

TN

403

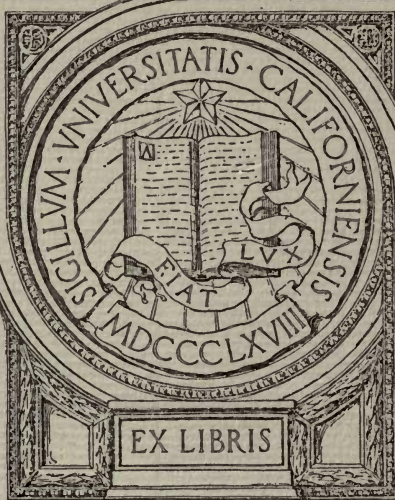
M6N5

UC-NRLF



B 4 267 211

GIFT OF



EX LIBRIS

# Mesabi Iron Range of Minnesota

A BIBLIOGRAPHY

By

SIGNA NIEMI

Compliments of  
The Public Library  
Eveleth, Minn.

Library School  
UNIVERSITY OF WISCONSIN

June 1920

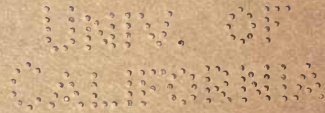


# Mesabi Iron Range of Minnesota

A BIBLIOGRAPHY

By

SIGNA NIEMI



*Gift of*

Compliments of  
The Public Library  
Eveleth, Minn.

Library School  
UNIVERSITY OF WISCONSIN  
June 1920

TN403  
M6N5

GIFT

*Public Library, Eveleth, Minn*

## INTRODUCTION

---

The Mesabi Iron Range is a group of low, iron ore-bearing hills extending from Grand Rapids on the Mississippi River to Birch Lake, a distance of about 100 miles with a width varying from 2 to 10 miles, and about 75 miles northwest of Duluth. Its area is about 400 square miles. The following are the towns and cities located on the Range: Biwabik, McKinley, Eveleth, Gilbert, Virginia, Mt. Iron, Hibbing, Buhl, Coleraine, Chisholm, Keewatin, Nashwauk and Bovey. In 1918 sixty-two per cent of the iron ore mined in North America was mined in Minnesota and of this the greatest supply came from the Mesabi Range, which was unknown in 1890. In 1892 occurred the first shipment of marketable ore.

Not much literature on the Mesabi Range has been written, with the exception of that concerned with the geology and the mines. This bibliography aims to cover the material found in Madison, Wisconsin, libraries and a few entries from the Minnesota Historical Library and the Eveleth, Minnesota, Public Library. The mining and geology sections are not complete, because of the existence of the "Bibliography of Minnesota Mining and Geology, 1915," compiled by Winifred Gregory (Wisconsin Library School, 1910) for the School of Mines, University of Minnesota. These sections of this bibliography have entries bringing Miss Gregory's up-to-date and also a few before 1915 found in her bibliography which have been personally examined.

Articles preceded by an asterisk have not been personally examined because the publication itself was not available at the time.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

## TABLE OF CONTENTS

AGRICULTURE .....	4
BIOGRAPHY .....	4
DESCRIPTION .....	4
FOREST FIRES .....	5
GEOLOGY .....	6
General .....	6
Ores .....	10
Peat Deposits .....	11
HISTORY AND EARLY EXPLORATION .....	11
MINES AND MINING.....	13
Accidents and Accident Prevention .....	13
Description .....	13
Ownership of Mines .....	15
Production .....	15
Taxation .....	16
Transportation .....	16
SOCIAL CONDITIONS .....	16
Education .....	16
General .....	17
Immigrants and Americanization .....	17
Strikes .....	18

444219

# MESABI IRON RANGE OF MINNESOTA

## AGRICULTURE

Leverett, Frank. St. Louis County, by Frank Leverett and F. W. Sandeson (in their Minnesota Geological Survey. Bulletin No. 13. 1917. p. 55-58. Pam.)

This describes the agricultural conditions and land classification on the Mesabi Range.

McGuire, A. J. Address (in Cows in clover. Duluth public affairs committee, 1907. Pam.)

This address was given by Mr. McGuire, who had charge of the Experimental station at Grand Rapids.

## BIOGRAPHY

History and biography of Northern Minnesota. Ogle, 1902.

The following biographies have references to the Mesabi Range: Nels Anderson, p. 975-976; C. W. Miller, p. 981; J. A. Healy, p. 986-989; T. A. Brady, p. 990; C. W. Kimberly, p. 204-205; J. F. Buh, p. 212-215; Andrew Hawkinson, p. 229-230; G. A. Whitman, p. 251; Colvin and Robb, p. 313-314; S. E. Moren, p. 431; Mathew Prettner, p. 458; Mathias Bilban, p. 495-496; O. M. Stockland, p. 521-522; Charles Jesmore, p. 530; P. O. Hanson, p. 577; G. A. Smith, p. 598; Alfred Burk, p. 645; Gustaf Johnson, p. 666-669; J. A. Redfern, p. 702; C. M. Atkinson, p. 735; John Costin, Jr., p. 754; J. J. Stuart, p. 765-766; E. J. Longyear, p. 772-773; W. L. Hill, p. 889; Albert Rohrer, p. 916; C. E. Nelson, p. 922-923; W. D. Ellsworth, p. 936; J. S. Lutes, p. 960.

