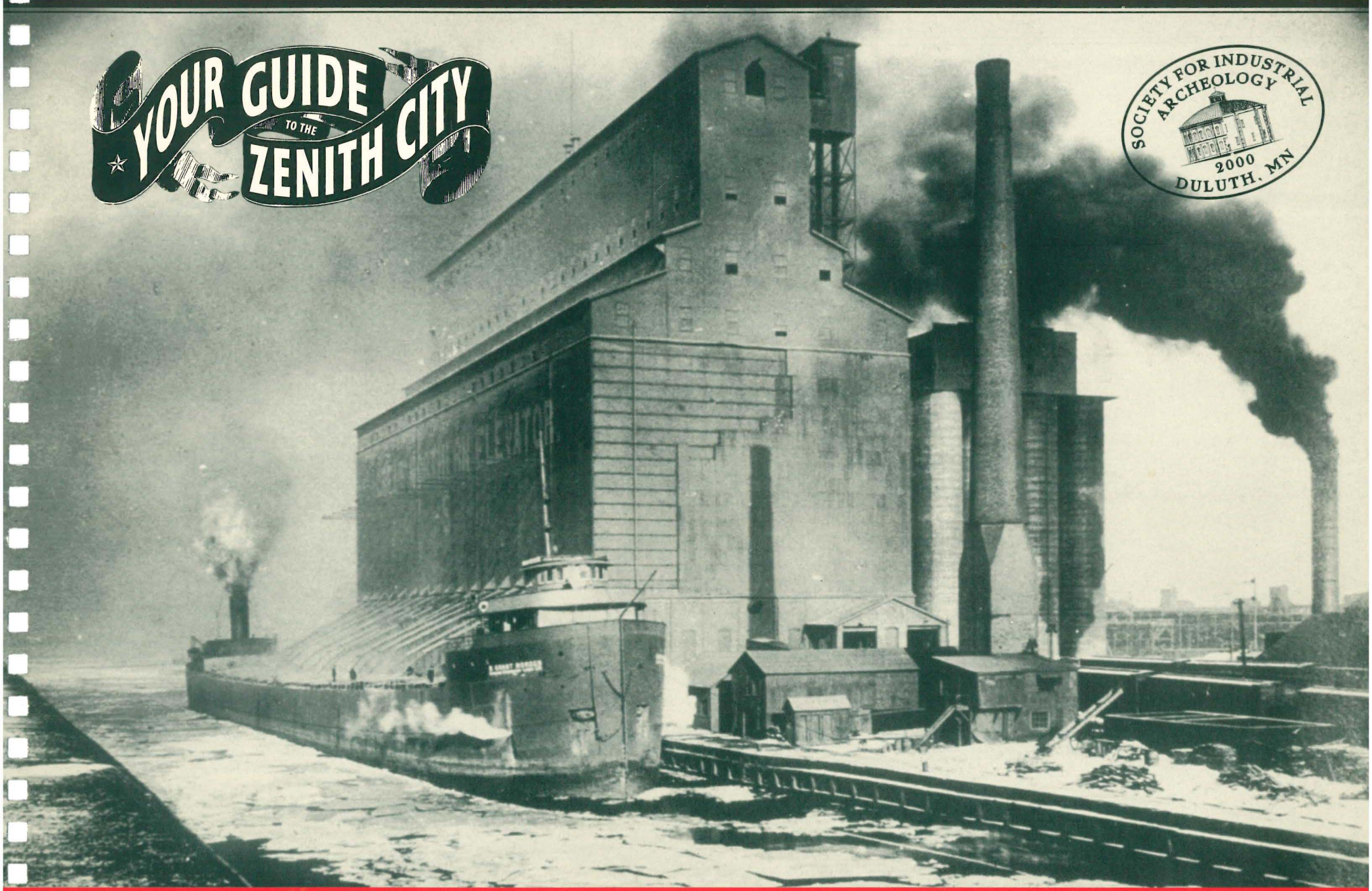
SOCIETY FOR INDUSTRIAL ARCHEOLOGY



29TH ANNUAL CONFERENCE

SOCIETY FOR INDUSTRIAL ARCHEOLOGY

IA at the Head of the Lake:

A Guide to Industrial Sites for the Twenty-Ninth Annual Conference of the Society for Industrial Archeology

Duluth, Minnesota
June 1-4, 2000

By Mary Habstritt, Larry Mishkar and Ann Barnard Toftness

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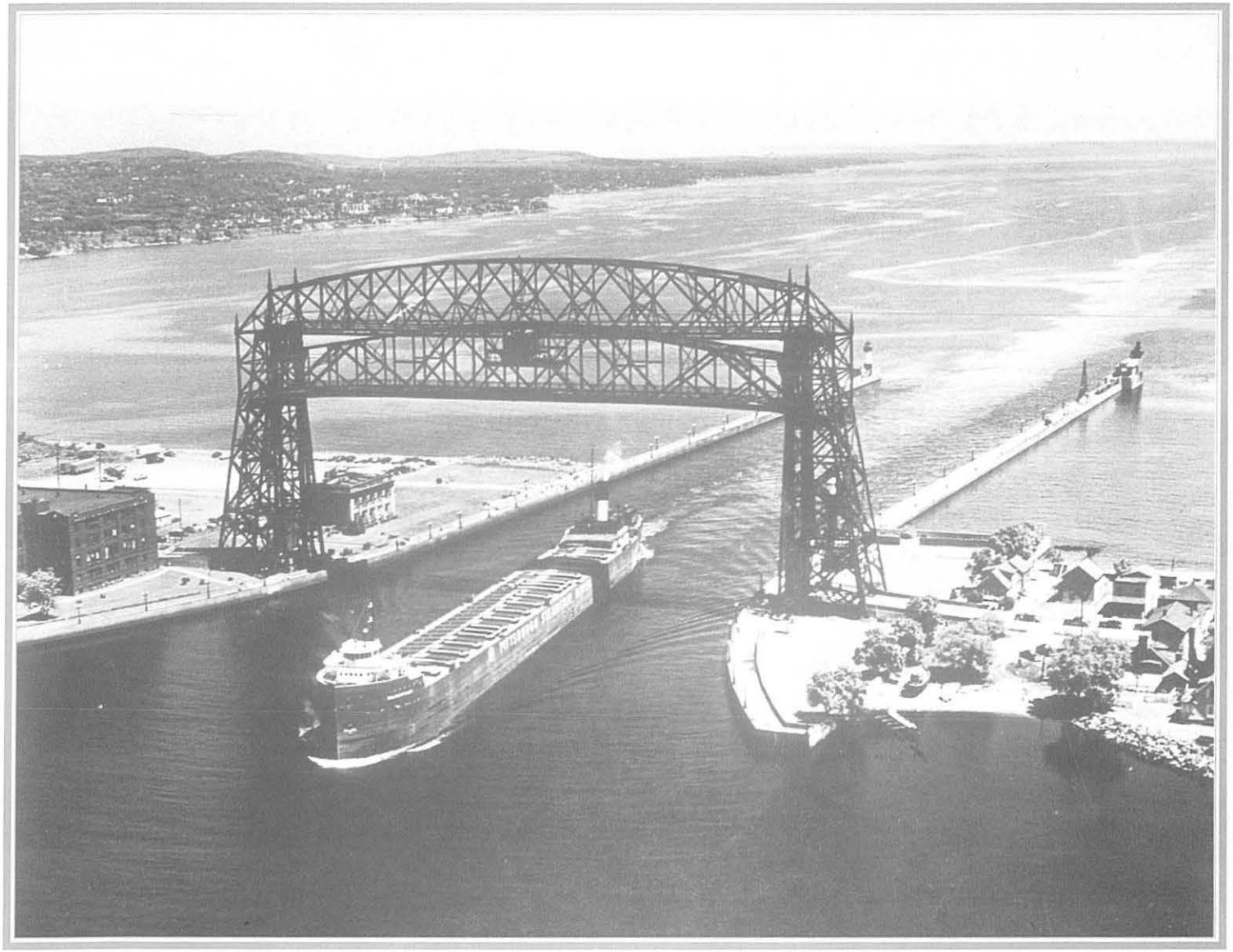


Minnesota Historical Society

Boat passing beneath the Aerial Lift Bridge, 1960.

{ACKNOWLEDGEMENTS}

This guide represents a whirlwind of work and may have set a new record for producing a Society for Industrial Archeology conference guidebook. The first planning meeting for the conference only happened in September, 1999, our local arrangements coordinator was not hired until January, 2000, and the writing of this guide began in earnest in March. Whew!

The guidebook was done not only quickly, but carefully and well, with the help of many more people than I can mention here. First and foremost, I must thank Larry Mishkar, my "publications czar." Larry answered one of my e-mail appeals for volunteers. An experienced underwater photographer, Larry dug through archives, doggedly tracked down usable images, photographed and scanned them, and met with our graphic artists while staying in touch with me daily, if not hourly, by e-mail. And he still has his sense of humor.

Thanks, too, to Ann Barnard Toftness, my co-writer and another volunteer who answered an e-mail summons. Somehow, while working 50 hours a week, maintaining a family life, and suffering through a disk drive breakdown, she composed many of the entries in this guide. Thanks to her husband, Paul, a font of historic railroad facts, and to her son, Eric, for putting up with it all.

Graphic designers, Laurie and Matt Kania, made the guide stunning. Thanks to them for living with our impossible deadlines and for creating a design that is not only aesthetically appealing but historically sensitive. Ideal Printers deserves our appreciation for making the design a reality.

Thanks to all of the companies that were willing to share their factories with us. There would be nothing to write about if they had not opened their doors

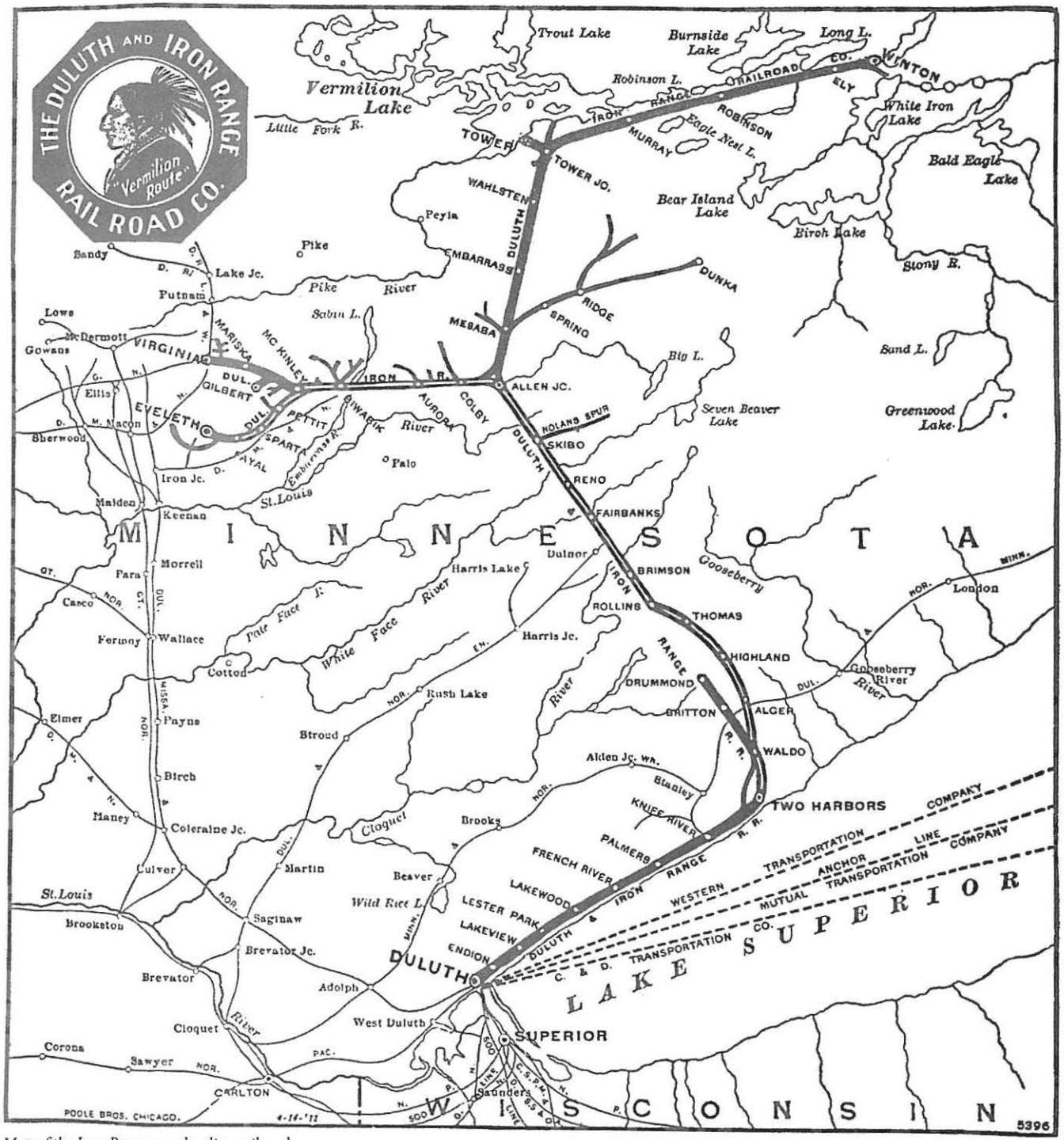
Our co-sponsors acted as liaisons with tour sites. Marlene Pospeck at the Iron Range Resources and Rehabilitation Board/Northern Lights Tourism Alliance, and Mary Ellen Sjoberg, our local arrangements coordinator, working for the St. Louis County Historical Society, made phone calls and rushed around to pick up brochures and photos while attending to other myriad conference duties.

Pat Maus at the Northeast Minnesota History Center, compiled a critical research bibliography, provided many excellent historic photos, and promptly answered many esoteric questions by e-mail. Similarly, Pat Labadie and Thom Holden of the Lake Superior Maritime Museum provided access to their archives and helped with questions. The staff of the Minnesota Historical Society Library put up with many harried requests for photos. Ralph Wehlitz contributed time helping to track down and copy photos. Charlene Roise and Eric Bonow proved inexhaustible sources of documentary information.

Last, but not least, thanks to my husband, Gerry Weinstein. His rare book collection had that water turbine pamphlet when I needed it at 10:00 p.m. on a Sunday night. His expertise in power plant development and maritime history helped me be more accurate. He tolerated my distraction and the lack of groceries in the cupboard with equanimity and, often, amusement.

We couldn't have done it without you.

Mary Habstritt, Chair
Conference Planning Committee



Map of the Iron Range ore-hauling railroads.

Map courtesy of DM&IR Railway Company

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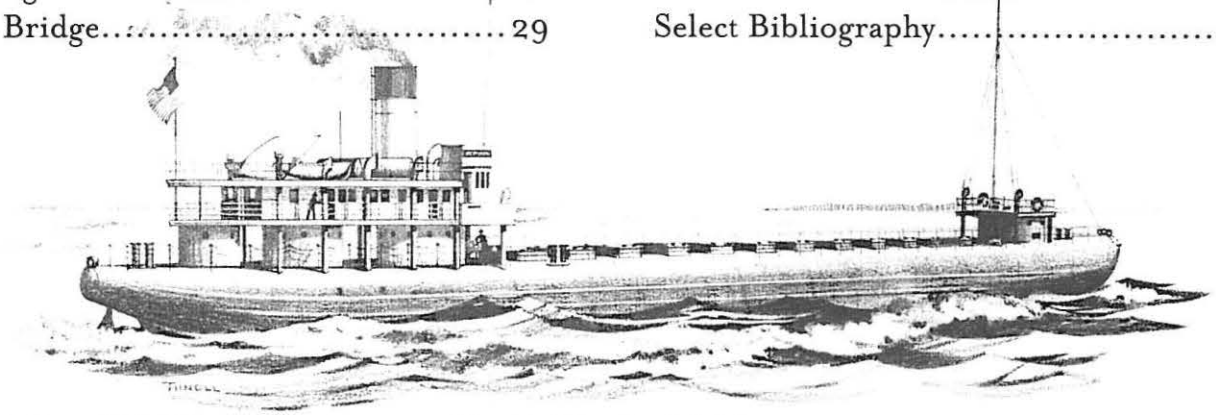


The 308' steel whaleback Thomas Wilson, *invention of Alexander McDougall, a Duluth Captain.* Courtesy of Lake Superior Marine Museum Association/Tunell.

{ INTRODUCTION }

The fortunes of Duluth, Minnesota, and Superior, Wisconsin, are closely tied to each other and to those of Minnesota's three iron ranges. Although shipment of fur, lumber, grain and coal have also been important, the development of the Twin Ports is unlikely to have occurred without the need for rail and port facilities for the transshipment of iron ore.

The first Europeans to arrive in the area were Frenchmen and the first map to accurately delineate the entirety of Lake Superior was drawn in 1658. The first of the early explorers to make a documented portage across what is now Minnesota Point was Daniel Greysolon, Sieur du Lhut (as he spelled it) in 1679. He continued on to the Mississippi and established one of the three major routes used by fur traders.

The Head of the Lake was a focal point of the fur trade for 200 years. The North West Fur Company built Fort St. Louis on Connor's Point in Superior in 1793. It served as the central collecting and distributing point and headquarters for its entire Fond du Lac department until 1805, when the fur trade reached its peak. After the war of 1812, America asserted its presence and the American Fur Company monopolized the field. The company left in 1847, due to decreased availability of furs, and the fur trade was active only through about 1870.

The mineral wealth of the area was known to Native Americans and early European explorers. A prehistoric culture known as "Old Copper" is unique to the western Great Lakes and existed from 5000 B.C. until 1500 B.C., leaving mines and copper artifacts behind. Although various accounts of copper deposits and native mines reached France earlier, the first authoritative account is that of Pierre Radisson and Medard Chouart, Sieur des Groseilliers in 1659.

International boundaries had to be settled to determine ownership of the region before its riches could be exploited. More detailed surveys with more frequent reports of mineral wealth eventually drove a demand for the U.S. Government to determine state lines. The mineral lands of the Upper Peninsula were placed within the boundaries of Michigan in 1837. The discovery of copper and iron there was the impetus for the building of a canal at Sault Ste. Marie in 1855.

Settlers and speculators fanned out along the Superior lakeshore. Superior became a terminus for steamboat lines from Cleveland and Chicago. For many years Superior was thought of as the sole port on the harbor and it experienced phenomenal growth with a population of 2,000 by 1857. That year's panic left Superior with only 500 residents and Duluth a ghost town.

A brief but unsuccessful gold rush after the Civil War brought some people back, and the area's massive stands of white pine brought a few sawmills to both Duluth and Superior in the 1850s, but it was not until railroads reached the area that it really recovered. Philadelphia financier, Jay Cooke, came to Duluth in 1866 after acquiring pinelands in the area. He recognized the potential of the natural harbor and invested in the Lake Superior and Mississippi Railroad. Construction on this vital railroad began in St. Paul in 1867. It linked with the Northern Pacific, in which Cooke had a controlling interest, at present-day Carlton.

The Northern Pacific ran through hundreds of miles of white pine and then hundreds of miles of prairies with no trees, but plenty of space for settlers. Immense new markets suddenly opened for the area's sawmills. The new elevators anticipating the grain trade were also voracious consumers of lumber. In 1855 there were but two small sawmills. By 1884, there were eleven. Nearby Cloquet was advantageously located above Knife Falls on the St. Louis River with easy access to thousands of acres of white pine. Frederick Weyerhaeuser established himself there and it became a center for the wood products industry.

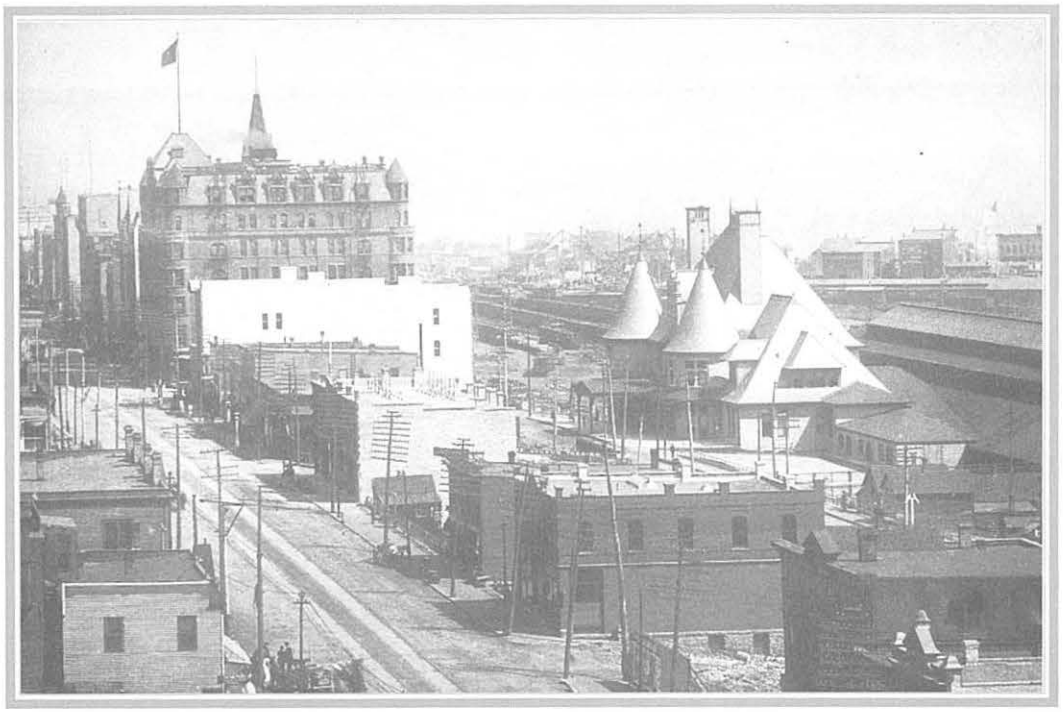


Photo by Eclipse View Company, Minnesota Historical Society

The Spaulding Hotel and Duluth Union Depot, 1889.

Cooke constructed grain elevators at both ends of his rail line. In 1869, the first 10,000 bushels of wheat were brought by train from southern Minnesota. It remained a minor commodity for the port until the Red River Valley was settled in the early 1870s. The Northern Pacific began bringing the valley's hard wheat to Duluth for transshipment to Buffalo in 1878. By 1886 Duluth was the largest grain port in the country outside of New York. The grain trade continued to grow and benefited greatly from the opening of the St. Lawrence Seaway in 1959. Grain is still one of the top three exports of the harbor.

Railroad interests also backed the plan to construct a ship canal at the Duluth end of Minnesota Point and the city completed it in 1871. This again moved Duluth ahead of Superior, opening it as a commercial port. The Superior Entry was not completed until 1875.

Charlemagne Tower, a business associate of Cooke, was intrigued by reports of iron ore and purchased land at Lake Vermilion in 1880. To exploit the iron found there, Tower purchased the Duluth and Iron Range Railroad, which had existed mainly on paper. In 1883 the first ore-carrying railroad was begun in Agate Bay, now Two Harbors. The railroad reached Soudan on July 31, 1884 and Minnesota's first load of iron ore was on its way.

