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MANITOBA MINES BRANCH
DEPARTMENT OF MINES AND NATURAL RESOURCES

MANITOBA EXPLORATION 1970: RETROSPECTS AND PROSPECTS

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MINES BRANCH

MANITOBA EXPLORATION 1970: RETROSPECT AND PROSPECTS¹

by

I. HAUGH²Historical development of the mineral industry in Manitoba.

There was little in the way of mineral industry in Manitoba prior to the early part of this century (Figure 1), and it was not until the early 1930's that metal production became significant. Since that time, however, there has been continued growth, highlighted by dramatic upsurges in the 50's and 60's. We fully expect this trend to continue in the 70's.

One could say that the mineral industry in what became the Province of Manitoba, began with the extraction of salt from brine springs on the west side of Lake Winnipegosis by the Hudson Bay Company, around the year 1800. Up until the beginning of the present century, salt and building materials accounted for all mineral production. Around the turn of the century, however, gold prospecting spilled over into Manitoba from the Lake of the Woods area, and culminated in the discovery of gold-bearing quartz veins at Rice Lake by Major Pelletier in 1911. From there prospecting activity spread northwards, attracted by the discovery of gold at Beaver Lake, Saskatchewan in 1913. As a result of this increased interest in the area north of The Pas, the first discovery of gold was made in northern Manitoba at Herb Lake in 1914. The following year, so the story goes, an Indian named Collins showed Messrs. Creighton, Dion and Mosher some pieces of sulphides from his hunting territory north of Lake Athapapuskow. The source of these sulphides, the Flin Flon deposit, was staked by these gentlemen in 1915 followed the same year by the staking of the Mandy deposit by Jackson and Reynolds. The first production of base metals in Manitoba came from the Mandy Mine in 1917.

¹ A paper presented with the permission of the Honourable Sidney Green, Q.C., Minister of Mines and Natural Resources, Manitoba, at the Thirty-eighth Annual Convention of the Prospectors' and Developers' Association, March 8 to 12, 1970, at the Royal York Hotel, Toronto, Canada.

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VALUE OF MINERAL PRODUCTION IN MANITOBA