## DESCRIPTION

Clark, C. H. Hibbing traveling library (in Library notes and news of the department of education in Minnesota. Dec. 1919. v. 6, p. 57-59.)

Miss Clark has described not only library extension but also some of the outlying mining districts of Hibbing which are typical of the entire Range.

Encyclopedia Americana. 1919. See the article on Iron Ore—Iron ore districts.

This is a short, descriptive article.

Epoch of Progress in Northern Minnesota. Daily Virginian, 1915. Pam.

This gives a good account of iron mining, agriculture, lumbering and other features of the Range. It also takes up the individual cities.

Hudson, E. H. Mesabi Iron Range (in his Half Century of Minnesota. 1900. p. 62.)

This is a short, concise article.



Lippincott. *Gazateer of the world*. 1906. See entries under Biwabik, Buhl, Chisholm, Eveleth, Hibbing and Virginia.

Brief information of each town is given.

Minnesota Public Library Commission. *Biennial reports*. 1899-1916. v. 1-9. See index under Range cities for material.

Practically all of these entries are concerned with libraries and library news.

——— *Library notes and news*. 1904-1918. v. 1-6. See index under the Range cities for material.

All of these entries are concerned with libraries and library news.

\*Municipal Recreational Building at Eveleth, Minnesota. *Improvement bulletin*, Feb. 15, 1919. v. 54, p. 7-9.

Musser, D. C. W. Hibbing. *Duluth News Tribune*, n. d. Pam.

Mr. Musser claims that this is the richest village on earth. This is an excellent description of the resources of the city.

——— Virginia in the great state of Minnesota. *Virginia Quickprint*, n. d. Pam.

This is a very good description of the city and its resources.

*New International encyclopedia*. 2nd ed. 1915. See articles on Hibbing, Iron ore, Virginia, Eveleth and Chisholm.

These are short descriptive articles.

White, T. *Through darkest America*. *Outing*, Oct. 1892. v. 21, p. 3-461; 10-463.

This tells of a trip taken in Northern Minnesota and mentions Long lake and Portage.

Woodridge, D. E. *Mining* (in *Minnesota*. 1904. p. 84-96. Pam.)

This was prepared for distribution at the World's Fair at St. Louis. Mr. Woodridge tells of the importance of the Mesabi ores to the United States at large, and also gives a bit about the history and social conditions of the Range.

*World book*. 1918. See articles on Hibbing, Virginia and Iron--Iron ore.

Information under these entries is brief.

## FOREST FIRES

Bruno, F. J. *In the path of the flames*. *Survey*, Oct. 26, 1918. v. 41, p. 83-84.

This article gives the area covered by the fire and relief work and rehabilitation following.

Cordiner, L. *Rationing the fire sufferers of Minnesota*. *Journal of Home economics*, Aug. 1919. v. 11, p. 347-351.

This does not mention the Mesabi Range (only St. Louis county) but clothing etc, was supplied by most of the Range towns and sent to Duluth.

*Mesabi Iron Range forest fires*. *Engineering and mining journal*, July 1, 1893. v. 56, p. 14.

Tells about the first fire that destroyed Virginia and Merritt, mainly as it concerned mining.

Motor corps in the fire zone (in How Minnesota gave the United States the first military motor corps. 1919. p. 97-110. Minn. Bacroft.)

This is a description of the fire that swept part of the Range.

Richardson, H. W. Northeastern forest fires of October 12, 1918. Geographical review. April 1919. p. 220-232.

This does not mention the Mesabi Range but this fire did cover parts of the Range.

## GEOLOGY

### General

Bayley, W. S. Actinolite-magnetite schists from the Mesabi Iron Range in Northeastern Minnesota. American journal science, Sept. 1893. v. 46, p. 176-180.

——— Basic massine rocks of the Lake Superior region. Journal of Geology, 1893. v. 1, p. 433-456, 587-596, 688-716. 1894. v. 2, p. 814-825; 1895, v. 3, p. 1-20.

“A detailed description of the gabbro and related rocks of northeastern Minnesota.”

Broderick, T. M. Detail stratigraphy of the Biwabik iron bearing formation, East Mesabi district, Minnesota. Economic geology, Sept.-Oct. 1919. v. 14, p. 441-451.

Chester, A. H. Iron region of Northeastern Minnesota (in Minnesota geological and natural history survey. Report. 1884. p. 154-167.