The Mesabi became Minnesota's second iron range when Cassius Merritt literally stumbled on a boulder of iron while estimating a stand of timber in 1887. The rock assayed as high-grade Bessemer ore. He, two brothers and a nephew obtained extensive land holdings and incorporated the Mountain Iron Co. in 1890. The soft powdery ore here is mined in open pits, unlike the harder vertical deposits of the Vermilion. The Merritts organized the Duluth, Missabe and Northern Railway and built an ore dock in West Duluth. It received the first Mesabi ore on July 22, 1893.

The Cuyuna range was discovered by Cuyler Adams, a wealthy farmer and timberman, near his summer home in Deerwood, Minnesota. He incorporated the Orelands Mining Company in 1903. Adams began the Cuyuna Iron Range Railway to serve the South Range and the Cuyuna Northern Railway to serve the North Range. The first ore shipped on October 20, 1910.

The mines of the Iron Range reached peak production during World War II, but high-grade natural ores that were economical to extract were nearly depleted by the 1960s. The development of taconite processing made this lean Mesabi ore, with impurities of 50 to 70 percent, profitable and rejuvenated the industry. The recession of the early 1980s and competition from overseas iron sent the industry into a depression. Many new industries have since moved in to take advantage of the skilled work force and the magnificent outdoor environment has made recreation and hospitality major factors in the local economy.

Fitger's Brewery Complex

600 East Superior Street
Duluth, Minnesota

The brewery that became Fitger's was begun in 1859 by four men who remained in the area after the panic of 1857 sent most settlers packing. It was sited about a block and a half from its present location to make use of a small clear brook, later known as Brewery Creek. Their small brewery was not particularly successful, and they sold out to Nicholas Decker a few years later. Sudden growth in 1869 brought increased business and Decker moved the operation to its present site.

In 1877, Decker sold out to Mike Fink who operated it as the Lake Superior Brewery. Fink hired August Fitger as brewmaster, and in 1881 Fitger purchased a half interest. In 1883, Percy S. Annecke bought out Fink's interest and the brewery became A. Fitger and Company-Lake Superior Brewery. In late 1903 it was incorporated as the Fitger Brewing Company and continued in operation under that name for the next seventy years. The brewery, at that time Duluth's oldest continually-operating industry, closed its doors in 1972.

Northeast Minnesota Historical Center

Fitger Brewing Company complex.

The existing Richardsonian Romanesque building was constructed between 1886 and 1911, incorporating parts of earlier buildings and increasing production capacity to 100,000 barrels a year. The Fitger's Brewery Complex was re-opened in 1984 with a hotel, restaurants, and a retail center. In 1890, Fitger's installed the first ice machine in a Minnesota brewery and it is on display in the retail area. The complex is on the National Register of Historic Places and has been documented by HAER.

2711 West Superior Street
Duluth, Minnesota

Lake Superior Brewing Company

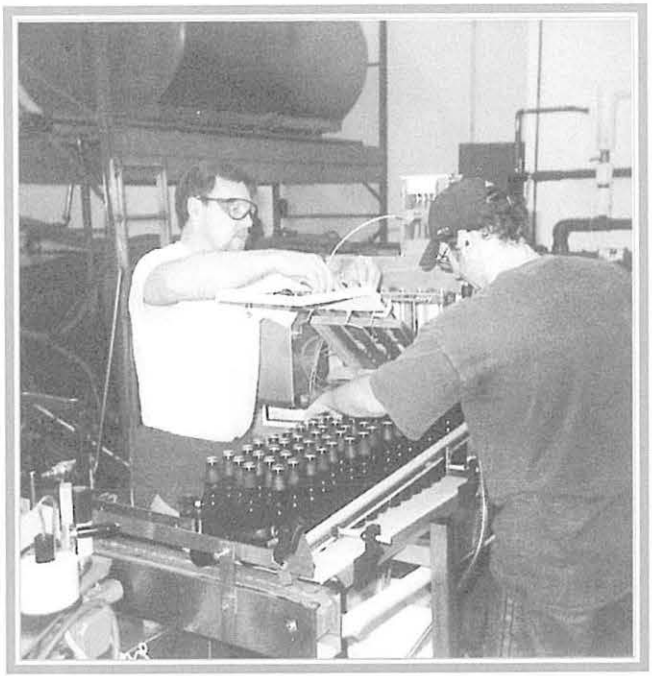


Photo courtesy of Lake Superior Brewing Company

Capping machine hard at work.

Duluth's only microbrewery, Lake Superior Brewing Co. makes handcrafted beers in small batches using traditional methods and Lake Superior water. The company began in 1994 in, appropriately, the Fitger's Brewery Complex but outgrew its 900 sq. ft. Its current 4,000-sq.-ft. space has allowed the company to add a used bottling machine and make bottled beers available. As part of the expansion, a 16-barrel steam-jacketed kettle has replaced an 8-barrel direct-fired kettle.

Lake Superior Brewing Co. is the first commercial brewery in Duluth since 1972 when Fitger's ceased operations. Only a few other breweries appear in Duluth's history, many of them operating for only short periods, but two managed to succeed for nearly as long as Fitger's.

In 1896, the Duluth Brewing and Malting Company opened at 231 South Twenty-ninth Avenue West. A malting plant was added in 1900 and it was one of only ten breweries in the U. S. that produced malt for its own use and sold the excess. Hamm's of St. Paul was the only other Minnesota brewery to do so. The company was known as the Rex Sobriety Co. during Prohibition. It closed permanently in the 1960s.

The People's Brewery was organized by West Duluth saloonkeepers in 1906. Production started in 1907 at a plant at Forty-second Avenue West and Traverse Street. It operated for fifty years producing lager beer and malt liquor, but was liquidated in 1957. Portions of the company's buildings still stand and are used for warehousing.

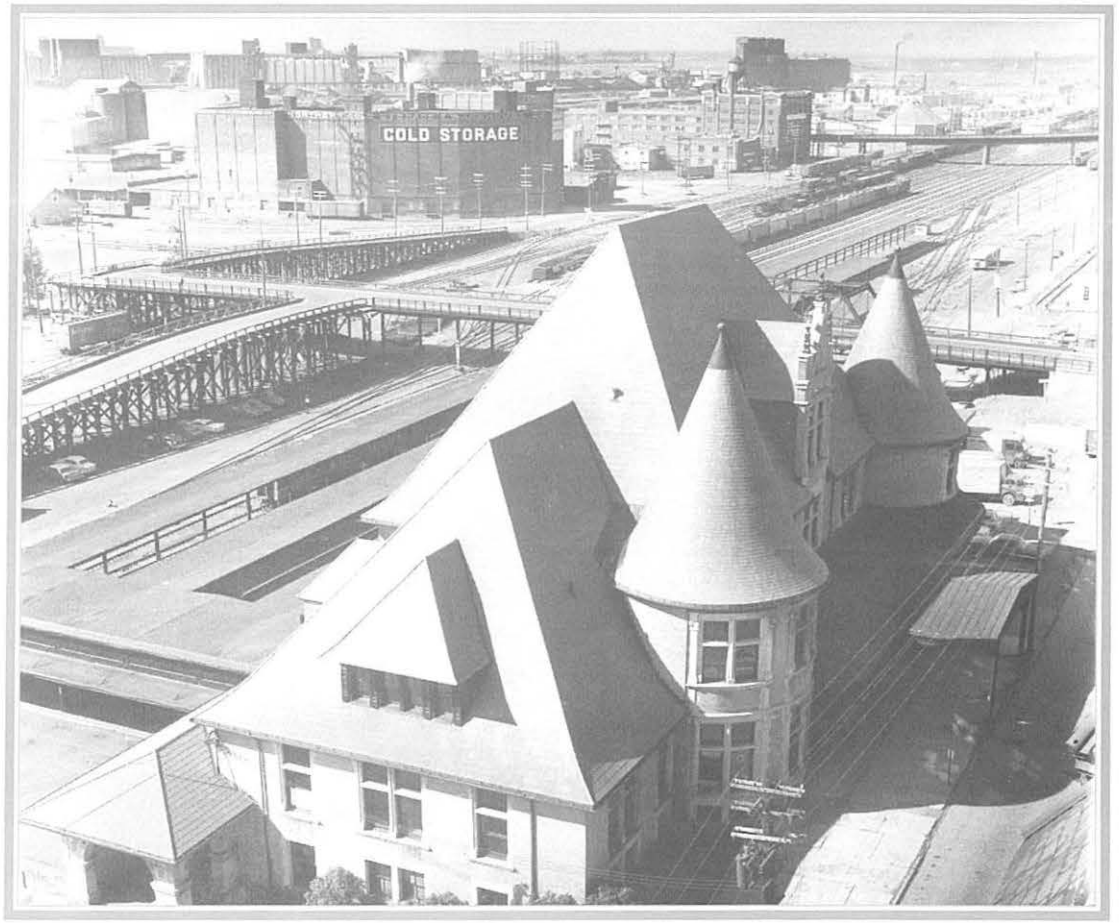
Duluth Union Depot

506 West Michigan Street
Duluth, Minnesota

The Duluth Union Depot was built by the Boston architectural firm of Peabody & Stearns between 1890 and 1892 at a cost of $615,000. It was placed on the National Register of Historic Places in 1971 and is considered to be one of America's finest examples of the French Chateauesque style.

The Union Depot saw its heyday between 1910 and 1920 when it served seven railroads: Duluth & Iron Range; Duluth, Missabe & Northern; Duluth, Superior & Western; Great Northern; Northern Pacific; St. Paul & Duluth; and Duluth, South Shore & Atlantic. As many as 50 trains were arriving and departing daily. The original train shed was removed in the 1920s and replaced with canopies, which still exist and are held in the collection of the Lake Superior Railroad Museum. It was a working railroad station until passenger service ended in 1969.

The efforts of Duluth citizens saved the building from demolition. Renovated in the 1970s, it is now the Saint Louis County Heritage and Arts Center, but is still commonly known as "The Depot." A performing arts wing with a 285-seat theater was added in 1977. The Depot houses the Lake Superior Railroad Museum, the St. Louis County Historical Society and other cultural organizations on four levels.

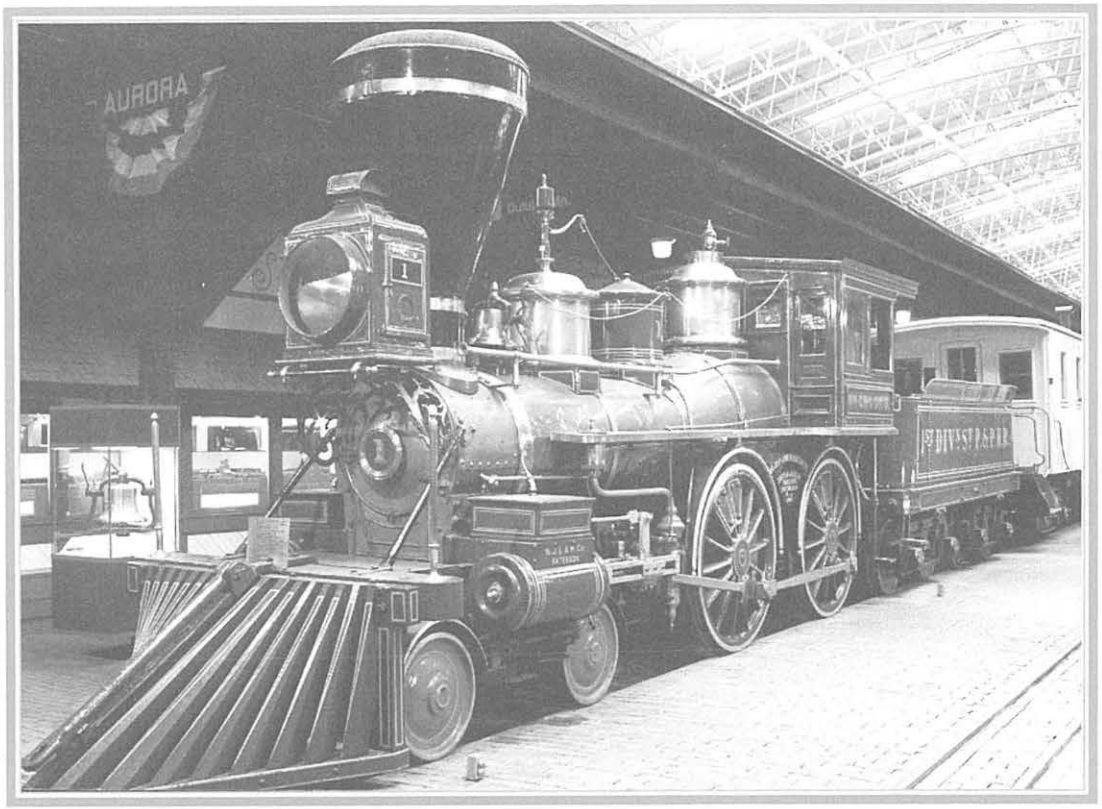


Lake Superior Railroad Museum

Duluth Union Depot and adjacent rail yards, 1963.

506 West Michigan Street
Duluth, Minnesota

Lake Superior Railroad Museum



Lake Superior Railroad Museum

The 1861 Smith and Jackson 4-4-0 William Crooks.

The St. Louis County Historical Society worked to save the Union Depot's tracks when it was renovated in the 1970s. When this idea grew to include a museum, a separate organization, The Lake Superior Museum of Transportation and Industry was created. "Industry" was soon dropped from its name and in 1998 its original focus on rail history was recognized by the change to its current name. The Lake Superior Railroad Museum has one of the Midwest's largest and most diverse collections of railroad artifacts.

Among the unique items to be found here are the oldest known rotary snowplow and a Russel wedge snowplow. Keeping the rails clear in this northern climate is a priority.

The museum also holds Minnesota's first locomotive, the *William Crooks*, a 4-4-0 built in 1861 by Smith & Jackson. It came up the Mississippi by steamboat for use on James J. Hill's St. Paul and Pacific Railroad, and first ran between St. Paul and Minneapolis in 1862. It was named for Colonel William Crooks, the railroad's chief engineer. The engine was retired in 1897.

The Northern Pacific's first engine, "The Minnetonka," is also here. An 0-4-0 switcher, it is a construction engine built in 1870 by Smith & Porter. It was used in building the rail line between Carlton and Brainerd and then saw service in the Pacific Northwest. It was sold in 1896, used in logging and then abandoned in the woods in 1928. The NP recovered it in 1933 and reconditioned it for exhibition.

Edna G.

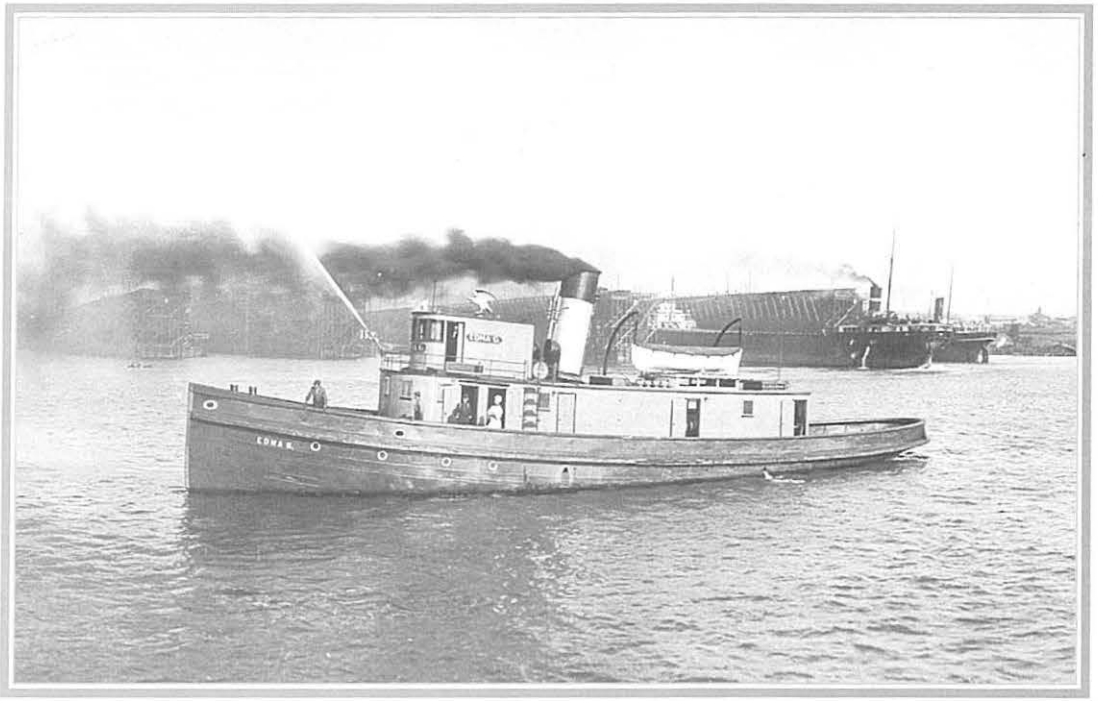
Waterfront Drive
Two Harbors, Minnesota

Moored in Agate Bay, just a short walk from the Duluth and Iron Range Depot, is the tugboat, *Edna G.* Built in 1896, by the Cleveland Ship Building Company, the boat was named for Edna Greatsinger, the daughter of J. L. Greatsinger, president of the Duluth and Iron Range Railroad.

The *Edna G.*, retired in 1981, was the last working hand-fired, steam-powered tug on the Great Lakes. Her compound-condensing engine is original with a boiler that dates from 1948. She is listed on the National Register of Historic Places

The steel-hulled tug is 102-ft. long and 23-ft. wide, with a 15.5-ft. draft. Her gross weight is 154 tons. The recently restored *Edna G.* now belongs to the Lake County Historical Society. The entire boat, including the pilothouse, galley and restored captain's office and sleeping quarters can be toured. From the deck you get an intimate view of big vessels visiting the ore docks.

The *Edna G.* moved freighters in and out of the three ore docks at Two Harbors built to serve the Vermilion Range. The docks transferred peak tonnage during the early 1940s and #1 Dock was rated the fastest loading dock on the Great Lakes.



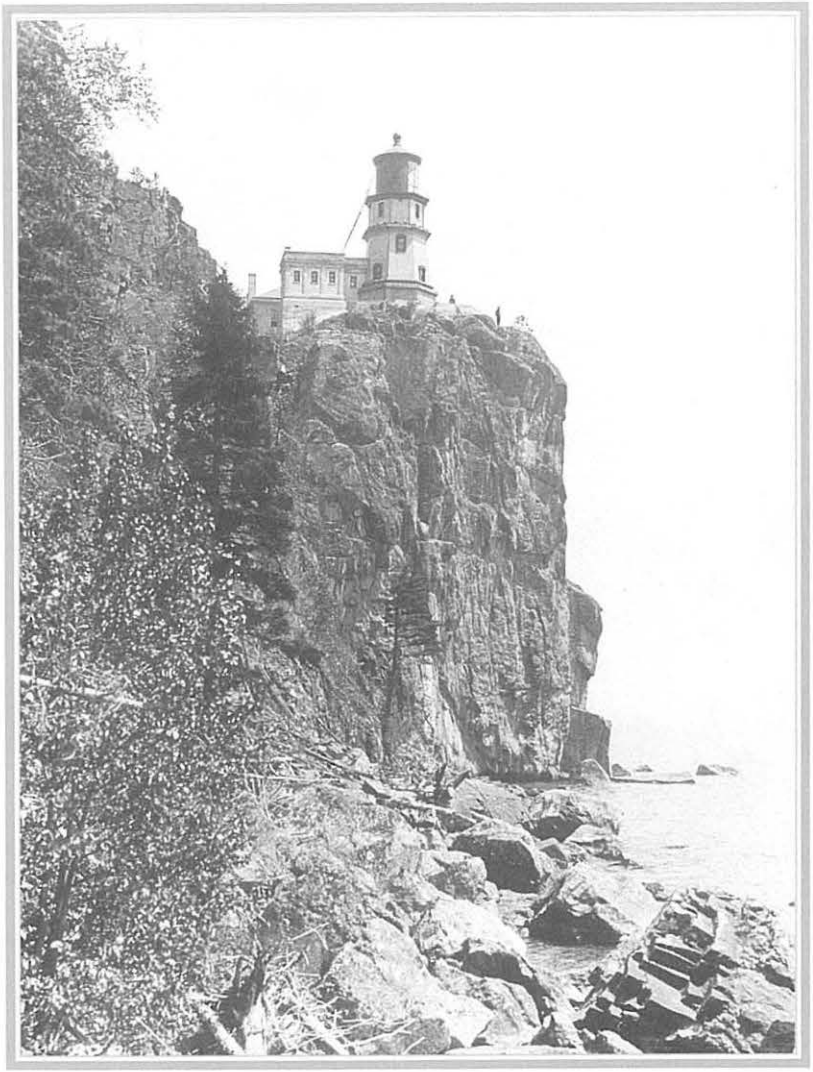
Northeast Minnesota Historical Center

Edna G. *posing in Agate Harbor, Two Harbors.*

Not only did the *Edna G.* shepherd ore boats, but she also assisted vessels in distress. The vessel's huge fire gun on the upper deck was used to fight fires. She served for 85 years in Two Harbors, with the exception of a two-year stint in Norfolk, Virginia during World War I.

3755 Split Rock Lighthouse Road
Two Harbors, Minnesota

Split Rock Lighthouse



Minnesota Historical Society

Split Rock Lighthouse, 1925.

From 1899 to 1906, the Merrill and Ring Lumber Company logged most of the original Norway and white pine from the area. Pilings from the old wharf and dam can still be seen jutting out of the water at the mouth of the Split Rock River.

Magnetic distortion in bedrock in this area makes compass readings inaccurate. In November 1905, a series of winter storms claimed six boats within a dozen miles of Split Rock River. The tragic sinking of these ships fueled the demand for a lighthouse.

Since the area was sparsely settled, and without roads, all construction materials for the lighthouse had to be brought in by boat and lifted up the 120-ft. cliff. A steam engine was used to lift itself up the cliff, and then became the motive power for a huge derrick, which lifted the construction materials for the lighthouse and keeper's houses, and was subsequently used for many years to bring supplies up from the lake.

Split Rock Lighthouse and its fog signal building, made of yellow brick, were commissioned in 1910. The light produced a 370,000-candlepower beacon. Its third order Fresnel lens floated on a trough bearing that contained 250 pounds of mercury.

In 1924, U. S. Highway 61 along the North Shore was completed, and the lighthouse became a tourist attraction as well as a maritime aid. The lighthouse functioned until 1969. In 1976, the Minnesota Historical Society (MHS) assumed operation of the site, which has been restored to its 1924 appearance, with historical interpreters available in-season.

