# MENOMINEE RANGE HISTORY – IRON MINES – CHAPIN MINE, IRON MOUNTAIN, MICHIGAN

***[Compiled and Transcribed by William J. Cummings]***

*Menominee Democrat*, Menominee, Menominee County, Michigan, Volume 1, Number 9 [Saturday, January 2, 1886], page 5, column 3

**Wages have advanced at the Chapin mine.**

**Frank Kieler** fell off the scaffolding at the **Chapin saw mill**, **Iron Mountain**, a distance of 12 feet, last Monday, breaking his leg above the ankle.

*Florence Mining News*, Florence, Florence County, Wisconsin, Volume VI, Number 27 [Saturday, July 3, 1886], page 1, columns 1-5

## A GREAT PLANT.

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### THE LARGEST AIR COMPRES-SORS IN THE WORLD.

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### A Gigantic Monument of Modern Machinery Fifteen Miles from Florence About which Little is Said – Furnishing Compressed air for Machinery Located Three miles From its Production – A Triumph of Mechanism Hidden, but doing Good Work in the Midst of a Wild and Unsettled Country – Nature Harnessed and made to do Economic Duty – Splendid Illustration of the Magnificent Rand Compressors.

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About fifteen miles southwest of Florence, on the Michigan side of the Menominee river famous for its adjacent wealth in pine and iron and historic as the canoeing ground of Father Marquette and the disciples of pioneer religion who followed him, is located the largest air-compressing plant in the world. Residents of Wisconsin and Michigan, while cognizant of the existence of the plant, do not realize its magnitude and few take into consideration what a monument of civilization and engineering skill is there reared in the midst of an unbroken wilderness. Nature, seemingly aware of the necessities which the development of a rich region would create, formed there a sudden drop in the bed of the Menominee river and the result is known as the Upper Quinnesec Falls, forty-seven feet in height and furnishing unlimited power, which has been harnessed by modern skill and now does economic duty. The enterprise consists of a plant of air compressors located at Quinnesec Falls on the Menominee river, which compress air into a line of pipe leading from the Falls to Iron Mountain, (three miles distant), where it is employed to drive the machinery of the Chapin and Ludington iron mines, pumping, hoisting and motive power engines above ground, and direct-acting pumps and rock drills below ground – to the exclusion of steam. The entire plant is of the most durable and substantial construction, and has been laid out with a view to future enlargement. The air-main, for instance, being twenty-four inches in diameter, considerably larger than present needs. The idea of using air for motive power at the mines mentioned, *[sic]* originated with Albert Conro, of Milwaukee, who is a practical engineer and is prominently indentified *[sic – identified]* with the Menominee Mining Co., operators of the Chapin mine. He took into consideration the immense fuel expenses, the rapid disappearance of a convenient fuel supply and saw that the cost, instead of

diminishing, was very likely to increase. It was then that he commenced advocating the erection of an air-compressing plant at the Falls mentioned and although distant three miles from the mines spoken of, his perseverance and persistence, coupled with the demand for something of the kind and the reasonableness and good judgment of those associated with him, brought success, I spite of the fact that such an undertaking would require a vast outlay of capital and a huge amount of tedious, difficult labor. A company having as its object the construction of the plant and called the Hydraulic Power Co., was organized in 1883. The stock was taken by Chicago, Milwaukee and Marinette capitalists, all of whom are members of the companies operating the Chapin and Ludington mines. The officers of the Hydraulic Power Co., whose office is in Milwaukee, are: John H. Van Dyke, president; Albert Conro, vice president; George L. Graves, secretary; George D. Van Dyke, treasurer; C.H. Cady, superintendent. Board of Directors: J.H. Van Duke, Albert Conro, Augustus c. Brown, A.A. Carpenter and George L. Graves. As stated above, the stock is owned by the Menominee Mining Co., and Lumbermen's Mining Co., and the compressed air produced is used wholly by the two companies. The plant was rushed to completion and the air pipes were connected two years ago and not withstanding the fact that there were six compressors or three pairs of thirty-two-inch diameter and sixty-inch stroke it was soon ascertained that not sufficient power was furnished and so well was the company satisfied with the work of the Rand Drill Co., of New York, the manufacturers and inventors of the plant, that another pair of compressors was ordered. These are to be of thirty-six-inch diameter and sixty-inch stroke, and re expected to be in place and running by September 1, next. This will make the plant the largest of its kind in the world and of far greater magnitude than the celebrated air-compressing plant erected by the Rand Drill Co., for the Calumet and Hecla copper mine, which is the next largest plant in the world. Taken together with the accompanying excellent illustrations of the machinery, especially furnished for the FLORENCE MINING NEWS, this further description of the great plant, *[sic]* will be valuable, intelligent and interesting: The Quinnesec Falls furnish a natural head of water of forty-seven feet requiring only a slight deflecting wing-dam to turn the water into the flume. At the base of the Falls one bank of the stream turns almost a right angle, forming a large eddy at the foot of the Falls. This deflecting bank takes the form of a steep bluff, and it is at the base of this bluff and at some distance from the Falls that the compressor house is located, this location being chosen because of its forming an admirable natural protection from floating ice and logs. The flume, starting from the stream at some distance above the Falls, leads down to and along the edge of this bluff, and from its side open the several iron penstocks, as shown in the side view. The compressors are arranged in pairs, a crank being attached to each end of each compressor shaft, and a frame attached to each pillow block. The cranks of each shaft are at right angles to one another, and this, together with the heavy gearing employed, give, so far as the eye can detect, a perfectly uniform rotary motion. Each pair of compressors stands on its own separate foundation and is supplied with its own independent turbine. The foundations stand end-on to the bank, and each one at a distance fo fourteen feet from its neighbors. The turbines are located at the bank end of these passages, which form the tail races of the turbines and

are decked over so as to form a continuous floor to the compressor house. The wheels are in closed boiler iron casings, the penstock entering at the side and the wheel shafts passing through stuffing boxes on top of the casings.

The method of support and framing adopted (due to the Rand Drill Co.) is worthy of note, and is a fair exhibition of the care with which the entire plant has been thought out and executed. The aim throughout has been to take all working strains by substantial iron framing, and leave to the foundations only their proper function of supporting the dead weight of the machinery. It will be seen that the main pillow blocks and jack shaft bearings are tied together by rigid iron tie beams, which render the distance between gear centers a positive certainty, and render any movement from the thrust of the gears an impossibility. It is however, in the arrangement of bearings at the bevel-gears that the principle is best seen. The customary arrangement for this situation would be, we suppose, to support the top of the turbine shaft by a bearing below its gear and mounted on a bridge-tree, and the bevel-gear end of the horizontal jack shaft by a bearing behind the gear and mounted either on the edge of the wheel pit or on a separate bridge-tree, and to take the end thrust of the jack shaft by a collar bearing, located indifferently on either one of its bearings, or by a step at its end. Now it will be observed that with such a plan the reaction to the driving force is transmitted form one bevel wheel bearing to the other through the foundation, and also that the end thrust is ultimately resisted by the foundation. The plan here adopted prevents all this. The two shafts are extended through their gears until they nearly meet. The bearings are placed on these extended ends, and both are mounted on and ridigidly *[sic – rigidly]* secured to the same bridge-tree, and the end thrust collar is arranged here also. A little reflection will show that with this arrangement neither the working strains nor the end thrust of the shaft ever get beyond this compound bearing, the forces then meeting and neutralizing one another. The Compressors are of the Rand "Class A" type, and are of the most durable and substantial construction throughout. The frames are of the Corliss pattern, with the addition of a foot under the end of the cross-head slide main bearings. Cross-head gibs *[sic – jibs]* and connecting rod brasses are of phosphor bronze. The main bearings are four part boxes, very large and fitted with very large steel wedges for taking up side wear. Valves are of the standard Rand poppet construction – the inlets of steel and in two pieces, and fitted with a new form of guard to avoid all possibility of falling into the cylinder. The method of absorbing the heat of compression is by the well-known method of the Rand Drill Co., which consists of a brass-lined water-jacketed air cylinder, water-jacketed air cylinder heads, and a hollow piston supplied with water through telescoped tubes, which pass through a stuffing box in the back cylinder head, thus surrounding the air on all sides by cold metallic surfaces. The compressors are run by hand regulation only. A complete automatic regulator was designed especially for them, but the designor *[sic – designer]* had to be content to see it die a natural death, as it was soon found that the long line of air pipe furnished such a immense reservoir as to render hand regulation all that was necessary. Two pairs of compressors have been in constant operation, day and night, since January 1, 1884*[,]* and have run without hindrance or delay. Their success was immediate from the start, and they have given such satisfaction that it was soon decided to extend the plant. The third

pair was ordered and is now in place ready for work.

It has been reported recently that when the new compressors are in place and running that the air produced would be more than sufficient to supply the Chapin and Ludington mines and that the Hydraulic Powere Co., *[sic]* would undertake to furnish power for manufacturing purposes and thus establish the nucleus of a flourishing manufacturing community in the neighborhood of Quinnesec Falls, near which is located an abundance of raw material, both iron and wood. Relative to this Mr. George L. Graves, a prominent member of the company*[,]* had this to say: "The plant has been built exclusively for the use of the two mines named and whether we shall have air for other consumers or not, *[sic]* will depend wholly upon the demands of the mines."

The passenger riding on the Chicago & North-Western will pass under the huge iron pipes, near ill-fated Keel Ridge, where several unfortunate miners are entombed, with naught but a skeleton shaft house to mark the spot where they met death in the artificial caverns of Mother Earth, while at work removing her vaulted treasures. These pipes convey the power from the largest air-compressing plant in the world, *[sic]* to the machinery used in operating two of the largest and richest deposits of Bessemer iron ore in the world, and such are some of the many rich possessions of this region about which very little has heretofore been said.

*[NOTE: Large illustrations are printed above this article with the following caption:* **Compressed Air Plant of 1,500 Horse-Power Built by the Rand Drill Company for the Hydraulic Power Company.***]*

*The Menominee Range*, Iron Mountain, Menominee County, Michigan, Volume XI, Number 18 [Thursday, July 25, 1889], page 1, column 2

THE Chapin Mining Company this week and hereafter will pay off with checks on a Milwaukee bank instead of currency.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 17, Number 40 [Thursday, February 20, 1913], page 1, columns 1-2

## CHAPIN MINE HYDRO-ELECTIC *[sic]*

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### PLANS FOR INSTALLATION OF BIG PLANT ARE PERFECTED.

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### Project Embraces Immense Electrical Pumps, Electrical Tramming, Stock-pile Hauling.

For many years, the Oliver Iron Mining company has operated at Quinnesec Falls a plant for compressing air for use at the Chapin mine. This plant consists of four turbines, each geared to a duplex air compressor, the entire plant having a capacity of 20,000 cubic feet of free air per minute. This plant does not take all the power that goes over Quinnesec Falls, and after going with great thoroughness into all matters pertaining to rain fall, drainage area, and maximum and minimum height of water, it was decided to install a hydro-electric plant and generate electric current for use in mining operations at the Chapin mine.

The pumping conditions at the Chapin mine, as every one *[sic – everyone]* who is at all familiar with the Menominee range, are extremely severe. Speaking in round

numbers, 3,000 gallons per minute have to be pumped from a depth of 1,400 feet, and this entails a consumption of fuel, even with the best type of steam driven pumping engines, which it was thorough would well warrant a hydro-electric power plant to enable the pumping to be done by electricity.