“Professor Chester of Hamilton College published an account of an examination of the eastern end of the Mesabi Range, made in 1875 for private parties. This was the first examination of the Range by a mining expert noted in literature. Coming from Duluth on the south, he struck the Mesabi Range at the portage of the Embarrass and worked northeast along the Range, T. 60 N., R. 12 W. In general the reader gathers the impression from Professor Chester's report that he is not favorably impressed with the value of the iron ores from the part of the district visited by him.” Leith, C. K.

Hames, H. H. Geological reconnoissance of the northern, eastern, middle and other counties of Minnesota (in Minnesota Geological Survey. Report. 1866. p. 1-58.)

“Eames, referring to the ‘gigantic uplifts’ in the northern part of the state, which reach their greatest altitude at or near Missabe Heights,” states ‘In this region are found also immense bodies of ore.’ In a geological reconnoissance Pogegama Falls and the Falls of Prairie River were visited.” C. K. Leith.

Eames, H. H. Metalliferous region bordering on Lake Superior

(in Minnesota Geological Survey. Report. 1866. p. 8-9.)

"In 1865 Eames crossed the 'Mesabi Wasju' at Embarrass Lake, and in his report mentions the granite there seen." C. K. Leith.

Elftman, A. H. Geology of the Keweenaw area in Northeastern Minnesota (in American Geology. 1898. v. 21, p. 90-109, 175-188; v. 22, p. 131-149.)

"The glacial history of the northern part of the state is reviewed." C. K. Leith.

—— Preliminary report of the field work during 1893 in northeastern Minnesota (in Minnesota Geological and Natural History Survey. Report, 1894. p. 159-169.)

"Mr Elftman gives a detailed description of the iron formation on Birch Lake and southwestward." C. K. Leith.

Grant, U. S. Contact metamorphism of a basic igneous rock (in Geological Society America. Bulletin. 1900. v. 11, p. 503-510.)

"Dr. Grant describes the contact metamorphism caused by the great gabbro of Northeastern Minnesota on rocks with which it come in contact." C. K. Leith.

—— Sketch of the geology of the Eastern end of the Mesabi Iron Range in Minnesota (in University of Minnesota Yearbook. 1898. v. 6, p. 49-62.)

This is a concise detailed article.

\*Grout, F. F. Nature and origin of the Biwabik iron bearing formation of the Mesabi Range, Minnesota (in Economic Geology. 1919. v. 14, p. 452-464.)

\*Harder, E. C. Preliminary report on the geology of east central Minnesota, by E. C. Harder and A. W. Johnson (in Minnesota Geological Survey. Bulletin, No. 15. 1918. p. 11-12, 20-21. Pam.)

Irving, R. D. Copper bearing rocks of Lake Superior (in United States Geological Survey. Monograph. 1883. v. 5, p. 382-384.)

"In his famous monograph on the copper-bearing rocks of Lake Superior, Irving correlates the Mesabi iron-bearing rocks as far west as Pokegama Falls with the slates and associated iron-bearing rocks at Gunflint Lake and then eastward to Thunder Bay." C. K. Leith.

Irving, R. D. Origin of the ferruginous schists and iron ore of the Lake Superior region. American Journal Science, 1886. v. 32, p. 255-272.

Irving concludes that the original form of the iron bearing rocks of the Lake Superior region was iron carbonate. No direct reference is made to the ores of the Mesabi district." C. K. Leith.

Leverett, Frank. Elevation of the Mesabi Range (in Minnesota Geological Survey—Surface formation and agricultural condi-

tions of Northwestern Minnesota. Bulletin no. 12, 1915. p. 8. Pam.)

This mentions the highest elevation of the Mesabi Iron Range.

Nicollet, J. N. Report intended to illustrate a map of the hydrographical basin of the Upper Mississippi River (in Twenty-sixth congress, 2d session, senate document, no. 237. Report. 1841. p. 63.)

"Rocks at Pokegama Falls are briefly described and Mis-saby Heights are indicated on the map for the first time." C. K. Leith.

Norwood, J. G. Geology of the Northwestern and western portion of the valley of Lake Superior (in U. S. Geological Survey. Report. 1852. p. 213-418.)

"This report was made under instructions from the United States Treasury department, by D. D. Owens, Philadelphia. Dr. Norwood crossed the Mesabi Range in two places, at Gun flint and Embarrass Lake." C. K. Leith.

Spurr, J. E. Preliminary report of field work done in 1893 (in U. S. Geological and Natural History Survey. Report. 1894. p. 115-124.)

"Mr. Spurr describes the general features of the Mesabi Range."

— Iron-bearing rocks of the Mesabi Range in Minnesota (in Minnesota Geological and Natural History Survey. Bulletin no. 10. 1894. p. 1-268.)

Mr. Spurr was the first to make a systematic study of the origin of the ores and his conclusions published in this report are of much interest.

Same in American Geology. 1894. v. 13, p. 335-345.

Upham, Warren. Preliminary report of field work done in 1893 in Northeastern Minnesota (in U. S. Geological and Natural History Survey. Report. 1894. p. 18-66.)

