatedly applied to the British Government for financial aid and was repeatedly refused. In 1839, Hayes retired to his home city of Dublin, where he was able to regain some of his former stature before dying there in 1844.

Throughout this period, sporadic efforts were made to operate the Marmora ironworks, but these were generally unsuccessful and by 1880 iron production at the site had ended. With the dimming of the fires at Marmora, iron-making activity shifted back to Normandale on the shores of Lake Erie. There, a group of Americans led by Hiram Capron had revitalized the site and had expanded iron production, an expansion which has continued in southern Ontario to the present time.