At certain times of the year, the ice conditions at Quinnesec Falls are so severe that it was deemed advisable to always have in readiness means for generating current by steam power, so that in case of troubles due to ice, the motor-driven pumps in the mine could still be operated. After exhaustive study of the somewhat unusual and difficult problems involved, the following plan was agreed upon, and the work under this plan is now in course of construction:

In a steel and concrete building at Quinnesec Falls, there will be installed two 2,800 h.p. Allis-Chalmers company turbines. These turbines are built for a normal head of fifty-six feet, and will operate at 257 revolutions per minute. Each turbine will be direct *[sic – directly]* connected to one 1,875 k.w. (maximukm continuous rating) 2,300 volt, three phase, sixty cycle generator. By means of step-up transformers, the 2,300 volt current will be converted to 13,200 volts, and delivered to the transmission lines at that voltage. The transmission lines will be carried on steel towers, and will convey the current to the No. 2 Hamilton shaft, at the Chapin mine. Here, by means of transformers, the current will be stepped-down to 2,300 volts.

In the present No. 2 Hamilton engine-house *[sic – engine house]*, there will be installed a relay steam plant to provide current in case of troubles due to ice at Quinnesec Falls. This relay steam plant will consist of one single flow steam turbine driving a 2,250 k.w., 2,300 volt, three phase, sixty cycle generator, built by the Allis-Chalmers company. An Alberger jet condenser will furnish the vaccum *[sic – vacuum]*, using the water from the mine.

After considering various types of motor driven pumps, it was decided that all things taken into consideration, centrifugal pumps would be best adapted for the purpose. Until quite recently, a very large portion of the water made at the Chapin mine, *[sic]* was cut upon the 12th level, but recently the conditions changed and the water is now produced almost entirely on the 16th level. The installation of pumps will be as follows:

On the 16th level, there will be installed two motor-drive centrifugal pumps each having a capacity of 3,000 gallons per minute, and operating under a head of 450 feet. Unless conditions should change, either one of these pumps will have capacity to handle the flow, but provision will be made for the installation of a third pump, should future conditions warrant it. These pumps on the 16th level will throw the water to the 12th level, where will be installed two six-stage motor-driven centrifugal pumps having a capacity of 3,000 gallons per minute, each under a head of 1,000 feet. Here, also, provision will be made for future installation, if necessary.

On the 16th level, there will be installed a 200 k.w. motor generator set, delivering direct current at 250 volts, for underground tramming. In addition to tramming and pumping the current will be made use of for lighting, driving motors on *[the]* stockpile and in the machine shop.

It will, of course, be understood that an extensive installation as this will be, *[sic]* involves in addition to the machinery above mentioned a full complement of apparatus, which it is unnecessary here to describe in detail. The centrifugal pumps will be built by the International Steam Pump company, from Worthington designs. The motors

driving these centrifugal pumps and control therefor *[sic – therefore]*, will be of General Electric company build. The switch-boards *[sic – switchboards]* at the No. 2 Hamilton engine-house *[sic – engine house]* and at Quinnesec Falls will be built by the Westinghouse Electric & Manufacturing company.

All plans for this installation have been made in the general offices of the Oliver Iron Mining company, Duluth, Minnesota, under the immediate supervision of S.S. Rumsey, chief engineer of the company.

It is believed that this installation will be as thoroughly up-to-date in every way as any hydro-electric plant in the country, and will effect a great fuel economy at the Chapin mine.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 17, Number 40 [Thursday, February 20, 1913], page 1, column 2

## Butte & London.

Preliminary work preparatory to the installation of an electric plant is being done. Electrical equipment will be used throughout as it is found to be more economical than steam. The agreement entered into between the Butte & London company and Thomas F. Cole states that work must be started within ninety days, and dates from December 24th, 1912, so the work of pumping out the shaft will be started shortly after the first of March.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 17, Number 40 [Thursday, February 20, 1913], page 1, column 2

## Large Power House.

Work on the new power-house *[sic – power house]* for the new hydro-electric plant of the Oliver Iron Mining company is making excellent progress under the supervision of G.H. Robey. The building will be 55x61 feet in size on the foundations and three stories in height. The construction material is concrete and steel. Work on the new concrete dam will commence at an early date.

*Florence Mining News*, Florence, Florence County, Wisconsin, Volume VI, Number 46 [Saturday, November 13, 1886], page 1, columns 3-6

## MINING NEWS.

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## A NEW DEPARTURE IN SHAFTS AT THE CHAPIN MINE.

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**"D" Shaft, Which is to be Started Down Next Spring, to be Circular and Curbed with Iron Castings – The Shaft to be Twenty-two Feet in Diameter and to Accommodate Two Cages and Two Thirty-Inch Pumps – The Present Season's Output at the Chapin and the Product that can be Achieved in a Couple of Seasons More – The Ore Market – Work Commenced on the Breitung Property, Pine River – Byron White in This Vicinity for Angus Smith – Dr. Bond's New Option – Exploring in Florence County – Miscellaneous Mining Notes.**

# MENOMINEE RANGE HISTORY – IRON MINES – CHAPIN MINE, IRON MOUNTAIN, MICHIGAN

***[Compiled and Transcribed by William J. Cummings]***

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While at the Chapin mine, on Tuesday, a representative of the MINING NEWS had the good fortune to run across Albert Conro, of Milwaukee, one of the owners of that great mine, and to whom is due, in a great measure, the credit for the splendid equipment of the Chapin in every respect. The new hoisting plants, just put in by the M.C. Bullock Manufacturing Company, are giving the best of satisfaction in every way. The plants consist of two pairs of conical drums, one pair furnishing power for "B" shaft and the other for "C" shaft. The drums are 10 ½ feet in diameter at the small end and 14 ½ feet at the large end. If desired, the cages can be hoisted and lowered at a velocity of 1,500 feet a minute, but at present they are operated at a speed of 1,000 feet a minute. One cage ascends while the other descends, and all of the power is compressed air, this force being employed on the brakes and in fact every place where power is utilized. The new plants are as fine as any in the world and could not be more perfect. Mr. Conro stated that a reasonable annual capacity for each would be 150,000 tons of ore, and added that they could hoist all of the ore that could be furnished. The new plants are covered by houses of red sandstone, which material is quarried adjoining the mine and which is also used for filling. The stone makes a splendid building material, and the exterior of the new engine houses is really very pretty, and of the interior, when finished, the same can be said. The buildings, two in number, are well-lighted, and a large plate glass front allows the man manipulating the hoist to see everything that is going on in the shaft house. In the rear part of each engine house a set of four boilers has been put in, which can be instantly utilized in case of any accident occurring that would cut off the compressed air supply. At present they are hoisting from "A," "B," "C" and No. 7 shafts and form the open pit, and Mr. Conro stated that the Chapin's product would reach 200,000 tons this season, if they could get cars. No. 7 and "A" shafts are equipped with skips, while "B" and "C" shafts are equipped with two cages each. The force of men employed at present, including those underground, on the surface and engaged in the work on improvements of all kinds, numbers about 1,200. Speaking of "D" shaft, Mr. Conro said: "We will not start the work of sinking 'D' shaft until next spring, as we have enough on our hands just at present. After a great deal of drilling, we have at last determined upon the location of this shaft, which will be put down on the foot wall at the west end of the mine, where it is 100 feet to the ore. This shaft, when sunk, will be circular, 22 feet in diameter, and will be curbed with iron castings. It will be large enough for two cages and two 30-inch pumps, and we estimate that it will require nearly two years' time to sink it. When 'D' shaft is ready we shall put in another hoist, similar to our new ones, to command it, and we shall have to erect a new engine house and also a new pump house. When we get ready to hoist form this shaft we can achieve an output of 600,000 tons a season, without trouble, if called upon to do so." "B" and "C" shafts are now down 550 feet and are being sunk still deeper. On being asked the extent of the ore vein at the Chapin, Mr. Conro stated: "It is three quarters of a mile long on our property, and varies from 30 to 130 feet in width. On the property adjoining us on the east we have expended $40,000 in exploring without finding anything. The ore seems to come to the surface and pinch out on the east, while on the west it holds its size, but dips down." The Chapin is a mammoth mine, is splendidly equipped,

and when all the changes in the underground operation of the mine are made and all of the contemplated improvements are completed, it will doubtless be able to achieve the largest product in a given time of any mine in the world.

The past week has been a busy one in the ore business, and there has been few features of interest to relieve the monotony of a strong but inactive market. Few transactions are reported, although there are said to be numerous buyers willing to take any lots that may offer within a certain range of prices. We hear of two transactions of about 1,000 tons each of non-Bessemer ore, ranging from 58 to 62 per cent. *[sic]* in iron on a basis of $4.90 per ton in Cleveland. In regard to the amount of ore still in the hands of producers waiting for purchasers and the probability of a shortage in the supply that may force some furnaces to blow out before the opening of navigation next season, opinions seem to be quite varied. A gentleman well posted and prominent in ore circles expressed it as his opinion that each of the prominent sellers would have from 5,000 to 15,000 tons by the close of the season, and that while stocks were likely to be pretty well cleaned up before new ore arrived, all would be able to cover their legitimate wants, though they would of course, be compelled to pay higher prices than earlier in the season. Some other sellers seem to concide *[sic – concede]* with this view. On the other hand individual sellers claim to be entirely sold up, a few admitting, however, that they have odd lots to sell. One gentleman assured us that he believed that there was less than 50,000 tons of ore in the hands of the producers, and that several furnaces are about out of ore, and one large one alone would consume all there was left unsold. He said there were furnaces about out of ore that would be obliged to shut down before the end of the year unless they obtained new supplies, and he did not know where they could get them. While we believe that some of the sellers are practically sold up, having but form 2,000 to 5,000 tons to offer, there are others that still have some pretty fair sized lots to dispose of, and if report is correct, there are several lots ranging from 12,000 to 20,000 tons which are being held out of the market, with the expectation of bringing better prices later on. Whether these hopes will be realized may depend somewhat on the course of the pig iron market, as furnace men claim that present prices do not warrant the paying of prices for ore that will cover the advance freight, and they may find it advantageous to shut down rather than pay them. Shipments from upper lake ports have shown a marked decrease the past week. – Cleveland Iron Trade Review.

The fourth duplex air compressor for the plant of the Hydraulic Power Company at Quinnesec Falls, on the Menominee river, was shipped from the Rand Drill Co.'s works in New York city on the 23d ult. *[of this month]*, and will ere long be in position and aiding in the great work of utilizing the immense water power at the point named for operating the mining machinery of the Chapin and Ludington mines, some three miles away. This compressor is the largest yet put in, the cylinders being 36x60, those of the three now in use being 32x60. The air compressing plant of this company is one of the finest in the world, and gives entire satisfaction in its work. – Mining Journal.

Byron N. White, of Ontonagon, who is at present engaged in the examination of the lands owned by Angus Smith in Northern Wisconsin and Michigan, was in town on Saturday last. He had just returned from a trip over the Penokee range, and exhibited

some nice looking specimens taken from Mr. Smith's lands. Mr. White says the Menominee range has far better chances for the future than the Gogebic; that the show for iron ore on this range is just as good or better, and that a mine in this region, owing to greater convenience of location, with regard to shipping, is worth much more than a mine in the Gogebic district.