Mr. Upham gives a general discussion of the Northern part of Minnesota, chiefly relating to the glacial drift.

Van Hise, C. R. Mesabi iron district of Minnesota (in U. S. Geological Survey of the Lake Superior region. 1911. See index under Mesabi.

These articles give the history and later development of the mines.

Whittlesey, Charles. A report of explorations in the mineral regions of Minnesota during the years 1848, 1859 and 1864. Cleveland. 1866.

"Colonel Whittlesey gives a vague account of the Northern part of the state. The region is referred to as 'an imperfectly defined region of granite, syemite, mica, slate, siliceous and talcose rocks extending to and across the natural boundary.' Quartzite of Pokegama Falls is compared to the Pots-

- dam sandstone." C. K. Leith.
- Willis, Baily. Report of a trip on the upper Mississippi and to the Vermillion Lake, Minnesota (in U. S.—Census 1866. v. 15, p. 457-461.)
- "Mr. Wills describes the rocks at Pokegama Falls and the two falls of the Prairie River and accompanies the description with a sketch map of both places." C. K. Leith.
- Winchell, H. V. Minnesota—Geological and Natural History Survey. Report. 1888. p. 438-440.
- "Here is a brief description of Pokegama and Prairie Falls." C. K. Leith.
- Mesabi Iron Range (in Minnesota—Geological and Natural History Survey. Report. 1893. p. 111-180.)
- "This is the most comprehensive discussion of the Range up to this time, particularly in its Western portion. The following mines are described: Biwabik, Cincinnati, Canton, Kanawha, Hale, Missabe, Mountain, Ohio, Wyoming, Lake Superior, New England, Virginia, Paddock, Lone Jack and Security." C. K. Leith.
- Same in Trans-American Institute Mining Engineering. 1893. v. 21, p. 644-686.
- Report of a field observation made during the season of 1888 in the iron region of Minnesota (in Minnesota—Geological and Natural History Survey. Report. 1889. p. 77-145.)
- "H. V. Winchell here reports on a trip from Birch Lake southwest along the Dunka River, along the Mesabi Range to the Duluth and Iron Range Railroad and back again to Birch Lake." C. K. Leith.
- Winchell, N. H. Crystalline rocks (in Minnesota—Geological and Natural History Survey. Report. 1893. p. 1-28.)
- "Professor Winchell discusses the general age of the crystalline rocks in Northeastern Minnesota." C. K. Leith.
- Minnesota—Geological and Natural History Survey. Report, 1881. p. 106-109.
- "Professor Winchell writes of a trip down the Pike River across the portage to Embarrass River, down the Embarrass to the Dam. The magnetic character of the formation is noted." C. K. Leith.
- Minnesota—Geological and Natural History Survey. Report. 1884. p. 168-170.
- "Professor Winchell discusses the age of the Mesabi rocks." C. K. Leith.
- Minnesota—Geological and Natural History Survey. Report, 1885. p. 10-24.
- "Professor Winchell describes the rocks of the Mesabi Range seen in a trip along the Duluth and Iron Range Railway." C. K. Leith.
- Minnesota—Geological and Natural History Survey. Report. 1887. p. 209-399.

"In this report Winchell mentions the occurrence of nontitaniferous magnetite." C. K. Leith.

——— Geology of Minnesota (in Minnesota—Geological and Natural History Survey. Report. 1884. v. 1.)

"This contains an interesting account of the early explorations and also describes the general physical features, timber soils, glacial drifts and lakes." C. K. Leith.

——— Minnesota—Geological and Natural History Survey, by N. H. Winchell and U. S. Grant. Report. 1899. v. 4.

"County maps and detail maps are made subjects of special chapters." C. K. Leith.

——— Iron ores of Minnesota, by N. H. Winchell and H. V. Winchell (in Minnesota—Geological and Natural History Survey. Bulletin, no. 6. 1891. p. 430.)

"Written before the discovery of ore." C. K. Leith.

Winchell, N. H. Sketch of the work of the season of 1878 (in Minnesota—Geological and Natural History Survey. Report. 1879. p. 9-25.)

"Professor Winchell here tells of the occurrence of iron ore near Gunflint Lake. The Mesabi Heights are referred to as due to drifts and to hard quartzite." C. K. Leith.

——— Some problems of the Mesabi iron ore (in Minnesota Geological and Natural History Survey. Report. 1893. p. 134-143.)

"This survey gives a general succession of the rock and the occurrence of iron ore in the Mesabi Range and a discussion of the origin of the ore." C. K. Leith.

——— Structural Geology of Minnesota (in Minnesota—Geological and Natural History Survey. Report. 1900. v. 5, p. 1-80, 972-1000.)

"This volume contains final conclusions on the general geology." C. K. Leith.

——— Taconic iron ores of Minnesota (in Minnesota Geology, 1890. v. 6, p. 263-274.)