LTV Steel Mining Company

County Road 666
Hoyt Lakes, Minnesota

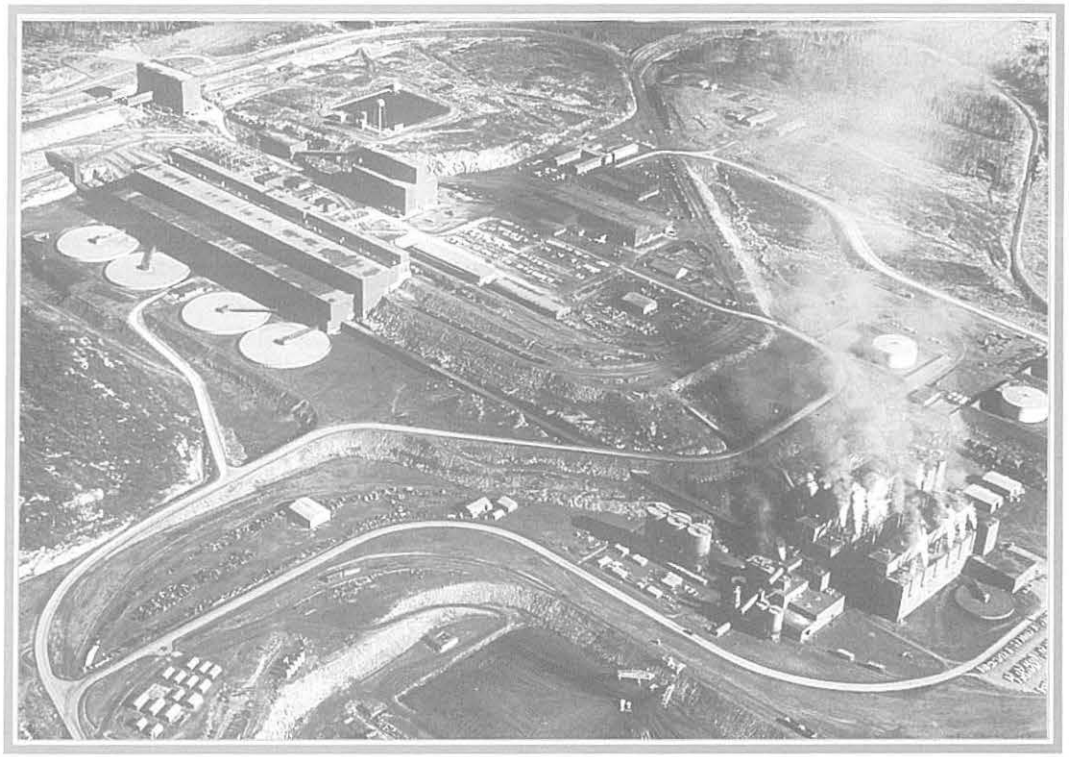
This taconite mining and processing operation, operated by LTV Steel Mining, produces iron ore that is used in LTV Steel's flat rolled steel operations. Erie Mining Co. (LTV's predecessor), built this mine and plant, which opened in 1957. It has an annual capacity of 7.5 million tons.

Initially, crude taconite is reduced by gyratory crushers, then by cone crushers. The ore is conveyed to the quarter-mile-long concentrator where it is ground in rod and ball mills. The iron content is concentrated to 67 percent. In the pellet plant, the moist concentrate is mixed with bentonite binder into "green balls." The balls are conveyed to the top of vertical shaft furnaces where they are heat hardened at 2,350°F.

Pellets are shipped on company-owned trains carrying approximately 8,000 tons of iron ore pellets 74 miles to Taconite Harbor on Lake Superior. This operation has numerous unusual locomotives, including some Baldwins, and A-B-B-A lashups of EMD F units.

Pellet trains are unloaded into dock bins, capable of holding 100,000 tons of pellets, in a matter of minutes. The pellets are moved into large lake carriers for transportation to LTV Steel's Cleveland and Indiana Harbor Works blast furnaces along the Great Lakes.

Electric power for the Hoyt Lakes plant is generated at Taconite Harbor, which produces enough power to serve a city of more than 200,000 people.



LTV's Hoyt Lakes plant, 1960.

Photo by Basgen Photography, Minnesota Historical Society

170 Hampshire
Hoyt Lakes, Minnesota

Partridge River, Inc.

Partridge River produces hardwood and softwood dimension parts used in a variety of finished wood products, including kitchen cabinets and furniture. The company was started in 1987.

Photo courtesy of Partridge River

Partridge River supplies dimensional lumber for furniture and kitchen cabinet manufacturing.

The nine-acre plant site in Hoyt Lakes was originally an elementary school, which had been destroyed by fire. The original plant was 10,000 sq. ft. It has been enlarged several times and is currently 50,000 sq. ft. With nearly 100 employees, the plant runs round-the-clock Monday through Friday. Business has grown at an annual rate of 20 percent during the past ten years.

Partridge River uses kiln-dried rough lumber from Minnesota, Wisconsin, and Michigan, and ships products across the United State and to Europe and Asia. In 1998, 50 percent of the company's sales were exported.

The company recently purchased optimizing rough mill equipment and a fingerjointer. In addition, Partridge River Superior, Inc. constructed a new 60,000 sq.ft. manufacturing facility for a branch operation in the Superior (Wisconsin) Community Development Zone.

Last year, Partridge River was honored in the Fourth Annual Joel Labovitz Entrepreneurial Success Awards by the University of Minnesota—Duluth.

ASV, Inc.

840 Lily Lane
Grand Rapids, Minnesota

ASV designs, manufactures and sells all-season, track-driven vehicles and related accessories and attachments. ASV's primary product, the Posi-Track, traverses nearly any terrain with minimal damage to the ground, making it effective in construction, landscaping and agriculture. All Posi-Tracks have extremely low ground pressure, thus will not cause significant soil compaction.

The company was started in 1983 in Marcell, Minnesota. In 1995, ASV moved to Grand Rapids, where the facilities consist of approximately 95,000 sq. ft. of production space and approximately 10,000 sq. ft. of office space, with additional buildings used for research and development and storage.

All ASV's products utilize a rubber track suspension system that provides the traction, stability and mobility of tracked vehicles, but does not damage surfaces. The tracks are made of molded rubber reinforced with layers of nylon, Kevlar and fiberglass rods. Current Posi-Tracks use engines manufactured by Isuzu and Caterpillar.

ASV's rubber-tracked Posi-Track at work.

Photo courtesy of ASV

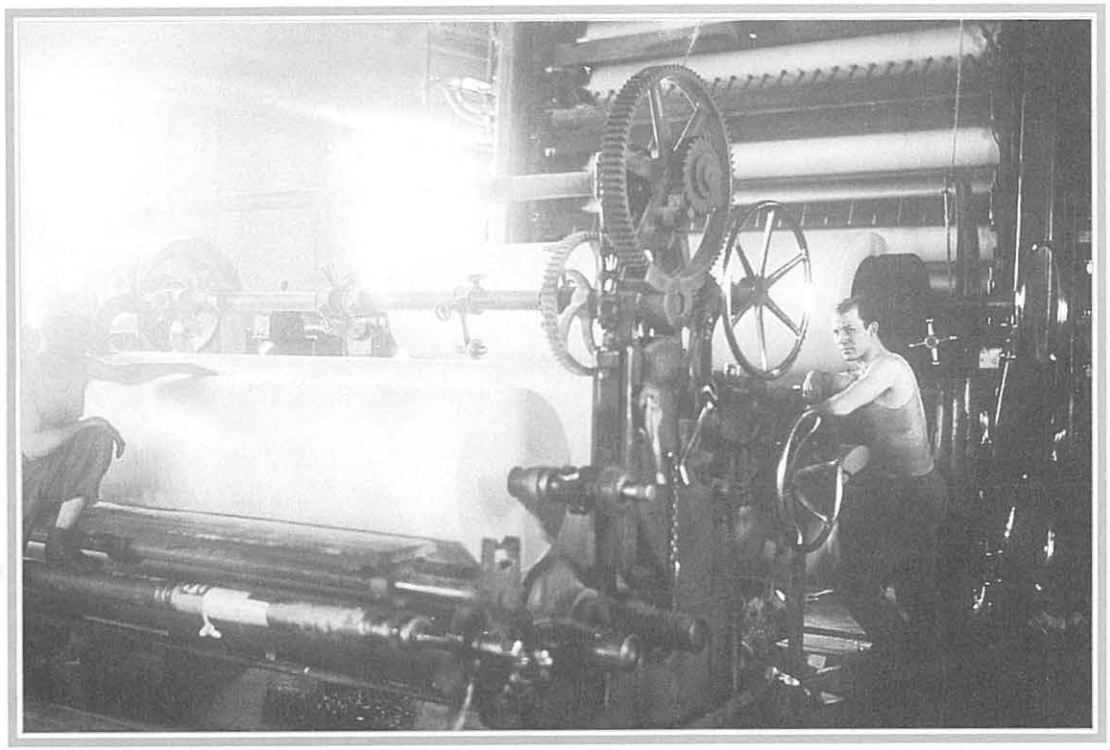
The Posi-Track can also be adapted. For example, a Posi-Track attachment can be used for laying a specially cut continuous roll of sod over 100 feet in length and weighing over 1,200 pounds. The sod, held in front of the vehicle, unrolls as the Posi-Track moves forward. The vehicle's rubber tracks then gently set the sod in place.

Posi-Tracks versatility allows its use in areas where a typical skid-steer vehicle could not operate. A grain export company is using Posi-Track's in the hold of grain vessels to level the grain for proper weight distribution or before adding more cargo, eliminating many hours of hand labor.

115 Southwest 1st Street
Grand Rapids, Minnesota

Blandin Paper Company

The steamboat era in Grand Rapids ended in the 1880s, when improvements were made along the upper Mississippi River. In 1901, the Grand Rapids Dam was completed, bringing with it the promise of power and industry.



Minnesota Historical Society

Interior of Itasca Paper Company (Blandin), 1926.

In 1902, the Itasca Paper Company was incorporated. Its first mill was a Fourdrinier mill from the Beloit (Wisconsin) Iron Works. In 1916, the mill bought the St. Paul Pioneer Press-Dispatch, which it sold in 1927 to the Ridder family. In 1929, the company took the Blandin Paper name, and in 1931 they expanded, by buying a third Fourdrinier machine, a 100-ft.-by-156-in. machine that arrived in 65 railcars. This machine is still operating today.

During WWII, the mill used German prisoners to cut pulpwood. In 1945, the mill changed from producing newsprint to making high-grade magazine paper, such as that used for Life Magazine. In 1954, Blandin began making coated paper, which was developed for bread wrappers. They also developed the "flying splice."

Blandin's pressurized groundwood mill uses mechanical, rather than chemical, processes to create pulp. Native aspen, spruce and balsam fir is used as the raw material for groundwood. Chemical pulp is purchased. The company generates twenty percent of the electricity consumed by means of hydropower and a solid fuel boiler plant.

The Finland-based forestry company UPM-Kymmene bought Blandin in 1977. Today a total of 1,400 tons per day of magazine-grade papers are run off on all four paper machines.

Hill Annex Mine

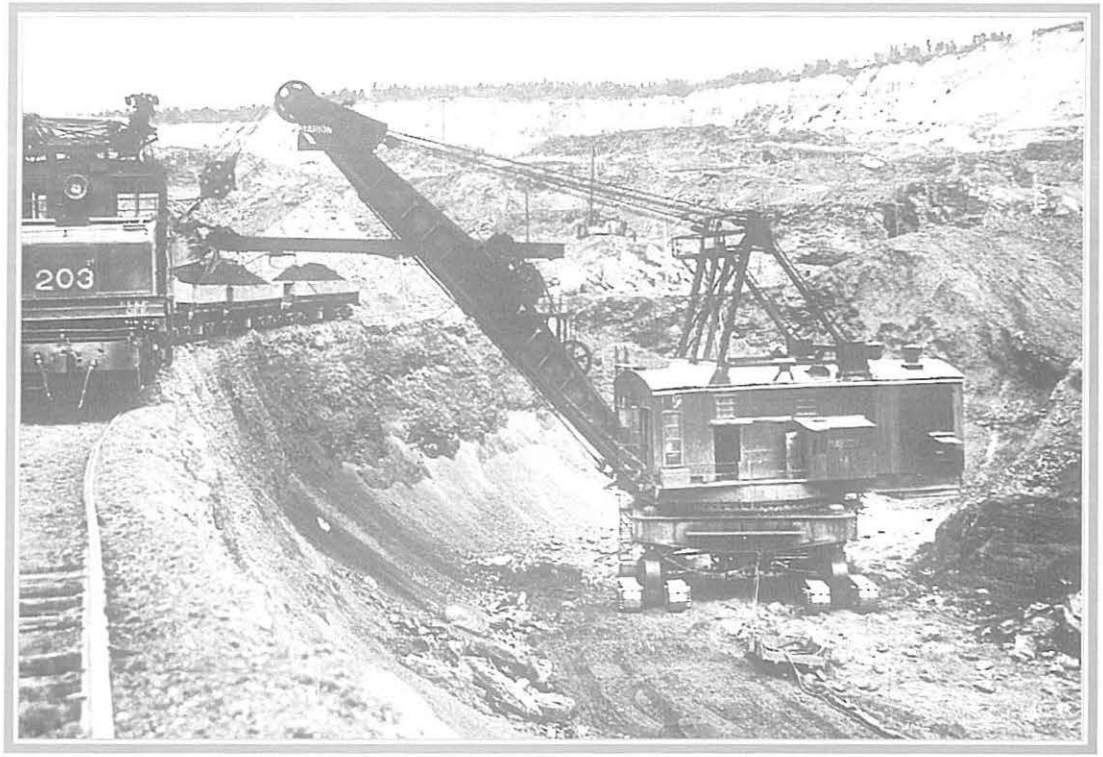
Calumet, Minnesota

The history of Hill Annex, the world's largest open-pit mine that can be toured, dates back more than a century. The land was originally leased for mineral exploration in 1892. Mining began in 1913 and continued until 1978. The mine produced 63 million tons of iron ore, and was the sixth largest producer in the state.

James J. Hill got into iron mining due to his sons' interest in two railroads--the Duluth and Winnipeg and the Duluth, Mississippi River and Northern. Hill bought the D&W when it went into receivership in 1894. The purchase included 10,000 to 12,000 acres of Mesabi land, an ore dock, grain elevators and warehouses in Superior. In 1899 he acquired the DMRN, a logging railroad that had just begun to haul iron ore.

Over its 60 years of operation, mining technology at the Hill Annex Mine changed drastically. In the early days, horses provided the power. Eventually steam and then electrical power replaced the horse-drawn equipment. Electric engines were powered by what were essentially long extension cords when they weren't under the catenary wire. Marion shovels were used as well.

When the high-grade ore finally played out, the mine was sold to the Iron Range Resources and Rehabilitation Board (IRRRB) for $1. The IRRRB developed the tour route, converted the clubhouse into a museum/visitor center, and gave tours of the mine for 10 years. In 1988, the Minnesota legislature made Hill Annex Mine a state park.



Electric shovel and locomotive, Hill Annex Mine, 1941.

Photo by Newman-Schmidt Studios, Minnesota Historical Society

Old Mine Road
Keewatin, Minnesota

National Steel Pellet Company

National Steel Pellet Company (a subsidiary of National Steel Corporation) is located in the heart of the Mesabi Iron Range. The company produces high grade taconite pellets used as the basic raw material for finished steel. This plant is capable of producing 5.35 million tons of pellets annually. The plant has produced over 110 million tons of taconite pellets since it opened in 1967. Peak employment occurred in 1980 with 1,100 employees. Today, process improvements allow the same production level with about 500 workers.

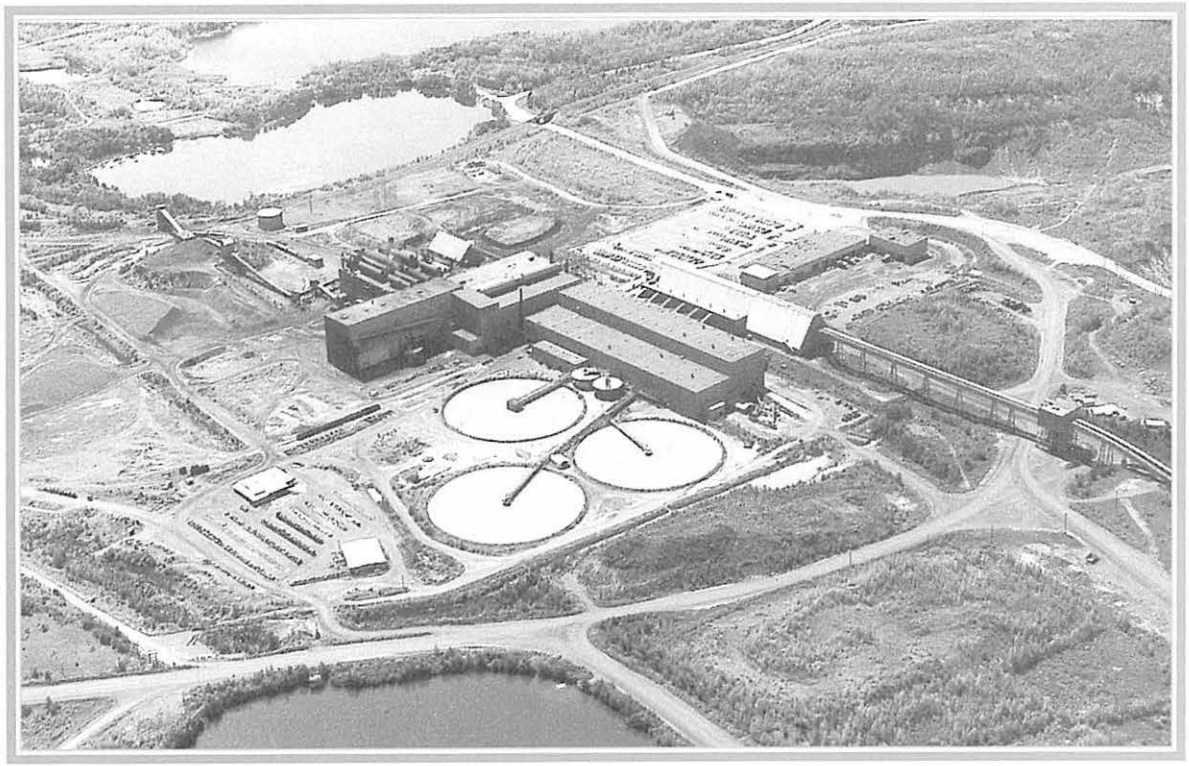


Photo courtesy of National Steel Pellet Company

View of National Steel Pellet Company.

First, low-grade iron ore called taconite is mined. This taconite is about 28 percent iron. Processing the taconite rock removes most of the sand/silica and prepares it for shipment. Once the ore is mined, it is crushed and ground to a fine powder. The fine ore is mixed with water and run near a series of magnets, which removes the iron particles. Everything else is discarded. For every ton of iron retained, two tons of tailings, or waste, are discarded.

Next, the water is removed, clay is added as a binder, and small pellets about the size of a marble are formed. These iron ore pellets are heated in a large, natural gas fired kiln to 2,400°F to harden them for shipment. The pellets are loaded onto trains that take the ore directly to National Steel's Granite City, Illinois steel plant or to BNSF's ore dock in Superior for shipment to National Steel's blast furnaces and steel mills in Detroit.

K-Byte Hibbing Manufacturing

3125 14th Avenue East
Hibbing, Minnesota

K-Byte Hibbing Manufacturing, founded in 1974, is a contract manufacturer of electronic and electromechanical assemblies. It also provides testing, design, circuit board assembly, and subsystem integration for original equipment manufacturers (OEMs). The firm's customers include telecom, medical, banking, industrial, networking and computer industries

One of the largest employers on the Iron Range, K-Byte Hibbing has rapidly become one of America's leading electronic contract manufacturers. The Hibbing plant accounted for 43 percent of K-Byte Manufacturing's net sales in 1999. Capabilities encompass design, purchasing, surface-mount and through-hole assembly, final assembly, board-level and system testing, final packaging, and repair.

The firm was a pioneer and remains a leader in manufacturing surface mount technology (SMT) assemblies. Using the latest production equipment, SMT products are manufactured with components on topside only, as well as top and bottom. Mixed technology boards combining traditional through-hole and SMT components are also produced routinely.

Computer-controlled automatic insertion equipment is used to insert through-hole axial, radial, and dip components. Soldering is performed with computer-controlled dual wave soldering equipment.

Photo courtesy of K-Byte

Testing of electric and electromechanical assemblies at K-Byte.

Before shipping, products are thoroughly tested. In-circuit, functional and system tests are performed using state-of-the-art automatic testing equipment. When required, products undergo burn-in, including power cycling, elevated temperature or temperature cycling from subfreezing to elevated temperatures.

Hull–Rust Mahoning Mine

Hibbing is the site of the world's biggest open pit iron ore mine, the Hull-Rust Mahoning Mine. Developed by the Lake Superior Iron Company, the Hull, Rust, Mahoning, Burt, and Sellers mines were eventually combined, creating a mine more than three miles long, two miles wide and 535 ft. deep. More than 1.4 billion tons of earth have been removed from the mine.

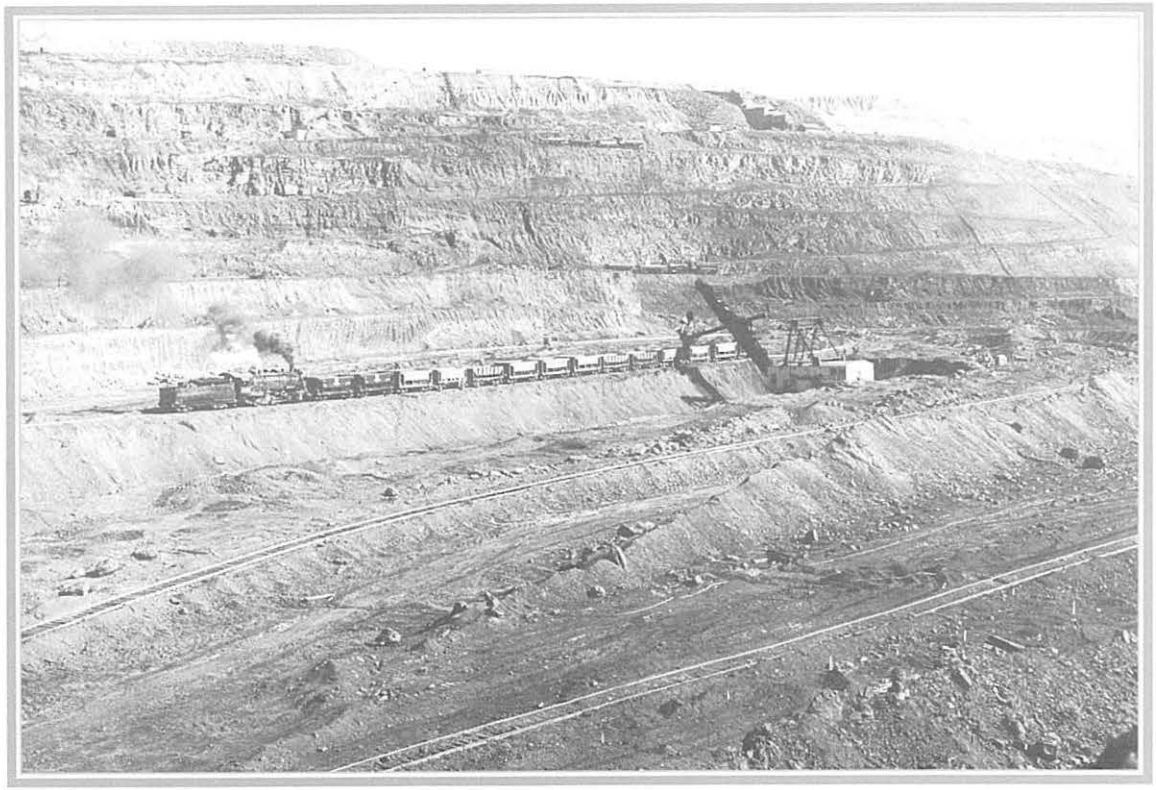


Photo by William Roleff, Minnesota Historical Society

Mahoning side of Hull-Rust open pit mine, 1942.

