



REFERENCE PAPERS

INFORMATION DIVISION
DEPARTMENT OF EXTERNAL AFFAIRS
OTTAWA - CANADA

No. 81

IRON ORE IN CANADA

by

W. Keith Buck(1)

Iron ore was first mined and smelted in Canada about the year 1736 at Les Forges, Quebec. During the 18th, 19th, and first quarter of this century, about six million tons of ore were mined and employed in the manufacture of items ranging all the way from kettles, stoves, and cannon for the early settlers to weapons of war for the allied armies of World War I.

However, there is little relationship between the structure, character, and size of the iron ore industry during these early years and that of recent years. The modern Canadian iron ore industry had its beginnings in 1939, when Algoma Ore Properties brought its Helen Mine, in the Michipicoten area of Ontario, back into production after a closure of twenty years. Surprisingly enough, this entrance was not based on high-grade, direct-shipping ore but on low-grade, beneficiating siderite.

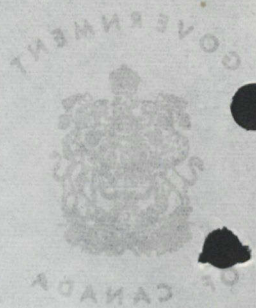
Since 1939, the Canadian iron ore industry has grown tremendously. In contrast to the period 1924-1938, when no iron ore was produced, the ore is rapidly becoming one of Canada's major mineral products. Production during 1955 amounted to about 15 million long tons valued at \$113 million dollars. On the basis of current and probable developments it is expected that production by the mid-1960's will attain a scale of between 46 to 60 million long tons per year.

Algoma Ore Properties followed its Helen Open Pit Mine, when the economic depth of open pit mining was reached in 1945, with the Victoria Open Pit Mine. In turn, the Victoria Open Pit Mine was followed by the Helen Underground Mine in 1950, and the Victoria Underground Mine in 1954. Current capacity of the company's sinter plant at Jamestown, 3 miles from the minesite, is $1\frac{1}{2}$ million long tons of sinter per year. Approximately $\frac{1}{5}$ of the output is shipped by rail to the parent company's steel plant at Sault Ste. Marie, Ontario, and $\frac{4}{5}$ is exported to the United States.

Following the reopening of the Helen Mine by Algoma Ore Properties there have ensued a succession of events important in the history of the modern Canadian iron ore industry. These have included:

