Iron Ore Mining in Minnesota

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IRON ORE MINING IN MINNESOTA.[1]

THE iron ore mines of Minnesota, so far as they are developed, are situated in St. Louis county, about midway between Lake Superior and the boundary line of Ontario. They are located in two ranges, which are about twenty miles apart and extend in an easterly and westerly direction; the more southern of the two is the Missabe, the other the Vermillion Range. The ore deposits do not stretch in an uninterrupted body across the country, they are scattered along in groups, at irregular intervals; long stretches of non-merchantable ore being sparsely interspersed with groups of rich mines. On the Vermillion Range two groups of mines are now in operation; one at Ely and the other near Tower, on the east shore of Lake Vermillion. The mines on the Missabe Range are centered around the towns of Biwabik, McKinley, Sparta, Eveleth, Virginia, Mountain Iron, and Hibbing. A number of new mines are being developed near Sharon and Buhl. All mines on the Vermillion Range are underground, ranging in depth from five hundred to one thousand feet. There is no mine over two hundred and fifty feet in depth on the Missabe Range, but quite a number are surface or daylight workings. The way in which the ore from such mines is extracted differs materially from the old practice of mining underground deposits; two systems are in use, milling and steam shovel work. The latter is conducted on the same plan as the work in an ordinary gravel pit, with the exception that first the overlaying gravel and sand is stripped off the ore body. The ore is shaken loose by powder blasts, and loaded by steam shovels into railroad ore cars. In order that this system of work shall be economical, there must be no delays. The milling system is resorted to in all mines where the ore body lies at

[1] Reference is made to HORACE V. WINCHELL'S *Minnesota Iron Mining, Economically and Statistically Considered* and the *Seventh Biennial Report of the Bureau of Labor of the State of Minnesota.*

no great depth from the surface, and where, for various reasons, steam shovel work is not advisable.

The essential features of the milling system are, first, the removal of the overlying-ground and the sinking of hoisting shafts in the side walls to the bottom of the ore deposit. Drifts and cross-cuts are made from the shafts through the ore body, and numerous raises are cut to the surface. The raises are timbered and provided on the lower end with proper appliances for loading the ore into tram-cars. The ore on the surface is loosened by blasting and falls down the raises. At the bottom it is drawn out and conveyed to the shafts, where it is hoisted to the surface. This system of mining is very economical and requires very little timbering, aside from that of the drifts, cross-cuts, and raises.

All the ore from the Vermillion Range, and much from the Missabe Range, goes to the docks at Two Harbors; the remainder is taken to West Duluth, or to Allouez Bay, near West Superior. The year 1900 was marked by its great activity in iron ore production. The year's shipments, from all Lake Superior mines, amounted to 19,059,393 long tons, and the Minnesota mines contributed a little less than 50 per cent. of this amount. The ore docks mentioned above received and loaded, during the season, 9,465,355 tons of ore; 7,809,535 tons came from the Missabe, and 1,655,820 tons from the Vermillion Range. Last year's production showed an increase of 1,067,469 tons over that of the preceding year. Three railroads divide the transportation of the ore from the mines to the docks, and the figures best give an idea of the heaviness of the traffic. One mine of the Missabe Range loaded and shipped last year 14,000 tons of ore in one day; that is to say, within twenty-four consecutive hours. Four steam shovels were at work scooping the ore from the stock piles into the railroad cars. Five hundred and sixty cars of twenty-five tons capacity and eleven locomotives were required to move that quantity. An ore train generally is made up of one locomotive, fifty-one ore cars and one caboose, and all the cars and locomotives coupled together

would have made a train two and one-half miles long. Since last year, however, ore cars of thirty-five and fifty tons capacity have come into use. The total amount of last year's production, loaded in cars of twenty-five tons capacity, would have required 378,614 cars, and 7,424 locomotives to move them. They would have made a train 1,816 miles long. Bearing in mind that lake navigation generally lasts but eight months of the year, and that with the close of navigation all ore movements by rail come to an end, it will not be surprising to learn that ore trains have precedence over any other train on the road.

The great bulk of the men employed in the mines, seven to eight thousand, are foreigners. Mr. John Pengilly, general manager of the Chandler Mine at Ely, says in a description furnished to the Geological and Natural History Survey of Minnesota, 1896–1898: "There are not more than 10 per cent. of our men who speak the English language, and not more than the above number who have the remotest idea of mining." Nearly 40 per cent. of all so-called miners are Finlanders; another 40 per cent. are Austro-Hungarians; Italians form about 8 per cent. of the whole, and the rest are American, German, Scotch, Swedish, Canadian, Welsh.

Each of the two principal classes present distinct features of interest to the student of political economy. The Finlander, as a rule, is a strong, well-built person, all muscle and bone, and from childhood used to hard work and meager fare. Reared under adverse circumstances, and under an unsympathetic government, he came to this country buoyed by the hope of bettering his condition, and to enjoy the free exercise of political rights. It is his ambition to become a citizen, and one of his first acts, as soon as an opportunity is presented, is to declare his intention of naturalizing. According to the moral influence of his surroundings, the character of the Finlander as a citizen will be determined. We find the best proof for this in relative conditions of the second oldest mining town of both ranges—the town of Ely, on the Vermillion Range.