The Mahoning Mine was the first open pit mine on the Mesabi Iron Range. The first train of Mahoning ore shipped in 1895 over the Duluth, Mississippi River and Northern Logging Railroad to Swan River. From Swan River, it connected with the Duluth and Winnipeg Railroad line to ore docks on Allouez Bay in Superior. In 1899, James J. Hill acquired these railroads to provide a direct rail connection for moving Dakota grain to the head of Lake Superior.

One steam shovel could mine as much Mesabi ore in an hour as 500 miners could bring up in a day from the old deep mines. At peak production in the 1940s, as much as one-quarter of the ore mined in the U.S. came from Hull-Rust.

The Village of Hibbing grew up near the Hull-Rust pit--too near. In 1918, all buildings in the north section, then the heart of the town, were mounted on steel wheels and moved two miles south so the ore below could be mined.

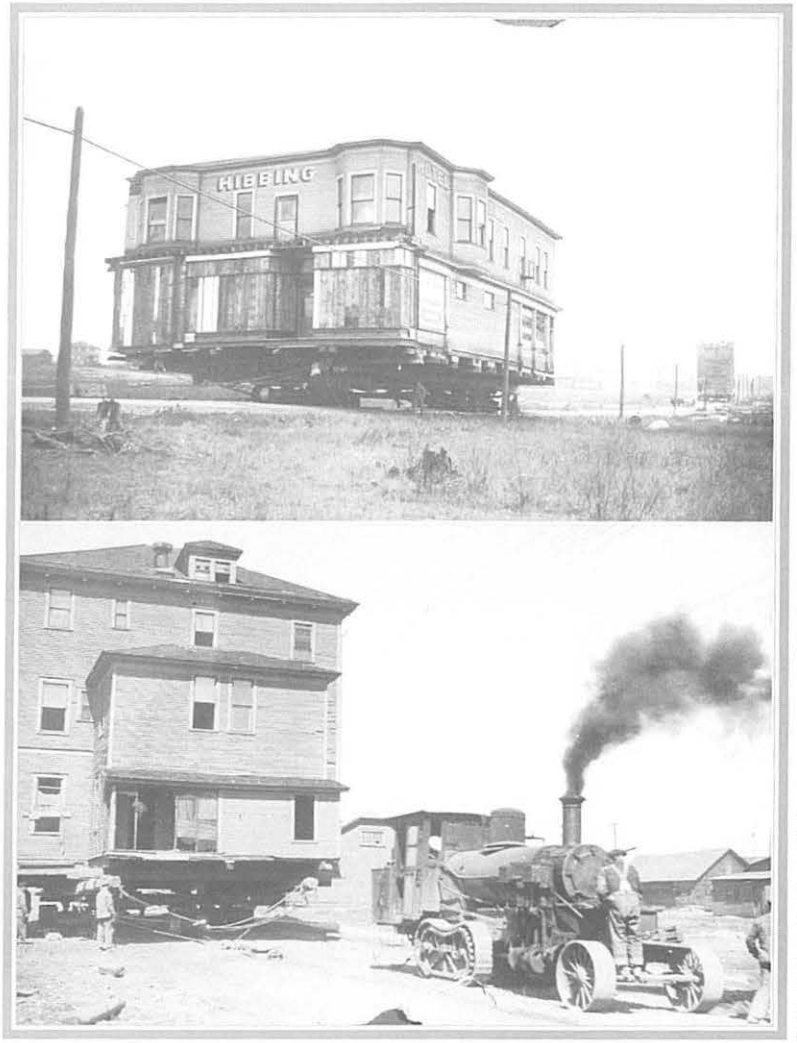
Hibbing on the Move

Hibbing, Minnesota

Early towns on the Iron Range were often threatened by the discovery of new ore deposits, especially on the Mesabi. At Hibbing the magnitude of townsite displacement far exceeded that at any other community on the range. Problems associated with Hibbing's "North Forty" continued for decades. Nine years after its founding in 1891, rumors began to circulate that iron ore lay beneath the town. By 1909, dynamite blasting and extraction activities had moved so close that buildings in the enclave had shifted on their foundations.

From 1912 to 1914, beleaguered residents, now surrounded by 'continuous yawning chasms' on three sides, filed injunctions against the Oliver Iron Mining Company. Despite further legal maneuvers the company began to move buildings to a site about a mile further south in 1919. Some structures were razed, but many buildings were transplanted to the new area.

The primary move was completed in 1921, but many homes and commercial buildings remained abandoned on the old site for an additional twenty-five years. Legal issues were not resolved between Oliver and the remaining property owners until the late 1930s and the last buildings were razed after WWII. The site was soon swallowed by the Hull-Rust Mahoning Mine.



Northeast Minnesota Historical Center

Hibbing Hotel and a residence on the move during the 1919 relocation.

Highway 169
Soudan, Minnesota

Soudan Mine

The first ore was shipped from the Soudan Mine in 1884 to Agate Bay at Two Harbors. The mine was financed by Charlemagne Tower's Mountain Iron Co. with rail shipment provided by its Duluth and Iron Range Railway subsidiary, Minnesota's first ore-carrying railroad. Experienced miners recruited from northern Michigan originally dug the ore from open pits. The non-magnetic oxygen-rich hematite, high in iron and low in phosphorus, was used as a catalyst prior to the use of oxygen lances in steelmaking.

Photo by Minneapolis Tribune, Minnesota Historical Society

Lower level of the Soudan Mine after closing, 1963.

By 1888 it had become necessary to move underground to mine the ore. The Soudan was an extremely safe hard rock mine where little shoring was needed--the reason it can be open to the public today--and no lives were lost. It was closed in 1962 and given to the state and made a park in 1965. Visitors can travel 2,400 ft. underground using 1880s hoisting machinery. Many structures, including an ore crusher, are extant above ground with many tools near where they were when the mine was shut down.

In a unique re-use, the mine now houses the University of Minnesota neutrino research facility, MINOS (Main Injector Neutrino Oscillation Search), in newly blasted space. The Fermi National Accelerator Laboratory in Chicago will generate a beam of neutrinos and aim it at the detector here to determine if the subatomic particles have mass. The detector is assembled from inch-thick 10-ton steel plates made of Minnesota taconite and weighs 10 million tons. The $146 million dollar experiment will involve 200 scientists.

Dorothy Molter Museum

Highway 169 East
Ely, Minnesota

Dorothy Louise Molter, known to paddlers of the Boundary Waters Canoe Area Wilderness as the "Rootbeer Lady," first visited remote Knife Lake, 40 miles northeast of Ely, in 1930 on a family fishing trip. She returned to work at the Isle of Pines Resort each summer while finishing her nursing education in Chicago, and came to stay in 1934. When Bill Berglund, the resort's owner, died in 1948, he willed the property to Molter.

Although dubbed the "loneliest woman in America " by the Saturday Evening Post, Molter was not lonely. She served 11,000 to 12,000 bottles of her homemade root beer ("three burps to the bottle") to the thousands of visitors who passed through each year. Her nursing skills were used to provide first aid to the travelers and earned her yet another nickname, "Florence Nightingale of the North."

The Wilderness Act resulted in the resort being condemned and purchased by the U.S. Government and Molter was ordered to leave. Due to a petition drive by her many friends, Molter was granted lifetime tenancy in 1975 and stayed there until her death in 1986.

Local people wishing to preserve Molter's home had to move quickly to prevent the Forest Service from burning down the resort. The cabins were dismantled and the logs and her belongings moved by dogsled, airplane and snowmobile. In 1993, on what would have been her 86th birthday, the museum opened in the reassembled cabins. It honors Molter, but also preserves a typical old-time resort.

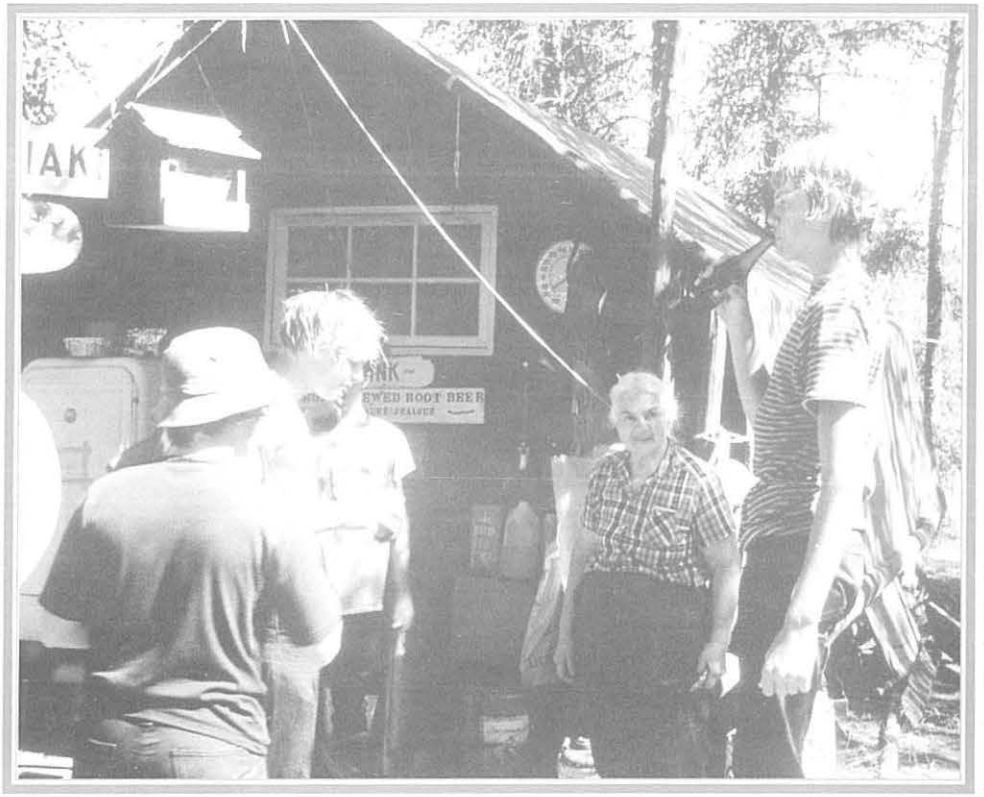


Photo courtesy of Dorothy Molter Museum

Canoeists stop by to see Dorothy and have root beer.

205 Sheridan Street
Ely, Minnesota

Wintergreen Northwoods Apparel

In 1985 Susan Schurke developed her design talents by creating Eskimo-style clothing from new synthetic fabrics for members of the 1986 Steger International Polar Expedition team. The team included her husband, Paul, and was the first confirmed trek to the North Pole without resupply.

Photo courtesy of Wintergreen Northwoods Apparel

The sewing room at Wintergreen Northwoods Apparel.

From this beginning 14 years ago grew Wintergreen Northwoods Apparel, where garments for outdoor activities are still crafted one at a time. Having outgrown the Schurke garage in 1991, doing so now involves a workforce of 40 seamstresses, designers, cutters, clerks, shippers and managers. Retail and catalog functions are now part of the operation, which takes up three buildings.

Having met while working for an organization that provided canoe trips to the Boundary Waters Canoe Area Wilderness for disabled people, Paul and Susan have continued their commitment to enjoying the outdoors and preserving the environment. In Susan's business she has made a commitment to providing meaningful work at livable wages to revitalize her small town. Manufacturing scrap is kept to a minimum and everything possible is recycled. Some of the garments are made from recycled polyester fleece.

Paul operates Wintergreen Dogsled Lodge, which offers winter skills classes and dogsled and ski treks and the occasional trip to the Arctic. Paul has returned four times to the North Pole, including leading an expedition at the request of the Chinese government in 1995 and trekking there with Admiral Robert Peary's great grandsons in 1997.

Pioneer Mine

Pioneer Road
Ely, Minnesota

The quick success of the Minnesota Iron Co. at Soudan attracted the attention of major steel producers. Henry H. Porter, a Chicago railroad magnate with interests in the Illinois Steel Co., headed a syndicate, which acquired 25,000 acres northeast of Charlemagne Tower's property, hoping to squeeze him out. After escalating attempts to buy Minnesota Iron Co., the syndicate eventually threatened to reveal Tower's fraudulent land claims and the elderly man agreed to sell in 1887.

Porter reorganized the company, mechanizing some of its operations, adopting underground mining, and developing the Chandler Mine near present day Ely, shipping its first ore in 1888. The company began shipping ore from several mines nearby. The Pioneer Mine was next in 1889. Compared to Soudan, the soft ore here broke up easily and was less difficult to dig and process, but it caused frequent cave-ins and the deaths of many miners.

The Pioneer came to be considered the richest of Minnesota's underground mines, yet it closed in 1967. The ore body was not exhausted, but underground mining had become uneconomical. Its operations employed approximately 600 miners to produce 1,000,000 tons annually, compared to the open pit mines, which produced about five times the tonnage with about 100 workers.

Photo by Larry Mishkar

Remaining headframe and water tower at the Pioneer Mine.

Remaining structures include the captains' and miners' dries; the shaft house; the stack, built in 1902 to create a draft for boilers powering early steam hoists; the 1927 engine house powering later electric hoists; the steel headframe and a water tower. The nearby lake was created by subsidence.

350 Harbor Drive
Duluth, Minnesota

William A. Irvin

The *William A. Irvin*, 610-ft. long flagship of the U.S. Steel Great Lakes Fleet, made her maiden voyage in 1938. She was named after the president of the company. U.S. Steel executives and VIPs sailed with the boat from Ohio to load iron ore in Lake Superior.

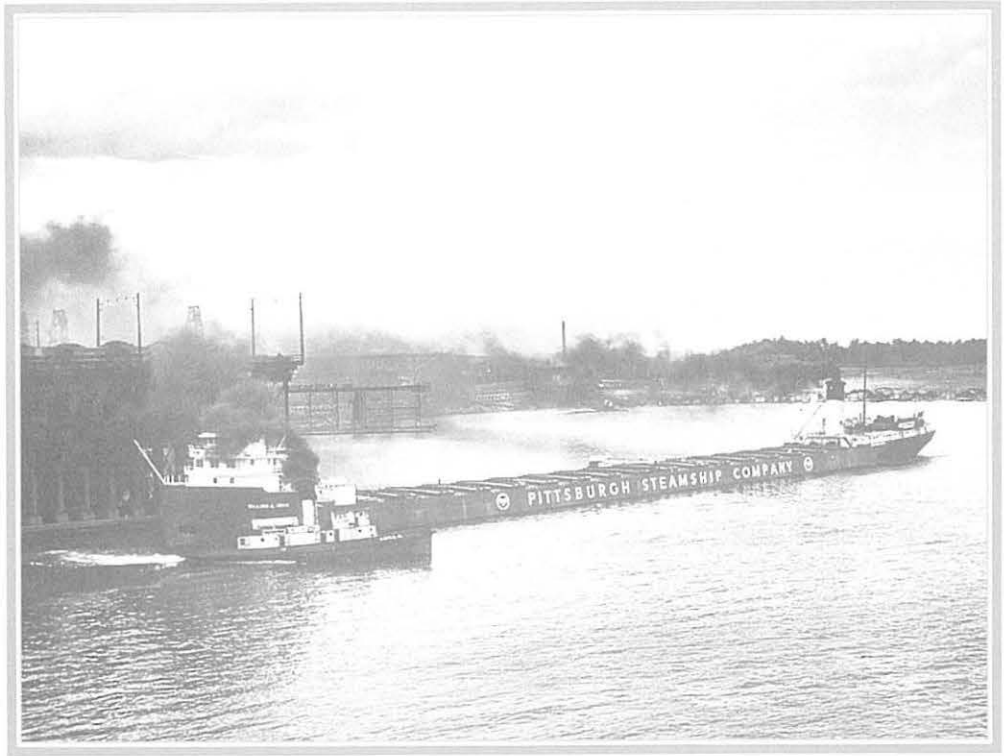


Photo by William Roleff, Minnesota Historical Society

William A. Irvin *towed from Two Harbors ore docks by tug* Edna G.

The *Irvin* was one of the first lakers to use marine turbines and was equipped with Foster Wheeler type D boilers steaming DeLaval cross compound geared turbines of 2,000 shaft hp. She could attain a top speed of 11.1 mph loaded or 12.5 mph when traveling light.

The capacity of the *Irvin* varied by type of cargo. She could carry 14,088 tons of iron ore, 11,612 tons of coal, or 10,500 tons of grain. In 1940, the *Irvin* set an unloading record that still stands--13,856 tons of ore in 2 hours 55 minutes. This was quite a feat for a boat using on-shore Hulett cranes. These large clamshell-type buckets take about 17 tons of ore out of the hold per bite.

Modern ore boats have self-unloading equipment that allows them to quickly get the cargo from the hold to the dock. The *Irvin* was too short and too slow to be fitted with self-unloaders, and was therefore retired in 1978.

The *Irvin's* flagship appointments made her more attractive than other retired boats of the time and she was spared the scrapping torch. She now resides in a former WWII shipbuilding slip, giving interested people a view into the world of the merchant mariner.

Blatnik Bridge

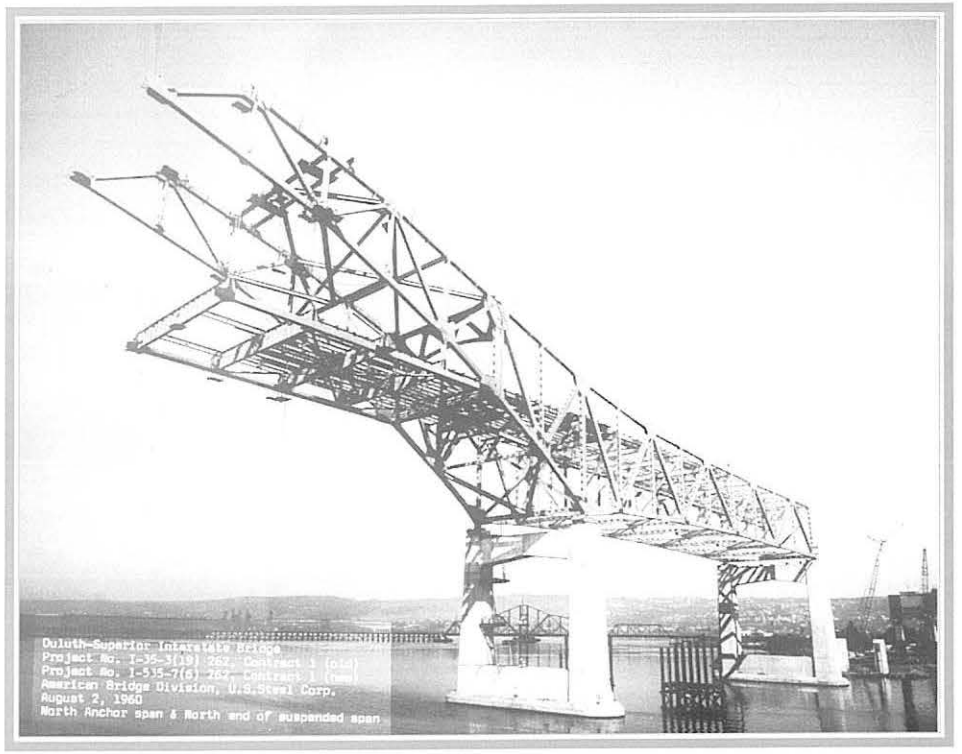
Interstate 535
Duluth, Minnesota--Superior, Wisconsin

The Blatnik Bridge, at 7,980 ft, is the second-longest bridge in Minnesota. (The upstream Bong Bridge is 8,395 ft.) The bridge and its 2,800-ft. approaches were dedicated in 1961.

In 1971, the bridge was renamed to honor Representative John Blatnik, who served in the U.S. House for 28 years. Blatnik played a leading role in the establishment of the St. Lawrence Seaway, which helped Duluth-Superior become a major inland port, and also helped establish the 41,000-mile interstate highway system. As part of this system, the Blatnik bridge was eligible for Federal Highway funding, making it toll-free.

The bridge is nearing the end of an eight-year reconstruction project, which has included widening and replacing the bridge decking, and repainting. Stainless steel link hinge pins have replaced low-alloy steel pins, 5 to 9 inches in diameter, which act as hinges that move with expansion and contraction of the bridge. These fracture-critical members absorb the moving load of high volume overhead traffic and resist the heavy use of road salt and the big temperature swings that occur in the rugged environment.

The painting project carried the challenge of not only removing lead-based paint and repainting all of the steel, but also applying a required Minnesota Department of Transportation Special Surface Finish to cover 300,000 sq. ft. of concrete surface area.



Northeast Minnesota Historical Center

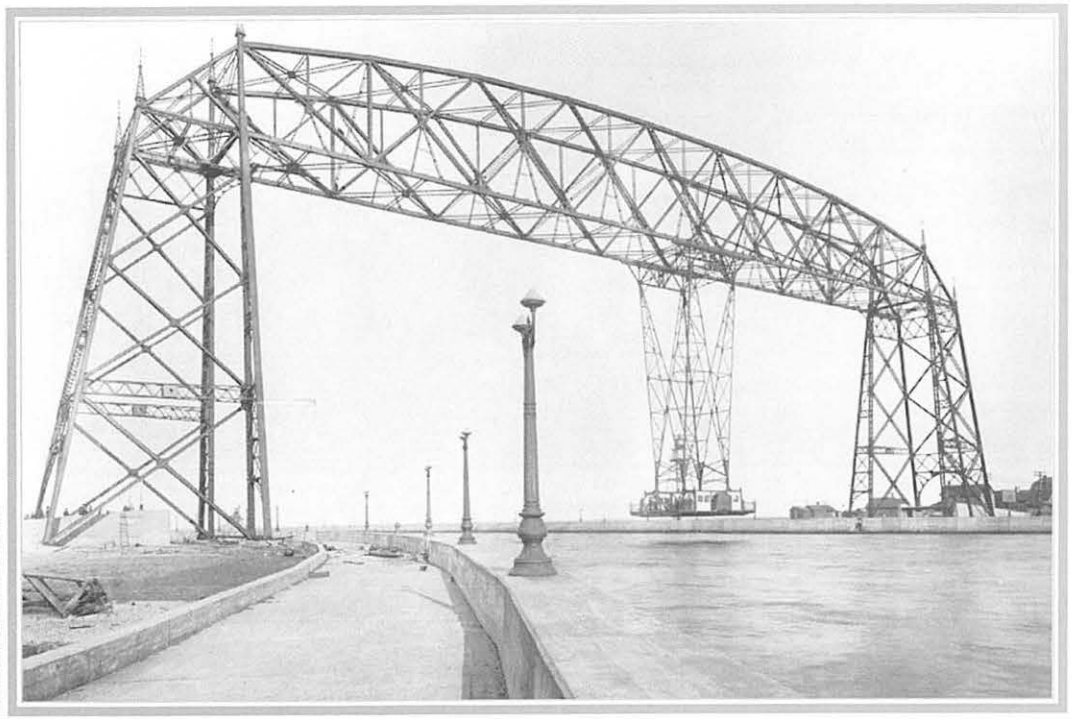
The partially built Blatnik Bridge high above the Saint Louis River.

This bridge carries as many as 100,000 cars per day. When its predecessor, the 1896 Interstate Bridge was constructed, only 90 motor vehicles existed in the United States.

Duluth Ship Canal
Duluth, Minnesota

Aerial Lift Bridge

The 300-ft. Duluth Ship Canal, built in 1871, isolated the people of Park Point from Duluth proper. Initially, the area was served by ferries but by 1900 there was a demand for more reliable access. The Aerial Transfer Bridge, completed in 1905, used two 40 hp motors to carry a suspended gondola car across the canal.