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LEON ORE IN CANADA

Nov 81

by

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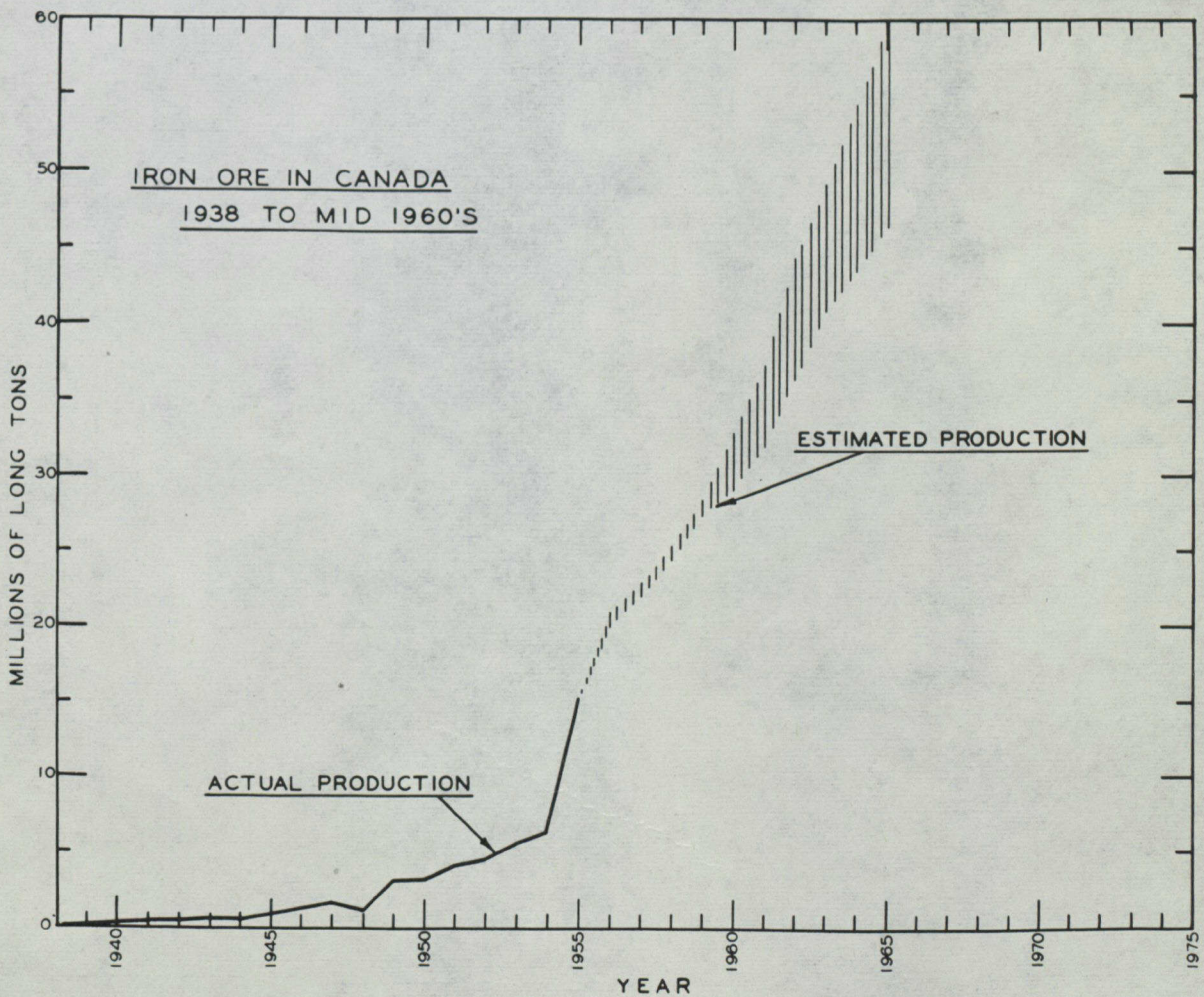
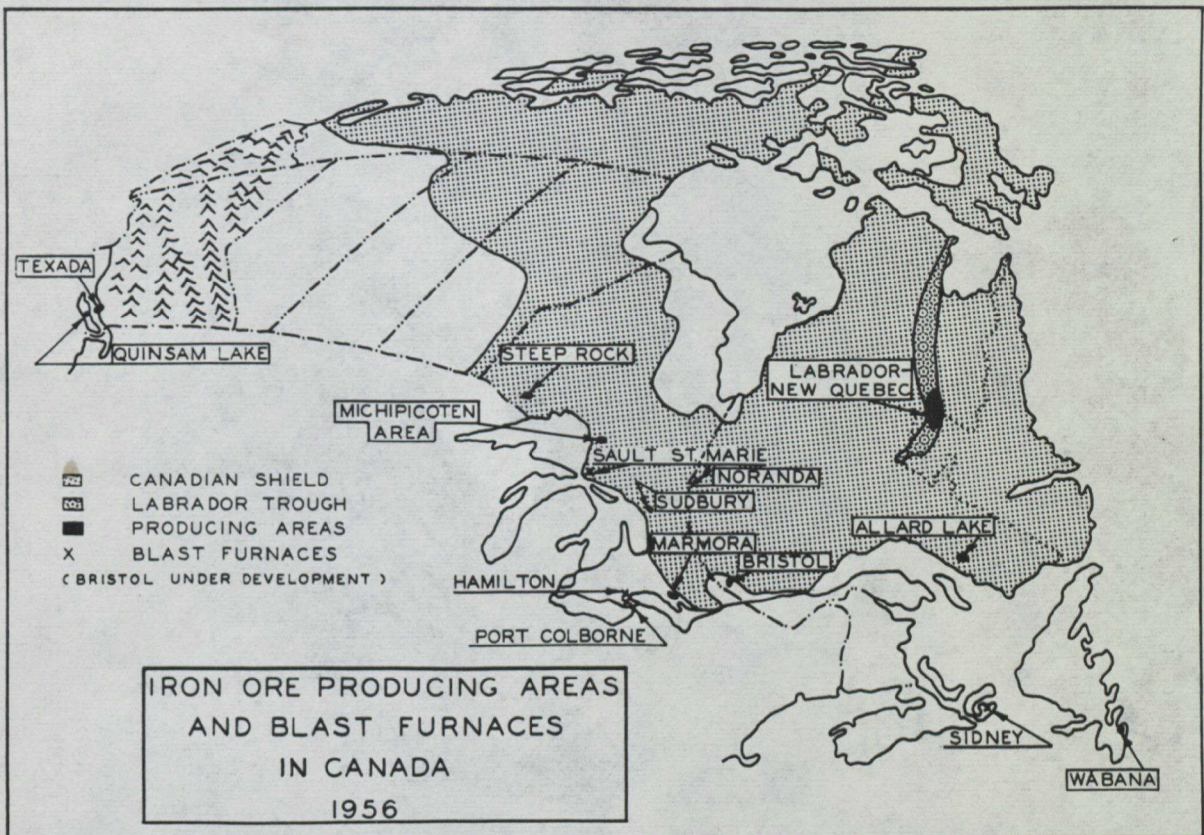
Iron ore was first mined and smelted in Canada about the year 1885 at Les Forges, Quebec. During the 1890's and first quarter of this century, about six million tons of ore were mined and employed in the manufacture of iron ranging all the way from kitchen stoves and cannon for the early settlers to weapons of war for the allied armies of World War I.