"Iron ores of Minnesota are described at five different geological horizons. In the fall of 1890 occurred the first discovery of merchantable ore in the Mesabi district. The first shipment was made in 1892." C. K. Leith.

Woodbridge, D. E. Lake Superior iron ore deposits. Engineering magazine, Feb. 1906. v. 30, p. 753-755.

This article deals with the exploration and development work on the Iron Ranges of the Lake Superior district in 1905.

### Ores.

Elftman, A. H. Ore deposits in Minnesota (in Minnesota University—Yearbook Society of Engineers. 1896. v. 4, p. 115-117.)

This summarizes the different metals found in the Minnesota iron mines.

Grade of iron ores in relation to the question of available ore reserves. *Scientific American Supplement*, May 20, 1911. v. 71, p. 314-315.

This mentions the soft grade of ore in the Lake Superior district.

Gregory, J. W. Iron ore supplies of the world. *Scientific American Supplement*, Nov. 11, 1911. v. 72, p. 306-308.

Dr. Gregory thinks the ore supply of the Mesabi Range will be exhausted a few years hence.

Grout, F. F. Preliminary report on the clay and shales of Minnesota (in Minnesota—Geological Survey. Bulletin, no. 11. 1914. p. 154. Pam.)

Kemp, J. A. Our iron ore reserves. *Scientific American Supplement*, May 27, 1911. v. 71, p. 325.

The number of tons of iron ore in reserve is given in this article.

Our available iron ore supply. *Scientific American*, May 14, 1904. v. 90, p. 382.

This is a short article about the supply of iron ore and includes the Mesabi.

Thomas, Kirby. Mining ore in the Mesabi district. *Scientific American*, Apr. 23, 1904. v. 90, p. 331.

Short article giving history of mines and mining.

Winchell, N. H. Diamond drill core section of the Mesabi rocks (in Lake Superior Mining Institute. Proceedings. 1909. v. 14, p. 156-178; 1910. v. 15, p. 100-141.)

This is a technical article.

### **Peat Deposits**

Soper, E. K. Peat deposits of Minnesota (in Minnesota—Geological Survey. Bulletin, no. 16. 1919. p. 218-240.)

Material is scattered through these pages.

### **HISTORY AND EARLY EXPLORATION.**

Allen, James. Report of Schoolcraft's expedition of 1832 to the sources of the Mississippi River (in *American State Papers—Military affairs*. v. 5, p. 330-331.)

"Lieut. Allen briefly describes Pokegama Falls and states that the river breaks through a ridge which trends northeast-southwest. This is the first mention of the ridge which was later known as the Mesabi." C. K. Leith.

Casson, H. N. Most wonderful Range of all (in his *Romance of Steel*. 1907. p. 55-60. Barnes. \$2.50.)

This is a most interesting story of the discovery of the Mesabi Range.

Chester, A. H. Romance of the Ranges. *Duluth News Tribune*. 1914. Pam.

This is an interesting account by the man who headed the

first expedition party to the Iron Ranges.

Holmes, F. R. Mesabi Range (in Minnesota in three centuries. 1908. v. 4, p. 381-385. Pub. Soc. of Minn.)

Concise article on the history of the Range and the early ore discoveries.

\*Longyear, E. J. Explorations on the Mesabi Range. Trans. Amer. Inst. Mining Engineers, 1897. v. 27, p. 537-541.

\*Minnesota History Bulletin. 1917-1918. v. 2, p. 180, 477.

In the first article noted: "In a review of Leverett and Sardeson's Surface formations and agricultural conditions of Northeastern Minnesota, Mr. Upham mentions the Mesabi in a list of other iron ranges." The second entry has the following reference: "The St. Paul Dispatch of May, 1918, devotes nearly an entire section to a description of the Mesabi iron range, including articles on the origin, development and present condition of the range towns of Hibbing, Buhl, Mountain Iron and Eveleth. The section is profusely illustrated with pictures of the iron mines and of public buildings in the towns." Minnesota Historical Library.

New Mesabi groups. Iron Age, Nov. 14, 1895. v. 56, p. 994.

This article discusses the beginnings of Eveleth, Hibbing and Elba, in as much as it is concerned mainly with mining, but also brings in the housing question.

Pike, Z. M. An account of expeditions to the sources of the Mississippi and through the western part of Louisiana, performed by the order of the government of the United States during the years 1805, 1806, 1807. Philadelphia. 1810.

Brief mention of Pokegama Falls is here made.

Schoolcraft, H. R. Summary narrative of an expedition to the sources of the Mississippi in 1820. 1855.

"This expedition was resumed and completed upon the discovery of the source in Itaska Lake in 1832. This contains a brief mention of the Pokegama Falls." C. K. Lerth.

State Board of World's Fair Managers. Minnesota iron mines (in Minnesota. St. Paul, Pioneer Press, 1893. p. 119-123. Pam.)

"This is a brief sketch of its history, resources and advantages." Sub-title.