The Brier Hilll Iron and Coal Co. has closed its negotiations with C.A. Hallett, by which it obtains full possession of the option on section 28, 39-18, Pine river region, Florence county. A crew of eight men was started to work on Tuesday, and by this time exploratory operations are under full headway. Supt. Porter ahs considerable faith in the property, which certainly exhibits splendid indications, and it will be given a thorough test. The camps erected by Capt. Johnson, at the time he explored on the property, will be occupied. The fee here is owned by Edward Breitung and others.

Drs. D.M. and F.L. Bond, of Iron River, have an option on the south half of the north east *[sic – northeast]* quarter of section 15, 40-30, Michigan, northeast of Lake Antoine, the fee of which is owned by the Canal Co. They will commence work on the property at once and it is said that the indications are particularly good. Their friends hope that they will strike it rich and the richer the better.

The two new plants of conical hoisting drums just put in at the Chapin mine by the M.C. Bullock Manufacturing Co., of Chicago, cost $40,000. The drums are 10 ½ feet in diameter at the small end and 14 ½ at the large end. Finer plants of hoisting machinery cannot be found in the country.

George Fay, of Menasha, who is an old explorer on this range, will go to the Vermillion district, during the coming winter, for the purpose of tracing magnetic attractions and doing other work of an exploratory nature.

At the Mastodon mine the season's contracts are about filled. The mine has made a splendid record for the season, all things considered and will doubtless be wrought in a conservative way all winter.

John Luxmore, at the Colby, met with a painful accident from the explosion of a can of powder last Friday evening.

Wood-cutting is progressing at the Caledonia and everything is being done preparatory to active operations.

It is reported that the Menominee Mining Co., *[sic]* will thoroughly explore its lands along ***[need to finish copying this article]***

*Menominee Herald*, Menominee, Menominee County, Michigan, Volume XXII, Number 836 [Thursday, January 13, 1887], page 1, column 3

–John A. Banfield has brought suit against H.A. Chapin and the Menominee Mining Co. for a half interest in the profits of what is known as the Chapin mine. The complainant avers in his bill that he is entitled to one half the profits arising from the leasing of the s ½ of sw ¼ and sw ¼ of se ½, section 30, 40, 30, and claims that he explored the property, entered the land in his own name, and then conveyed the same to Chapin with an understanding that he was to have half the profits. Ball & Hanscom*[,]* of Marquette, are the attorneys for complainant and E.J. Mapes of counsel.

*Florence Mining News*, Florence, Florence County, Wisconsin, Volume VII, Number 4 [Saturday, January 22, 1887], page 1, columns 3-6

## BIG MINING SUIT.

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# MENOMINEE RANGE HISTORY – IRON MINES – CHAPIN MINE, IRON MOUNTAIN, MICHIGAN

***[Compiled and Transcribed by William J. Cummings]***

## PARTICULARS OF THE LITIGATION INVOLVING THE CHAPIN MINE.

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**Rev. John A. Banfield, a Washington Territory Minister, Claims a Half-Interest in the Fee Simple of the Chapin Mine – He Sues H.A. Chapin to Establish his Right, and the Menominee Mining Co. for Half of all the Royalties Earned by the Chapin Mine – Millions of Dollars Involved. Annual Meeting of the Nanaimo Mining Co. – The Iron Ore Market at Cleveland – Exploratory and Other Operations at the East End of the Range – The Commissioner Business – Other Nuggets of News.**

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Some weeks ago the MINING NEWS informed its readers that John A. Banfield had brought suit against H.A. Chapin, for one-half of the fee of the land on which is located the great Chapin mine and also for one-half of the royalty which has been paid to Chapin by the Menominee Mining Co. Further than this, at the time, no knowledge could be obtained. By diligent inquiry the MINING NEWS has since obtained from a reliable source the details of the case. It appears that the bill of complaint was filed by Rev. John A. Banfield, of Tacoma, Washington Territory, against Henry A. Chapin, of Niles, Michigan, and the Menominee Mining Co., of Milwaukee. It sets forth that prior to the year 1864 complainant resided in Marquette, Mich., and had become somewhat acquainted with and had acquired valuable information in respect to mineral lands in the Marquette and Menominee iron ranges, and that in the Menominee range he had made some selections of lands which he was intending to purchase. At some time in 1864 the defendant, Henry A. Chapin, entered into an agreement with the complainant, that he would furnish money, land warrants or script, with which to make locations of mineral lands, and the complainant was to use what information he was possessed of and might acquire, and do whatever was necessary to secure the title to such lands from the United States, and that he and the defendant Chapin were to share equally, in whatever profits might result or arise form the venture; that, acting under that agreement, and with that understanding, he subsequently selected and purchased the south half of the south-west quarter and the south-west quarter of the south-east quarter of section thirty in township number forty north, of range number thirty west, in the county of Menominee, and procured a title thereto, taking the deed in his own name; but that, as it was a part of the understanding that the title should be in Chapin until Chapin should be repaid the amount of his expenditures in making the purchase, the complainant on or about the 20th day of May, 1865, conveyed the title to Chapin. That at that time the land was situated in an unbroken and uninhabited region, and had never been explored except for timber and iron, and was remote form water transportation and two hundred miles from any railroad. That complainant shortly after went to Washington Territory to live, relying upon Chapin's agreement to divide with him whatever profits, rents, or royalties that might thereafterwards be received. Complainant never learned until some time in 1882 of the development of

the property and the lease to the Menominee Mining Co., and the fact that Chapin was receiving royalty therefrom. Chapin now repudiates all obligation on his part to account to or share with the complainant any portion of the profits realized from the property, and the suit is brought to compel an accounting by Chapin for all the royalty received from said property, and to compel him to pay over to the complainant one-half thereof, with interest thereon, and to establish the complainant's rights to one-half of all royalties which may hereafter accrue, as well as to establish his title to an undivided one-half interest in the realty. It seems that the complainant is a clergyman, and like a large proportion of his profession, quite poor, and since he ascertained the fact that large amounts of royalties had been paid, to which he was entitled to one-half, has not been able to institute any legal proceedings to establish his rights. The bill has already been filed in the Menominee Circuit court, and the facts therein stated have been sworn to by the complainant. The fact that about half a million dollars in royalty has already been paid, together with the great value of the mine, makes this case one of more than ordinary interest. If the facts are as sworn to by Rev. Banfield in his bill, it would seem but just, whatever the law may be, that he should have his share according to agreement, in an undertaking and venture which has made the defendant Chapin, through the prudent selection of Banfield, a millionaire.

Sandy Sutherland, of Norway, writes about exploring and mining work at the east end of the Menominee Range, as follows:

"Rumor has it that the old Breen, the most easterly mine on the Range, and one of the first opened, is soon to be worked again, this time by Milwaukee capitalists. The property is considered a good one, and would not have been allowed to remain idle so many years but for the hoggishness of the owners of the fee. Many applications have been made for a lease of the property, but the demands of the owners were such that no one would accept. However, it is now understood that the owners have receded form the stand they previously held, and the mine will be opened up at an early day. –A large force of men are engaged in exploring on section 7, 39-28, near the Sturgeon river, and are meeting with good success This property some years ago was in the hands of Chicago parties, and although they had plenty of means at their command they lacked staying qualities and after expending a small amount of money dropped out at the very time when they should have held on. A diamond drill is now being placed in position on the property, and will probably be in readiness to start up in a week or so. Marquette and Chicago capitalists are the interested parties*[.]* –Milwaukee capitalists have men at work on the east half of the northwest quarter of section 13, 39-29, and are meeting with flattering results. There is scarcely a doubt but what they will early develop a good mine on this property. –The old Garfield property on the northeast quarter of northeast quarter of the same section is being operated again by a new corporation, known as the Lake Hanbury Mining company. Not enough work has been done as yet to prove the value of the tract, but as it is favorably located, being in close proximity to the East Vulcan mine, we see no reason why a paying body of ore should not be found upon it. –The diamond drill on the Isabella property is still boring in ore, having penetrated about 300 feet. This property is now under lease to the Penn Iron Mining company*[,]* one of the wealthiest and largest mine owners on the range. –The new find east of the Vulcan mine continues to grow larger day by day. A considerable quantity of ore is being

raised form it daily, but with more shafts and increased facilities in the way of machinery the output would be much greater. The find has been proven to be a continuation of the Vulcan mine, and is owned by the same company, the Penn. The company has among other improvements erected a large sawmill at the mine for the sawing up of timber, etc., the old one proving inadequate to the demands made upon it. –Much interest is being taken in the explorations of the West Vulcan Mining company on the northeast quarter of northeast quarter of section 9, 39-29, adjoining the Vulcan mine on the west. This is a new organization that filed articles of association some weeks ago. The officers are: president, James S. Dickie; vice-president, John Reber; secretary and treasurer, Charles T. McElroy; directors*[,]* J.S. Dickie, John Reber and Chas. T. McElroy. A very small amount of money and labor were expended on the property some years ago, developing vein matter over 150 feet in width, and finding ore in test pits across the entire formation, but when the general depression came in 1883 the parties then interested dropped it, being short of capital. The new organization has taken advantage of what work was done, and began operations about a month ago, a considerable distance to the south. The result so far is most gratifying, *[sic]* they have discovered the largest body of ore that has been found here for years in the same length of time. Several pits are down to the deposit, and the work of sinking is now in progress. An analysis of the ore taken form the top gave 58 per cent. *[sic]* metallic iron and no phosphorus. The tract is in a direct line between the mammoth Vulcan and Norway mines, and lies about a mile east of this village. This deposit is thought to be the connecting link of the Vulcan and Norway mines. The new owners are to be congratulated upon their good luck. –At the Norway mine preparations are being made for a large output the coming season, and it is probable *[sic – probably]* safe to predict that at least 200,000 tons of ore will be shipped. –Adjoining the Norway on the east are the Saginaw and Stephenson mines, both of which are looking well. It is currently reported here that the latter has been disposed of within the last day or two to Milwaukee parties for $100,000. Private parties are engaged in exploring the property adjoining the Norway mine to the northwest. A shaft is being put down about 300 feet from No. 10 shaft of the Norway, and as the ore vein trends in that direction, there is scarcely a doubt but what they will tap it with their shaft. –Several explorations are in progress at other points, which we shall visit in the near future and let your many readers know how they are looking."

…

Henry Tod, president; John S. Ford, secretary and treasurer, and H.K. Taylor, attorney of the Florence Mining Co., arrived in Florence on Thursday, *[sic]* for the purpose of transacting business. The general offices of the company, which have heretofore been in Milwaukee, will be changed to Florence, in a legal manner. It is probable that the old workings will be pumped out at once, probably commencing to dry them about February 1. Secretary Ford said the only sale of ore made yet was one of 15,000 tons at the mine. He added that his company anticipated achieving an output of between 125,000 and 150,000 tons of ore in 1887. Of course something in the market or elsewhere might occur to prevent the culmination of their anticipations. Mr. Ford suid *[sic – said]* non-Bessemers were changing hands in limited blocks, at Cleveland, at about $4.75 a ton. The matter of lake freights is a dilemma. Vessel men seem bound to demand about all of the small increase in

the price of non-Bessemers. Companies operating non-Bessemer mines are not anticipating any labor troubles from the fact that they will really get very little, if anything, more out of their ore the coming season than last, owing to the smart advance in freights. If nothing arises to prevent, in the way of unlooked-for disturbances, the Florence mine will be most actively wrought. A force of one hundred men is now employed.