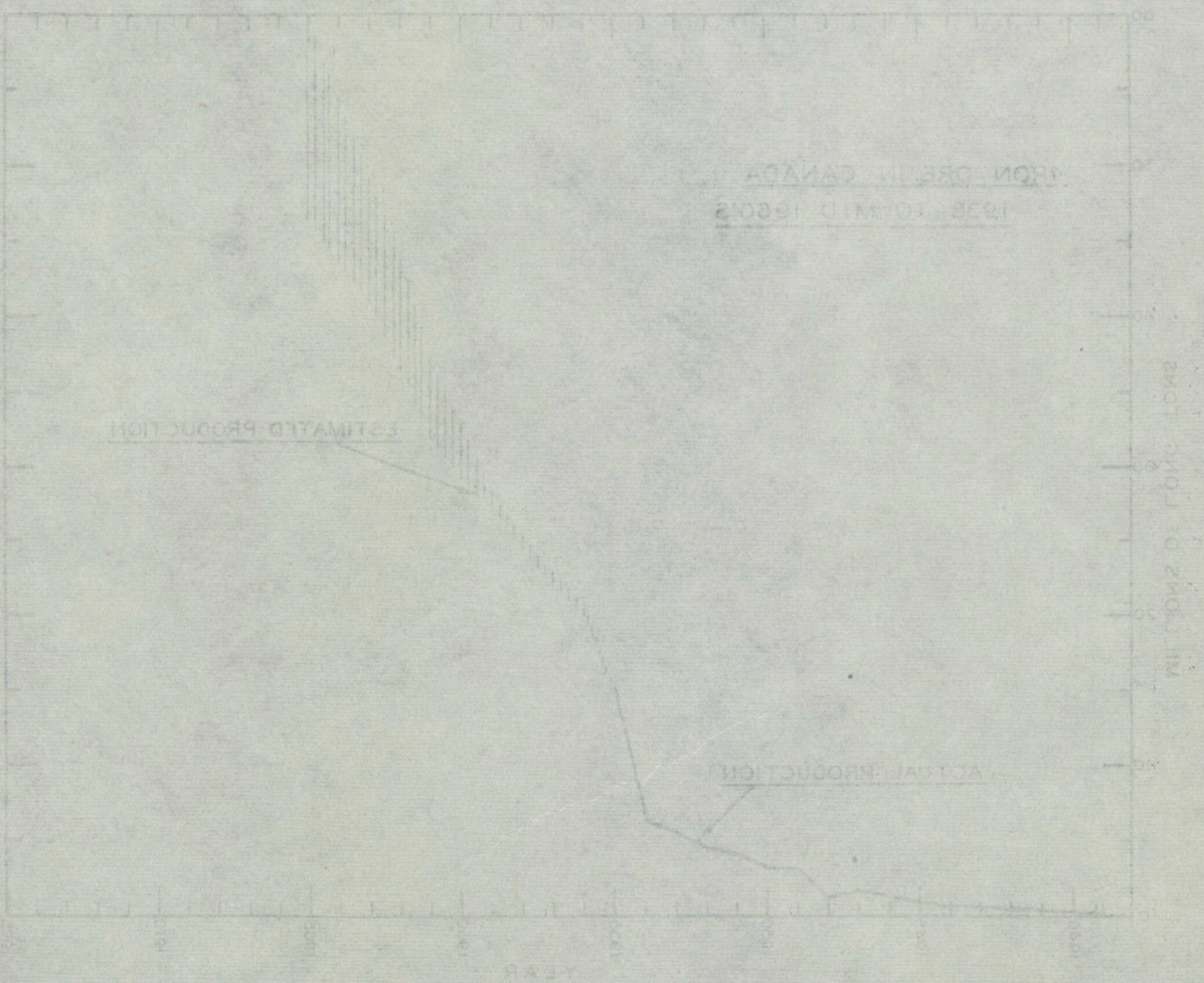
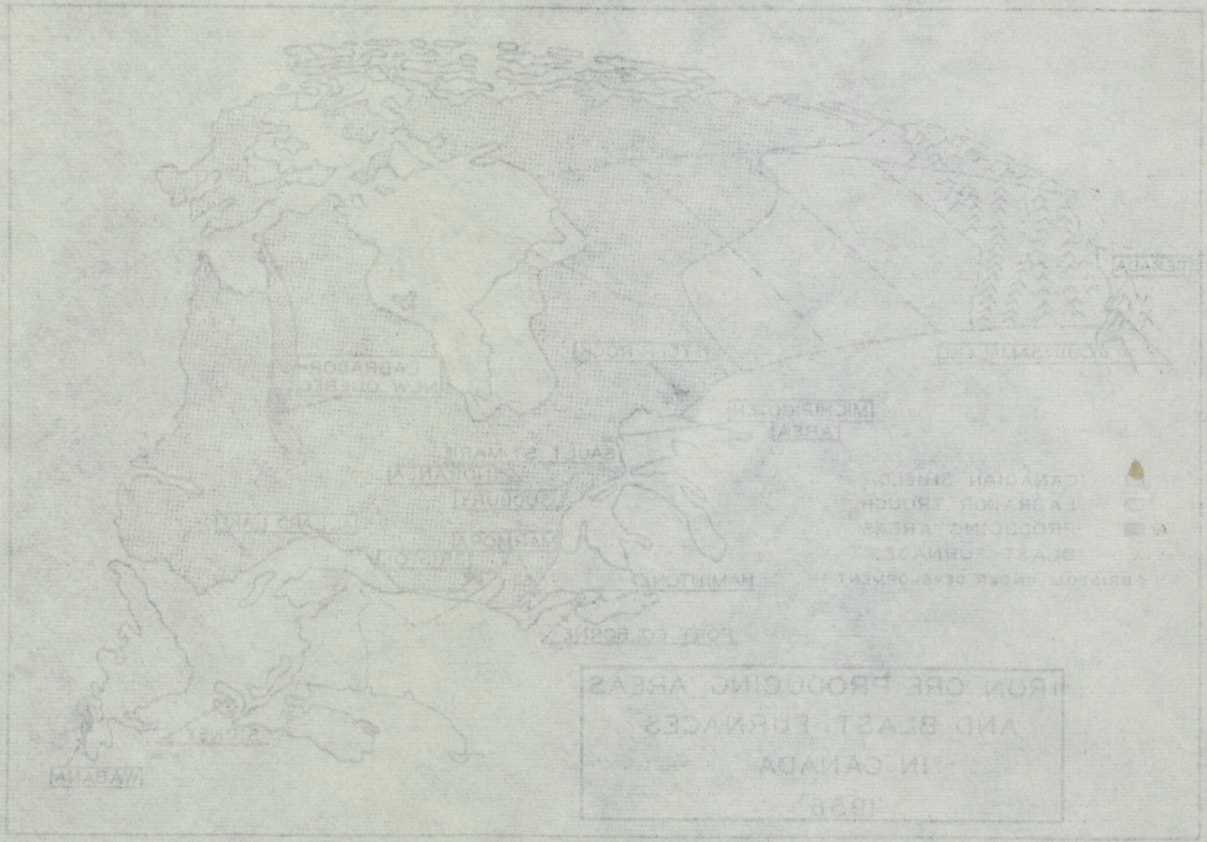
However, there is little relationship between the structure, character, and size of the iron ore industry during these early years and that of recent years. The modern Canadian iron ore industry had its beginning in 1909, when Algoma Ore Properties brought its Helen Mine in the Michipicoten area of Ontario back into production after a closure of twenty years. Surprisingly enough, this enterprise was not based on high-grade, direct-shipping ore but on low-grade beneficiating siderite.

