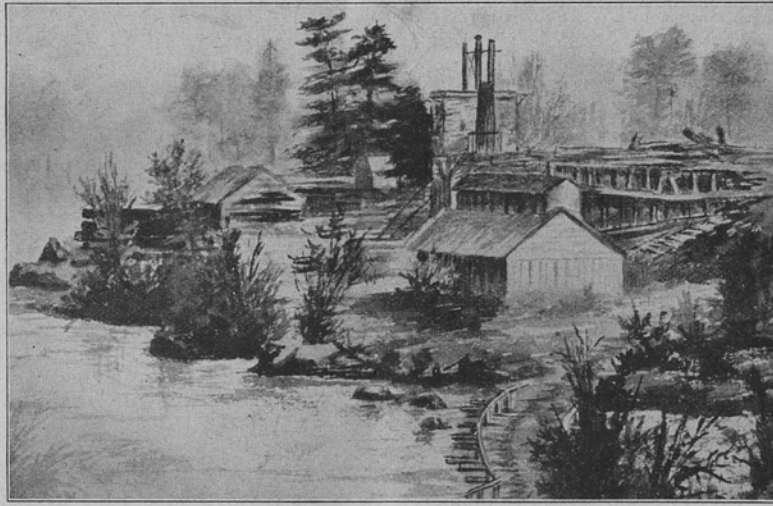


## The Story of the Discovery of Iron Ore in Clover-Land

By JAMES E. JOPLING of Marquette

[Illustrations for story used through courtesy of Lake Superior Mining Institute and Ishpeming Iron Ore.]



[From drawing in charcoal by Mrs. Pullman, wife of one of the employees]

Collinsville Furnace, near Marquette, about 1860. This is the site of the present Marquette city lighting plant

AT the request of the committee of the Michigan Historical Society, the following has been prepared to relate the discovery of iron ore in the Upper Peninsula and to show what the development of the mines has meant for Marquette county. It is now over 70 years since iron ore was found here in sufficient quantity to warrant the mining of it. To realize the conditions under which the discovery was made, it is necessary to consider the activities, not only of the territory of Michigan but those of the lake district in general. During the first part of the 19th century there had been rapid settlement of what are now the states bordering the great lakes and cities had begun to spring up. The demand for iron used for industrial purposes was being felt and as yet no ore had been found in districts first settled. Since 1667 the shores of Lake Superior had been known to contain copper and other minerals and it was in this direction that explorers turned their search.

The territory of Michigan as long ago as 1830 had secured Dr. Douglas Houghton, who had graduated from the Van Rensselaer school at Troy, as lecturer on chemistry and geology, and the next year he began his examination of the Lake Superior region. When Michigan became a state in 1837 he was appointed its first geologist and his name will be remembered always in connection with the discovery of the copper mines. In 1840 he undertook the survey for the United States government of the lands in the Upper Peninsula in order to divide them for settlement. He appointed as his deputy surveyor Mr. William A. Burt, who made the important invention of the solar compass, which has proved its value in land surveys where local magnetism of the rock prevent the correct running of lines by the ordinary compass. On the 19th of September, 1844, this survey party reached the district of the mines at Negaunee and it included Mr. Ives, compassman, and as barometer man, Jacob Houghton, a brother of Dr. Houghton. While running the township line near what is now the Jackson mine they noted the remarkable variations of the needle. The survey was stopped long enough for the men to collect a number of samples of ore. No commercial advantage was taken of this information, although it is likely that the matter became of general knowledge, especially among the Indians who were

employed as packers to supply the camp with provisions.

Next year, 1845, Mr. Philo M. Everett of Jackson, set out for Lake Superior with a party of men organized to explore and make locations for minerals. After coasting as far as Copper Harbor, he returned with the Indian Chief, Marji Gesick, who guided the party to what is now the Jackson mine, and the men of the party who made the actual discovery were S. T. Carr and F. S. Rockwell, according to a letter written by Mr. Everett. The Indian Chief, Marji Gesick, has been given the credit for the discovery and in recent years a tablet to this effect was imbedded in a monument erected near the spot by Mr. William G. Mather, president of the Cleveland-Cliffs Iron company. The tablet reads as follows:

"This monument was erected by the Jackson Iron company in October, 1904, to mark the first discovery of iron ore in the Lake Superior region. The exact spot is 300' northeasterly from this monument to an iron post. The ore was found under the roots of a fallen pine tree, in June 1845,

by Marji Gesick, a Chief of the Chippewa tribe of Indians. The land was secured by a mining permit and the property subsequently developed by the Jackson Mining company, organized July 23, 1845."