The stockholders of the Nanaimo Mining Co. held their annual meeting Wednesday evening. Fifteen thousand shares were represented. The directors reported very fully their action for the past year, the present condition of the company's business and the future prospects, which was approved. The advances in prices of ore and pig iron make the outlook for the business of the company very good for the year 1887. They are getting out over 100 tons of ore per day, and are drifting on their lower level in a very fine body of first-class ore. The reputation of Nanaimo ore for foundry purposes is excellent, and the company hopes to make a large output this year. They elected as directors for 1887, J.C. Wedge, Alex. McDonald, John Spence, Jas. H. Farnesworth *[sic – Farnsworth]*, Fond du Lac; and D.C. Prescott, Marinette. The board elected J.C. Wedge, president; D.C. Prescott, vice-president; and John Spence, secretary and treasurer. – Fond du Lac Commonwealth.

It is reported that a syndicate, composed of gentlemen interested in the Wisconsin Central railway, has purchased the Ashland mine on the Gogebic range, paying $1,000,000 for it. Hayes Bros., who owned the control, have done about as well as anyone on the new Range and they deserve all they have made.

This journal is under pleasant obligations to Supt. Davidson, of the Florence mine, for an excellent pannel *[sic – panel]* photo, *[sic]* of the surface of the mine and surroundings. The work is well executed and was done by Wixson, of Escanaba.

On Wednesday, H.G. Fisk, of Iron Mountain, said the reported sale of the Stephenson mine, *[sic]* to Milwaukee parties had not been consummated. Mr. Fisk holds the controlling interest in the mine, as he owns 10,400 shares of its stock. Jos. Bergeron owns most of the balance. Mr. Fisk states that he and Mr. Bergeron own all of the stock, except about 1,200 shares. It was expected that the trade would be closed the present week and rumor places the consideration at $100,000.

H.G. Fisk, of Iron Mountain, with Dr. Jones and others of Milwaukee, is negotiating for the purchase of the newly-developed Selden mine, at Stambaugh. The gentlemen named visited that property on Wednesday.

Arrangements are being made and it is quite probable that exploratory operations will soon be inaugurated at the Brier Hill mine, Norway. This property is controlled by the Brier Hill Iron and Coal Co., Youngstown, Ohio.

*The Menominee Range*, Iron Mountain, Menominee County, Michigan, Volume XI, Number 1 [Thursday, March 28, 1889], page 4, column 2

THE water was pumped out of D shaft, at the Chapin mine, the later part of last week, and the men are again hammering away at the flint like composition that has formed in the bottom. Talk about the north pole, we suspect that George Edward Thomas broke off a piece of it and drove it down in that swamp while the mud was soft and has been running that machinery all this time just for a blind. We can't believe that a little choride *[sic – chloride]* of

calcium dissolved in water, compressed ammonia, and all that stuff can freeze the ground so awfully hard 100 feet deep. We descended the shaft with Supt. Thomas Tuesday afternoon, and it presents a beautiful sight now, lined as it is with sparkling ice crystals from top to bottom. To demonstrate the efficiency of the freezing process the ice that formed about the pipe that was put down inside the shaft has been left clinging to it for a distance of about ten feet, and is, we should judge, about two feet thick. A small stream of water is entering the shaft in the south-west *[sic – southwest]* corner, making about eight gallons a minute, but no attempt is being made to check this, it being a very simple matter to pump it out as fast as it enters. The shaft needs to go about ten feet deeper before the Poetsch-Sooysmith contract can be considered completed, when it will be allowed to fill, and pumping machinery will be put in that will drain the entire valley in which the shaft is located. With no further delay Mr. Thomas will be through with his work in a short time.

*The Menominee Range*, Iron Mountain, Menominee County, Michigan, Volume XI, Number 2 [Thursday, April 4, 1889], page 4, column 1

D. SHAFT, at the Chapin mine, is again full of water. The flow of water last Tuesday had increased to such a volume that Supt. Thomas deemed it advisable to suspend work again, take out the pump and pump water into the shaft, so that it might be filled in the shortest time possible and with the least inflow of sand. This delay is truly annoying, but it is nothing more. The final successful completion of the Poetsch-Sooysmith contract is unquestioned.

*The Range-Tribune*, Iron Mountain, Dickinson County, Michigan, Volume XVII, Number 31 [Saturday, November 23, 1895], page 8, columns 1-4

## The News of the Mines

THE long expected has happened and the Chapin Mining company is now in full possession of the valuable Ludington and Hamilton mines.

As was stated exclusively in The Range-Tribune last week, the question of consolidating the three properties was being considered by President Hanna, of the Chapin company, and Mr. Kimberly, but it was not until Thursday last that all the preliminaries were arranged and it could be safely announced that the deal was an accomplished fact, or would be as soon as the necessary documents could be signed, which will be done at Cleveland in a few days.

Mr. Kimberly announced the consummation of the big deal to a party of friends at the Commercial Hotel Wednesday afternoon, and the good news spread like wild-fire, causing great rejoicing in business circles.

The consideration is of no importance to the general public. The people of Iron Mountain are only interested in knowing that the long-idle properties will be unwatered and wrought, and they may rest assured that this will be done without any unnecessary lost *[sic – loss]* of time.

General Manager MacNaughton was unable to state Thursday afternoon just when the great undertaking of unwatering the properties would in inaugurated, not having formulated any plans and not caring to do so until officially informed by his company that the consolidation was an accomplished fact. He believed, however, it could be considered as having been made. He anticipates no great amount of

trouble in unwatering the mines and keeping them dry.

Questioned as to the probable output of the Chapin company in 1896, Mr. MacNaughton stated that that would depend a great deal upon the market conditions. His company would mine as much ore as the conditions would warrant and they could sell. As next season promises to be an exceptionally good one in the iron business, it is safe to say that the output will be in excess of a million tons.

The resumption of mining operations at the Ludington and Hamilton mines means the addition of many hundreds of men to the ranks of the wage-earners and means old-time prosperity for Iron Mountain.

While some people would like to have seen the Ludington and Hamilton mines operated for a separate corporation, on the score that more men might be employed, The Range-Tribune cannot agree with them. President Hanna and his associates know the iron business from the ground up. They are men with unlimited capital, control immense iron manufacturing establishments, a large fleet of powerful steamers for the transportation of ore and large ore docks at Ohio ports. They can operate the mines under conditions that would force other concerns to the wall, and the consolidation removes all doubt as to the question of our future and continued prosperity. We can bank on the mines being operated the year around and we can do business accordingly. How much that means every business man *[sic – businessman]* will appreciate.

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The Ludington and Hamilton mines were flooded by water on January 1st, 1892, by the bursting of an immense yugg *[sic – vug]* on the eleventh level of Ludington A shaft, a disaster occurring about three o'clock in the afternoon. An attempt was made at that time to unwater the properties, but it was soon abandoned and mining operations ceased except on a small scale at what is known as the old Ludington mine, which was operated under the management of Francis A. Brown the [sic] in 1893. Early in 1893 Mr. Kimberly acquired a controlling interest in the Lumbermen's Mining company, owners of the Ludington. At this time many mining men were of the opinion that the properties were worthless and could not be unwatered and kept dry. Mr. Kimberly determined to prove that this was not so, and on Monday, June 19th, 1893, the bailers and pumps at the several shafts were put in motion and the important fact established beyond the shadow of a doubt that the water could be removed and the mines kept dry at a comparatively small expense. The mines were then permitted to fill again. Measurements taken by Mr. MacNaughton at this time prove that the natural flow of water into the mines is not to exceed 600 gallons per minute, less than almost any other mine on the range.

The Hamilton Ore company mined its first ore in 1886, when 872 tons were sent to market. The largest output in a single year was in 1891, when 58,197 tons were shipped. The total shipments by the company aggregated 96,072 tons.

The first ore was mined at the Ludington in 1880, when 8,816 tons were shipped. In 1891 the output reached 141,303. The grand total for the mine is 1,001,518 tons.

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THE Dessau Mining company, successor to the Millie Mining company, has filed articles of incorporation with the secretary of state. The capital stock is $25,000, and the directors are Simon Dessau, S.A. Dessau, John R. Rogers and Charles McGregor.

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# MENOMINEE RANGE HISTORY – IRON MINES – CHAPIN MINE, IRON MOUNTAIN, MICHIGAN

***[Compiled and Transcribed by William J. Cummings]***

THURSDAY was pay day at the Chapin and $37,000 was distributed.

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THE Pewabic company is receiving 12,000 tons of soft coal.

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THE work of sinking the old shaft on the Quinnesec townsite was commenced this week. Twelve men will be employed in the work, and it is expected that it will take several months to sink the shaft to the ore body. John R. Wood will give the work his personal attention.

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THE Chapin and Pewabic companies will present all the married men in their employ with fat Thanksgiving turkeys.

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THE old Norway mine, the property of the Penn Iron Mining company, has put a few men to work cleaning up so that the portion of the mine above the adit level may be re-entered and explored. There is some ore in sight, and new bodies may be found. The property has been idle for many years and there is much to be done before mining work can be resumed. It will take a month or more to finish preparations. A small force will be employed here throughout the winter with Wm. Williams, formerly night captain of the Curry mine, in charge. The people of Norway are pleased at the resumption, and hope it will lend discoveries that will benefit the town in a business way. –I.O. *[Iron Ore]*

## A FINE PROPERTY.

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**Commissiooner Newett Thinks the Big Chapin Has Few Equals.**

The last issue of Ishpeming Iron Ore contained an exhaustive and exceedingly interesting write-up of the Chapin mine, prepared by the able editor, from which we make the following extracts:

The principal trouble that has been met with in mining the ore of the Chapin is due to its unstable walls. The foot is slippery slate, greasy, treacherous, and nothing can withstand its downward movement once the ore is taken from under it. For years the attempt was made to support the hanging by rock filling, by heavy timbering, and other plans, but while these succeeded in part in holding the overlying mass, it proved too expensive. In the end it would have resulted unfavorably, as a gradual settling was taking place constantly. Shafts originally sunk in the hanging or ore body had to be abandoned, new ones put down in the foot and some of the latter were costly, due to quicksand overlying the rock formation. Nor is the hanging alone treacherous. The foot is of slate for a thickness of about 150 feet, and this also shows an inclination to move. For a considerable distance horizontally and vertically, say 400 feet in the latter and twice that in the former, and in front of their timber shaft, and not far distant form the point of contact with the slate and the banded ore formation next in order, a clay seam shows in unbroken line. It is very narrow, not an inch, probably, but on this seam one body of slate is sliding down upon the other, slowly creeping along, and showing how useless it would be to try to sustain such an immense mass as that extends upward to surface from lower levels, now about 875 feet.

The ore slides from the slate walls with much ease, the dip of the formation being about 70 degrees. At one point in the mine where the only opening was a drift and above which ore stood without an opening

for a distance of three hundred feet, the evidence of the pressure was apparent, the floor of the drift being bulged upward due to the pressure from the sides. With such ground to content with, it will be seen that the Chapin is no easy property to take care of.