Since 1909, the Canadian iron ore industry has grown tremendously. In contrast to the period 1885-1909, when no iron ore was produced, the ore is rapidly becoming one of Canada's major mineral products. Production during 1955 amounted to about 12 million long tons valued at 215 million dollars. On the basis of current and possible developments it is expected that production by the mid-1960's will reach a scale of between 25 to 30 million long tons per year.

Algoma Ore Properties followed its Helen Open Pit Mine, when the economic depth of open pit mining was reached in 1909, with the Victoria Open Pit Mine. In 1911 the Victoria Open Pit Mine was followed by the Helen Underground Mine in 1920, and the Victoria Underground Mine in 1924. Current capacity of the company's entire plant at Jameson is 12 million long tons of sinter per year. Approximately 1/3 of the output is shipped by rail to the parent company's steel plant at Great Lakes, Ontario, and 2/3 is exported to the United States.

Following the reopening of the Helen Mine by Algoma Ore Properties there have ensued a succession of events important in the history of the modern Canadian iron ore industry. These have included:





(1) In the Steep Rock Lake area, about 145 miles due west of Port Arthur, Ontario, an abundance of hematite float, which littered the land to the south of Steep Rock Lake, led to the discovery of deposits of direct-shipment iron ore in the winter of 1937-38. Exploration continued until sufficient ore had been proven to justify the expense involved in diverting the Seine River and in dredging the Middle Arm of Steep Rock Lake. Diversion work was commenced in the Spring of 1943 and the Errington Open Pit Mine ("B" orebody) came into production in 1944. The Errington Open Pit Mine of December 8, 1953, reached the economic depth of open pit mining, having produced a total of 9,165,844 long tons of ore during its life.