Stuntz, G. R. Evidences of early man in Northeastern Minnesota (Minnesota—Academy of Natural Sciences. Bulletin, no. 3. 1889. p. 76-84.)

Mr. Stuntz tells what tribes of Indians lived on the Mesabi Range and surrounding country and mentions the fact that they did some mining.

Winchell, N. H. Discovery and development of iron ores of Minnesota (Minnesota—History Society Collections. 1895. v. 8. p. 25-40.)

"This article was read at the annual meeting of the Minnesota Historical Society, January 21, 1895." Sub-title. It



is mainly historical in character, telling about the men who were prominent in the early discovery and development.

—— Missaby Hights (in Historical sketch of explorations and surveys in Minnesota. 1883. p. 67-68. Minneapolis, Johnson.

The Mesabi Range was covered in Nicollets' explorations.

## MINES AND MINING.

### Accidents and Accident Prevention

Lescossier, D. D. Accidents and accident prevention in the Minnesota iron mines. Survey, Sept. 7, 1912. v. 28, p. 710-716.

This article summarizes a special investigation of the accident prevention of the Oliver Iron Mining Co., the Minnesota subsidiary of the U. S. Steel Corporation. Other companies are rapidly introducing these safety devices.

—— Risks of the ore-diggers. Survey, July 1, 1911. v. 26, p. 514-520.

"This is rather technical, but none the less freighted with a human story which gives color and general interest to the article." Sub-title.

—— Safety in concentration plant. Survey, Sept. 21, 1912. v. 28, p. 773-778.

This describes the machinery in the plants and the ways of carrying on safety measures in the different shops.

### Description.

Bacon, D. S. Methods of working on the Mesabi iron range. Engineering and Mining Journal, Sept. 11, 1897. v. 64, p. 306-307.

This article was read at the Lake Superior meeting of the American Institute of Mining Engineers. It tells about the different ways of mining ores.

\*Bailey, C. E. Mining methods on the Mesabi Range. Trans. Amer. Institute of Engineers, 1897. v. 27, p. 529-536.

Brackenbury, Cyril. Methods of mining on the Mesabi Range, Mines and minerals, Nov. 1900. v. 21, p. 150-152.

"This is a description of the ore and also of the open pit, the carving and milling methods of mining." Sub-title.

\*Denton, F. W. Methods of iron mining in northern Minnesota. Amer. Inst. Mining Engineers, 1897. v. 27, p. 344-390.

\*—— Open pit mining, with special reference to the Mesabi (in Lake Superior Mining Institute. Proceedings. 1895. v. 3, p. 84-92.)

Devens, Richard. Mechanical handling of materials. Scientific American Supplement, May 27, 1911. v. 71, p. 326-327.

This article mentions briefly the use of the grab bucket machine on the Mesabi Range.

Kennedy, F. A. Iron ore concretation on the Mesabi Range. Engin-

Engineering and Mining Journal, Apr. 19, 1919. v. 107, p. 683-688.

This article tells about the washing of iron ores in the Mesabi district. Modifications in machinery and methods have been introduced in some plants.

Lammers, T. L. Engineering and Mining Journal, July-Dec. 1892. v. 54. See index under Mesabi.

This gives new mines in the Mesabi Range and also contracts.

Leith, C. K. Mesabi district (in U. S.—Geological Survey, Bulletin, no. 225. 1904. v. 222-225, p. 218.)

This contains one paragraph about the year's work in 1903.

——— Mesabi Iron-bearing district of Minnesota (in U. S. Geological Survey, Monograph, 43. Wash. Govt. Printing Office, 1903.)

This government survey gives a detailed account of the geography, history, description and origin of the ores, economic features and early explorations of the Mesabi Range. It also gives a summary of the literature published in government documents.

Same in 57th Congress, 2d session, house document 429.

McGrath, H. J. Iron mining (in his Great Northwest and its men of progress, by H. J. McGrath and William Stoddard. 1901. p. 59. Minneapolis Journal, \$5.00.)

Mesabi Iron Range (in Minnesota Academy of Science. Bulletin, no. 5. 1911. p. 53-56. Pam.)

This article contains a description of the rocks and ores of the Mesabi Range.

——— Engineering and Mining Journal, July to Dec. 1893. v. 56. See index for material.

These are short articles in the general mining news section which are interesting for history material.

——— Iron Age, Aug. 1, 8, 22, 1895. v. 56, p. 216-219; 277-280; 386-389.

This takes up commercial considerations, sampling, cheap mining, ownership of lands, railroads, and the three methods of mining: shovel mining, milling system and underground mining.

——— (in Lake Superior mining institute proceedings. Report. Ishpeming. Pub. by the institute, 1913.)

This is a report of the proceedings of the institute at the meeting held at the cities of the Mesabi Range.

Pollock, H. M. Treasures of the earth (in her Our Minnesota. 1917. p. 180, 303-304. Dutton, \$1.60.)