Lake Superior Maritime Museum

The Aerial Transfer bridge carries a gondola over the ship canal, 1905.

In the 1920s, a design for a new bridge was proposed and a truly unique bridge was created. New towers were integrated with the existing ones, and a 386-ft, 900-ton center lift span was added. The bridge was lifted 5,000 times during 1930, its first year of operation. In 1978, its peak year, the bridge had 7,583 lifts.

The bridge underwent a major overhaul in 1985. The lift motors were replaced with four new 100 hp motors, which were moved off the span (two at each end.) Moving the motors increased the carrying capacity of the bridge, which has a mere 15-ft. clearance above the water when it is closed. Today the bridge takes two minutes to go up and two minutes to return.

Repainted every 15 years, the bridge requires so much paint that the counterweights must be readjusted after painting. The bridge underwent another major overhaul this winter, opening to traffic in late March.

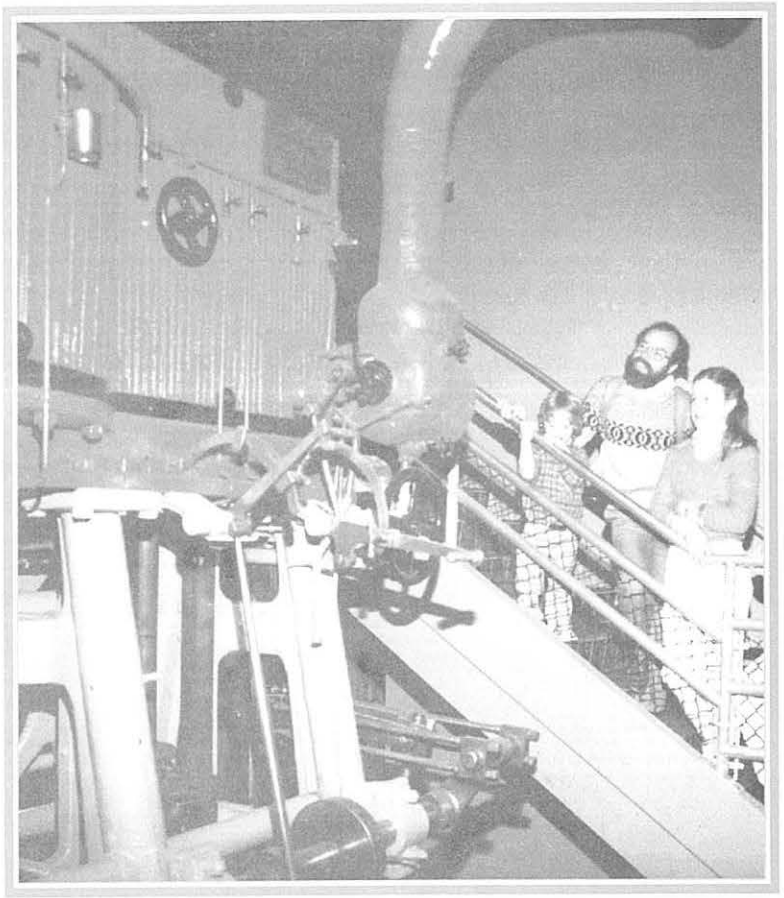
Lake Superior Maritime Museum

Canal Park
Duluth, Minnesota

The Twin Ports are located 1,900 miles from the Atlantic via the St. Lawrence Seaway. Together they constitute the most inland seaport in the world. Nearly 300 foreign-flag vessels and an average of a thousand Great Lakes bulk freighters, "lakers," visit each year. One of the best places to see these boats is the Lake Superior Maritime Visitors Center, located near the Aerial Lift Bridge in Canal Park.

The visitors center, operated by the U.S. Army Corps of Engineers, features information on the history of Lake Superior, the shipping activity of the Twin Ports, and the history and current projects of the Corps of Engineers throughout the region. Among the attractions within the modern two-story building are full-sized replicas of ship cabins, the interior of a Great Lakes freighter pilothouse, an operating steam engine, and some of the finest scale ship models in the Midwest. Outdoor exhibits include a ship's propeller, capstan and anchors, including a rare McDougall anchor used aboard a whaleback steamer.

Canal Park takes its name from the adjacent Duluth Ship Canal, which was completed in 1871. Superior, which flanks the natural harbor inlet, realized the impending loss of its commercial advantage, and sought an injunction to stop work on the canal. With a modest passage dug, natural scouring increased the opening and the canal was finished before the injunction arrived.
The museum is adjacent to the Duluth Lake Walk, a four-mile paved bike path and pedestrian walkway along Lake Superior's shore.

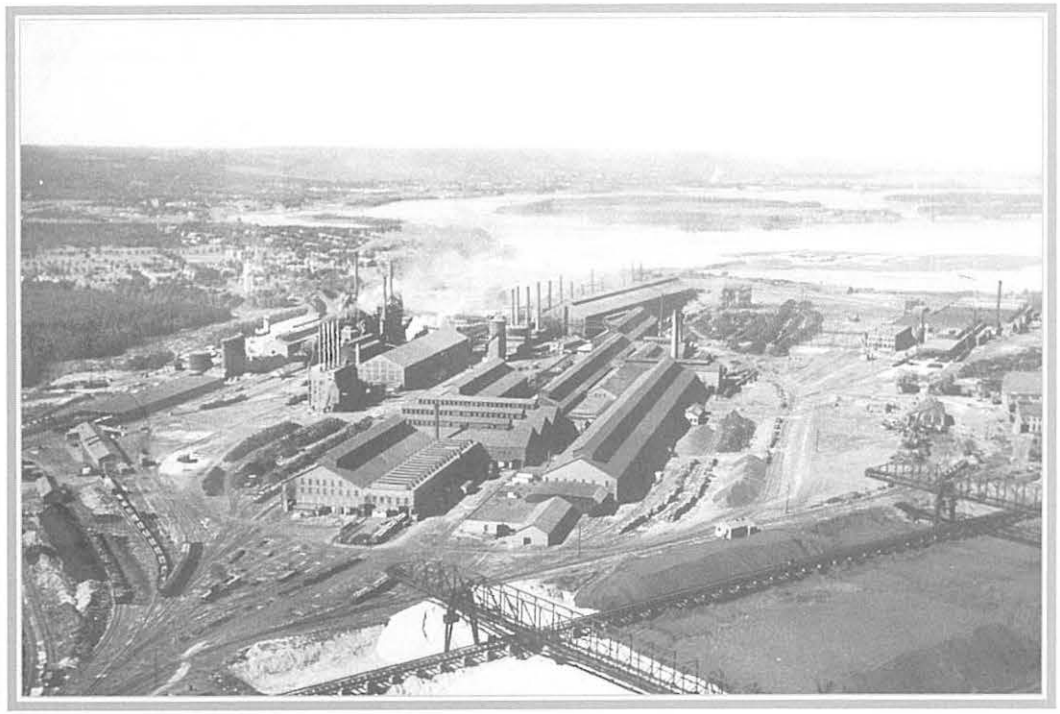


Lake Superior Maritime Museum

Visitors view a steam engine from the 1908 Army Corps of Engineers tug Essayons.

Morgan Park and U.S. Steel

In the early 1900s, many Minnesotans were bothered by the fact that the Iron Range's mineral wealth was exported as raw material, rather than finished (and more lucrative) products. The state planned to impose a tonnage tax on exports, and used this threat to encourage U. S. Steel to build a plant in Duluth.



Northeast Minnesota Historical Center

View of U.S. Steel's American Steel and Wire Division Plant, 1951.

As part of the 1,700-acre factory site in West Duluth, U.S. Steel built adjacent workers' housing, based on the Pullman and Gary models of company housing. Although the terrain didn't require it, the streets were curved, and major community buildings were located in the central part of Morgan Park.

Laid out by Movell and Nichols, company-owned and operated facilities included a bank, a hospital, stores, and even two churches--one Protestant and one Catholic. Although Morgan Park was within the Duluth city limits, the company also provided schools and services such as snow plowing. The Morgan Park Company, which administered the company town, encouraged civic involvement through groups such as the Good Fellowship Club.

The company built hundreds of homes, ranging from a one-bedroom bungalow for the company nurse, to four-bedroom, three-story homes for executives, and bunkhouse-style dormitories for the bachelors. All were concrete and stucco, designed by Frank Robinson, of the Chicago firm of Dean and Dean.

After the Depression, U.S. Steel began to divest itself of property nationwide, and offered the homes to residents. In 1942, the unsold homes were transferred to a realty company. Until the mill closed in 1971, however, most Morgan Park residents were still affiliated with U.S. Steel.

Oliver Bridge

Minnesota Hwy 39; Wisconsin Hwy 105
Duluth, Minnesota -- Oliver, Wisconsin

The Oliver Bridge, approximately 1,900 ft. long, links Duluth with the town of Oliver, Wisconsin. Built in 1910, the 24-ft. wide bridge has an upper level for railroad traffic, and a lower deck for pedestrian and vehicle traffic. The bridge is owned by the Duluth, Missabe & Iron Range Railway, which maintains the upper train deck. Minnesota and Wisconsin split the cost of maintaining the roadway as part of a deal struck when Interstate 35 displaced some of DMIR's railyards in Duluth.

The Oliver Bridge is named in honor of steel magnate Henry Oliver, who established Oliver Mining Company in 1892. The bridge was built to serve the Duluth's 1915 United States Steel Plant by U.S. Steel subsidiaries Spirit Lake Transfer Railway and Interstate Transfer Railway.

The main channel crossing is a 300-ft. rigid-connected Warren truss swing span on concrete piers. Originally, the main channel crossing could be opened, as mandated by the War Department, but the turning mechanism has been deactivated.

Both levels of the bridge are decked with wood timbers. The bridge is currently slated for a $5.4 million rehabilitation that will replace the distinctive wooden planks and side rails with standard-issue concrete. The upper deck, which carries trains, will receive some improvements, but remain essentially the same.

Northeast Minnesota Historical Center

View of bridge construction from Oliver, Wisconsin.

200 Carterette Street
Duluth, Minnesota

ME International

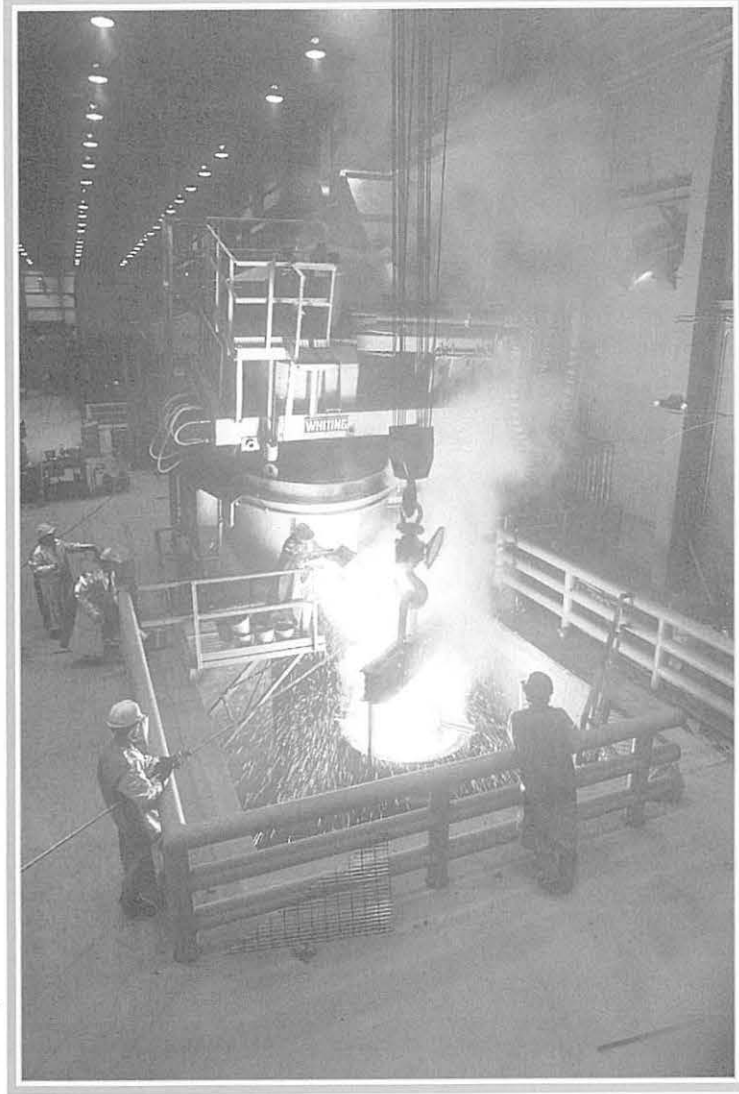


Photo courtesy of ME International

The Duluth melt shop makes a pour after a 90-minute heat.

ME International (MEI), in the Gary section of Duluth, is the largest steel foundry built in North America in the past 50 years. The plant produces wear, or consumable, parts for the mineral processing industry, specifically white iron and alloy castings that are used to line grinding mills used in processing iron, copper, gold, and silver.

Headquartered in Minneapolis (and now a wholly-owned subsidiary of GS Industries, Charlotte, North Carolina) MEI grew out of Minneapolis Electric Steel Castings. Owned and operated by the Sheldon Wood family until the early 1970s, the business was sold to the Evans Products Company, and grew rapidly. In the mid-seventies, a doubling of market demand was projected. The Minneapolis site had no room for expansion and this state-of-the-art manufacturing facility was built in Duluth. The first casting was poured here in 1980.

In 1987, MEI was formed by a joint-venture buyout of Evans Products by the steel companies Stelco and Armco Inc., which consolidated all the equipment from Minneapolis at this Duluth facility.

This facility uses a unique dry sand vacuum molding process (V-Process) which eliminates the need for binders, and produces castings with a well-defined surface finish. The lack of binders also improves workplace air quality and enhances process control.

Workers at the plant can produce a volume of 60,000 castings annually, a yield of 27.5 tons each year, the world's largest production tonnage of abrasion-resistant wear parts. These individual parts range in size from 200 to 16,000 pounds.

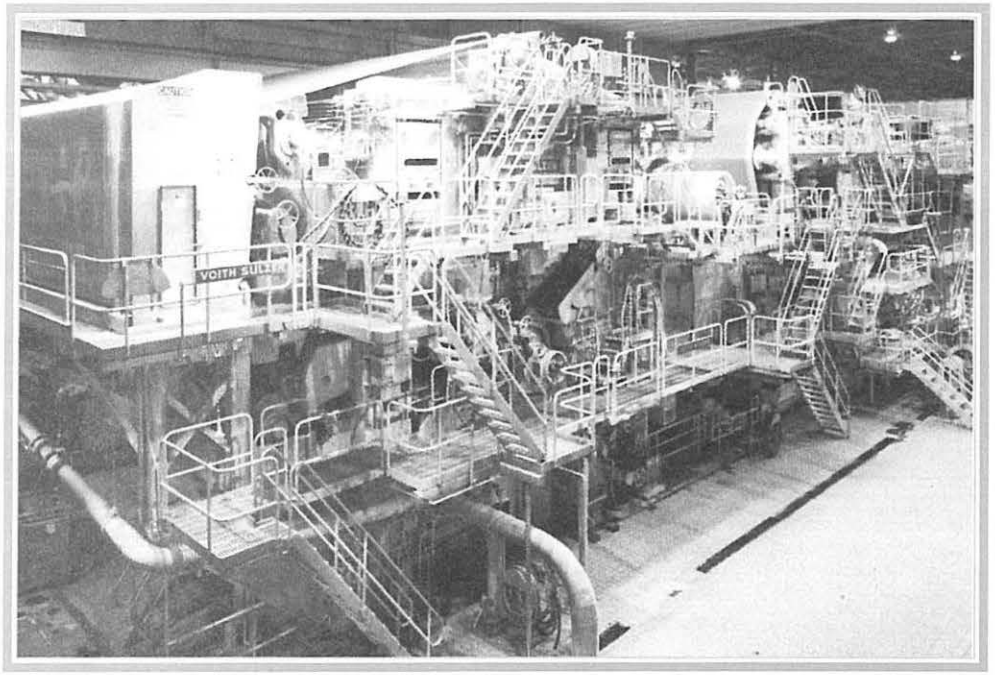
Lake Superior Paper Industries

100 North Central Avenue
Duluth, Minnesota

Lake Superior Paper Industries began in 1987 as the result of an ambitious $400-million joint venture between Pentair, Inc., a tool and pump manufacturer headquartered in St. Paul, and Minnesota Power, a utility based in Duluth. Consolidated Papers bought LSPI and the later-constructed Superior Recycled Fiber Industries in 1995. Consolidated Papers began in 1894 as a waterpower company in Wisconsin and is now North America's top producer of coated printing paper.

When built, LSPI was the newest and most efficient paper mill in North America and was producing supercalendered, publication-grade paper (SCA) for a highly competitive U.S. market. By the end of its second year of operation, LSPI was operating at 87 percent of its 243,000-ton-per-year capacity and had positioned itself as the domestic leader of SCA. It now fulfills 19 percent of the SCA demand in the U.S. and Canada and employs 325.

The site's M.L. Hibbard Station was built in 1930 by Minnesota Power, which until then had relied almost completely on hydroelectric power. The location on the St. Louis River waterfront provided ample water and allowed coal to be cheaply backhauled up the Great Lakes by ore carriers. The station generated 25,000 kw. It lay unused since the early 1980s and might have become a wrecking ball casualty had LSPI not needed steam. Boilers 3 and 4 were retrofitted to produce steam by burning wood bark and waste chips. Together they are fueled by 85-90 percent wood and 10-15 percent coal. Low-sulfur coal assures hotter, more complete combustion.



Swiss-made Voith Sulzer paper making machine.

Photo courtesy of Lake Superior Paper Industries

1320 West Railroad Street
Duluth, Minnesota

Georgia—Pacific

Superwood Corporation started manufacturing flat-sheet hardboard at this facility in 1949. The company was organized as an outgrowth of Superior Wood Products Company in 1945 and Super-Wood ("Super-Wood iron-hard board") was the name used for its hardboard product. Superwood became a wholly owned subsidiary of Georgia-Pacific in 1986. Georgia-Pacific began in 1927 as Georgia Hardwood Lumber Company, a lumber wholesaler, in Augusta, Georgia.

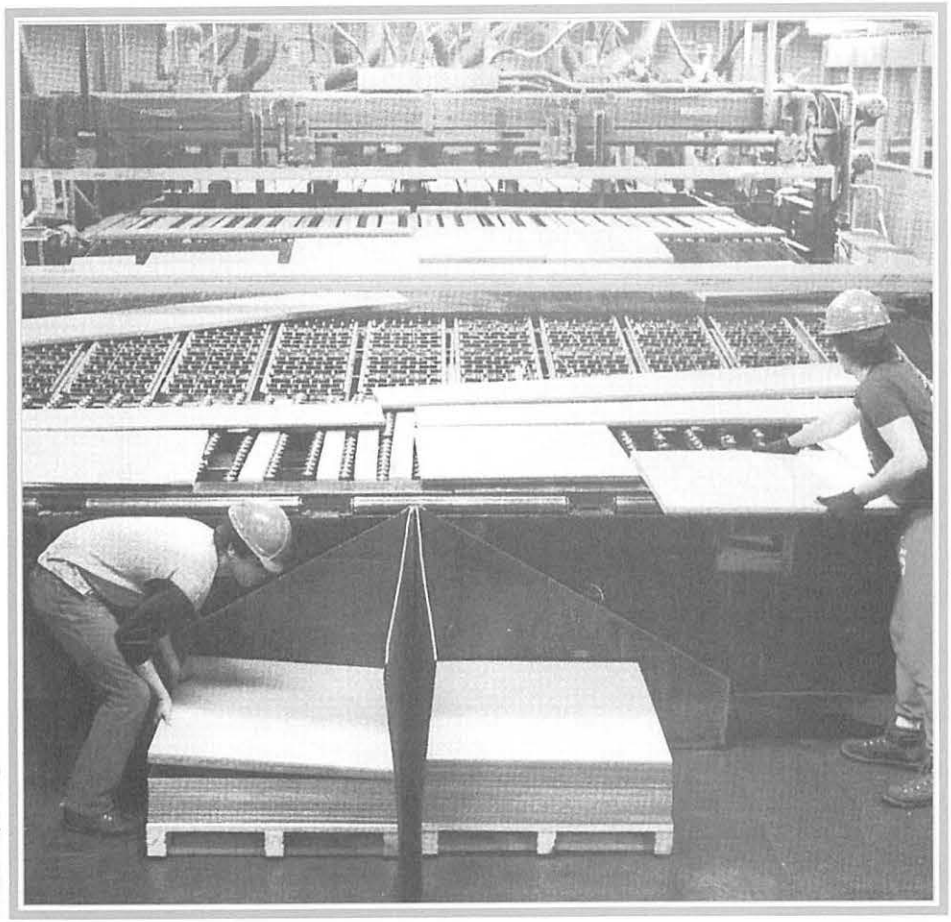


Photo courtesy of Georgia Pacific

Jenkins saw used for cut-to-size requests.

Hardboard should not be confused with particleboard, which is made from wood chips, which have not been refined into distinct fibers. Since wood is naturally fibrous, hardboard and other fiberboards exploit its inherent strength to a greater extent. Hardboard can be produced via either a wet or dry process. This plant has four wet-process lines with an annual production capacity of 350 million square feet.

Wood chips are cooked under heat and pressure to soften them and dissolve some of the natural resin. The softened chips are fed into refiners where opposite rotating grinding disks shred them into fibers. The process is much like papermaking in that a pulpy mass moves on a Fourdrinier wire. Water is drawn off through the screen and then through a series of press rolls with a wringing action. The resulting mat passes through hydraulic presses that use heat (380-550°F) and pressure (500-1500 psi) to weld the fibers back together, producing properties unattainable in natural wood. Press sizes include one 4-by-8 ft.; one 5-1/3-by-9-ft.; one 4-by-16-ft.; and one 5-1/2-by-16-ft. which produce hardboard ranging in caliper from 1/10 to 5/16 of an inch.