Dredging of the silt overlying the Hogarth Open Pit Mine ("A" orebody) located at the north end of the Middle Arm of Steep Rock Lake was commenced in 1950. Shipments of ore from the exposed portion of the orebody was commenced in August 1953. Development of the Errington #1 Underground Mine was commenced in 1950 and by 1954, it had reached the stage that it could have been brought into production if its ore had been required to meet the company's commitments. The company now plans to bring it into production in 1956. Dredging of the silt overlying "G" orebody, lying between the Errington and Hogarth mines, was commenced in 1955.

Although current capacity of the mines is about $3\frac{1}{2}$ million long tons per year and 1956 shipments are expected to amount to $3\frac{1}{4}$ million long tons, the company plans on an eventual production of about $5\frac{1}{2}$ million long tons by 1958 or 1959. Almost all the company's production is exported to the United States.

(2) Also in the Steep Rock area, the development program of Caland Ore Company, a wholly-owned subsidiary of Inland Steel Company, is of major importance. This company has leased "C" orebody in Falls Bay from Steep Rock Iron Mines Limited and is now engaged in a dredging job comparable to that entailed in the construction of the Panama Canal. Initial open pit production of direct-shipment iron ore is expected to commence in 1960, with an eventual capacity of 3 million long tons per year.

(3) In 1949, Newfoundland entered Confederation. This event brought into the Canadian production picture the Wabana Mines of Dominion Wabana Ore Limited, a wholly-owned subsidiary of Dominion Steel and Coal Corporation. The Wabana iron ore deposits lie off the north-east coast of Bell Island, under the floor of Conception Bay, on the southeast coast of Newfoundland. The first production from these deposits was in 1895 and the mines have been in almost continuous operation since then. The company has recently completed a comprehensive modernization and expansion program and mining is being carried on about two miles out under the sea. Currently, production capacity is about $2\frac{1}{2}$ million long tons, with about $1/5$ of the production supplying the parent company's steel plant at Sydney, Nova Scotia and the other four-fifths being exported to the United Kingdom and Western Europe.

- (4) In 1954, Iron Ore Company of Canada commenced the production of direct-shipping iron ore from its deposits situated in the "Labrador Trough" astraddle the Quebec-Newfoundland interprovincial boundary, 300 to 350 miles north of Sept Iles, Quebec on the Gulf of St. Lawrence. This event marked the culmination of 18 years of almost continuous exploration and development. Participating in the Iron Ore Company of Canada are: Hanna Coal & Ore Corporation, Republic Steel Corporation, National Steel Corporation, Armco Steel Corporation, Youngstown Sheet & Tube Company and Wheeling Steel Corporation in association with the two concession companies; Hollinger North Shore Exploration Co. Ltd. and Labrador Mining & Exploration Ltd. In production are the Ruth Lake No. 3 Mine in Labrador, and the Gagnon and French mines in Quebec -- all open pit mines. The company shipped 7.7 million long tons in 1955 and plans to ship 12 million tons during 1956. Although designed capacity is about 12 million long tons per year, very little additional construction would be required to increase the capacity to 20 million tons per year.
- (5) At Marmora, Ontario, Bethlehem Steel Corporation, through a wholly-owned subsidiary, brought into production in April, 1955, a low-grade, open pit magnetite deposit. This event marked the culmination of five years of exploration and development. The capacity of the Marmora Mine and concentrating and pelletizing plant is $\frac{1}{2}$ million long tons of iron ore pellets, all of which are shipped to the company's steel plant at Lackawana, near Buffalo, New York, via the company's ore dock at Picton on the Bay of Quinte, Ontario, 64 miles from the minesite.
- (6) In the Fall of 1955, The International Nickel Company of Canada Limited brought into production, at Copper Cliff, near Sudbury, Ontario, the first of three units for the production of by-product iron-ore pellets from pyrrhotite. The capacity of the first unit is $\frac{1}{3}$ million long tons per year. When in full production the company expects to produce 1 million long tons per year.
- (7) Announced by The Steel Company of Canada Limited and Pickands Mather and Company is the development of the old Bristol Mine, 35 miles north-west of Ottawa. Mining by open pit methods is expected to commence in 1957. Designed capacity of the beneficiation plant is to be 6 million long tons of pelletized magnetite concentrates per year. Shipments will be to The Steel Company at Hamilton and to Jones & Laughlin Steel Corporation in the United States.
- (8) At Port Robinson in the Niagara Peninsula of Ontario, Noranda Mines Limited has commenced production of a by-product iron oxide sinter from pyrite, on a small scale. Production in 1956 is expected to amount to about 70,000 long tons.
- (9) On the west coast of Canada, there are two operating companies -- Texada Mines Limited and the Argonaut Mine, Division of Utah Co. of the Americas -- both American owned. Shipments of magnetite concentrates have amounted to about $\frac{1}{2}$ million long tons per year during the past two years, principally to Japan.