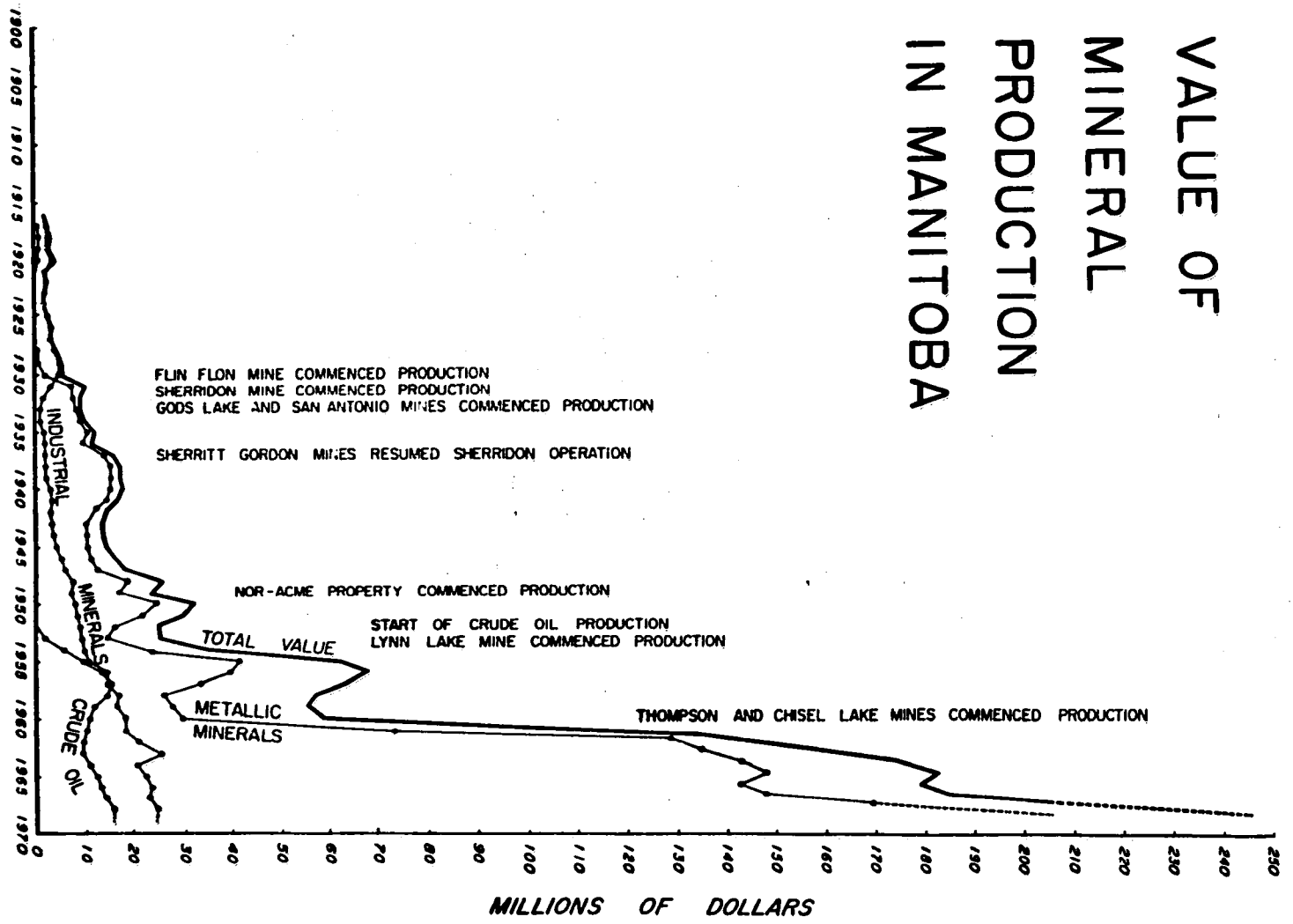


FIGURE 1

Ore shipped from the Moosehorn claim at Herb Lake the same year, yielded the first recorded gold production from the Province. Gold was also recovered from the Mandy ore. All of this ore was shipped to Trail, B. C. for processing. Between 1917 and 1920 the Mandy Mine yielded almost 10 million pounds of copper.

This and other significant events of the past 50 years have been indicated in Figure 1, notably:

- (i) commencement of production from the Flin Flon mine in 1930;
- (ii) from the Sherritt Gordon mine at Sherridon in 1931 (although production was suspended from 1932 to 1937 because of low copper prices);
- (iii) commencement of gold production from San Antonio and Gods Lake Gold Mines in 1932;
- (iv) commencement of gold production from the Nor-Acme gold deposit at Snow Lake in 1949;
- (v) first shipment of nickel concentrate from Lynn Lake in 1953;
- (vi) first nickel production from Thompson and zinc from Chisel Lake in 1960.

From 1960 to the present time, we have witnessed the greatest expansion ever in metal production and in the development of new and potential mines. The total value of mineral production in 1969 was a record of almost \$246 million, an increase of 17% compared with 1968. Most of this increase came from greater output of nickel, copper and zinc, with the total metal production valued at approximately \$206,000,000, up from approximately \$170,000,000 in 1968.

Current Mining Activity

Three new metal mines came into production in 1969:- the Birchtree Mine of the International Nickel Company of Canada Limited; North America's first tantalite mine at Bernic Lake opened up by the Tantalum Corporation of Canada Limited; and Dumbarton Mines Limited copper-nickel mine on the north side of the Bird River Sill. This brings the total number of operating metal mines in Manitoba to ten, with more than a dozen other deposits under development or active exploration. Exploration and development of industrial mineral deposits is also continuing.

Flin Flon - Snow Lake area

Production continued from the Flin Flon and Schist Lake mines of Hudson Bay Mining and Smelting Company Limited, in the western part of this area, and from the same company's Chisel Lake, Osborne Lake and Stall Lake mines in the Snow Lake area. Hudson Bay Mining and Smelting Company Limited is also continuing development work at the Anderson Lake mine, reported to be preparing for copper ore shipments of 1,000 tons per day in 1970, and at the Dickstone Copper property (in which the

company has a major interest) where 575,000 tons grading 2.53% copper and 3.2% zinc have been indicated. During 1969, Hudson Bay Mining and Smelting Company Limited also announced completion of exploration drilling and at their Wim deposit, 10 miles north of Snow Lake, where over one million tons of 3% copper have been outlined to a depth of 2,100 feet. Preparations are proceeding for the development and production from this mine.

Southeast of Flin Flon, drilling on the Hudson Bay Mining and Smelting Company Limited White Lake property, eight miles from the town, has indicated 350,000 tons grading 2.22% copper and 6.2% zinc; and at the Pine Bay copper-zinc property of Cerro Mining Company of Canada Ltd., underground exploration is continuing.

Falconbridge Nickel Mines Ltd. have announced feasibility studies at the Stall Lake Mines Limited property, where over 600,000 tons of ore grading 5.38% copper and 2.28% zinc have been indicated.