During the past year they have been doing considerable in the caving way, the sub-level plan being the one tried. This appears to be working satisfactorily, the principal *[sic – principle]* difficulty met with being due to the fact that many levels were opened, and it keeps them very busy keeping up with the moving mass. They are making excellent headway, however, and the plan can hardly be described as such. The method is this: They cut the ore deposit into blocks by crosscutting from one wall to the other, and drive drifts along the walls. Mills for sending the ore to the level are put in and in combination with each mill is a ladder way, well timbered so that no ore from the mill can strike those who may be going up or down. These mills are from 38 to 50 feet apart, this being governed by existing conditions of the vein. The ore in this mine comes so readily that fewer subs are used than in most others employing this system. One in the regular level of 100 feet is sufficient to bring the ore down. They usually slice the ore from the foot to prevent any mixture that might come from the hanging sides were *[sic – where]* the latter first attacked. There are times, however, when the ore block is attacked from all four sides. By this plan any number of men can be employed, and a very large product attained in case the market demands. In the cutting up of the ore body small timbers are used, about seven inches in diameter, these being readily handled. With the cutting out of a slice the overlying ore gradually settles down so that the miners go in again on the same level and take out another cut, timbering as before. In this way they have gone in upon one level as often as seven times, the ore coming from above so readily as to permit this. Could the Chapin take care of the different levels until such time as the mining could be confined to a single one, the sub caving plan could be operated very cheaply and without the annoyance that now occurs due to the movement of the ground. It is for this that the superintendent, Jas. MacNaughton, is striving, and he has ability enough as well as the necessary enterprise to bring it about.

In front of D shaft is a large block of ore that has been left untouched to protect this opening at which is located the big mine pump. To attack this ore would be dangerous to the safety of this shaft and its magnificent pumping equipment, and to suffer it to remain in the mine means the tying up of something more than a million tons of ore, and this of the best grade the property produces. Nor is the big pumping plant guaranteed against disturbance even if the ore is permitted to remain in the mine. There has been considerable settling to the east of the shaft where the surface has followed the wrought-out portions of the mine, and there is a “draw” due to the settling that may affect the ground upon which the pumping plant is located. We are inclined to the opinion that Mr. MacNaughton would like to mine the ore that lies in front of this shaft, and there is reason to believe that the company may make important changes here in the near future. In order to make the pump perform the work of taking care of all the water of the mine it will need to be extended through all the levels, and the cost of this would be considerable. As to the efficiency of this enormous pumping engine, we are informed by the superintendent that it has proved all that the builders have claimed for it, and has given excellent satisfaction. It certainly works smoothly and quietly as a

watch, as a trip through the shaft in which it is located, *[sic]* proves. To carry on the present system of caving the ground overlying the ore, however, the big pump would be in some danger, and the removal of this plant of machinery would seem to be only a question of a short time, as the caving plan is the one that will probably be maintained.

The Chapin mine has what is locally termed the "main vein" or "south vein" and the "north vein" these being two lenticular-shaped deposits contained in the slate formation. The main lens is one that has proved of wonderful extent, it being developed for the entire distance across the company's lands, a half mile. The ore possesses an average thickness of between 60 and 70 feet, trends nearly east and west, pitches to the west and dips to the north. The north lens is, as its name indicates, to the north of the main deposit, and at this time there is much to suggest that it will join the main, or south deposit, as greater depth is reached. With each added level the distance between the two is perceptibly lessened, and the slates between the two bodies are supposed to be but the filling in of the central portion of the trough in which the ore lies, and will be found with its bottom resting upon ore as well as its sides. A diamond drill boring made horizontally to the north from the ninth level, extreme west end, found 30 feet of clean ore at 110 feet from this portion of the mine. This suggests that a third lens of much value exists here, and as the company has something like 530 feet before the western boundary is reached, there is room for considerable ore tonnage. This latter is supposed to be an extension of the ore body worked upon in the Ludington mine, which was followed upon the property of the Chapin mining company. The same lens was also found from work done in the fifth level, Chapin, but the ore showed smaller at that point. The north vein has been developed for a distance on its trend of about 700 feet, and has an average thickness of something like 55 feet.

A peculiarity of the Chapin mine ore deposits is that the poorer product comes from about the center of the lenses. On the upper levels the ore was of their best grade, giving about61.25 per cent. iron, this being their "Chapin," while in a zone beneath this the iron ran down to 58, making their "Rex" grade. Now they have passed through the poorer territory, and throughout the lower levels there is little but the "Chapin" grade showing. It is one of the peculiarities of which nearly every mine has its own in some form or another. In the lower levels the dip of the Chapin vein is flatter than in the upper, which suggests that providing the angle is unchanged the ore deposit will ultimately be cut by the enclosing walls. There is nothing alarming in this fact, however, as there is an end to all things, and then there is no sign that the end of the Chapin will be found for many years to come. We regard it as one of the best mines in the Lake Superior region in so far as its longevity goes. There is enough ore in sight to-day *[sic – today]* to keep up the present output for many years to come, and the Chapin will have shipped 600,000 tons by the close of navigation for the single season of 1895. The point of improvement in quality is an important one. For 1894 the shipment as to quality was the best that had been made for many years previous to that period, and the present year finds the average above that of '94. But two grades are shipped, the "Chapin" and "Rex." In phosphorus the ore runs very regularly, both grades giving about .070 per cent.

The deepest point attained in the mine is a winze sunk from the 11th level about 470 feet west of C shaft. It is with the dip of the ore body and measured vertically, is 50 feet below the bottom of the 11th level. A

crosscut to the north was 60 feet in ore at the time of our visit and was still in ore at the time.

The absence of timber gangs is noticeable in the Chapin. Time was when they played an important part, but the timberman has gone with the rock filler. The timbers now principally used are small and are put in place by the miners themselves, the trammers taking it from the shafts. There appears to be more use for track gangs than for timbermen. The latter have considerable to do in keeping the floors for tracks in shape. Due to the constant pressure form the sides of the drifts, which are two-tracked, the ground is forced up from the sides and bottom, necessitating constant care. On the sides of the drift the heaviest legs are soon bent, twisted and broken, needing replacing while the small caps resting upon them show no sign of undue strain. The thrust is from the sides instead of a direct vertical one. At first thought one would expect to find the caps subjected to a strain greater than the legs next *[to]* the wall.

The Chapin is well equipped for doing work in and about its mine. The Chapin has but few accidents. The caving plan of winning the ore is well understood by the miners, and they prefer it to any other method. There are no large openings to threaten, the ground being cared for as they go along. Capt. Martin Goldsworthy, who has charge of affairs underground, and who fully understands his business, is very active to the safe workings of the property. In three trips made underground with him the past year we found him ever cautioning the men to use judgment in taking care of themselves and the mine. We can say that the Chapin company is getting its ore clean and getting practically all of it, the percentage of saving comparing favorably with the best work done anywhere. The ore comes to them readily from the walls due to their upright position. The captain is much pleased with the caving plan and believes it the one the mine is best adapted for. Mr. MacNaughton takes the greatest interest in his work at this property. He carefully notices the minutest changes, and applies practical remedies when needed, and this without any unnecessary noise or display. He enjoys the confidence of those around him, is an excellent superintendent as well as citizen, and his company is fortunate in the possession of his services. Not only should the people of Iron Mountain be pleased with the management of the Chapin, but particularly should they feel satisfied because it promises so much for the future of their city. As it is the principal labor-employing institution of the town it should be good news to the people to feel assured that it is so healthy physically. The citizens should work with the mining men, should combine with them in talking over business affairs, in arranging plans for the future and preparing the way for years of prosperity that are to come. In the past the townspeople have suffered during the depression, but there is now a clearer business horizon and with careful management much can be accomplished to better the condition of the entire community. There is anti-corporation talk indulged in here as well as elsewhere, and much of the foolish kind is heard. It would be far better to encourage harmony rather than discord. There is more in it for all sides than in fighting those who are supplying the money to employ the men whose wages keep up the town.

At the Chapin we found L.B. Sutton occupying the responsible positon of mining engineer for which he is so well qualified. He is keen, thorough and competent and will grow in his profession. M. Lonergan still holds the office of mine cashier, and has a fine system of keeping accounts

which have often been referred to by other mining companies.

A few hand trammers and the timbermen work by the day, or "company account," while all else is done upon the contract system. The men are making fair wages and show a large product per man. The size of the ore body, the freedom with which the ore runs, the light timber employed, the excellent ventilation, all contribute to this result, and then the men are skillful and an industrious class.

Six steel steamers controlled by prominent owners of the Chapin, and operated under the title of the "Menominee Transportation company," are an important feature in connection with the mine.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 9, Number 27 [Thursday, November 24, 1904], page 1, column 4 [PHOTOGRAPH, page 1, columns 3-6]

## Thanksgiving Birds.

As has been customary for many years, the mining companies of Iron Mountain will this morning present all married men (and heads of families) in their employe *[sic – employ]* with Thanksgiving turkeys. At the Chapin mine it will require over six hundred birds to "go round" and at the Pewabic about four hundred. This is the only mining center in the Lake Superior region where this practice prevails. "Long may it wave."

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 9, Number 28 [Thursday, December 1, 1904], page 1, column 2

## "MIGHT HAVE BEEN WORSE."

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### Fire at Hydraulic Plant Caused Considerable Damage Last Monday.

The hydraulic plant of the Oliver Iron Mining company at Quinnesec Falls was considerably damaged by fire last Monday morning.

The fire was caused by an explosion in one of the compressors at about half past seven o'clock. The oil in the cylinder took fire and the blaze was blown across the engine-house *[sic – engine house]* with great force, driving the men out, and communicating to the wood-work *[sic – wood work]*. In much shorter time that it takes to tell the story, the entire enterior *[sic – interior]* of the structure was a mass of flames.

Help was summoned from this city and a large force of men hastened to the works. The fire-engine *[sic – fire engine]* was taken down, but by the time it had reached the scene the roof had collapsed and the interior wood-work *[sic – wood work]* was gutted. Considering the scant supply of burnable material in the house, the fire was a hot one – so hot, indeed, that the large steel timbers in the roof were badly warped and fell in upon the costly machinery.

After the fire, a causual *[sic – casual]* glance at the wreck, *[sic]* lead to the belief that the entire plant of machinery was badly damaged and that months would be required to make repairs. When the debris was cleared away, however, it was discovered the damage was comparatively light. Indeed, some of the compressors were found uninjured and will be in operation in a few days and it is expected to have the entire plant in working order within ten days. In the meantime air is being generated at the big compressor plant at C engine-house *[sic – engine house]*.

The fire is a duplicate of the one occurring two years ago, happening in the same manner. However, the loss is not so

great. Mr. Davidson says that the loss two years ago totaled $12,000. While it is not possible at this writing to estimate the loss of last Monday very closely, Mr. Davidson, after an examination, is of the opinion that it will be between $6,000 and $10,000. This is bad enough, but it "might have been much worse." The company carries its own insurance.

The work of clearing the debris away is about finished and a temporary roof will be erected over the machinery.

The mine has continued steadily in operation, only the trammers being idle for a few hours.