This consists of short paragraphs on the history and methods of mining.

Skinner, H. M. Story of Minnesota. 1913. p. 30. Chicago. 5c.

This is only a short paragraph.

Spurr, J. E. Original source of the Lake Superior iron ores (in American Geology. 1902. v. 29, p. 335-349.)

This is a general article on the mines.

Warren, O. B. Mahoning iron mine. *Iron Age*, Nov. 9, 1899. v. 64, p. 1-3.

This article describes one mine, the Mahoning near Hibbing.

Wilkinson, C. D. Systems of mining in Minnesota iron mines (in *Minnesota University—Yearbook of Society of Engineers*. 1895. v. 3, p. 47-51.)

This article outlines the different ways of mining.

Reprint in *Colliery Engineer*, Feb. 1896. v. 16, p. 544.

\*Winchell, H. V. Biwabik mine, by H. V. Winchell and J. T. Jones. *Trans. Amer. Inst. Mining Engineers*. 1893. v. 21, p. 951-961.

\*——— Iron Range of Minnesota (in *Lake Superior Mining Institute—Proceedings*. 1895. v. 3, p. 15-32.)

\*——— Methods of mining. *Iron Trade Review*, July 21, 1892.

Winchell, N. H. Field observations in 1892 (in *Minnesota Geological and Natural History Survey*. Report. 1893. p. 79-134.)

“Here is a brief discussion of the following mines: Hale, Cincinnati, Biwabik, McKinley, Missabe Mountain, Security and Virginia.” C. K. Leith.

Woodbridge, D. E. Iron ore mining on the Mesabi Range. *Engineering and Mining Journal*, Aug. 12, 1893. v. 56, p. 163.

This tells about the stripping of ore by steam shovels.

### Ownership of Mines

Mesabi news. *Iron Age*, Sept. 19, 1895. v. 56, p. 593-594, 1339-1340.

Ownership and railroads are discussed.

### Production

Botsford, R. B. Increasing iron ore productions on the Mesabi Range. *Engineering and Mining Journal*, May 8, 1920. v. 109, p. 1072-1073.

This gives the use of the large steam shovels in loading ore cars.

Eckel, E. C. Iron ore reserves. *Engineering magazine*, Aug.-Oct. 1912. v. 43, p. 665-674; 825-836; v. 44, p. 7-15.

This is a general article but it applies to the Mesabi Range.

Johnson, J. A. Iron mining in Minnesota (in 60th Congress, 2d session, senate document 676. v. 1, p. 157-161.)

“This is an address given before the Joint Conservation Conference, December 9, 1908.” Sub-title.

Kemp, J. F. Outlook for iron (in *Smithsonian Institution*. Report. 1916. p. 289-301.)

This compares the productions of ore with other mining districts.

Mackintosh, C. H. Support for the first line trenches. *Minnesota*, July, 1917. v. 3, p. 23-25.

"Minnesota furnishes 70 per cent of all the iron ore used in the U. S. Everyone knows what iron ore is doing for the Allied forces." Sub-title.

Productions of iron ore in 1903. *Scientific American*, Sept. 3, 1904. v. 91, p. 154-155.

The Missabe Range is given as one of the foremost mining districts of the world.

Selwyn-Brown, A. Development of the world's iron resources. *Engineering Magazine*, Oct.-Nov. 1911. v. 42, p. 41-46; 212-232.

The first part of the article deals with the production of iron ore in comparison with other districts of the Lake Superior region. The second part gives some illustrations of the mines.

Stacy, F. N. Iron mines that give us leadership. *World's Work*, Sept. 1904. v. 8, p. 5235-5243.

This article discusses the method of mining, transportation, the inexhaustible supply of ore. It also has good illustrations of the open pits, and steam shovels.

Wiley, D. A. World's greatest iron ore deposits. *Engineering Magazine*, Mar. 1913. v. 44, p. 867-868.

This is a general article on the mines and transportation of the ores.

### **Taxation**

Woodbridge, D. E. Iron ore super-taxation. *Engineering and Mining Journal*, May 3, 1919. v. 107, p. 791-794.

"Although producing 62 per cent of iron ore mined on the continent of North America, the Mesabi Range is in a keen competitive position with regard to other mining districts of the world." Sub-title.

### **Transportation**

Lake Superior iron ore transportation. *Engineering and Mining Journal*, Mar. 1, 1919. v. 107, p. 400-401.

This consists of three excellent illustrations.

Wonderful iron mines of Lake Superior. *Scientific American*, Dec. 11, 1919. v. 101, p. 430-431.

"This is a good description of how the ore is mined and carried in bulk." Sub-title.

## **SOCIAL CONDITIONS**

### **Education**

\*Colgrove, P. P. Virginia plan of industrial education. *Bulletin of affiliated Engineering Societies of Minnesota*, July 1919. v. 4, p. 116-119.