Lynn Lake - Ruttan Lake area

Undoubtedly the highlight of exploration activity in Manitoba in 1969 was the announcement by Sherritt Gordon Mines Ltd. of a major copper-zinc deposit, just north of a hitherto small unnamed lake, 60 miles southeast of Lynn Lake. This lake is now destined to go down in history bearing the name of Sherritt Gordon's successful chief geologist Doug Ruttan, and the deposit itself must rank as one of the two most important base metal finds of 1969 in Canada. Continuing production from the Lynn Lake mine, now all obtained from the Farley Shaft south of town, the proposed initiation in 1970 of 3,000 tons per day production from the Fox Lake mine west of Lynn Lake, and continued exploration of the Ruttan Lake deposit, have combined to create the greatest activity in the company's history. Figures reported to date on the Ruttan Lake deposit have been impressive, with the last published accounts indicating approximately 30,000 tons of ore per vertical foot to a depth of 400 feet grading around 1.25% copper and 3.0% zinc; and with persistence of substantial ore values suggested from incomplete drilling from 400 to 1,000 feet.

A staking rush followed the announcement of the Ruttan Lake discovery in the first quarter of 1969, and additional heavy staking occurred in June when the Mines Branch airborne geophysical results for the Southern Indian Lake area were released with activity spreading beyond the Rusty Lake - Karsakuwigamak Lake greenstone belt. Since then several companies have announced or are undertaking exploration programmes in the area.

The Manitoba Nickel Belt

Since the initial production of electrolytic nickel at Thompson in 1960, annual capacity has increased from 75 million pounds to more than 100 million pounds, and is projected at 170 million pounds in 1970. This will result from a high level of production from the Thompson and Birchtree mines and the development of new mines at Pipe and Soap Lakes. Forty-eight

miles of railroad have been constructed to the Pipe and Soab mines and processing facilities at Thompson have been expanded to handle the increased ore tonnages.

Exploration outlook in 1970:

A high level of exploration activity in established mining areas and in the vicinity of new deposits, particularly Luttan Lake, is continuing in 1970. Elsewhere in the Province, major exploration programmes, continuing from 1969, are being carried out in the extreme northwest, and below the Palaeozoic cover between Kiski Lake and Grand Rapids.

In the northwestern part of the Province a major exploration effort began in 1967 when five reservations were issued to Denison Mines Limited, Goldray Mines Limited and Roman Corporation Limited in 1967. Following later important developments in the Saskatchewan portion of the Wollaston Lake belt, interest in the region increased and reservations were issued to six other organizations in 1969.

In the region north of Grand Rapids, large expenditures have been made on extensive geophysical surveys and exploratory drilling in the continued search for the southward extension of the Nickel Belt.

In the eastern part of the Province, the Fox River sill has attracted renewed interest for its base metal potential. Seven reservations, covering an area approximately 15 miles wide and 100 miles long, were issued to the Canadian Nickel Company Limited in 1969. Further north, two reservations astride the Precambrian - Palaeozoic contact were taken out by Falconbridge Nickel Mines Limited.

Manitoba Mines Branch geological programmes

The increased mining and exploration activity in Manitoba has resulted in a corresponding increase in the need for geological information on the Province, and therefore in the demands placed on both Provincial and Federal governments. We regard the main function of the Mines Branch Geology Division is to collect and disseminate this information, largely through the publication of geological maps and reports, through files on assessment work, and by personal contact and discussion. While this basic role has not changed significantly over the past few decades, there have been definite changes in the manpower and methodology.

The administration of mineral lands within the Province remained vested in the Federal Government until the transfer of the natural resources to the Province on July 15th, 1930. In anticipation of this transfer, however, and because of the necessity of controlling the burgeoning mining operations and fostering the industry, the Department of Mines and Natural Resources was established on May 9th, 1928. The first Commissioner of Mines, R. C. Wallace, was appointed in the preceding year, and initially was attached to the Depart-

ment of Agriculture. This rather unlikely combination however, was rectified with the creation of the new Mines and Natural Resources Department. Dr. J. S. DeLury succeeded Wallace as Commissioner of Mines in September 1928. In the same year George Cole was appointed Chief Inspector of Mines.