The fire afforded the "anvil chorus" a fine opportunity to "knock" the town – and, as usual, it was improved to the utmost. The irresponsible correspondent got in his deadly work, of course – and the fellow is deserving a good kicking. In one dispatch that has come to our notice the loss is placed at $1,000,000 and we are told that from "12,000 to 15,000 men are idle as a result." Even such a conservative paper as the Chicago Tribune was caught by the fakirs. A Norway dispatch to that paper places the loss at $500,000 – "the biggest loss ever known by fire on record on the Menominee range."

Such lying dispatches are certain to work injurious to every business man *[sic – businessman]* in Iron Mountain and the county. When the wholesaler reads that "from12,000 to 15,000 men" are idle here, he will not stop to think that Iron Mountain only has a population of 9,000 people, but will bend his energies in the direction of making it unpleasant for his creditors hereabouts. But, we suppose, there is no way of suppressing these penny-a-liners.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 9, Number 29 [Thursday, December 8, 1904], page 1, column 2

## Hydraulic Plant Fire.

The work of repairing the fire damage at the hydraulic works of the Oliver Iron Mining company is progressing rapidly. One compressor was started this morning and it is expected to have the entire plant in operation in about ten days. A new steel roof has been ordered for the building and it was shipped from the factory yesterday. The management is confident that the total loss will be considerably less than $10,000. The mining operations are being conducted without a hitch.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 9, Number 32 [Thursday, December 29, 1904], page 1, column 6

## New Shaft.

Excellent headway is being made in sinking the new shaft at the Chapin mine of the Oliver Iron Mining company. At this writing it has reached a depth of 750 feet. It is to be sunk to a depth of over 1,200 feet. The management anticipates that it will require fully a year to complete the gigantic task.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 9, Number 32 [Thursday, December 29, 1904], page 1, column 6

## Hydraulic Works.

The work of repairing the damages inflicted by the recent fire at the Hydraulic plant is progressing rapidly. Three compressors are now in operation and repairs to the fourth will be complete as

soon as some castings are received. The new steel roof is now being placed.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 11, Number 50 [Thursday, May 2, 1907], page 1, column 6

## Filling the Pit.

Nearly two hundred men, four train crews, nearly two hundred flat-cars *[sic – flatcars]* and two large steam shovels are now employed by the North-Western and St. Paul roads in the work of filling and ballasting the tracks across the Chapin mine pit. The daily expense probably exceeds $1,500. It is certain that the work will continue throughout the season.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 13, Number 10 [Thursday, July 30, 1908], page 1, column 3

## NEW CHAPIN SHAFT

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**FIRST SKIP OF ORE WAS HOISTED LAST MONDAY MORNING**

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**Probably the Largest and Best Shaft in the Lake Superior Region; Practically Fire-Proof.**

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The first ore was hoisted through the new Ludington shaft of the Oliver Iron Mining company last Monday.

The work on the shaft was started on May 6th, 1903.

The work of sinking was completed early last December.

It is ocnnected *[sic – connected]* with the old workings at the tenth and fourteenth levels.

The total depth of the shaft is 1522 feet.

The shaft is one of the largest in the Lake Superior region and is practically fire-proof. It is surmounted by a modern steel shaft-house *[sic – shafthouse]*, and the ore pockets of which there are four are built in a steel structure.

The shaft is a four-compartment affair. The inside measurements are ten feet four inches by twenty-three feet one inch. The two hoisting compartments are each five feet by ten feet four inches and the pump compartment ten feet four inches by eleven feet one inch.

The shaft is lined with steel frames from the surface to the bottom lathed outside with heavy planks that are “broken” at various points in order to avoid a continuous sheet of combustible material.

At this shaft has been re-erected the big Cornish pump, formerly stationed at Chapin D shaft, which was dismantled n *[sic – in]* 1899. The plant is one of the largest in the Lake Superior country. A good idea may be gained of the size of the pump when it is stated that the upper cylinder is fifty inches and the lower cylinder one hundred inches. The stroke is ten feet. The engines are connected directly with the pumping bob, which weighs fifty tons. The fly-wheel is forty feet in diameter and weighs fifteen hundred tons. The crank shaft is twenty-seven inches in diameter. The connecting rods fifteen inches in diameter at the center and eleven inches at the ends. The pump rods are of iron about seven inches in diameter and calculated for a depth of 1,500 feet. The plunger is twenty-eight inches in diameter. The capacity of the pump at normal speed is a fraction more *[than]* 319 gallons per stroke with ten strokes to the minute. The

guaranteed capacity is 3,000 gallons per minute against a head of 1,500 feet.

The hoisting plant embraces everything that is new in *[the]* line of machinery. It is built for a maximum depth of 3,000 feet and the load, including skip and ore, is fully ten tons.

The height of the smokestack, constructed of tile, is 135 feet above ground and the inside diameter is seventy-eight inches.

It is the intention of the management to hoist the greater portion of the product of the mine through this shaft. There is ample room in the vicinity for stock docks and the ground is of such a nature as to insure against caving, having been thoroughly tested before the work of sinking commenced.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 15, Number 12 [Thursday, August 11, 1910], page 1, column 5

### New Dry House.

Work has commenced on the new sanitary dry-house *[sic – dry house]* for the Oliver Mining company. It will be of stone and steel construction, making it fire-proof. The building will be 140-4x64-4 feet in size. It will contain 660 steel lockers for the clothing of the men and will be equipped with shower baths and enambled *[sic – enameled]* wash fixtures. The construction will be in accordance with the very latest ideas in dry-house erection and will be as near perfection from a sanitary standpoint as possible. The cost of the structure will be $12,000. It is being erected near Ludington C shaft.

*Iron Mountain Press*, Iron Mountain, Dickinson County, Michigan, Volume 25, Number 31 [Thursday, December 16, 1920], page 2, column 2

## CHAPIN MINE WELFARE FUND

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### Created By Trustees of Late Charles A. Chapin.

A welfare fund, to be administered for the benefit of the widows and orphans of men who lost their lives while employed in the Chapin mine, has been established by the trustees of the state of the late Charles A. Chapin, owners of a portion of the fee of the property.

O.C. Davidson, general superintendent of the Oliver Iron Mining company, has just been informed of the generous action of the trustees and has been requestd *[sic – requested]* to act in the capacity of administrator of the fund. Mr. Davidson has consented to assume the responsibility of administering the fund and has requested that Dr. Joseph A. Crowell, chief surgeon, and Miss Anna B. Murphy, visiting nurse, for the Oliver Iron company, be associated with him for the purpose of investigating the needs of applicants for aid and in making recommendations *[of]* deserving cases.

The trustees of the Chapin estate have decided to devote the sum of $5,000 each year to this purpose and to this sum Mrs. Charles A. Chapin has added the additional sum of $2,500 making the fine fund of $7,500 yearly.

In their letter of announcement to Mr. Davidson the trustees of the Chapin estate say:

"At a meeting of the Trustees of the Estate of Charles A. Chapin, held Saturday, November 5th, it was decided to devote the sum of $5,000.00 each year to the needs of

incapacitated, crippled or invalid miners, and the widows of miners and their families, that have been injured or killed while employed at the Chapin mine. To this $5,000.00, my mother, Mrs. Charles A. Chapin, adds the sum of $2,500.00, making a total of $7,500.00, that will be devoted to these purposes each year, as long as the mine pays a reasonable income based on its past record. We wish, of course, to have the widows of miners that have been killed in the mine and their children looked after first; then crippled, invalid or incapacitated men."

This unsolicitated *[sic – unsolicited]* action on the part of the trustees of the estate of the ***[need to finish copying this column from the original newspaper at the Menominee Range Historical Foundation Museum]***

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, _____ Year, Number _____ [Friday, April 29, 1921], page 1, column 2

## CHAPIN WILL GO ON FOUR DAY WEEK

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### Further Curtailment Caused By Depression in Iron

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Further curtailment at the Chapin mine of the Oliver Iron Mining company was announced yesterday, on his return from Duluth, where he went to consult company officials, by O.C. Davidson, range superintendent for the company.

It will take the form of putting the present force of approximately 700 men on a four day week, and this is equivalent to a thirty three and a third curtailment. It will be effective the first of the month. The men will work the first four days of each week, until further orders, and will be idle Friday and Saturday.

The order affecting the Chapin which is understood to have no relation to working conditions at Oliver properties in other districts, reflects the depressed condition of the iron market, which has already caused drastic curtailments on other ranges.

Even with the latest curtailment here, Iron Mountain has come out of the depression very well, as in some fields the reduction of operations ahs run as high as sixty percent. Iron county has been particularly hard hit, and in the Marquette county field the Negaunee area has suffered the most.

The mining and mill men are not yet able to discern any particular improvement in the situation, but it is believed that curtailment has been carried in the main about as far as it is likely to go.

**Wage Question Open.**

As far as the Oliver Iron Mining company is concerned, the wage question is still open. There have been no reductions as yet at any of the company's mines, though there have been frequent reports of late weeks that they were shortly to be announced. It is believed that it is only a question of a short time when the U.S. Steel corporation will scale wages somewhat at all its properties, as the wages so far maintained by the corporation are out of line with its competitors in all activities.

A meeting of the presidents of the various subsidiary companies of the Steel corporation has been called for New York next week. Among those in attendance will be President Olcott, of the Oliver Iron Mining company. It is possible that the wage policy will be determined at this meeting, and that important announcements will follow its adjournment.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, _____ Year, Number _____ [Tuesday, June 21, 1921], page 1, columns 6-7 [box story]

## Oliver Mining Company To Suspend Operations In Dickinson Workings

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### Large Stock Piles and Market Depression Force Company To Drastic Step; 1,000 Employes Affected

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Work at the Chapin mine here and at the Aragon in Norway will cease today, for an indefinite period.

The decision of officials of the Oliver Iron Mining company t close these properties was announced on their visit here this week, in the course of their survey of the Lake Superior ranges, and is due to the discouraging conditions in the iron and steel trade.

While no assurances are given that there will be a resumption this fall, one consideration that impelled the officials to close the two Dickinson county mines at this time is the fact that otherwise they would certainly have to be closed down during the winter.

The mines have been stocking ore heavily for a period of many months, during the slack demand for their product. If production were continued even on the curtailed scale through the summer it would be certain that by the advent of winter it would be impossible to stock any more ore. With the present suspension there will be stocking room available for winter production, if by late fall there is an improvement in the iron and steel market that will enable the Oliver Iron Mining company to look forward to next year with a measure of confidence.

**Over 1,000 Men Affected.**

Over 1,000 men are affected by the order to cease mining, 700 at the Chapin and 385 at the Aragon. Only pumping will be continued at the mines, and the only employment will be given to the nominal force necessary to keep the pumps going. Readjustments will also be made in the office forces.

At Ironwood the officials of the company have ordered a 50 per cent reduction in forces. Ironwood is favored over Iron Mountain for the reason that its ores run higher in grade than those of the Dickinson county mines, and are the base of the furnace charges. The leaner ores from this range are used in *[a]* comparatively small part in the mixture for the stacks and thus demand for them falls off rapidly as production of iron decreases.

Heavy stocks of ore on the lower lake docks at the time navigation usually opens in earnest and a great percentage ofinactive furnace capacity is the cause of the curtailments made effective by the Oliver Iron Mining company.