(4) In 1954, the U.S. Steel Corporation announced the acquisition of direct interests in the U.S. Steel Corporation's "Lafayette" plant, which was then owned by the New York State Thruway Authority. This event marked the beginning of a new era in the steel industry, as the U.S. Steel Corporation and the New York State Thruway Authority entered into a joint venture to develop and operate the plant. The plant was then renamed the "Lafayette" plant. The plant was then owned by the U.S. Steel Corporation and the New York State Thruway Authority. The plant was then owned by the U.S. Steel Corporation and the New York State Thruway Authority. The plant was then owned by the U.S. Steel Corporation and the New York State Thruway Authority.

(5) At the same time, the U.S. Steel Corporation announced a wholly-owned subsidiary, U.S. Steel Pipe Corporation, which was then owned by the U.S. Steel Corporation. This event marked the beginning of a new era in the steel industry, as the U.S. Steel Corporation entered into a joint venture to develop and operate the plant. The plant was then renamed the "Lafayette" plant. The plant was then owned by the U.S. Steel Corporation and the New York State Thruway Authority. The plant was then owned by the U.S. Steel Corporation and the New York State Thruway Authority.

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(9) On the west coast of Canada, there are two operating companies - Texas Steel Limited and the Aluminum Division of U.S. Steel Co. of the Americas - both of which are owned by the U.S. Steel Corporation. The plant was then owned by the U.S. Steel Corporation and the New York State Thruway Authority. The plant was then owned by the U.S. Steel Corporation and the New York State Thruway Authority.

Resources of low grade iron-bearing material in the eastern part of Canada are tremendous. For instance, iron formation extends almost continuously in an arc from the most northerly tip of the west coast of Ungava Bay to the Mistassini area of Quebec. A number of companies are actively investigating various sectors of this area, with the southwest end of the "Labrador Trough" and the part lying immediately west of Ungava Bay receiving the most attention. It would seem to be only a question of time before there is large scale production from one or more sectors of the "Labrador Trough". In Ontario, there are also a number of areas of iron formation which are being actively investigated. In a number of instances, exploration has been encouraging.

By reasons of geography and company affiliation, the major part of the iron ore produced in Canada is exported to the United States. A much smaller amount is exported to the United Kingdom and West Germany. A similarly small amount is used internally in the Canadian domestic iron and steel industry. The balance of Canada's domestic iron ore requirements are, in turn, imported from the United States, once again for reasons of geography and company affiliation.

In the years to come there will undoubtedly be slight changes in this pattern of trade but the changes will be more relative than absolute. The continued development of Canada's tremendous resources of iron ore is mainly dependent upon a large and continuing market in the United States.

Reference:

Buck, W. Keith: "A Survey of the Iron Ore Industry in Canada in 1954"; Mineral Resources Information Circular, M.R. 13, 1955, 38 pp.

RP/A

March 28, 1956.

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THE UNIVERSITY OF CHICAGO
DEPARTMENT OF ECONOMICS
CHICAGO, ILLINOIS

1950

Iron Deposits

1. Wabana (hematite)
2. Allard Lake (limonite)
3. Marybelle Lake (titiferous magnetite)
4. Nictaux-Torbrook (magnetite and hematite)
5. Bathurst (magnetite, hematite, sulphides)
6. Labrador-New Quebec (hematite, iron formation)
7. Mt. Wright (iron formation)
8. Matonipi Lake (iron formation)
9. Alabonci Lake (iron formation)
10. Bristol (magnetite)
11. Nastapoga Islands (iron formation)
12. Becher Islands (iron formation)
13. Calabogie (magnetite)
14. Marmora (magnetite)
15. Allana Mills (magnetite)
16. Campbellford (magnetite)
17. Noranda (sulphides)
18. Moose Mountain (magnetite)
19. Sudbury (sulphides)
20. Gouais (magnetite)
21. Michipicoten Area
22. Helein, Victoria, Alexander (siderite)
23. Siderite Hill (siderite)
24. Ruth and Lucy (siderite)
25. Josephine (hematite)
26. Britannia (siderite)
27. Gungahnt (iron formation)
28. Atkohan (magnetite)
29. Sleep Rock Lake Area (hematite)
30. Errington