The Chandler mine was opened in 1888, and the Pioneer

started up the following year. Prior to this Ely was practically unknown. Today there are five mines in operation around Ely, giving employment to about 1,300 men. The town has a population of 3,700 inhabitants, which includes nearly 90 per cent. of the mine employees. There are no company dwelling-houses, boarding places, or stores, and the employees, when not on duty, are free from restraint by the company.

Of the total number of mine workers at Ely, 40 per cent., or about 520 persons, are Finlanders. A Finnish national temperance society of 350 members is maintained principally by mine employees. They have a fine, steam-heated hall, lighted by electricity, and with a seating capacity for 500 people. Weekly meetings and occasional entertainments are held, and the society, in addition to its efforts to elevate and improve its members, maintains a sick and death benefit feature. Mr. Pengilly, who has been living at Ely since the opening of the first mine, says that the beneficial effect of this society upon its members cannot be overestimated; that its influence has helped to reduce the number of accidents, incidental to the hazardous occupation of mining; the companies obtain better workmen, and the families of its members are lifted to a higher social standing. Of ten graduates, comprising this year's class, four were children of Finnish parentage. Many Finnish miners invest their savings in farm land, working on the farm during summer and fall, and returning to the mines for the winter; continuing thus until they have cleared off all incumbrance from their future homesteads.

The Austro-Hungarian, a man well built and by nature fitted for hard work, shows different characteristics. He is not as ready to become assimilated, his thoughts linger more in the wild Pushtas of his far-off country, and it seems to be his dream to get enough money to go back there to live. There are, of course, many exceptions to the rule. Single Austrians will club together and hire one of their country-women to do the housekeeping for them, they buying the provisions, for which each one pays his share, and all surplus money thus saved goes into

the stocking or bank, for the purpose already indicated. The sanitary conditions under which they thus live are open to much improvement; but they make, in a general way, a good labor stock, which, particularly in dull times, will stand much driving and pushing. An effort is being made of late, at different mining towns, to introduce temperance features into the beneficial societies maintained by the Austro-Hungarians.

Of the third large class of mine workers, the Italians, it is to be said that they are not of such strong physique as the Finlanders or the Austrians, but they are persistent in their work; and, as one mining captain put it, "they do not take such big shovelfuls as the others do, but they pick away, and when the day is over I find that they have done just about as much work." They are, however, better adapted to surface work, and prefer to labor in places where the sun is shining upon them. The man from northern Italy is, according to the statements of mine officials, docile and very willing to work, and in good times, with high wages and plenty of work in sight, they are a better class to get along with than men of other nationalities. The south Italian is certainly frugal and saving, so much so, indeed, that a dozen of them will huddle contentedly together in sleeping quarters which, under ordinary circumstances, would be hardly sufficient for half that number. They believe in the "stocking" savings bank, and their ambition leads them to dream of a banana push-cart in the near future, or ownership of a grape patch in some southern country.

The sturdy Cornishman is considered the mainstay in all mines. He is an experienced, cool-headed miner, reliable, temperate, and industrious. Out of this latter class come the greater number of mining captains, foremen, and bosses. Other nationalities have too small a representation among the miners to be specially discussed here.

The conditions of mine work on the Missabe Range, as has already been stated, differ in many respects from those of the Vermillion Range, and their effect upon the social conditions of the employed is very observable. On the latter range all mines

are underground, and offer a chance for all-year, steady work; which in itself is a great inducement to maried men to settle down and become residents of the mining town.

Underground mines continue their operations after closing of lake navigation, the winter's production being deposited on the surface for future shipment. But things are different on the Missabe Range; here we find many open-pit or surface mines. They are worked during the navigation season only, which at best is only seven to eight months, and the men are forced to idleness for the remainder of the year, or have to hunt work in the logging camps on the range. Other mines, which are worked by the milling system, reduce their working force with the advent of winter, and they naturally give preference to the married men. Moreover, taking into consideration the fact that the mines on this range are as yet in a state of development, it is obvious that the inducements for married miners to settle down are not very great; and this, together with outside influences, has created a disposition of unrest and an inclination to shiftlessness among miners; it has brought forth the tramp miner.

The latter is a great source of complaint from mine managers. They say that conditions had become so unbearable to them that they were compelled to adopt strict rules relative to observance of working time and payment of wages. One mine superintendent said:

> The habit of giving to private persons orders on their pay had become such a nuisance that during some months we had to handle over one thousand of such orders, of which a great percentage had been given to saloonkeepers; yet we had only about 400 men on our pay roll.
>
> The Austrian is in the habit of celebrating every holiday on his calendar, and as they did not think it necessary to give us previous notice of their intention, we found on many a morning our working force so crippled that we had to shut down altogether for that day. So in order to protect our own interests, we gave strict notice that none but legal holidays would be recognized.