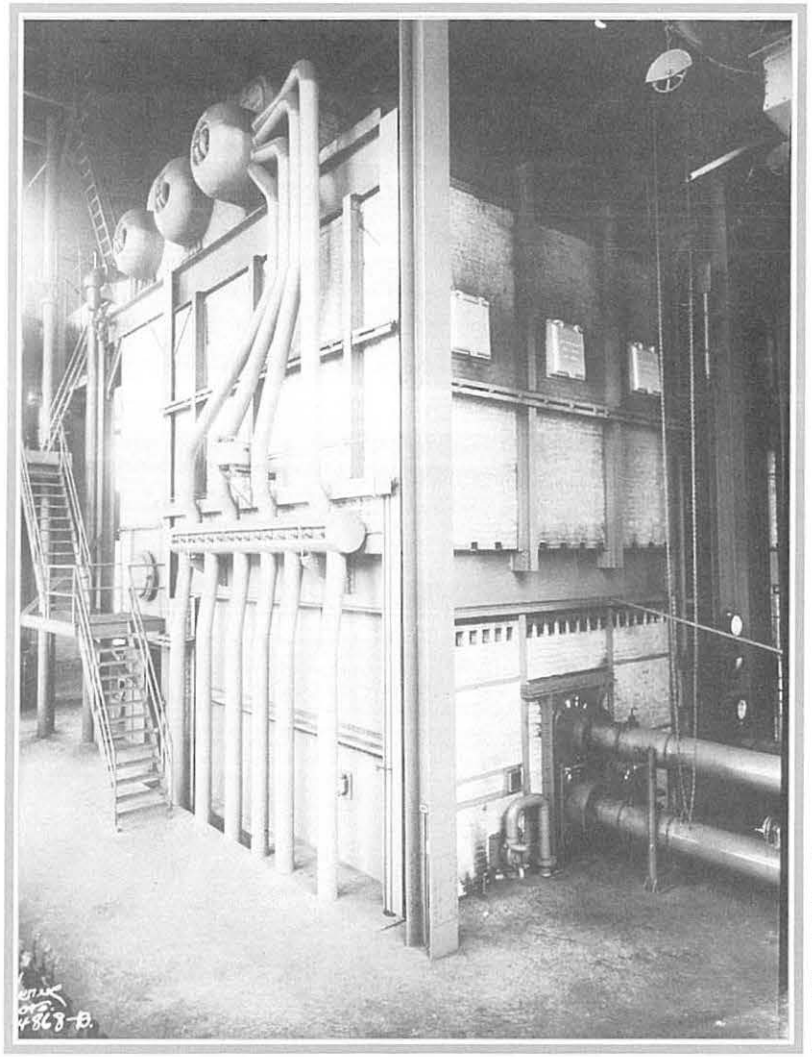
Duluth Steam Cooperative

One Lake Place Drive
Duluth, Minnesota

City of Duluth Steam Utility #1 was built in 1932 by the Duluth Steam Corporation to provide steam at 150 psi to downtown Duluth. Construction contracts provided for field erection of four 100,000-pound-per-hour steam boilers and two miles of high-pressure steam distribution lines in downtown Duluth.

In 1978, the plant and system were purchased by the City of Duluth which signed a management contract with the Duluth Steam Cooperative Association to operate and maintain the facility. The cooperative is made up of commercial users of steam in downtown. The system now consists of the plant, with four four-drum water tubed Edge Moor pulverized coal-fired boilers, and nine miles of steam line serving approximately 225 downtown buildings. The plant is staffed 24 hours a day, 365 days a year.

The primary fuel is low sulfur Powder River Basin Western coal with Eastern coal used as a cold weather supplement. On average, 150 tons of coal is used daily. The record usage was 350 tons on a day when the temperature was -29°F. In the summer, the plant provides steam for air conditioning and hot water, using 50 tons daily. Two of the boilers are equipped with natural gas rings to use when gas is more economical and as operational backup. A baghouse was installed in 1979 to remove particulate matter from the flue gas steam to meet clean air requirements. The recovered soot is used by a cement company.



Northeast Minnesota Historical Center

One of the four Edge Moor boilers.

Highway 210
Thomson, Minnesota

Thomson Dam and Station

Ten years after the financier, Jay Cooke, went bankrupt in 1873, he had recovered and repurchased the riparian rights to the lower St. Louis River and river valley property. Just before his death, he sold these to the Great Northern Power Co. to ensure development of the river as he envisioned it when he first bought the land in the 1860s.

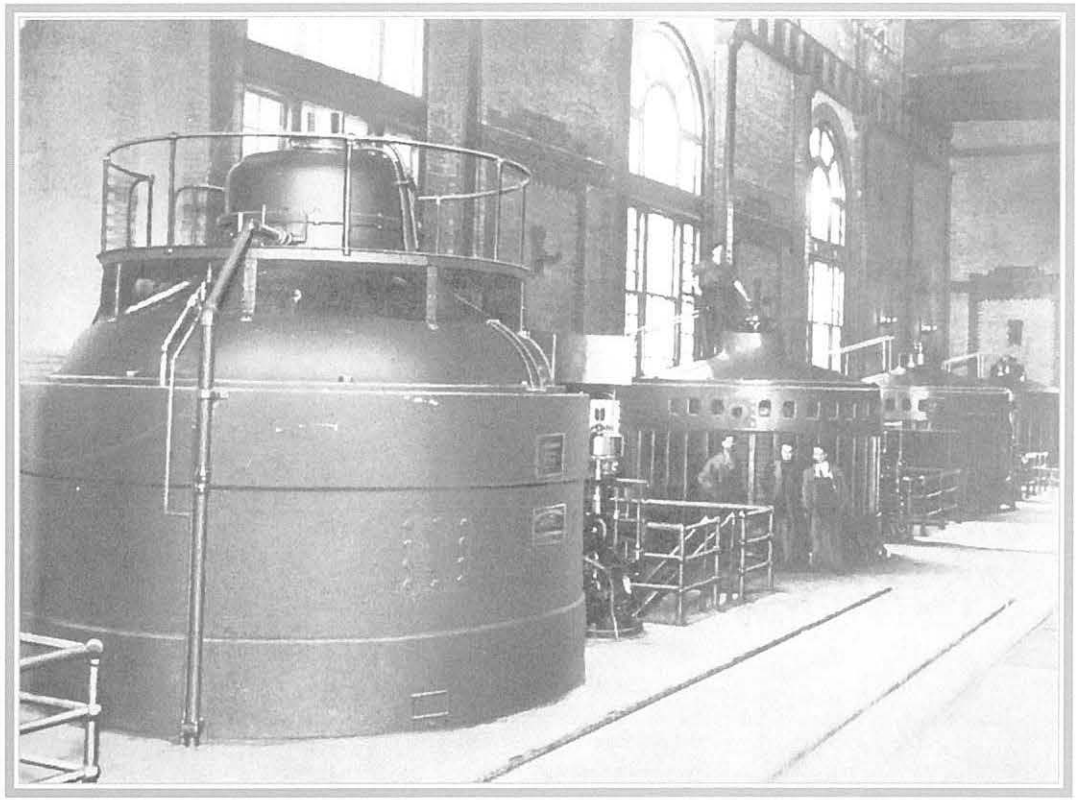


Photo courtesy of General Electric

Three 7,500-kw, 375-r.p.m., 6600-volt, 25-cycle generators installed in 1906 and one 12,000-kv-a. unit installed 1914.

The Thomson Dam was begun in 1905, first generated electricity in 1907 and was finished in 1908. It was built by the National Railway Construction Co. W.A. Brackenridge, resident engineer of the Niagara Falls Power Co. was an advisor. The 38-foot high dam was built of Portland Cement and Lake Superior sand and gravel across the dalles of the St. Louis. The resulting reservoir held 130 million cubic ft. of water covering 3/4 of a square mile. An open 1-2/3-mi.-long canal was dug from the reservoir to the forebay.

Water falls from the forebay through 7-ft.-diam., 5,000-ft.-long penstocks. The three turbines are a modified form of vertical shaft Francis pressure type wheels, designed by Escher-Wyss of Switzerland and manufactured by Allis-Chalmers. The same type were used at Niagara. Each could attain a maximum of 13,000 hp with the available head of 378 ft.

The three original 7,500 kw generators were supplied by General Electric. The 7,500 kw 3-phase transformers were the largest of their type ever built at the time, measuring nearly 15-ft.-high by 14-ft.-wide. A 12,000 kv-a. generator was added in 1914. They supplied 25-cycle 3-phase current to industrial customers, primarily the Duluth Traction Company. A 60-cycle unit was added later.

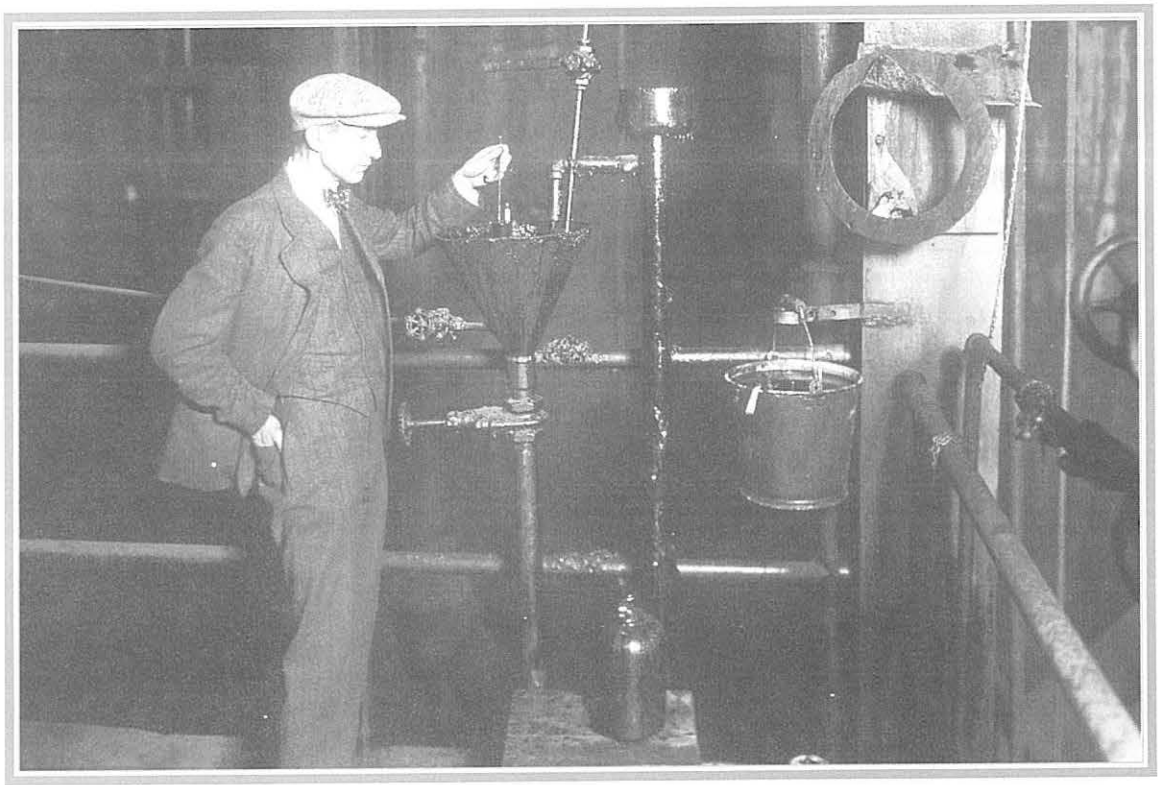
Potlatch Corporation

2201 Avenue B
Cloquet, Minnesota

By the 1890s, much of the vast midwestern white pine forests had been cleared, forcing lumbermen to look to the south or far northwest. Northern Idaho was one of the new regions exploited and there, in 1903, Northland Pine Co., a supplier to the Weyerhaeuser syndicate, and its main competitor, Wisconsin Log & Lumber, merged as Potlatch Lumber Company, named after one of the rivers which cut through their land. Potlatch's roots in Minnesota date back to 1898, when a paper mill was built by the former Northwest Paper Co. along the St. Louis River. Also a Weyerhaeuser creation, it merged with Potlatch in 1964.

Potlatch produces pulp for its own premium coated printing papers made at this plant and at one in Brainerd. The pulp mill is undergoing a $525 million modernization and expansion to be completed this year. It will more than double the plant's capacity to 1,300 tons per day and will move Potlatch into the pulp market. The pulp mill currently uses 1,000 cords of wood a day, seven days a week.

Unlike many of its competitors, Potlatch relies relatively little on federal lands for its raw material. It owns 1.5 million acres of timberland in Arkansas, Idaho and Minnesota. Potlatch has its own nursery and greenhouse and replants every acre of harvested land within 2 years or allows it to regenerate naturally.

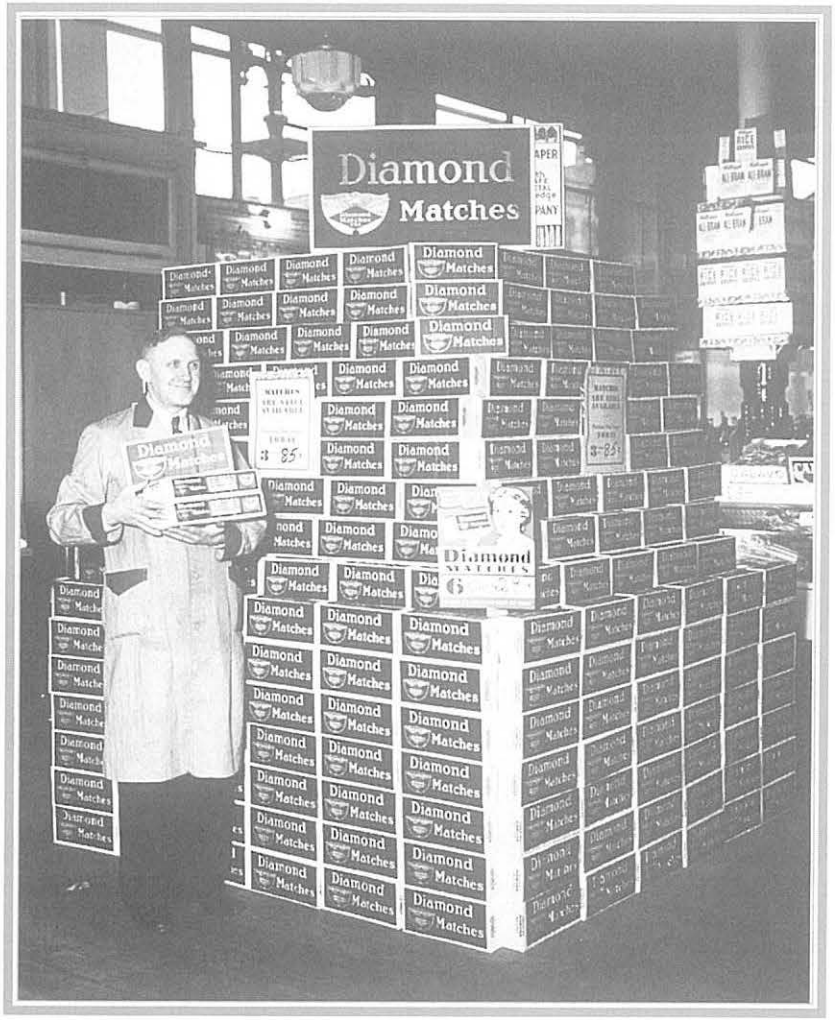


Minnesota Historical Society

Checking cooking liquor in digesting room, 1929.

1800 Cloquet Avenue
Cloquet, Minnesota

Diamond Brands



Minnesota Historical Society

Store display of Diamond Brand Matches, 1945.

Friction matches were originally made entirely by hand. The introduction of gas for lighting and cooking made the "lucifer" almost a necessity. Mechanized methods were needed to meet demand and the country's largest manufacturers banded together in 1881 to form The Diamond Match Co., pooling their technology.

Diamond opened a factory in Cloquet in 1905 to cut wooden blocks to supply to other factories for making match splints, but it closed in 1908. Berst-Forster-Dixfield opened a toothpick and tongue depressor factory on the present site in 1913. Diamond bought it in 1920 and began stick match production in 1928. With the phase-out of Diamond's two east coast factories and the 1991 purchase of Universal Match, its only domestic competitor, the Cloquet plant became the sole producer of stick matches in the U.S. and Canada.

Strike-Anywhere matches are turned out at the rate of more than 300 a second on machines 60 feet long and two stories high. A setting head places pre-formed matches, at the rate of 40,000 splints a minute, into the holes of plates traveling in an endless belt. The match splints are bathed in ammonium phosphate, which eliminates "afterglow". Then they are dipped into melted paraffin and next go into a chemical composition that forms the bulb. The next step tips them with sesquisulfide of phosphorus mixture, which ignites with chlorate of potash to produce the flame. Finally, they drop into a solution that improves the aging of the match heads. The rest of the hour-long journey dries the matches.

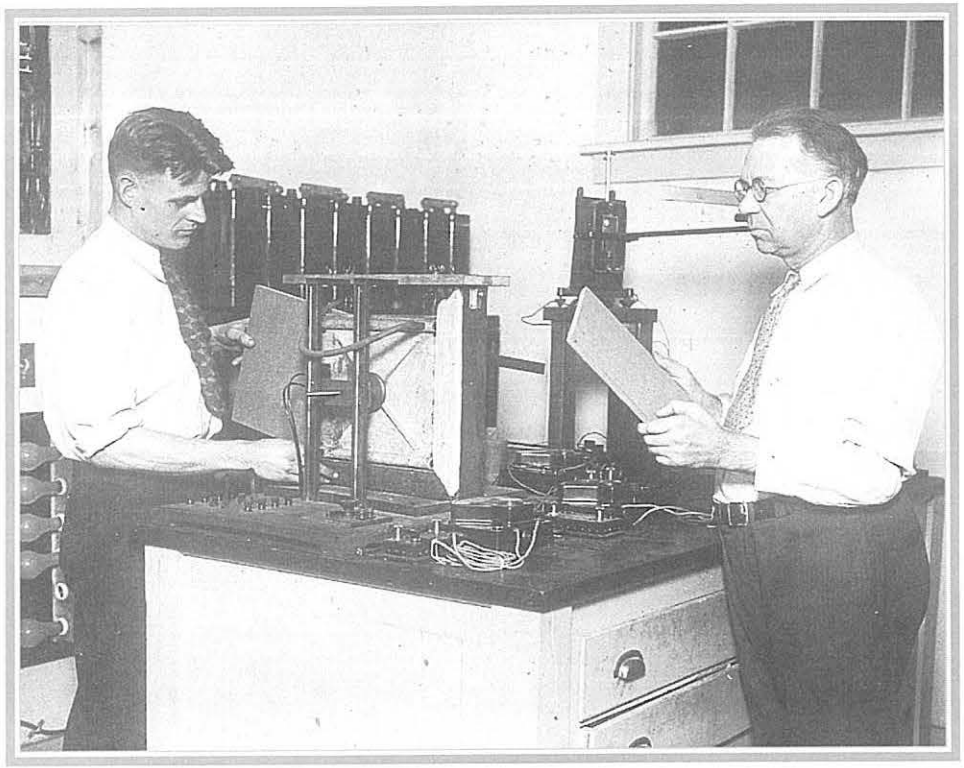
USG Interiors

35 Arch Street
Cloquet, Minnesota

U.S.G. Company was incorporated in 1901 when 35 gypsum manufacturers consolidated to control about 50 percent of U.S. output. It bought Sackett Plasterboard Co. in 1909. Augustine Sackett had invented gypsum wallboard and the specialized machinery to make it. This wallboard quickly became one of U.S.G.'s major products. U.S.G. improved on Sackett's concept and patented a wallboard that had paper folded over its edges to seal in plaster residue. This later became SHEETROCK®. In 1985, the holding company, USG Corporation was created. Its subsidiary, United States Gypsum, is still the largest gypsum producer in the world.

The USG Interiors subsidiary manufactures acoustical panels and tiles for ceilings and walls. The Cloquet plant operates four lines to produce ceiling tiles. Many recycled materials are used including mineral fiber made from slag and fibers from repulped newsprint. Other components are gypsum, ball clays which impart fire resistance, corn and wheat starch as binders, and perlite, an expanded volcanic rock.

The Cloquet plant was purchased from Conwed in 1985. Conwed was founded in 1921 as Wood Conversion Co. in an effort to help the town recover from the devastation of the great forest fires of 1918. Much of the large timber had been lost and an effort was made, with the help of research done at the Forest Products Laboratory in Madison, Wisconsin, to find a product that could be made from scrub trees such as aspen, balsam and jack pine. Balsam-Wool, an insulation product resembling sheep's wool, was the first to be commercialized, and Nu-Wood, a rigid insulating board soon followed.



Minnesota Historical Society

Samples of Nu-Wood being tested for conductivity in Wood Conversion Company lab, 1935.

400 Main Street
Superior, Wisconsin

Peavey—Connor's Point Elevator

In 1868, Frank Hutchinson Peavey started out marketing farm implements to settlers in Sioux City, Iowa. Farmers often paid with grain and he discovered that many of them did not have reliable markets for their product. He built a 6,000-bushel elevator, the first of many, in Sioux City, and convinced millers in Minneapolis that he could supply them.

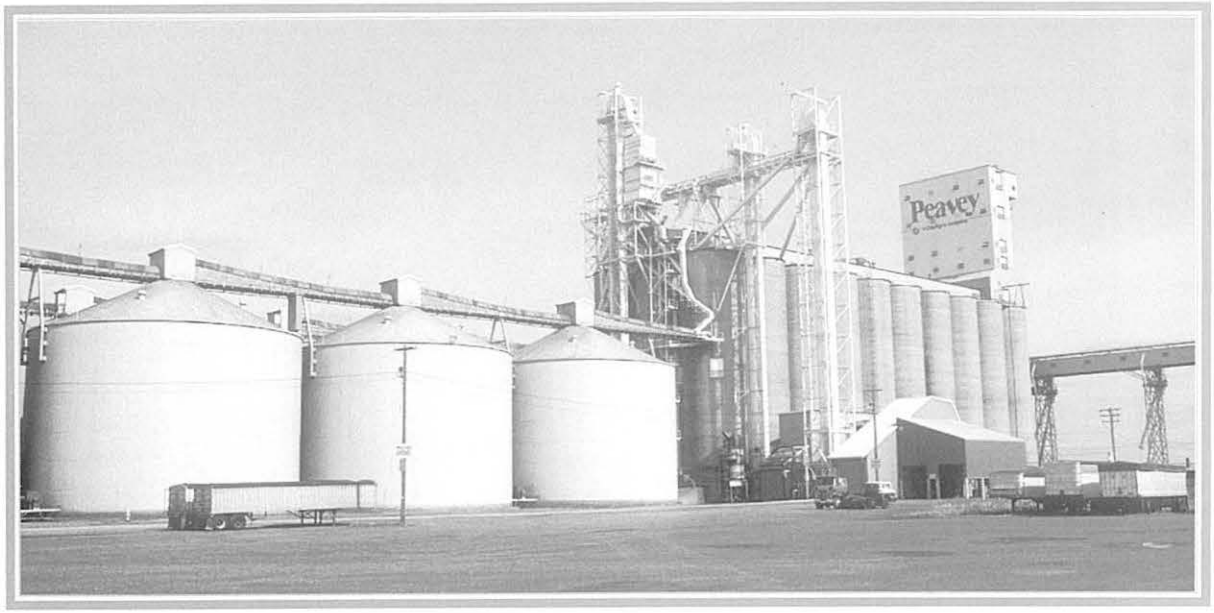


Photo by Larry Mishkar

Peavey elevator can hold more than 8 million bushels of grain.

Peavey built the world's largest wooden grain elevator in Minneapolis in 1886. When it burned in 1887, he was motivated to build a fireproof elevator. After much study, he constructed a concrete grain elevator in St. Louis Park, Minnesota. Common wisdom was that only wood had enough "give" to store grain, but when the first grain was drawn from "Peavey's Folly," it held. Peavey erected the first concrete terminal elevator, with a capacity of 4,750,000 bushels, in Duluth in 1900. It was recently demolished, the rubble still visible at the slip.

In the 1920s the F.H. Peavey Co. entered the flour milling business. With the acquisition of the Russell-Miller Milling Co. in 1953, Peavey became one of the nation's top five flour millers. In 1982, ConAgra bought Peavey, giving it 16.3 percent of the nation's wheat-milling capacity and a system of grain exporting terminals.

The Connor's Point elevator was built in 1965 for the Chicago & North Western Railway. Continental Grain Co. operated it for 20 years. ConAgra became the operator in 1986. It holds more than eight million bushels of grain and can load ships at a rate of 75,000 bushels per hour.