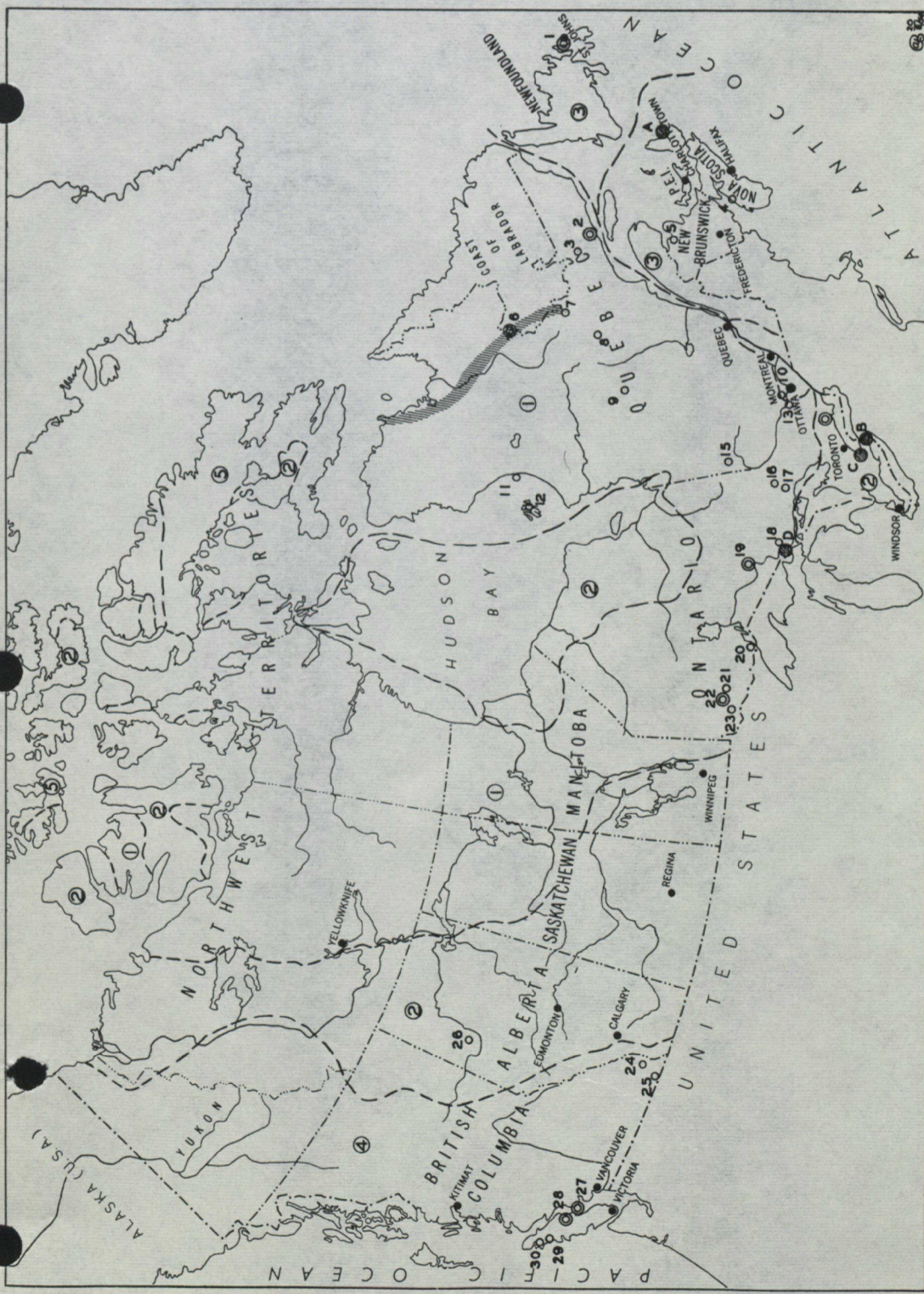
31. Frogarth
32. "G" ore body
33. Mine Centre (titiferous magnetite)
34. Kimberley (iron tailings)
35. Kitchener (iron tailings)
36. Peace River Area (siderite)
37. Tessa Island (magnetite)
38. Quinsam Lake (magnetite)
39. Zaballas (magnetite)
40. Quatsino (magnetite)

Blast Furnaces

- A. Sydney, Nova Scotia
Dominion Iron and Steel Company Limited
- B. Port Colborne, Ontario
Canadian Furnace Co., Limited
- C. Hamilton, Ontario
The Steel Company of Canada Limited
Dominion Foundries and Steel Limited
- D. Sault Ste. Marie, Ontario
Algoma Steel Corporation

Legend

- Iron Ore Producing Areas
- Principal Iron Occurrences
- Iron Blast Furnaces
- Quebec-Labrador Iron Belt