Before Mr. Everett left Jackson, the Articles of Association of the Jackson Iron company had been signed "for the purpose of exploring the mineral region of Lake Superior." The next year, after securing the land from the government, the location was explored and in the year following, the construction of a Catalan forge was begun on Carp river about three miles east of the discovery along the road to the lake. The first iron made on Lake Superior was produced on February 10, 1848, by Ariel N. Barney. In 1850, Mr. Everett moved to Marquette and members of his family are still living here.

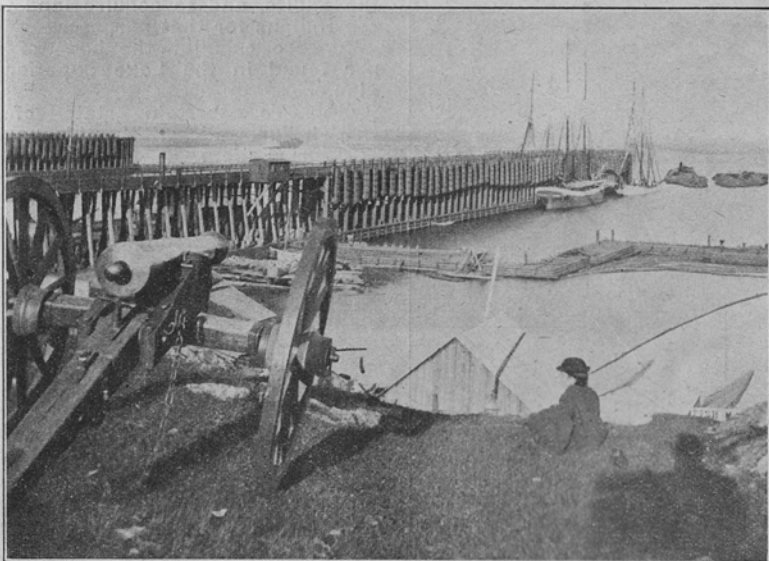
Previous to the coming of the Jackson Iron company, there had been no white settlers in Marquette county. To reach the mines small boats had landed a short distance south of what is now Marquette at the mouth of the Carp river, which gave its name

to the new settlement. The natural harbor here soon became the objective point for boats and in the summer of 1848 a company was formed by men from Worcester, Mass., to develop mines and manufacture iron on the shore of the lake. In this party were Mr. A. R. Harlow and Mr. R. J. Graveraet. At first they called the town Worcester, but later the name was changed to Marquette in honor of the well known Jesuit Priest who in the 17th century had come as missionary to this region and had left valuable records of his travels in the lake district in the relations written for the order to which he belonged. Mr. Peter White, who gave the library building to the city, came to Marquette in company with Mr. Graveraet on May 17, 1849. At this time "there was no dock at Marquette, no canal at Sault Ste. Marie, scarcely a road in the country, no shops for repairs, no skilled labor but what was, together with all the supplies, imported 'from below' and no regular communications. During the summer of 1849 only three sailing vessels and five propellers arrived at Marquette."

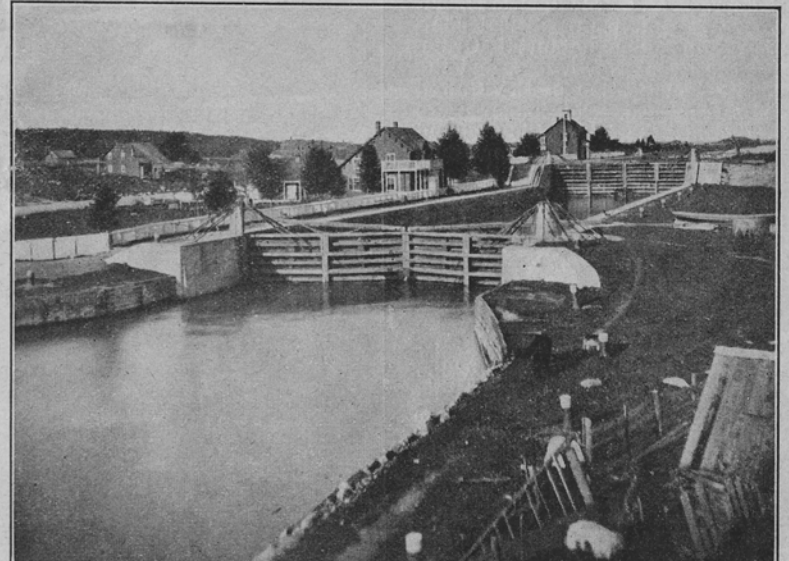
In 1850 the Cleveland Iron Mining company was formed. The incorporators were John Outwaite, Morgan L. Hewitt, S. Chamberlain, Samuel L. Mather, Isaac L. Hewitt, Henry F. Brayton and E. M. Clark. Mr. Mather was the father of Mr. Wm. G. Mather, president of the Cleveland-Cliffs Iron company, which was incorporated May 18th, 1891, and was the consolidation of the Cleveland Iron Mining company with the Iron Cliffs company. Since that time it has acquired a number of properties, such as the Jackson, Negaunee and Republic mines and had discovered or developed a number of others. The land of the Cleveland company lay to the west of the Jackson where the city of Ishpeming now is and again to the west was the land taken by the Lake Superior Iron company, which was formed in 1853. These and several other mining companies formed about the same time did not attempt the manufacture of iron, but after a few trial ship loads which had to be transported past the rapids at Sault Ste. Marie, waited for the opening of the canal and locks.