Superior Midwest Energy Terminal

St. Louis Bay
Superior, Wisconsin

The Superior Midwest Energy Terminal (SMET) was developed by Detroit Edison to speed coal to its power plants in southeastern Michigan. The transshipment facility was commissioned in 1976 and was cited as an outstanding civil engineering achievement by the American Society of Civil Engineers in 1977.

Low-sulfur coals received here originate in the Powder River and Hanna Basins. The present annual transshipment capacity is 18 million tons, with about 10million tons going to Detroit Edison. By adding a second car dumper, SMET's capacity could grow to 24 million tons.

Detroit Edison-owned 121-car train sets transport the coal to SMET at 14,000 tons per trip. Rail service is provided by Burlington Northern Santa Fe and Union Pacific. Movement and unloading of each unit train, at a rate of 4,000 tons per hour, is accomplished using a remote controlled car indexer which positions each aluminum car on a McDowell Wellman rotary dumper. Swivel couplings allow cars to be turned upside down without uncoupling.

Photo courtesy of Superior Midwest Energy

Two hundred acres of western coal and railroad tracks.

The 200-acre site can store up to seven million tons and eight separate types of coal at one time. Dust is kept to a minimum by water cannons. Reclaim and blending of the coal is accomplished using a series of nine computer-controlled variable speed rotary plowfeeders under the storage piles. A 96-inch transfer conveyor system transports coal directly from the car dumper or from the storage piles to the loading dock and traveling shiploader. Coal can be loaded into vessels at rates up to 11,500 tons per hour.

S.S. Meteor

The *S.S. Meteor* is the world's only remaining whaleback freighter. In all, 43 whalebacks were built--39 of them by Alexander McDougall's American Steel Barge Company in West Superior, at the present site of Fraser Shipyards.

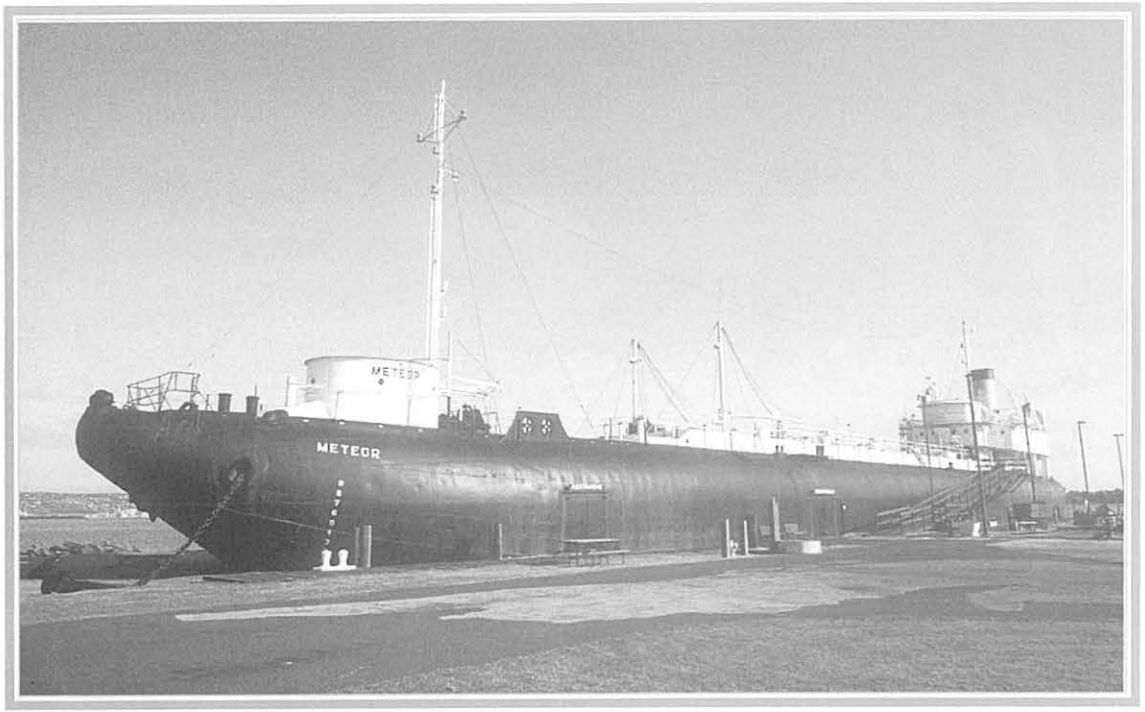


Photo by Larry Mishkar

The land-locked 1896 whaleback on Barkers Island.

The Meteor was launched as the *Frank Rockefeller* on April 25, 1896. She was originally built for the iron ore trade. She measures 366.5 ft. in length with a beam of 45 ft. and was registered at 2,759 gross tons. Her original 23-in., 38-in., 63-in. diameter by 40-in. stroke triple expansion engine with two Scotch boilers developed 1,200 hp.

A series of owners and many conversions ensued. Renamed the *South Park* in 1917, she was put to use in the sand and gravel trade. Fitted with sand hoppers, she helped fill the site of the 1933 Chicago World's Fair. Beginning in 1936, she served the grain and automobile trades. To accommodate cars, special racks were installed on the rounded decks and an elevator was added to lower cars into the hold. She was converted into a tanker, with a gross tonnage of 3,383, by Cleveland Tankers in 1943 and received her final name, *Meteor*.

After she ran aground in 1969, the Cleveland Tankers decided not to re-fit her and presented the *Meteor* as a gift to Superior. A group of local citizens raised money for the cost of towing the vessel and the *Meteor* arrived in Superior harbor on September 11, 1972 to begin a new career as a museum.

D. D. Gaillard

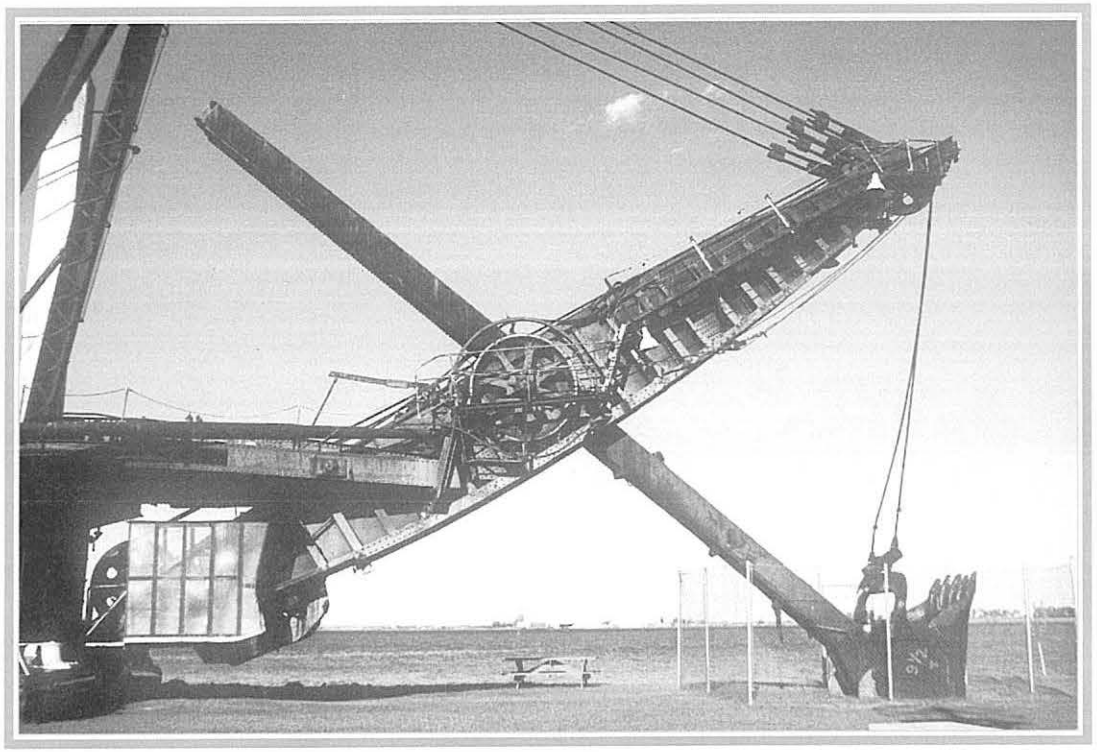
Barkers Island
Superior, Wisconsin

The steam dipper-dredge, *D. D. Gaillard*, was built in 1916 to maintain the Port of Duluth-Superior and the nearby Keweenaw Waterway. The Port had been enormously enlarged between 1898 and 1912, almost all of it done by private contractors. The Corps of Engineers had only a small wooden suction-dredge called the *Tortoise*.

The Corps requested a dipper-dredge, which would have the capability of working in sand, silt or rock. It was to have a scow-type steel hull, a 60-foot boom, and a 4-1/2-cubic-yard dipper bucket. The Gaillard was built by Hartmann-Greilling Co. in Green Bay. She is 116 feet long, 41 feet wide and weighed more than 700 tons loaded. She was named in honor of Col. David DeBose Gaillard, a career officer of the Corps who had served as district commander at Detroit and Duluth before taking responsibility for a major part of the Panama Canal construction.

The *Gaillard* lifted boulders 15 or 20 tons in weight with ease. She got a new 550 hp hoisting engine in 1933, an oil-burning Babcock & Wilcox watertube boiler in 1951. A new handle and 6-yard bucket in 1957 enabled her to dig channels 36 feet deep.

In 1982, on the 123rd anniversary of her birth, the *Gaillard*, still in excellent working condition, was the last of the Corps steam dredges to be retired. The Corps returned to the practice of using private contractors for dredging. She was turned over to the Head of the Lakes Maritime Society, which has preserved the *Meteor*.



Forward view of the Army Corps dredge, D. D. Gaillard.

Photo by Gerry Weinstein

Allouez Bay
Superior, Wisconsin

Burlington Northern Santa Fe Dock #5

The massive BNSF Dock No. 5 is the Twin Ports' largest transshipment facility. Burlington Northern has had transshipment operations on Allouez Bay since 1892 when Ore Dock Number 1 was built by the Duluth & Winnipeg Railroad. In 1899, after the D&W had been acquired by James J. Hill's Great Northern Railroad, a second timber gravity-fed dock was constructed. By 1911 Dock No. 4, then the world's largest, was built. The four earlier docks were abandoned due to their inability to handle the 1,000-ft. ore boats. Dock Number 5 was opened in 1977 to accommodate these "superlakers" and was designed to handle taconite pellets exclusively.

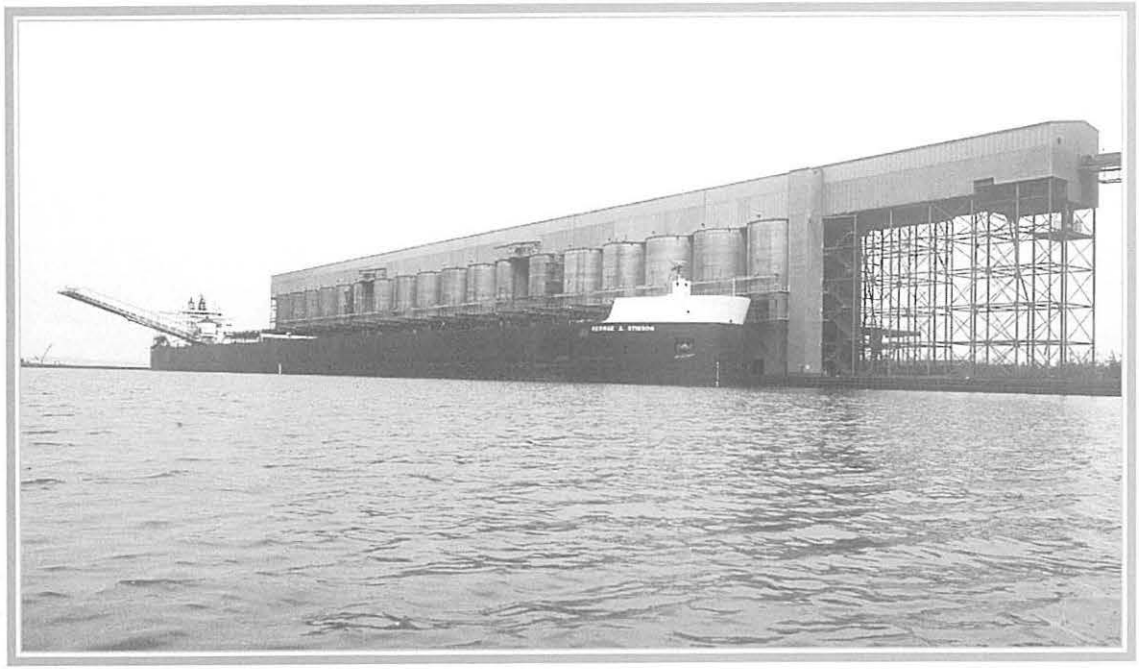


Photo by Larry Mishkar

The George A. Stinson *taking on taconite at BNSF #5, 1998.*

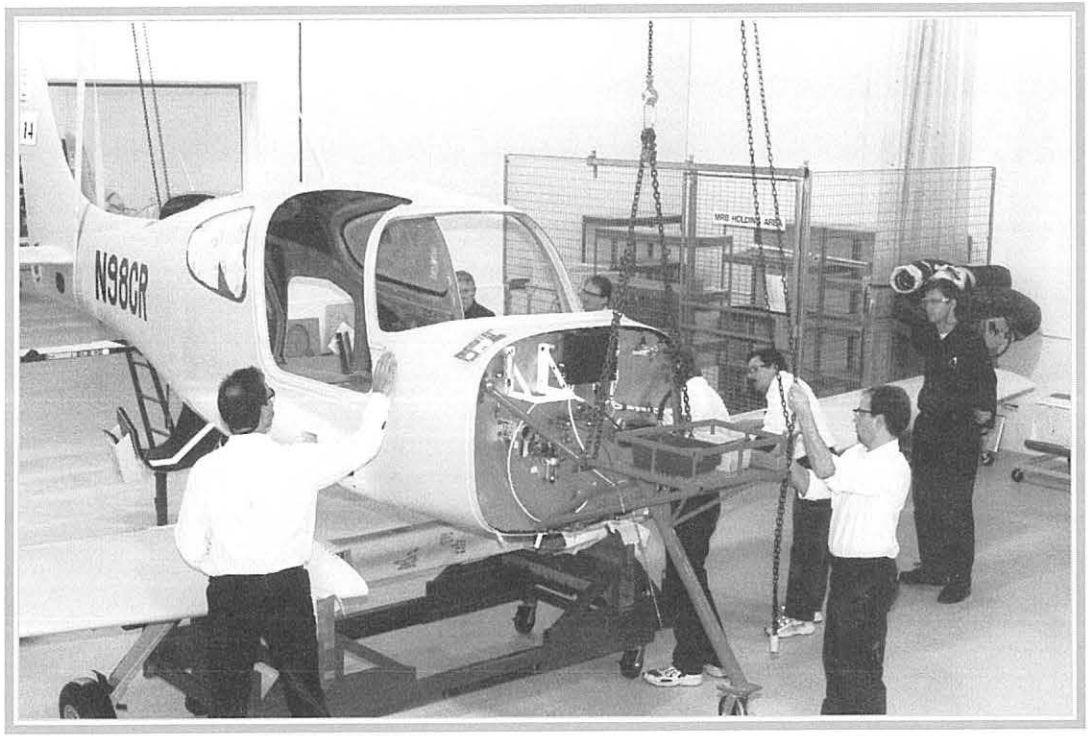
In years gone by, 400 employees were needed to empty raw ore from railcars at the top of the four docks, which used gravity chutes to load ships. Only 80 employees are now needed to operate Dock No. 5.

Cars are unloaded 3-1/2 miles away. If not being conveyed directly to ships, pellets are stored in two yards, which together hold 5.7 million tons. Bucket reclaimers crawl along the piles, scooping pellets onto the stacker. The stacker dips to ground level to take the load and then pours the pellets onto a passing conveyor to transport them over U.S. Highway 53 to the dock. There, the pellets are carried into 36 silos, each holding 2,000 long tons. The silos are emptied by shuttle conveyors, which stick out 45 feet above the water and can fill a thousand-footer in about 8 hours.

Cirrus Design Corporation

4515 Taylor Circle
Duluth, Minnesota

Brothers Alan and Dale Klapmeier founded Cirrus Design in 1984 in Baraboo, Wisconsin to make "kitplanes" that hobbyists could build. In 1987, they introduced the futuristic cigar-shaped fiberglass VK-30. They later deemed the VK-30 too complex for the home-built market, but it became a catalyst for developing production aircraft. To pursue this goal, Cirrus moved to larger facilities on an abandoned Air Force airstrip in Duluth, in 1994. There, they successfully completed a prototype of the turboprop ST50, a variation on the VK-30, for Israel's Israviation.



The assembly of a SR20 at Cirrus Design.

Photo courtesy of Cirrus Design

Using some of the same technologies, Cirrus created a prototype for a single-engine, piston-powered general aviation aircraft designated the SR20. The original prototype first flew on March 31, 1995. Their idea was to build small, fast, affordable planes that ordinary people would find simple, comfortable, and safe to fly. The SR20 utilizes composite material in its airframe to take advantage of better malleability and reduced drag and to reduce the number of parts needed in assembly. Its design includes the first FAA-approved use of wing cuffs, a NASA development. An airframe parachute system that lowers the plane, if disabled, to a survivable landing is standard equipment. Seats are engineered to allow the occupants to survive a 26G vertical drop. Currently, one SR20 is produced every five days.

In May 1996, Cirrus became a subcontractor for Alliant TechSystems, Inc., in the development of a Tactical Unmanned Aerial Vehicle (TUAV) for the Department of Defense. Cirrus developed and manufactured the fuselage, wings and empennage (the tail).

3300 London Road
Duluth, Minnesota

Glensheen

The 39-room Jacobean Revival mansion sits on a 7.6-acre estate. Formal gardens dot the grounds. It was built by Chester Adgate Congdon as a family home. He and his wife had seven children, and it was their daughter, Elisabeth, who gave the house to the University of Minnesota. It closely resembles the way it was when completed in 1908 and has been operated as a museum since 1979.

Minnesota Historical Society

Chester A. Congdon's home during a long Minnesota winter, 1930.

Congdon was a lawyer and businessman who helped shape the economic and political history of Minnesota from 1880 until his death in 1916. He served as Assistant U.S. District Attorney before entering private practice. From 1892 to 1901, Congdon represented Henry W. Oliver, owner of The Oliver Iron Mining Co., which later became a subsidiary of U.S. Steel. He was active in state politics as a legislator. His entrepreneurial reputation was earned by developing ore mining in the Canisteo region of the Mesabi range.

Elisabeth Congdon became well-known through her infamous murder. She never married, but raised two adopted daughters, Jennifer and Marjorie. In 1976, Marjorie Congdon married her second husband, an alcoholic named Roger Caldwell. She had always been known as a spend-thrift and as debts mounted, she confessed to her husband that she might be heir to a fortune. On June 26, 1977, frail 89-year-old Elisabeth was found suffocated with a pillow, her jewelry missing and her nurse bludgeoned to death. Caldwell was convicted of the murders, but there was insufficient evidence to convict Marjorie.

St. George Serbian Orthodox Church

1216 104th Avenue West
Duluth, Minnesota

Migration from the iron ranges led to the growth of a South Slav community (Bulgarians, Croatians, Montenegrins, Serbs and Slovenes) in Duluth. The first Serbian men are said to have worked on the Thomson Dam completed by the Great Northern Power Company in 1907. From these beginnings St. George Serbian Orthodox Church in Gary came into being in 1923.

The number of South Slavs increased during construction of the U. S. Steel Corporation's plant in Gary in 1910. Slovenes, Croats, and Serbs worked for the steel company and in the adjacent Universal Atlas Cement Company's plant for over 50 years, living nearby in New Duluth, Gary (both annexed to Duluth in 1895) or West Duluth.

By the mid-1920s Gary-New Duluth had its own merchants, clubs, and activities. By the 1930s South Slavs in Gary numbered 3,000 to 5,000, largely employed in the steel and cement works. In the 1970s both the steel plant and the cement plant closed, and the effects were felt strongly in the community. However, St. George continued to flourish.

In 1970, Mala Gospojina (Little Holy Lady) Free Serbian Orthodox Church, was consecrated in Gary. This congregation was formed by people who objected to control of the Serbian church by the Yugoslavian hierarchy. The result was a schism within the church. St. George remained loyal to the hierarchy and continued to grow, constructing a new fellowship hall in 1971. By 1980 it had about 250 members.

Minnesota Historical Society

Interior of St. George Serbian Orthodox Church, 1939.

Port of Duluth—Superior

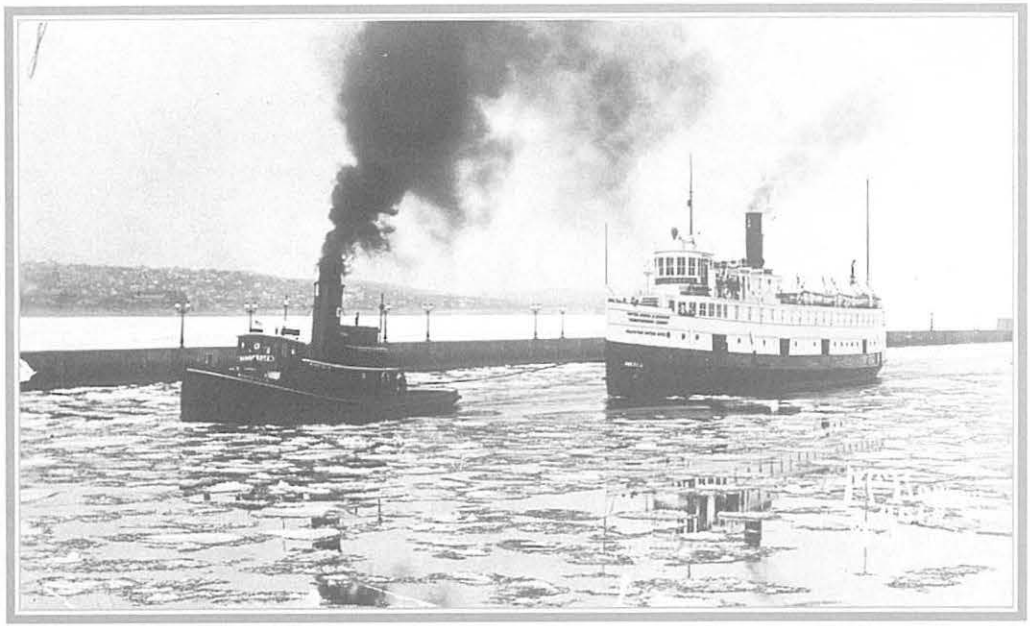


Photo by McKenzie, Minnesota Historical Society

Tugboat Minnesota *towing steamer* America *into Duluth Harbor, May, 1917.*

The natural passage between Minnesota and Wisconsin Points was subject to storms and shoaling and had a mean depth of only eight feet, shallower than the 12-ft. draft allowed by the Sault Ste. Marie canal. Inside the harbor, tortuous channels made it difficult to navigate to the Duluth side.

Backed by railroad interests, the Duluth Ship Canal was built from 1870 to 1871. Superior attempted to stop the work. Tradition has it that, with an injunction on the way and the steam dredge stuck in the mud, every able-bodied man, woman and child in Duluth helped dig it by hand. Actually, natural scouring speeded up the work.