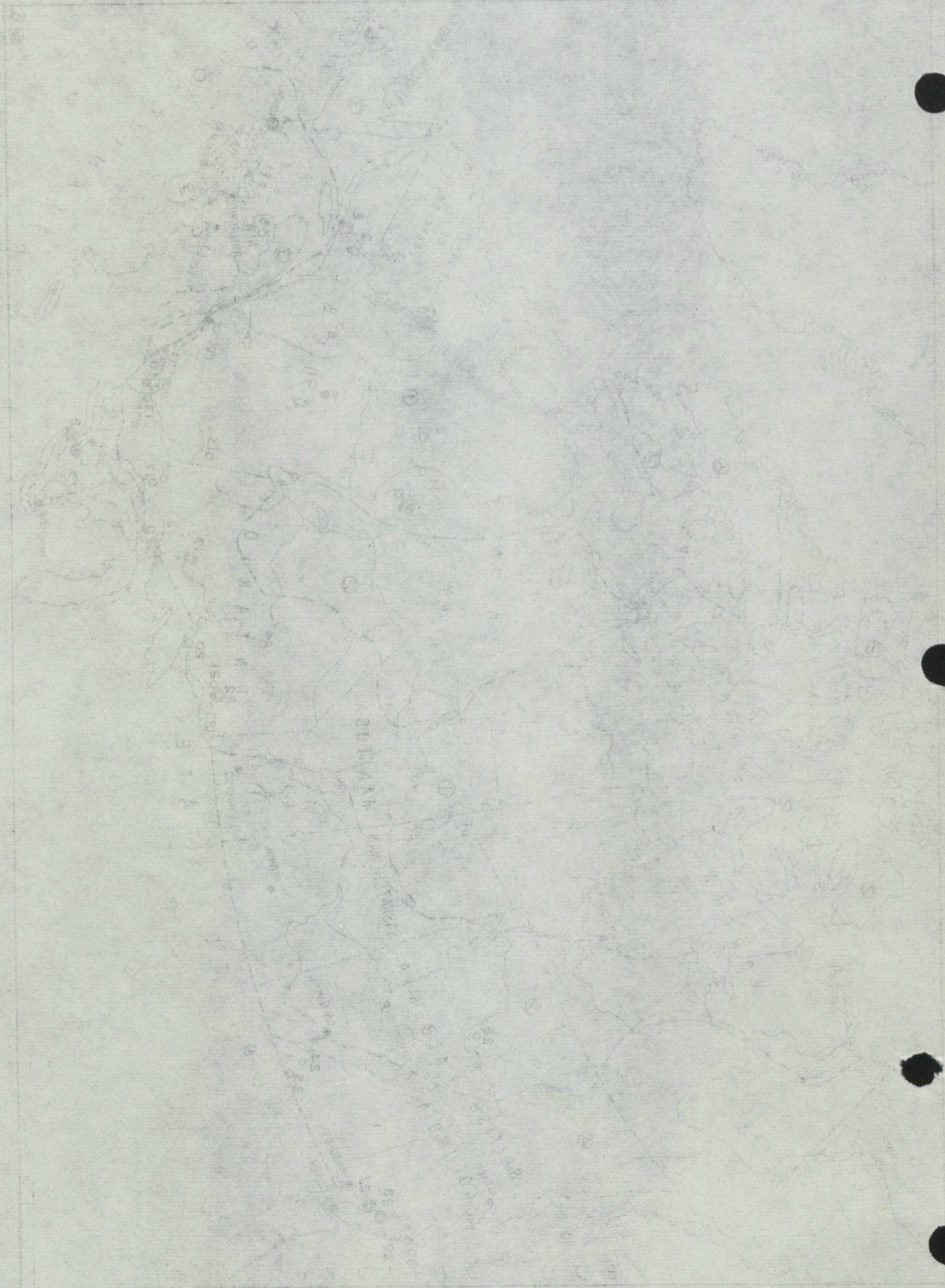
CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS
MINES BRANCH
OTTAWA

IRON DEPOSITS AND BLAST FURNACES IN CANADA
1954

- Main Geological Regions
- ① Canadian Shield
 - ② Interior Plains, St. Lawrence Hudson Bay and Arctic Lowlands
 - ③ Appalachia
 - ④ Cordilleran
 - ⑤ North Atlantic Folded Belt

ИСТОРИЯ ВОЙНЫ И НАУКИ
ИЗДАНИЕ ПЕРВОЕ
МОСКВА
1950

МИНИСТЕРСТВО
ОБРАЗОВАНИЯ
И НАУКИ
СОВЕТСКОГО
СОЮЗА



1. Общие сведения
2. Описание
3. Технические характеристики
4. Заключение