Stocks at the lower lakes May 1 were 238,000,000 tons, or from 100 to 200 per cent in excess of normal at that time of the year. Stocks at the mines were also heavy, and they have been greatly increased since May 1, as the movement of ore to date has amounted to practically nothing. A small sale of ore at a dollar under last year's price has been made, but the season's price is not yet regarded as fixed, and when it is finally made some mining men expect that it will be at a much larger reduction than a dollar.

The prospective lake shipment is about 20,000,000 tons, though unless the ore begins to move shortly it will likely be much below this figure. Even at 20,000,000 tons

it will be large, compared with the requirements of the furnaces, as the steel industry as a whole is now working at barely 25 per cent capacity.

**Hung On Longest.**

The Oliver Iron *[Mining]* company has hung on the longest of any Lake Superior producer in the face of discouraging conditions in the iron and steel industry. The independents began trimming their forces and reducing their wages early last fall, as they found the demand for ore softening. The Oliver Iron Mining company held off into the early months of this year before making any readjustments in the hope that a turn for the better would make it unnecessary to go far in revision of working conditions.

But the load of carrying on its manifold operations in many fields in the face of a declining iron and steel market has finally compelled it to make extensive readjustments. While nothing official has been said on that point, it is expected that its operations will be materially curtailed on all the iron ranges.

**News Was A Surprise.**

While here and there there may have been persons who were apprehensive at the outlook, the news of the immediate suspension at the Chapin and the Aragon came as a great surprise, as it gained currency about the city yesterday.

As a general thing, it was the belief that the Oliver operations would continue on the existing basis. Early in the spring the working force here was curtailed from 200 to 300 men. Some weeks later the force was put on a four days a week schedule and a little later a wage reduction of 20 per cent was made effective. The hope that work would be continued on this basis is now blasted.

O.C. Davidson, the range superintendent, yesterday expressed the deepest regret that the step was necessary, but was hopeful that a turn for the better would permit resumption on some scale or other for the winter months. "We might far better suspend operations now and work through the winter. Nothing is more certain than that if operations continued to fall on the present basis winter suspension would be necessary, through lack of stocking room*[,]*" he said. "It can be taken as assured that if there is any possible warrant for it in general conditions, the company will order a resumption for the winter."

This is the first time in Mr. Davidson's connection with the Chapin, over a period of twenty years, that there has been a complete suspension at the mine. Forces have been reduced somewhat and working time curtailed during periods of slack demand in the iron and steel industry, but the mine has always furnished employment for the great bulk of Iron Mountain workers.

**See Bright Spots.**

While the announcement of the suspension was a blow to the community, and it was somewhat dazed yesterday as it ws digesting the unpalatable news, some commentators on the situation were inclined to view it philosophically.

"We could not expect to get by unscathed when other communities in the iron fields were getting the gaff," one of them said, "and, while it will take us some time to readjust ourselves to the new condition, we must keep in mind the fact that industrial conditions are now dragging on the bottom, and that we will probably not have long to wait for tangible evidences of improvements. Meanwhile we have the consolation that no other city in the Lake Superior region can look forward to the future more confidently than Iron Mountain."

**Reduction On Mesaba.**

At Virginia, Minn., press reports tell of the reduction of 2,000 in the force of miners employed by the Oliver company on the Mesaba range. This is one phase of the

program of curtailment reflected by the suspension at the Dickinson county range mines.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, _____ Year, Number _____ [Wednesday, June 22, 1921], page 1, column 2

## MINE SHUTS DOWN AS NIGHT SHIFT LEAVES

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### Last Few Hours of Work Desultory; Men Are Depressed

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It was a very sober crew of miners that clambered abroad the cages in the Chapin shafts this morning, at the conclusion of the night shift, marking the suspension of mining operations. The usual banter and laughter were conspicuously missing.

Throughout the night, the work was desultory. A few skiploads of ore were hoisted, but nothing like the usual number. Considerable time was devoted to picking up the tools – drills, picks, shovels and the like – and taking them to the surface, to present possible loss.

**Motors a Problem.**

One problem confronting the company officials is that of the motors. There are 13 of these "electric mules" at various points in the working, most of them on the 14th and 16th levels. Taking them out would be an enormous task, but leaving them in the mine is likely to prove disastrous to field and armature coils.

"We have not yet decided what to do with the motors," said George J. Kisele this morning, *[sic]* "If we could take out the coils without tearing the cars to pieces, the task would be simple. We may bring them up, or we may run them off into a dry section of the mine and leave them.

"The problem is a new one, because the mine has never been shut down since the motors were installed; in fact, it has only been shot down once in the last 40 years. That was for eight months in 1893.

**Few Men Retained.**

"The only men retained will be the pumpmen, and one engineer at the Hamilton shaft to take care of the cage for them. It may be necessary later to send in some crews to repair timbering. The power plant at Quinnesec Falls will be kept in operation."

Notice of suspension of operations was given to the men at 10 o'clock yesterday morning, advising them that work would stop when the night shift went off duty. To the majority of them, at least, it was a abolt from a clear sky, as the general opinion had been that the four-day week, the layoff, and the pay-cut would enable the company to operate through the summer.

**Course Is Approved.**

But, when confronted with the prospect of discontinuing either during the summer or winter, the company's course met with practically unanimous approval, although considerable depression was manifested. The city was combed for possible jobs, but few were located.

It is believed that, within the next week or two, a better outlook will be taken of the situation. The present symptoms resemble those in Marquette county following curtailment by the Cleveland-Cliffs Iron company June 1. Since that time, the community has thrown off much of the panicky attitude resulting from the depression, and resumed something of its normal course.

*The Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, Volume 3,

Number 126 [Friday, September 7, 1923], page 5, columns 1-6

# History of Chapin Mine

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## An Interesting Insight Into The Growth and Development of This Industry as Given by George J. Eisele.

(The following interesting story on the development of the Chapin mine here and facts and figures in connection with its growth was read before the Rotary club this week by its author, George J. Eisele, assistant superintendent for the Oliver Iron Mining company. The article makes known things in connection with the mine that the public perhaps was never aware of. – Editor's note.)

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It has always seemed to me that the business of mining differs in many ways from that of almost any other industry – for instance: a manufacturing plant may start up in a small way and continue to gain in size, adding to its buildings and expanding in every way, increasing thereby its earning capacity and value indefinitely, or so long as it may dispose of or find a market for its product.

This is not altogether true of a mining proposition; once your mine is opened up or developed and you begin the producing of ore you immediately start depleting your principal and only asset; the ore you remove never goes back and you cannot manufacture more.

A mine exhausted of its mineral and abandoned has little value' its several shafts, the cost of which may have been thousands of dollars, have not one penny of value and the equipment to operate same would altogether command a price a trifle – if any – better than scrap.

**A Concrete Example.**

For instance: The concreting of Hamilton shaft, Chapin mine, together with the installation of necessary pumps to care for the constant flow of water occurring in the mine, electrical equipment, hoisting engines, etc., necessitated an expenditure of many thousands of dollars. The shaft itself, when the mine becomes exhausted, will have no value whatever and the equipment used in connection therewith will bring little more than scrap prices.

There is now located on what is known as the old sixteenth level of the Hamilton shaft, a pumping plant purchased in 1896, costing, f.o.b. cars Chicago, $32,000. The installation of this pump necessitated the cutting out of a pump station 60 by 40 feet in the lime stone; the cost of this entire installation was probably $60,000.

This was a wonderfully efficient plant; *[sic]* It is now idle and has been for nearly 10 years and will likely never operate again. If sold it will command only scrap price and it is doubtful if it will pay to dismantle it and bring it to surface.

**Another One That's Idle.**

We have another pumping plant. It is now idle and has been pump". *[sic]* The engine operating this plant is located on surface and this alone cost $82,500 back in 1890. The portion located in the shaft cost as much more, and the installation added would probably make a total expenditure for the entire plant of about $250,000. *[NOTE: This would be the Cornish Pumping Engine and pumps.]*

Because of conditions underground changing, this pump has been idle for a number of years and will likely never operate again. It would have no value – except as scrap – if removed, and would probably net less than $10,000 if sold. This

will be true of nearly all equipment about the mine – most of it will not fit in or is not adapted for conditions at other properties.

A manufacturing plant – even though it may have been closed and out of business – may have enhanced in value because of its site or other conditions, and would at least bring its owner a fair return in many instances.

Mines do become exhausted: -- Iron Mountain, among other towns, has experienced this fact. The Pewabic, a producing property for 25 years or more struggling along in its latter years with a product almost too lean to market – finally was closed and its equipment nearly all sold as scrap, and its surface, a part at least, reverted to the fee owners.

I have compiled a few facts and figures pertaining to the Chapin mine. There are a few men here who know this property from its beginning and much that I have written is not new to them, but we have among us many later arrivals to whom this may be of interest.

**Chapin Discovered In 1879.**

The Chapin mine was originally discovered – through exploration – by the late Dr. N.P. Hulst, in the year 1879. Its property then consisted of three forties, running east from about the line of the C.M. & St. P. railway, its southern boundary being in line with the alley south of St. George's hospital, or just north of Flesheim street. The first ore was encountered on the extreme east end of the property, very near the surface, and was of excellent quality.

Records show that discoveries of ore were made on this range, east of Iron Mountain, prior to the Chapin find, at Waucedah, Vulcan, Norway and Quinnesec, dating from the year 1871. Of these earlier developed mines, those of the Penn Iron Mining company are the only properties still among the shippers.

The first shipment of ore from the Chapin mine was made in 1880 and consisted of something over 34,000 tons; it was in that year the Northwestern Railway company extended its line from Quinnesec to Iron Mountain. At that time the railway company had its doubts about a railroad in this territory being sustained by the business or traffic it might acquire. The upper peninsula division – or the branches leading to the many mines – has probably earned more real money than any other of the entire Northwestern system. However, the Chapin mine, through development work, continued to grow and its shipments increased from year to year until 1890, when its total for that year amounted to 727,421 tons, contributing nearly one-twelfth of the entire shipments form the mines in the northwest – or upper lakes regions – which in that year amounted to 8,944,831 tons. The property became famous as the largest underground producing iron ore mine then in existence. Its production was all high grade and much sought for by furnace men, because of its desirability for fluxing purposes, etc.

**Once Employed 2,400 Men.**

It may surprise many of you to learn that the Chapin mine in the year 1890, the year it reached its peak as a producer from the original Chapin property, employed 2,400 men. Many of these men were employed in construction work, but a very much larger number than now were employed underground. In those days much of the drilling was done by hand – the hammer and drill method. More modern equipment and a change in mining methods has made possible larger production with a much less number of men employed.

I want to add that aside form the 2,400 men employed at the Chapin in that year, there were employed at the Hamilton, Ludington, Pewabic and Millie mines, developed after the Chapin was discovered

and prior to 1890, about 1,500 additional, making a total of nearly 4,000 employed in the city. Iron Mountain was then referred to as the "Pay Roll City of the North," and with its then 50 saloons, you can imagine it was a warm place.

The Ludington and Hamilton mines, lying west and north of the Chapin, operated respectively by the Lumbermen's Mining company and the Hamilton Ore company, were both drowned out through a large flow of water encountered in the Hamilton No. 2 shaft in the year 1891.