Hoyt, M. H. Making Americans in Minnesota. *Educational Review*, June, 1919. v. 58, p. 15-20.

This article by Miss Hoyt gives a good description of edu-

cation on the Mesabi Range, taking Virginia as a typical Range town.

Willett, G. W. Some factors affecting vocational guidance work in Hibbing, Minnesota. *Industrial Arts Magazine*, May, 1919. v. 8, p. 169-172.

### General

Crane, C. B. Report on a campaign to awaken public interest in sanitary and sociologic problems in the state of Minnesota. St. Paul, *Volkszeitung*, 1911. Pam.

There is no index, but Eveleth, one of the Mesabi Range towns, was one of the 17 towns in Minnesota which was studied. Reference is made throughout the pamphlet to Eveleth and compared with the other cities.

Minnesota—Labor bureau. Third district, exclusive of Duluth (in Biennial report. 1904. v. 1, p. 324-382.)

The tables in this volume give the industries other than mining of the principal cities of the Mesabi Range, also the number of employes, time worked, etc.

Moulton, W. H. Sociological side of the mining industry (in Lake Superior Mining Institute. Proceedings. 1909-1911. v. 14-16, p. 82-98.)

This is a general article about the Lake Superior iron ranges and copper mines, but is typical of the Mesabi Range.

O'Donnell, John. Mines and quarries (in Minnesota—Labor bureau. Report. 1904. v. 1, p. 349-373.)

This article takes up the salaries of the different employes of the mines and other interesting facts and tables concerning the mining industry.

Virtue, G. O. Minnesota iron mines (in U. S.—Labor dept. Bulletin, no. 18. 1909. p. 338-396.)

Mr. Virtue discusses every phase of the sociological conditions of the Range, in a clear and concise manner.

### Immigrants and Americanization

Fawcett, W. Mining of iron. *Century*, Mar. 1901. v. 61, p. 712-725.

This tells about the mines and miners during the early years.

Hodges, L. Immigrant life in the ore region of Northern Minnesota Survey, Sept. 7, 1912. v. 28, p. 703-709.

Immigrant life and social conditions are pictured very well in this article.

Pfeiffer, C. W. From Bohunks to Finns. Survey, Apr. 1, 1916. v. 36, p. 8-14.

"This is an account of the scale of life among the ore strippings of the Northwest." Sub-title.

Walker, I. M. Book peddler glorified. Public Libraries, Feb. 1920. v. 25, p. 55-61.

This is an interesting account of a trip made by the "Book Wagon" to one of the outlying districts near Hibbing.

Walker, I. M. Library an Americanizing factor on the Range. Wis. Library Bulletin, Oct. 1918. v. 14, p. 209-213.

This is an excellent description of the social and educational conditions on the Mesabi Range.

### Strikes

Cheney, C. B. Labor crisis and a governor. Outlook, May 2, 1908. v. 89, p. 24-30.

"This tells how a strike was averted on the Mesabi Range.

The names of the strike leaders show what a melange of nationalities exist in this part of Minnesota." Sub-title.

Cothren, M. B. When strike-breakers strike. Survey, Aug. 26, 1916. v. 36, p. 535-536.

"This gives the demands of the miners on the Mesabi Range."

End of the Mesabi Range strike. Survey, Jan. 6, 1917. v. 37, p. 411-412.

This is a short article bearing on a special murder case during the strike of 1916.

\*George H. Victory on the Mesabi Range. International Socialist Review, Jan. 1917. v. 17, p. 429-431.

Minnesota's striking iron-miners. Literary Digest, Sept. 23, 1916. v. 53, p. 732-733.

This is an unprejudiced treatise of the strike in 1916, giving the causes and quoting two articles, one in sympathy with the miners, the other by Mr. Dennett for the employers.

Vorse, M. H. Mining strike in Minnesota. Outlook, Aug. 30, 1916. v. 113, p. 1036, 1045-1048.

This is a general article on the strike of 1916.

West, G. P. Mesabi Range strike. New Republic, Sept. 2, 1916. v. 8, p. 108-109.

This summarizes the strike of 1916.









RETURN TO the circulation desk of any  
University of California Library  
or to the  
NORTHERN REGIONAL LIBRARY FACILITY  
Bldg. 400, Richmond Field Station  
University of California  
Richmond, CA 94804-4698

---

ALL BOOKS MAY BE RECALLED AFTER 7 DAYS

- 2-month loans may be renewed by calling (510) 642-6753
  - 1-year loans may be recharged by bringing books to NRLF
  - Renewals and recharges may be made 4 days prior to due date.
- 

DUE AS STAMPED BELOW

---

JUL 09 1998  
JAN 20 2007

---

---

---

---

---

---

---

---

---

---

---

---

12,000 (11/95)

LD 21-100m-7,'40 (69368)

U. C. BERKELEY LIBRARIES



C059795837

444219  
T N 403  
M 6 N 5

UNIVERSITY OF CALIFORNIA LIBRARY