Since the latter part of the nineteenth century, geological investigations in Manitoba had been conducted by the Geological Survey of Canada, notably by such illustrious geologists as J. B. Tyrrell, D. B. Dowling, R. Bell, A. R. C. Selwyn, F. J. Alcock and E. L. Bruce. The Geological Survey continued to play a major part in the systematic mapping of Manitoba after the establishment of the new Department of Mines and Natural Resources. Provincial surveys in the 1930's, conducted by such men as J. S. DeLury, G. M. Brownell, A. S. Dawson, F. D. Shepherd and R. I. McIntosh, were generally confined to areas of active exploration and included the examination of new discoveries and prospects, with assistance given to prospectors in the field. At the same time prospectors' classes formed an important part of the Mines Branch activities, and were in accord with the Mines Branch policy at that time of maintaining close contact with the requirements of prospectors and other parties interested in the mineral development of the Province. These activities however, were severely curtailed during the Second World War.

After 1945, the mapping activities of the Geology Division were placed on a more regular basis, under the direction of succeeding Chief Geologists J. D. Allan, G. H. Charlewood and J. F. Davies, and systematic one mile to the inch coverage began in earnest. From the late 40's to the latter part of the past decade, this mapping progressed on the basis of 15 minute map-sheets, aimed for the most part at coverage of the main greenstone belts and the major mining areas. During the same period, four miles to the inch coverage of the entire Precambrian was completed by the Geological Survey of Canada, although early maps, for example in the area east of Lake Winnipeg, are now undergoing revision. During the 1950's, information submitted on assessment work was placed on a more formal basis, and this information was retained on file at the Mines Branch. Aeromagnetic map coverage of the Precambrian Shield in Manitoba was completed in 1969.

Over the past decade, possibly influenced by the incredible technological revolution of these times, we have in the Mines Branch been continually taking stock of our progress, and what, in fact, we were actually achieving. While it is realized, for example, that 15 minute sheet mapping is one method of obtaining systematic one mile to the inch coverage, it is also apparent that this method suffers from numerous drawbacks. At the past rate of progress with existing manpower, it was quite apparent that it could take more than 50 years to complete the mapping. At the same time owing to changes in staff and ideas, the overall result would lack any form of cohesion, with enormous variations in quality and value of individual contributions. In other words, each map is only as good as the geologist responsible for it, and with no guidelines established there can be little

consistency in quality. Because of its disjointed nature, this type of mapping often fails to put an area into its proper regional perspective, and fails therefore to provide a framework on which to base working hypotheses for some of the fundamental problems confronting us. A notable exception to this, and an example of what could be done, is the report on the Lynn Lake area by G. C. Milligan, a mammoth work, in which previous 15 minute sheet mapping was revised and expanded, and welded into a comprehensive picture, which itself became the springboard for ideas. Yet although accorded the accolades it deserved, this methodology remained dormant for a number of years. Project Pioneer again has illustrated, as witnessed by the results which are now beginning to appear, that many of the complexities of Precambrian geology can be resolved by comprehensive detailed studies of specific regions. In doing this type of work, new ideas and methods are continually generated and can be used to establish guidelines in tackling other areas. At the same time, various misconceptions resulting from only superficial examinations can be corrected.

At all times, however, we have to strike an acceptable balance between basic mapping coverage of little known areas, and a deeper probing of specific problems, making best use of the talents and interests of the available manpower. To some degree we have achieved such a balance in the Mines Branch by means of a two-tier system, with basic regional mapping and special research projects operating consecutively or concurrently. Our approach to regional mapping has itself undergone a fundamental change in the Southern Indian Lake area, where it is proposed to complete the mapping of an area in excess of 6,000 square miles in 1970. This work was begun in 1969 by eight field parties, to be increased to ten parties in 1970. By using the old method of 15 minute sheet mapping, the total of 18 geologist-summings which will be spent on this project, would probably have resulted in coverage of only about half the total area. By removing the restrictions of latitude and longitude, however, and allocating areas based on geologic factors, the participating geologists are given greater scope. They can see their work in the proper context and regional setting and at the same time benefit from much greater discussion and exchange of ideas within the entire group.

It is also proposed in 1970 to conduct reconnaissance feasibility surveys in the Kasmere Lake and Burntwood River areas, with a view to continuing this same broad comprehensive type of project in these areas. Studies are also under way in the Snow Lake area and along the Nickel Belt, with a view to compiling existing fragmented work, conducted by different geologists over a number of years, with additional detailed work aimed at providing much needed information on the evolution of these important regions. Also continuing is an important line of research on ultramafic rocks in the Province. All of these projects are intended to keep us abreast of current exploration developments and enable us to supply information where it is most needed.

We intend to progress beyond our present rather rudimentary

knowledge of the geology of the Province, not merely contenting ourselves with knowing which rock types occur in an area, but determining more accurately the inter-relationships of different rock types and what processes have operated in different parts of the Shield. If programmes are designed with such aims in mind, then we will continue to progress.