The first ore was hauled to Marquette in wagons and later in cars along what was known as the plank road. In 1857 the Iron Mountain railroad was completed from Marquette to the mines. This was known

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Cleveland Ore Dock at Marquette in 1873



First Lock at Sault Ste. Marie. Started in 1853. Completed in 1855.



# CLOVER LAND

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later as the Marquette & Bay de Noc, a point on Lake Michigan. Later still the name was changed to the Marquette, Houghton & Ontonagon railroad and it is now part of the D. S. S. & A. railway system. It was built by the parties who incorporated the Lake Superior Iron company.

The opening of this railway stimulated the settlement of Marquette county and the town of Marquette experienced its first building boom. The structures were mostly of wood. The business portion of the town was destroyed by fire in 1868.

Previous to the building of the first ore docks, wagons from the mine were unloaded on a platform and the ore taken to the boats in wheelbarrows. The first ore dock was erected in 1855 by Mr. Daniel H. Merritt, who is still living in this city.

In 1857 Mr. Charles T. Harvey, who had been engaged in constructing the locks at Sault Ste. Marie, came to Marquette and formed the Pioneer Iron company, which built the first charcoal blast furnace for the manufacture of pig iron at Negaunee under the superintendence of Mr. S. R. Gay. Mr. Gay later on built the furnaces at Forestville and Collinsville near Marquette. In 1864 Mr. Harvey became associated with the incorporators of the Iron Cliffs company which included Mr. Samuel J. Tilden of New York and William B. Ogden and John W. Foster of Chicago.

The demand for pig iron caused by the civil war led to the erection of a number of small furnaces in the district. A list prepared in recent years shows that there were 23 of these furnaces in the Upper Peninsula and 14 in the Lower Peninsula. These included a few of the large and modern furnaces, but most of them were small and have long since been abandoned. The clearings made in cutting off the hardwood opened the district for settlers. In many places the ruins of the Bee Hive charcoal kilns can be found.

Mining in the early days was mostly in open pits, from which the ore was hauled in carts to the railway. At first and until about 1860 only the hard ore was mined as the soft ore was not regarded as valuable, although mined in other parts of the world. Mr. Gay has been given the credit of pointing out locally the value of the soft ore which now forms the bulk of the shipments.

The miners who came here were mostly emigrants from Europe. Cornwall in England, where the use of steam power in mining had developed, furnished many of the men. Following them came Germans, especially after the disturbance in 1848 when they sought a freer country. French Canadians came here to clear the forest, though many of them had been pioneer in exploring the wilderness, more particularly for the fur trade. Irish and Scandinavians followed and later on these were succeeded by emigrants from more distant parts of Europe, such as Finland, Austria and Italy. The copper country and Marquette county became the training ground of miners and for a number of years furnished skilled men for the development of mines in the western states and in other parts of the world. The native American has never taken to underground metal mining except in the capacity of owner, boss and mechanic.

The opening of the Marquette Range was followed in 1877 by shipments from the Menominee Range in what is now Dickinson County and in 1882 by shipments from Crystal Falls and Iron River districts, to the docks at Escanaba and later to Gladstone.

The Gogebic Range was opened in 1885 with shipments by way of Ashland. In Minnesota the Vermilion Range was added in 1884 and the Me-



Exploring party on the Marquette Range in 1873.

sabi in 1895. All these mines first shipped by Two Harbors, but later on ore docks were built in Duluth and Superior. The Cuyuna Range added to the shipments since 1911.

All these ranges together shipped a grand total of 835,163,094 tons up to the end of 1917. Of this the Marquette Range produced 124,166,213 tons, or about one-seventh of the total. From 1857 the tonnage sent out increased slowly. It was 1873 before the annual shipments reached one million tons, but in 1882 it had reached two million; since 1905 the Marquette Range shipments have averaged four million tons and most of this total is shipped from the docks at Marquette and Presque Isle, the rest going by way of Escanaba.

