

C H A P T E R I

I N T R O D U C T I O N

GENERAL STATEMENT AND PURPOSE OF REPORT

Mining and smelting of iron ore began in the Province of Nova Scotia on a small scale in 1825 and continued intermittently until 1913. The early operations were locally important, but had limited capacity because they were dependent on small quantities of iron ore and on the use of charcoal for fuel. The greatest production of iron ore in Nova Scotia was between 1853 and 1874 when fairly substantial bodies of limonite, ankerite, hematite and siderite were mined and smelted at Londonderry, Colchester County. Many small deposits of iron ore capable of producing a few thousand tons were discovered at various locations throughout Nova Scotia and some production was recorded. With the discovery of the large iron deposits at Wabana, Newfoundland, in 1892, and in the Lake Superior region in 1877, attention was directed from the smaller deposits in Nova Scotia.

A considerable amount of geological work has been done from time to time in the iron-bearing districts, much of it by geologists of the Geological Survey of Canada and by company geologists. Much of the information, however, is found in scattered reports and papers which are not readily accessible to the general public.

The aim of this report is to assemble from the literature and recent field studies information on the iron deposits of Nova Scotia. Adequate accounts of certain iron occurrences were already available and such occurrences were visited only to study the surficial geology and to inspect the iron mineralization. Most of the development work was done on the iron deposits over eighty years ago, so that the growth of underbrush combined with the caving of trenches and open-cuts has made many of the iron occurrences difficult to locate and impossible of access.

The present investigation was undertaken in furtherance of the Department of Mines' program for a systematic study and evaluation of the mineral resources of Nova Scotia. Field investigations were commenced in 1959 and continued with interruptions due to other commitments until October 1962. Chemical analyses were made of the iron mineralization from several localities to determine the type and amounts of impurities. Microscopic study was made to determine mineralogical composition and physical characteristics of the iron minerals and gangue. Diamond drilling was carried out at three locations for evaluation purposes.

HISTORY OF IRON MINING IN NOVA SCOTIA

The earliest reference to iron ore in Nova Scotia was in 1604, when DeMonts reported finding veins of magnetite in the basaltic flows in Digby County and layers of magnetite in the sand deposits along the beaches of St. Mary's Bay. It does not, however, appear that any attention was paid by the early settlers to the deposits. It was not until early in 1800 that any attempt was made to use the iron ore.

The first Catalan forge was built around 1825 at Nictaux Falls, Annapolis County, in which a few tons of bar iron were made. In 1825, a blast furnace was built at Clementsport, Annapolis County, by the Annapolis Iron Company, Limited, to smelt the magnetic iron ores obtained from Nictaux Falls and from three small deposits near Clementsport known as the Milner, Potter and Milbury. Approximately 350,000 tons of ore were produced from this area during sporadic workings of the mines between 1825 and 1913.

The iron deposits along the bank of the East River of Pictou County, near Bridgeville, were discovered in 1828. In 1829, the General Mining Association of London, England, collected limonite boulders and mined some of the red hematite and smelted it in a small furnace at the Albion Mines, Pictou County. Some of the iron ore smelted was fossiliferous hematite and is said to have produced iron which on account of the phosphorus was exceedingly hard. Records indicate that 188,000 tons of iron ore were produced from the ten shawings.

Iron deposits in the Londonderry area of Colchester County were developed in 1849 by Acadia Iron Company using six Catalan forges and a puddling furnace. This famous area was one of the early scenes of mining activity in Canada and one of the first areas where iron and steel were produced in quantity. Some of the first experiments on a commercial scale using Dr. Siemens direct process of making steel from molten iron were carried out in 1874-75 at Acadia Mines. This process with further development became known as the open-hearth converter, and is one of the principal methods used for making steel.

A charcoal blast furnace was operated intermittently between 1852 and 1875 at Londonderry, Colchester County, and the first steel plant was erected in 1870. This plant was demolished in 1877 when the site was used for rolling mills. Since 1908 no mining or smelting has been done in the district.

In 1856, two small blast furnaces were built at Nictaux, Annapolis County, to smelt the fossiliferous hematite discovered along the Nictaux River. They did not remain in production very long and the iron produced is said to have been of poor quality; no doubt on account of the phosphorus.

In 1882, the Nova Scotia Forge Company installed an open-hearth steel making furnace in Ferrona, Pictou County, and changed its name to the Nova Scotia Steel and Forge Company. A blast furnace was built in 1890 by this Company at Ferrona to smelt ore from Pictou County. In 1892 the Nova Scotia Steel and Coal Company purchased large reserves of iron ore from Bell Island, Conception Bay, New-

foundland. These deposits have been operated almost continuously from 1895 to about 1966 and supplied about 50 per cent of the iron ore requirements for the Sydney Steel mill. A large amount of the Wabana iron ore was exported to Europe. To ensure an adequate supply of coal an extensive deposit was obtained near Sydney on the coast of Cape Breton Island in 1893. In 1928 Dominion Steel and Coal Corporation (Dосco) incorporated and acquired the assets of the British Empire Steel Corporation.

A considerable tonnage of iron ore grading from 30 to 54 per cent metallic iron was mined between 1890 and 1913 from the "Leckie" and "Shell" beds of fossiliferous hematite, in the Nictaux-Torbrook area, Annapolis County, and mixed with the Londonderry carbonate-type of iron ore. The two ores supplement each other, the Torbrook ore being high in phosphorus and sulphur, the Londonderry ore being slightly lower in iron but low in sulphur and phosphorus and often nearly self-fluxing by reason of its content of lime and magnesium carbonates.

A small production of iron ore is recorded from various other points in Nova Scotia. From Brookfield, Colchester County, around 44,000 tons of limonite were shipped to Londonderry and Ferrona for smelting. A small production of iron ore is recorded from Erinville, and from other localities in Guysborough County. In Antigonish County, oolitic hematite was mined at Doctors Brook and at other points. In Cape Breton iron ore is found in widely separated areas and some of the deposits have been mined in the past. A small tonnage of excellent grade magnetite ore was mined from a small deposit on Economy Mountain, Colchester County, and at several points in the basaltic rocks along the southern side of the Bay of Fundy.

DEFINITION OF IRON ORE

In this report the term iron ore is used in a general geologic sense for masses in which iron ore minerals are abundant; the occurrence may not be of economic value. Iron can, for example, be extracted from titaniferous iron ores by using special smelting processes where titanium oxide is also recovered, but large-scale production of iron from this material has not been economical. The final criterion for an ore is whether its use will enable a company to operate at a profit. Strictly speaking none of the iron-rich deposits in Nova Scotia can be said to constitute iron ore in the strict sense of the term. However, for convenience throughout this report, all of the iron-rich occurrences shall be referred to as iron ore bodies. No single term seems appropriate to describe the great number of noncommercial occurrences of iron ore that occur in Nova Scotia.

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