Another great annoyance is the disposition of single men to quit work at any time, knowing that they again will find ready

employment at some other mine or in the lumber camps. The slightest provocation, or the desire to go on a spree, is, as mine officials say, a sufficient inducement in times of plenty of work and good wages to quit a job, and if such men cannot find employment again under their own name they will hire out under an assumed name. All mining concerns have one monthly pay day, and many of them have adopted the rule that anyone who wants to leave their employ has to give ten days' notice, and settlement for back wages will be made only after expiration of such time.

The chances for beneficial recreation and elevating intercourse are but meager in mining towns, and unmarried men are too much at the mercies of the saloon. Too much money, which otherwise would be saved, is thus expended in society injurious to both health and morals. It must be stated, however, that time will also change this condition; that with the development of the mines on the Missabe Range, chances for all-year work may become better, and that steady, married workmen will replace the tramp miners.

Noteworthy mine settlements are already established at the Fayal mines near Eveleth, at Sparta, and at the Elbe mines, near McKinley. These properties are maintained by the interested mining companies, which also take care of the sanitary regulations. The town of Fayal is a very attractive place; over five hundred miners' families live in company houses; some of them have bought their homes, paying a small rental for the land, and the surrounding grounds are laid out in gardens or lawns, which help to make the place cheerful, attractive and home-like. Here, as in all similar places, no stores nor saloons are tolerated.

Wages for mine workers have steadily increased during late years; this will be seen by the following table, which has been secured at different mines of both ranges:

	1896	1897	1898	1899	1900	1901
Miners - - -	$1.83	$1.77	$1.86½	$2.00	$2.20	$2.42
Trammers - -	1.61	1.54	1.81½	1.87½	2.00	2.08
Underground laborers - - -	1.82	1.70	1.77	1.86½	1.80	2.10
Surface laborers -	1.40	1.34	1.48	1.56	1.75	2.10
Contract workers	.....	.....	.....	.....	2.35	2.52

The State Bureau of Labor, in its seventh biennial report, gives the following data:

	1899	1900
Skilled labor - - - -	$2.80	$2.91
Miners - - - - -	1.93	2.09
Trammers - - - - -	1.79	2.08
Underground laborers - -	1.74	1.97
Surface laborers - - -	1.75	1.98
Contract workers - - -	2.09	2.16
General average - - -	$1.89	$2.07

Mining is classed by insurance companies as a hazardous occupation. The chances for injuries in a mine are manifold, and they come in most instances unforeseen, and in spite of all watchfulness and care. A small quantity of falling ore or rock will suffice to crush a person's limbs, and the careless handling of explosives accounts for a number of mine casualties.

The system of contract work, it seems, has also something to do with a great number of fatalities, incidental to mining. The desire to make big wages is an inducement for workmen to take chances, which, under other circumstances, they would not assume. Foremen and officers are ever on watch, directing the men in their work, and it is an established rule in mines that, first of all things, men must look out for their own safety; but a little too much ore may be taken out of a place before the protecting timbers are put up; men may return to their work, after a blast, before the person in charge has examined the roof overhead, and this carelessness may result fatally to the workmen:

The inspection reports for the years 1898, 1899, and 1900, as

compiled by the State Bureau of Labor, give the following figures relative to accidents:

	Mines	Men	Fatal	Serious	Minor acc'ts
1898	27	4,431	18	39	169
1899	30	6,645	34	71	316
1900	33	7,929	39	41	363

It should, however, be mentioned that two explosions alone were the cause of fifteen fatal and three serious accidents during last year. The fact, furthermore, that some mining companies report every slight bruise or cut, which may involve a disability to work, of one or two days only, it seems, has to account for such high figures in the accident reports.

All mining companies have arrangements made for medical treatment and care of their men in case of injury or sickness, and as a result of this, spacious and fine hospitals have been built in some mining towns near which a great number of men are employed. Prominent amongst them are the hospital at Ely, the company's hospital at Fayal, and the one recently opened by Dr. More at Eveleth. The latter is modern in every respect, and has space for forty beds, besides a few rooms for private patients. All mine employees have to submit to the deduction of one dollar per month from their wages, and they receive, as an equivalent, free medical treatment either at the hospital or at their homes, if injured or sick, and the hospital staff will minister also to the miners' families without looking for extra compensation, except in cases of childbirth, etc.

Benefit clubs have been organized at many mines. There is, however, no uniformity in their features, but all have for their object a weekly payment to any member who, by accident, has been disabled, and a sum of money in case of total disability or death as a result of an accident.

The efforts of the Chandler and Oliver iron companies to provide at Ely a place of recreation for their employees should also be mentioned. At beautiful Long Lake, near the Chandler

and Pioneer mines, is a strip of land four acres in extent, leased by the Chandler Iron Co., and this tract, which is nicely wooded, has been transformed into a park. Bath houses for both sexes, a grand stand, a pavilion, and other booths, have been built, and the families of the Ely miners here have an opportunity to while away the hot summer days. The mine managers, who jointly carry all expenses for the maintenance of this park, deserve high credit for this piece of humanitarian work.

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