It was feared that the canal would divert the natural flow of the river and lessen scouring action in the natural entry. Instead, it improved the scouring action. The building of the Superior Entry was begun in 1868, but not completed until 1875 due to the political and legal haggling and diversion of resources to an unnecessary breakwater.

Industrial sites around the harbor not otherwise discussed in this guide are listed below:

U.S. Lighthouse Service depot, 1907. An early reinforced concrete structure.

Northern Pacific Ore Dock, 1913.

King Midas flour mill, 1892. Now owned by ConAgra, its equipment was only recently removed and it is unused.

Fraser Shipyards has been on this site since 1945. Remnants of Alexander McDougall's American Steel Barge Co, 1890-1899 and other shipbuilders remain.

The Globe Elevator built in 1887 may be the last surviving wooden terminal elevator in the country.

The Great Northern Elevator is steel and was completed in 1901. It is operated by General Mills for BNSF and is a twin to the GN elevator in Buffalo, N.Y.

Clure Public Marine Terminal, 1959.

F. H. Peavey built the first concrete terminal elevator here in 1900. More recently known as Cargill Elevator D, it lies in ruins after recent demolition.

The Cargill elevator complex was built in 1959, but it incorporates part of the Consolidated Elevator built in 1884, now Cargill B2.

General Mills elevator complex, 1908.

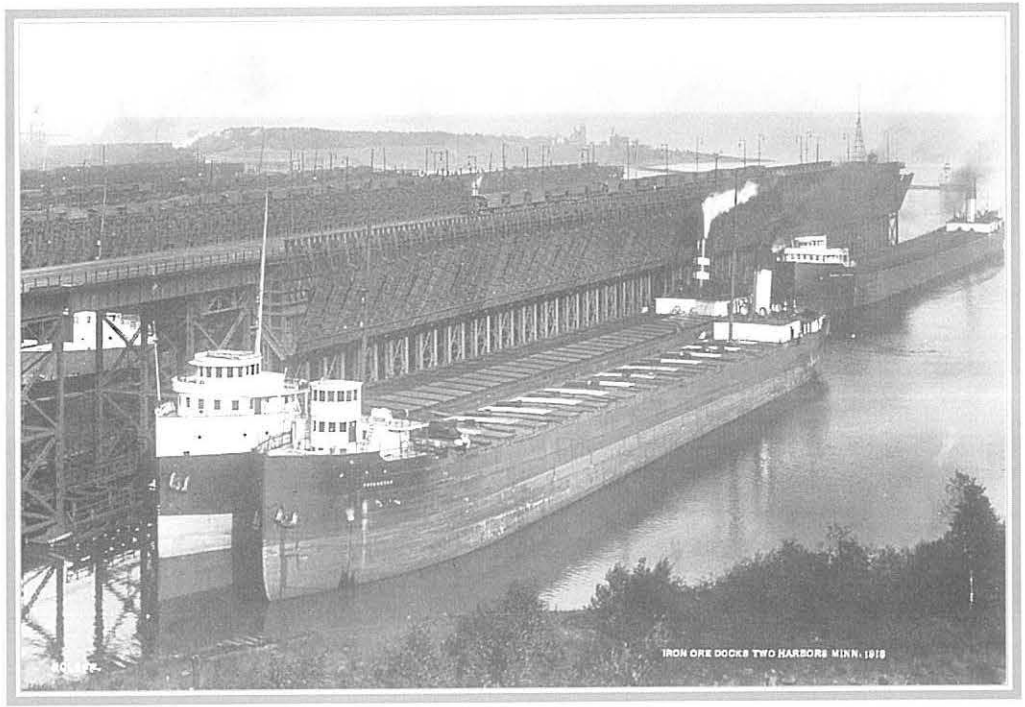
North Shore Excursion--Two Harbors

Two Harbors, Minn.

The North Shore Scenic Railroad travels on the Lake Front Line of the Duluth, Missabe & Iron Range Railway (DMIR) completed in 1886.

Two Harbors is named for its location, between Agate Bay and Burlington Bay. In early 1883, when a crew arrived to begin construction of the Duluth and Iron Range Railroad (later part of DMIR) there was one shanty here. In 1884, the first load of iron ore arrived from the Soudan Mine. By 1888 Two Harbors had become the Lake County seat and continued to be the main outlet for ore from the Vermilion Range.

The Lake County Historical Society depot has an historic collection of rail engines. DMIR No. 229 is the only surviving M-4 Yellowstone-class Baldwin. Built in 1943, the M-4 is heavier than the 1941 M-3s due to wartime restrictions on lighter alloys. The 3-Spot engine, a Baldwin 2-6-0 built in 1883, arrived in Two Harbors by boat. It was the engine on the first ore train from Soudan.



Iron ore docks at Two Harbors, 1918.

Photo by William Roleff, Minnesota Historical Society

The nearby abandoned DMIR roundhouse and shops, now owned by the City of Two Harbors, are slated for demolition and redevelopment.

3M (Minnesota Mining and Manufacturing) was founded in Two Harbors to take advantage of a reported deposit of corundum. The newly renovated 3M/Dwan Museum chronicles the history of sandpaper, 3M's original product.

The square-tower Lighthouse Point and Harbor Museum was built in 1892. The original optic was a fourth-order Fresnel Lens, now preserved at Inland Seas Museum in Ohio. The fog signal building and keeper's quarters are open to visitors.

1396 Highway 169
Ely, Minnesota

International Wolf Center

Built in 1989 and greatly expanded in 1993, The International Wolf Center is home to a pack of three gray wolves, exhibits, a wolf viewing theater, classrooms and laboratory space.

The resident pack of canis lupus were born in 1993 and provide hands-on training and education to researchers and the public with a goal of continuing studies begun in the 1930's by noted naturalist Sigurd Olson. The architecture of the center features triangular windows representing wolf eyes and ears and a large viewing window where visitors can observe the pack in their 1.25-acre enclosure and den site.

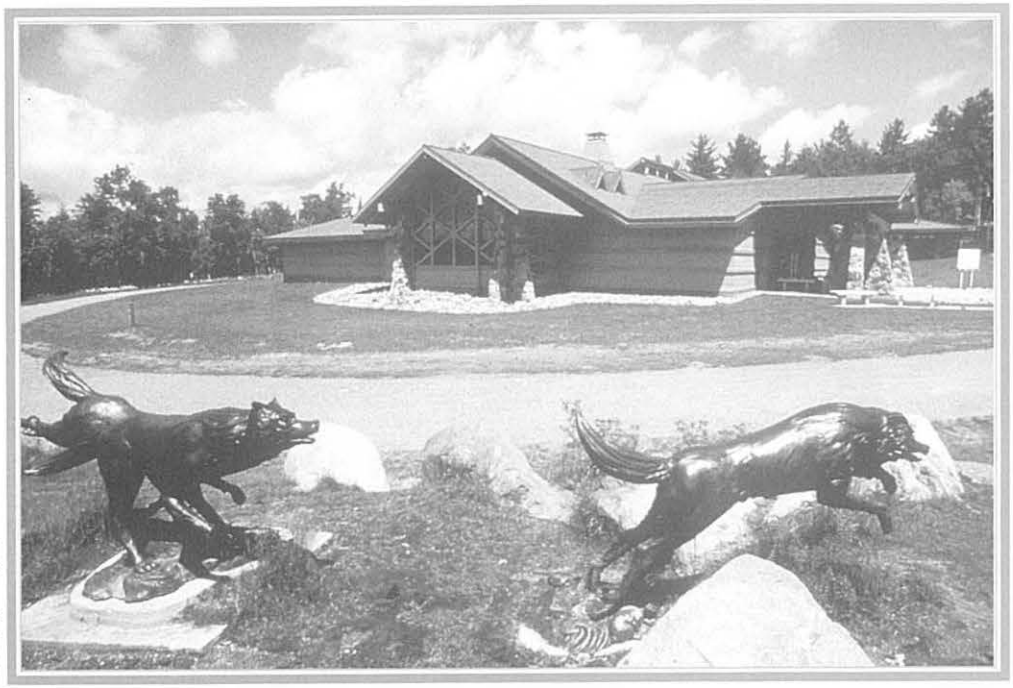


Photo by Lynn Rogers, International Wolf Center

Bronze wolves greet visitors to the International Wolf Center.

The highlight of our visit will include a hands-on demonstration about radio collars and radio telemetry currently used to track 17 wolves in the nearby Superior National Forest. The USGS Biological Resource Kawishiwi Field Lab monitors pack movements and size, territory size, distribution and mortality.

A number of species including crayfish, snakes, lemmings, pregnant black bears and whales have been tracked by scientists worldwide using radio telemetry.

Using a radio receiver and directional antenna, a researcher can trace the source of a signal from a specific animal as often as needed without disturbing the animal. Collars can detect a change in heartbeat, indicating whether the animal is active, resting or dead. Some collars can be signaled to anesthetize the animal or note when the animal is urinating.

GPS collars are currently being tested on about 12 wolves allowing researchers to gather highly detailed information but a high energy drain shortens battery life and high unit cost is limiting wider use.

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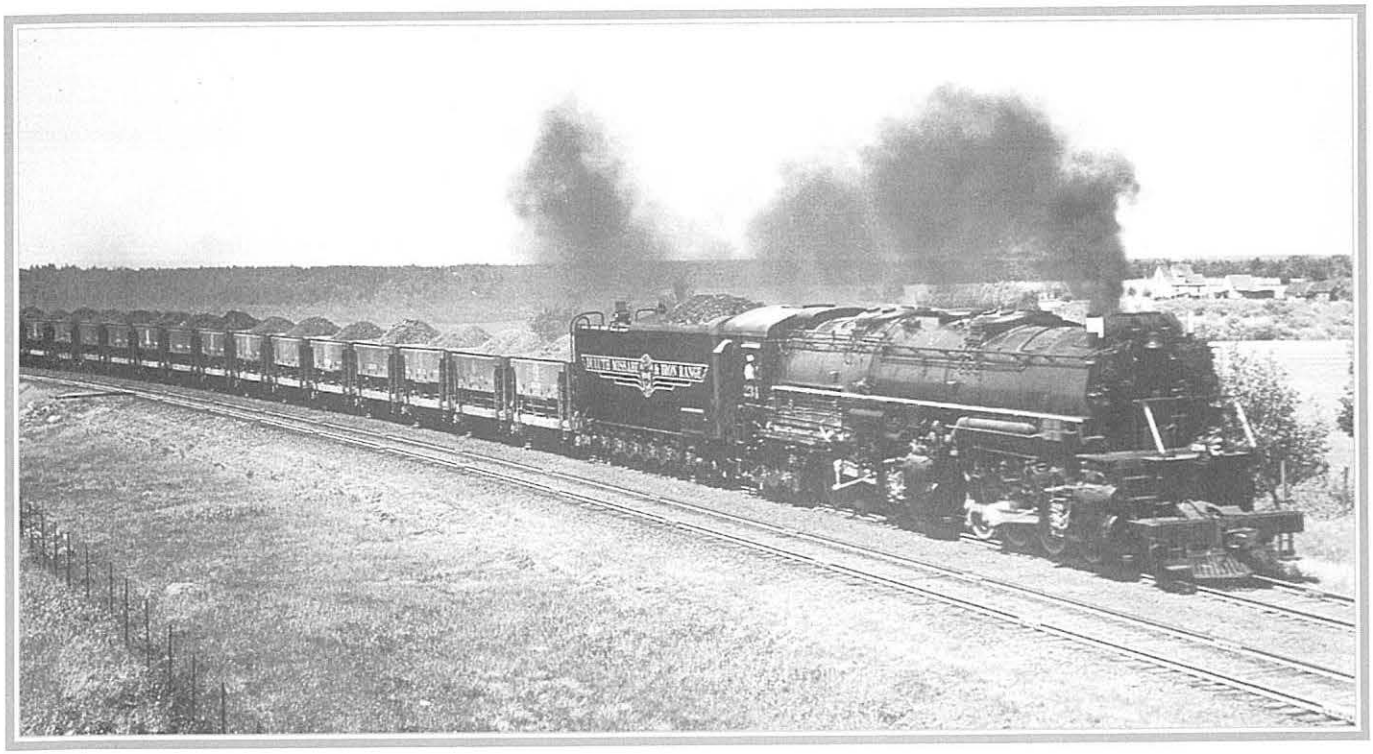
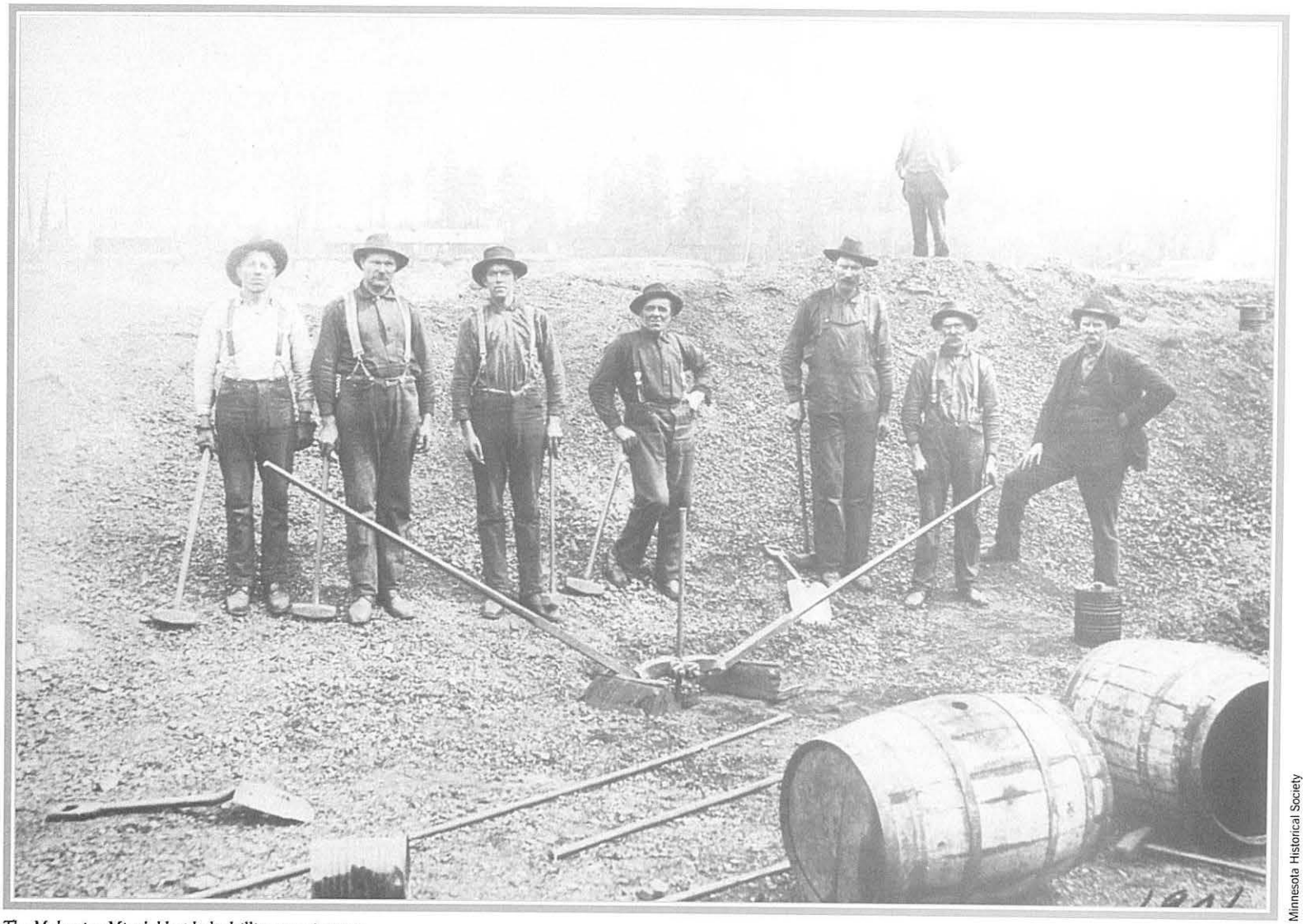


Photo by Zweifte-Roleff Studio, Minnesota Historical Society

Duluth, Missabe & Iron Range Yellowstone #231 *pulling an ore drag near Duluth, 1940.*



The Mahoning Mine's blast hole drilling crew in 1901.

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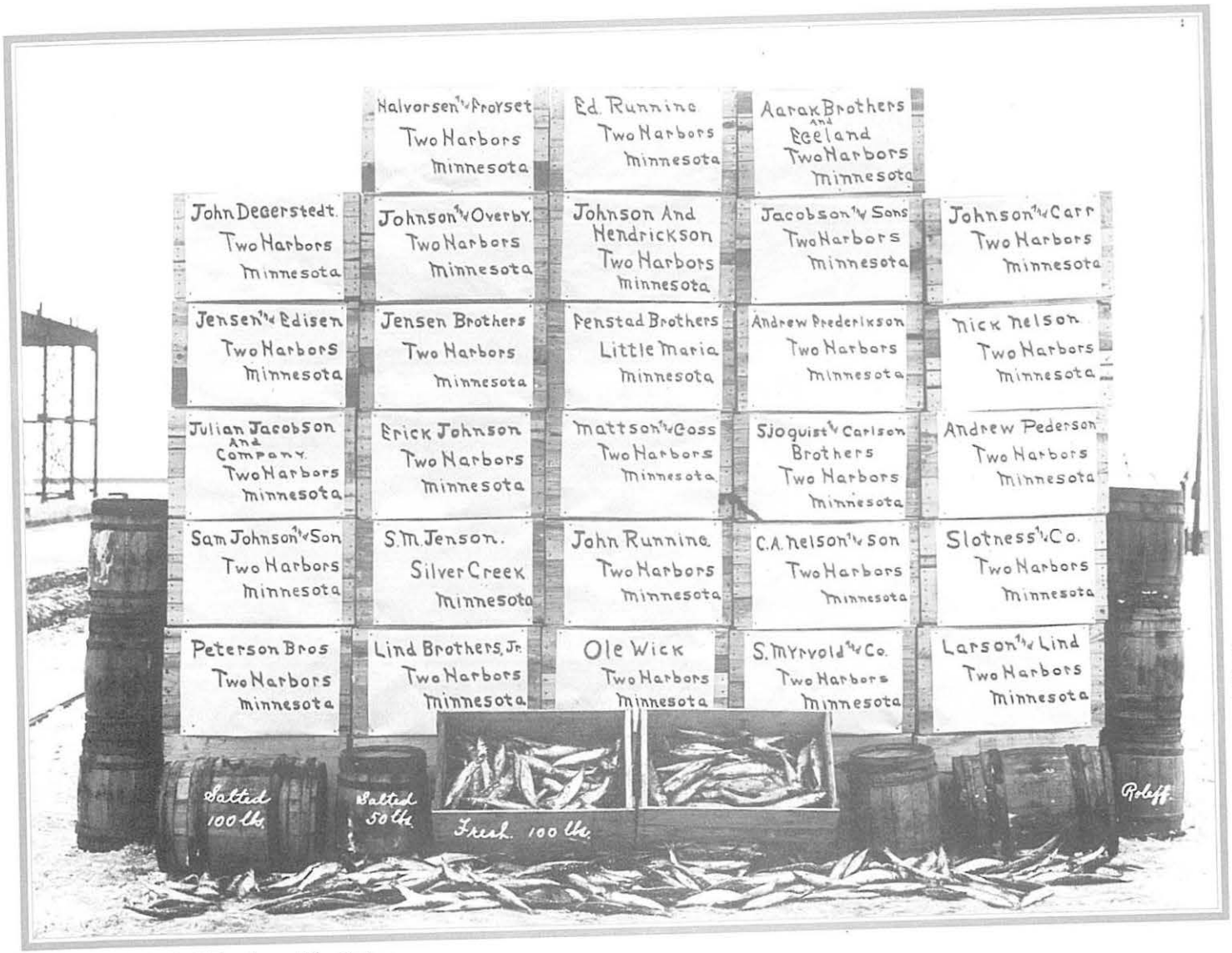
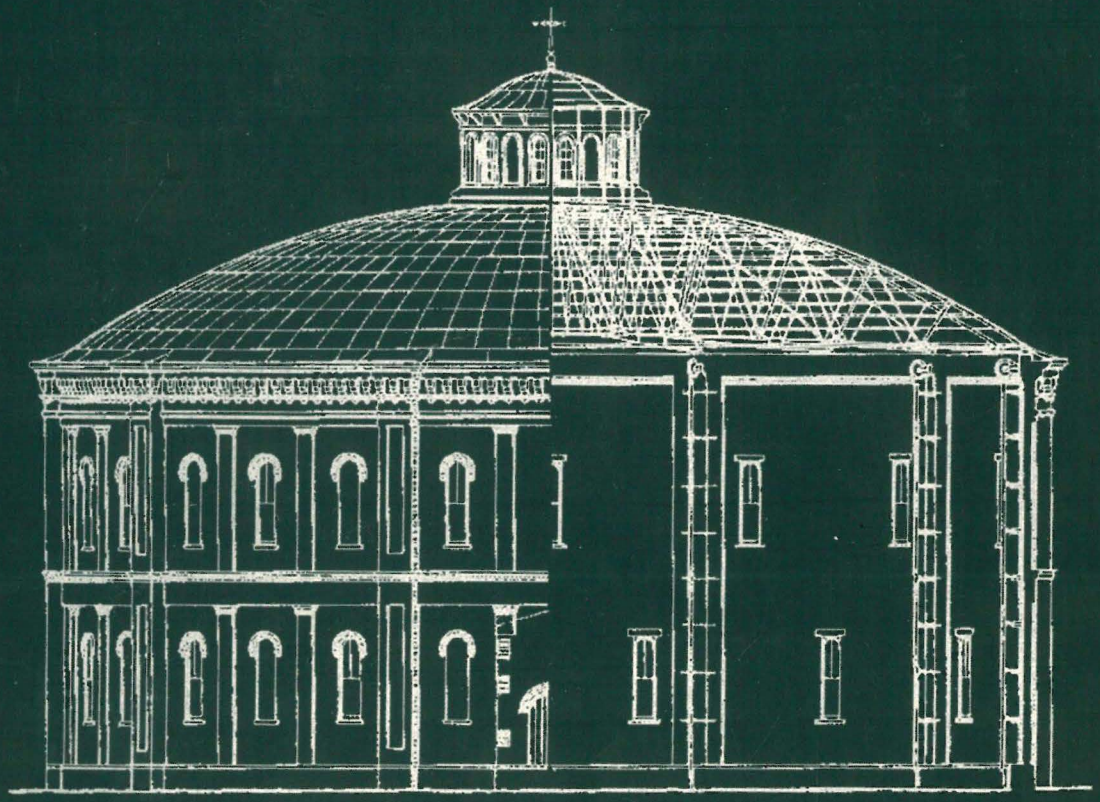


Photo by William Roleff, Minnesota Historical Society

Display of fresh and salted fish in boxes at Two Harbors.



Gas Holder Logo

The gas holder that graces the SIA 29th Annual Conference logo was built in 1873 by the Troy (New York) Gas Light Company to store illuminating gas. It represents an important 19th-century industry and is the official logo of the Society for Industrial Archeology.

The drawing, in half-elevation, half-section, is taken from the first survey ever done by the Historic American Engineering Record (HAER). It signifies SIA's interest in preserving industrial sites and its interest in engineering. Use of the drawing also represents the close affiliation between HAER and SIA.