The increase in size of the vessels carrying the ore has been equally remarkable. In 1856 the largest cargo was only 400 tons, in 1900 the largest cargo was 7,450 tons, but now the average of the entire fleet of 400 vessels is more than that, 7,822 tons, and the fleet has a capacity of over three million tons for a single trip. To take the tonnage of sixty million last year, the boats must have averaged a trip in about ten days during the 30 weeks of navigation.

The value of the ore at lower lake ports diminished from \$10 a ton in 1855 to an average of about \$4 in 1914 before the war, largely due to cheaper methods of mining and handling, while the vessel rate from Marquette fell from \$3 a ton to 50 cents in the same period.

On the Marquette Range mining underground was begun about 1878 because the ore at the surface had become exhausted and the deposits had to be worked under a capping of rock. At first this resembled underground quarries, but as time went on the type of mining developed which we are now using. In the hard ores where the ore and the surrounding rock are strong enough, mining is carried on in large openings which are commenced in tunnel-like form and enlarged by stoping or breaking down the ore in a pile so that the men can always reach the back and drill the necessary holes for blasting. In the soft ores the kind of mining used is some form of what is known as the caving system, where, after drifts or small tunnels have been driven to the extremity of the deposit the remaining ore is entirely mined out and the overhead material allowed to drop. This produces on surface large caved areas. The filling system has never been adopted in this district owing to difficulties and ex-

penses and also because it is not necessary to support the surface in such sparsely settled community.

The mines of the district are as well equipped with machinery and modern appliances as any mining district in the world. Many of the mining plants are of standard type, including brick office, engine house and shop buildings and also a dry or change house for the men, which is fitted with modern conveniences for washing, including shower baths, and provision made for drying the underground clothing. The shaft house, where the ore is loaded into railway cars, is usually of steel. In the mine itself the shafts are mostly lined with concrete so as to avoid danger from fire and the dividends and ladder roads of the mine have electric light and every safety device has been provided for the men, several of the companies employing mine inspectors whose duty it is not only to visit the mines regularly but also confer with the men as to any safety rule and appliance that they may have to suggest. There has also been kept going for several years previous to the war a small school for shift bosses in each of its districts where young men who have the necessary aptitude have been given courses in mathematics, map drawing, geology, safety appliances and other subjects connected with their work.

Mining accidents cannot be avoided entirely, but with great care and the installation of safety appliances the number of accidents has been reduced steadily. In 1909, Mr. Murray M. Duncan, the vice president and general manager of the Cleveland-Cliffs Iron Company, gave an address before the Lake Superior Mining Institute calling attention to the need of legislation for compensation to workmen in case of injury. The compensation act of Michigan was ultimately compiled in conference with mining men. Besides paying the usual compensation, some companies provide pension for their old employees. In all of the locations building ground is leased at a nominal rental to employees and gardens or small fields are provided outside the town.

A large hospital has been constructed at Ishpeming, where no expense has been spared to provide modern facilities for taking care of the injured or sick. There are also company hospitals at Gwinn and Munising.

One of the companies has developed a new district to the west of Ishpeming, known as North Lake, and has greatly enlarged the mining district of Gwinn, 20 miles to the south of

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district.

The limits of the iron formation have considerable scope, but only a small part of it is likely to be productive. The geology of the district has received a great deal of attention from the early days, principally because of the many outcrops of rock. In a general way it can be stated that the ore is found in a jasper formation, a sedimentary rock which occupies basin-like depressions in the surrounding granite or other rocks of a lower series. This jasper has considerable extent in the region of Negaunee and Ishpeming, covering several square miles together with its interbedded greenstone masses which forms prominent hills. The iron formation has great thickness. The hard ore first discovered is at the top of this series. Lower down in the series occur the large deposits of soft ore. The Athens mine recently opened at Negaunee has a depth of 2,600 feet and other deposits are likely to be found at even greater depths. The larger part of Marquette county is not likely to be found mineral bearing and much of the land in the neighborhood of the mines is too rough for cultivation except in narrow valleys.

The mining district as a whole has provided good wages and comfortable living ever since it was established and there never has been any difficulty in obtaining men for the permanent work in the mines. The severity of the climate and the distance from centers of population has not been found an objection where the men are well treated.

Besides mining, an important industry in the district for many years was lumbering. The bulk of the white pine timber in the neighborhood was removed mostly between 1885 and 1895. Since that time most of the lumber has consisted of hemlock and hardwood. There is an immense amount of mixed timber still standing in parts of the county. The operations at present also cover mine timber, which forms a considerable item.

Besides iron ore, the district has produced but little of value in minerals. In the early days brownstone quarries of Potsdam sandstone were operated in Marquette, but this kind of building stone has gone out of fashion to a large degree. The Ropes gold mine was operated for several years and up to July, 1897, produced nearly one million dollars' worth of gold. It is believed that the mine could be operated with profit and that other mines may be found, but the outlook is not very encouraging generally for

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