After unsuccessful attempts of the owners to get together on the proposition of jointly unwatering *[sic – dewatering]* the properties, they were closed down. These mines were later – in the year 1894 – acquired by the Chapin Mining company, which, by bailing and otherwise, unwatered *[sic – dewatered]* the properties, made underground connections with the Chapin and we have since been mining more or less ore therefrom.

**Acquire More Property.**

This was all before the time the U.S. Steel Corporation acquired the property, which was in June, 1901. Since then we have acquired, through lease and otherwise, the Millie mine, consisting of 80 acres, lying south of the two east forties of the Chapin. We are therefore now operating on nine forties and from 10 different levels; mining three grades of ore from four different fees.

The ores from the different fees and of the various grades are kept separate and sampled at the bottom of the shaft before being hoisted, after which the ores of one grade from the different fees are mixed in loading direct into railroad cars or placed in stockpile.

With the exception of a period from August, 1893 to May, 1894, and June*[,]* 1921 to February, 1922, the Chapin mine has been in continuous operation for 44 years. In that time it has produced a total of 22,750,865 tons of ore; its largest production in any one year being 1,010,452 tons – that in 1900 – just prior to the acquisition by the Oliver Iron Mining company, a subsidiary of the U.S. Steel Corporation.

Until about the year 1900 – or some 20 years ago – the production of the Chapin mine consisted of about 75 percent high grade ore and the balance, or 25 percent, of a leaner material. The quality of our total production has fallen off until at this time the quality of the higher grade material does not exceed 12 and one-half percent of the total, and the balance, or second grade ore, does not equal in any way the lower grade ores of earlier year *[sic – years]*.

I have nowhere in this article dwelt on cost of production, but I want to add and I believe I am correct in so stating, that there Is not another underground mine in the Lake Superior region operating on a product running so low in metallic iron as that of the Chapin at the present time; and I want to add further that this is only now possible by the foresightedness of the early owners of the Chapin mine in acquiring the water power plant at Quinnesec Falls, which now furnishes much of the power in the operation of our property. As an illustration:

In the year 1902, 67 percent, or 611,000 tons of our production averaged 60 percent in metallic iron, and 33 percent, or 302,000 tons averaged 57 percent.

In the year 1920, 88 percent of the production, or 750,000 tons, averaged 52 percent in metallic iron and only 12 percent, or 100,000 tons, averaged 50.50 percent.

**10 Miles of Openings.**

Just at this time we have about 10 miles of active openings in the mine. This covers main drifts and cross-cuts and any openings in and traversed to reach iron ore.

We do hundreds of feet of rock work each year; some of an exploratory nature and some to reach a vein of ore which, from previous exploration, we have every reason to believe should exist there, and very often we are disappointed, nature having made a switch and we missed it.

We have in place four miles of trolley line. Our longest haul just now is something over 3,000 feet.

We operate 15 electric locomotives on four different levels and have in use about 250 mine cars.

During the year 1920 we used 10 car loads of powder, over one million feet of fuse and nearly a quarter of million of exploding caps. In a normal year of operations we use about one and one-quarter million feet of logs and about 25,000 pieces of lagging; this material running from five to seven inches in diameter and in length 16 feet. The nature of the ground in the Chapin mine requires that all openings in iron ore be timbered, and certain rock openings also require timbering.

We, of course, use innumerable other supplies in different quantities, among them being rail of which we have many tons in place; drilling machines, air drill hose, 60d nails – which we purchase in carload lots – manila rope, miles of different size pipes, etc.

We use thousands of feet of ladders; some all steel, some with wood sides and steel rungs and some all wood.

**Pumping Out Water.**

Most of you have at one time or another heard that the Chapin mine had a large flow of water but few people have any idea of the quantity. We pump to surface each day a total of 4,189,000 gallons of water, or something over 3,400 gallons each minute of the day. If the permanency of this flow could be depended upon, it could be used by the city and its quantity is sufficient to supply a town with a population five times that of Iron Mountain at present. Figuring the gallonage *[sic]* in weight, you will find that we lift to surface bout 11 ½ tons of water for each ton of iron ore hoisted.

**Owns 150 Dwellings.**

Our company owns 150 dwellings, which are rented to its employes *[sic – employees]* at an average monthly rental of less than $6, no changes in the rates having been made for 15 years or more. The dwellings are all electric lighted.

No charge is made for water; the lighting, however, furnished by the local lighting company, is paid by the occupants of the dwellings at meter rates.

We employ constantly a visiting nurse, who renders excellent service to the families of the employes *[sic – employees]*, both in the sick-room and in welfare work.

Aside from contributing the service of a nurse to its employes *[sic – employees]* this company expends here something over $10,000 per year for safety and other welfare work.

Instructions are given employes *[sic – employees]* in first aid to the injured, the training being carried on in classes held weekly for 10 consecutive weeks – 10 men in each class, at the end of which time a new class is organized. The employes *[sic – employees]* selected for the classes and attending are paid for the time spent in training, aside from receiving their daily wage rate.

No expense is spared in providing safe guards *[sic – safeguards]* and devices of all kinds, both on surface and underground, to protect employes *[sic – employees]* in their work and prevent injury through accidents.

**Not Hazardous Work.**

Mining has always been looked upon and generally considered as especially hazardous work. Statistics do not show that this is true in iron mining. The average number of men employed at the Chapin

mine in the past 20 years has been about 750; in these 20 years 19 fatal accidents have occurred, averaging less than one per year, and – with the exception of a very small percentage – have all occurred through some negligence or carelessness on the part of the injured man himself or some fellow workman and not because of working conditions.

The average year's service for our men employed is high. We have quite a number whose employment runs from 25 years up; the oldest in service being Gust Tollen, superintendent of our hydro-electric plant, and Joseph Sandercock, blacksmith foreman, who have been continuously in our employment for 44 years.

We have retired on pension 56 employes *[sic – employees]* at this date, drawing monthly an average of $23,75; the lowest being about $12 and the highest a trifle over $41 per month.

We are at present employing about 575 men at the Chapin mine and our total monthly payroll amounts to about $70,000, which would make a total payroll for the year of $840,000.

For your information I have compiled a few figures with reference to the iron ore production in this country from the very early days up to and including the year 1920. Any figures I am giving are those procured through the department of the interior at Washington, and the "Iron Trade Review" of Cleveland.

**Total Production.**

The total production of iron ore form mines in the Lake Superior district, including the year 1920 and beginning with the year 1854 – in which 3,000 tons only were shipped – was 1,010,462,123 tons. Of this amount the Menominee range district contributed in round numbers a trifle less than 128,000,000 tons, or nearly 12 percent of the entire total.

The total estimated iron ore reserves in the Lake Superior district, as of May 1, 1920, amounted to 1,540,281,013 tons. Of this totala reserve tonnage a trifle over 1,300,000,000 tons lies in the Mesaba range district – this includes about 10,000,000 estimated probable ore in the Vermillion range district; the balance, or about 200,000,000 tons, constitutes the reserve ore on the old ranges, including Gogebic, Marquette and Menominee, nearly equally divided.

The iron ore industry has made its greatest strides in the past 30 years. In the year 1890 the total shipments from the Lake Superior districts was 8,944,831 tons; 10 years later, or in 1900, the shipments were 19,167,100 tons, or 147 percent increase; 10 years later, in 1910, the total shipments from the Lake Superior district were 43,627,629 tons, an increase of 127 percent over the previous 10 years, and in 1920 the shipments amounted to 60,531,467 tons, an increase of 38 percent as compared with 1910.

The largest shipments made in any one year occurred in 1916 when a totel *[sic – total]* of 66,000,000 tons went forward. I want to say here that the Lake Superior region contains the world's most important deposits of iron ore and produces about 85 percent of that used in the United States, and about 40 percent of that of the whole world.

The production of iron ore in the United States in the 70-year period from 1810 to 1880 inclusive, was 100,000,000 tons, or about 1,430,000 tons per year, while in the 40-year period ending with 1920 the total iron ore mined in the United States was 910,482,123 tons, or an average of about 22,700,000 tons per year.

**Perhaps 80,000,000 Eventually.**

If the steel industry continues its growth at the same rate in the coming 10 years as it has the past like periods, iron ore

shipments form the Lake Superior district in 1930 will probably be in the neighborhood of 80,000,000 tons, and this is not at all unexpected.

Imports of iron ore into the United States during 1920 amounted to 1,273,456 tons, of which 880,852 tons came from Cuba, and our exports in that year amounted to 1,145,802 tons – nearly all of it went into Canada; a small quantity only going into Mexico and Sweden.

During the year 1920 the finished product of iron and steel in the United States amounted to 32,347,873 tons, classified as follows:

Steel rails…….2,605,116 tons
Plates and sheets……...9,337,680 tons
Structural shapes……3,306,748 tons
Wire rods……..3,136,907 tons
Not classified…….18,962,422 tons

In 1890 the total finished product amounted to a trifle over 6,000,000 tons only, of which 1,885,307 tons was steel rail, 809,981 tons was plates and sheets, 457,009 tons was wire rods, 2,870,488 tons was not classified.

The total iron and steel production in 1920 being over 500 percent greater than that of 1890.

Up to and prior to 1890 the probable requirements of rail was most important to the iron and steel industry, i.e., the shipments of iron ore were really gauged by what the rail market might demand. Since that period the manufacture of steel for other uses has exceeded rail requirements, and so far as total tonnage is concerned it is the smallest of any of the classes of steel products now being manufactured.

Prior to 1892 structural shapes were not classified. In that year the tonnage amounted to only 453,957 tons, showing an increased production of this material in 1920 of 2,852,791 tons.

**Development of Structural Process*[.]***

Economic methods for the manufacture of structural steel shapes for buildings, bridges and other heavy structures were not brought about until about the year 1889. The process for rolling these heavier shapes out of steel came in about the same period as the process for manufacturing armor plate in this country was perfected. The steel industry from this period on showed its most rapid development.

The increased tonnage shown in the items of plates and sheets and structural shapes is due, no doubt, to the growing use of steel in the construction of buildings, ships, railway cars and automobiles.

I have made an effort to learn just the tonnage that goes into automobiles, but found nothing accurate, however it must be large.

I think I have referred in this article to the Chapin as being famous for its production of high grade ore in its earlier days. In closing, I cannot refrain form mentioning the many men who have been connected with the operation of the property in years past and who have all become noted in their chosen profession and whom many of the older residents here remember.

**Those Who Aided Growth.**

I first want to mention William J. Olcott, who, in the middle eighties was employed as mining engineer at the Chapin – now president of the Oliver Iron Mining company at Duluth.

John H. McLean, now general manager, also located in Duluth, was prior to 1892 employed as supply clerk at the Chapin.

Thomas F. Cole, whom you all know or heard of, and prominent as a copper mine operator, was at one time cashier and bookkeeper at the Chapin, resigning just prior to 1890, and in 1901 became president of the Oliver Iron Mining company.

James MacNaughton came to Chapin as a mining engineer, *[sic]* he later became general manager, resigning in 1901 to become general manager for the Calumet & Hecla Mining company, later its vice president and general manager.

F.S. Wheeler, cashier and bookkeeper from 1889 to 1892, is now president of the American Can company in New York City.

C.W. Pritchett, employed with us as assistant mining engineer in 1890-91, is now one of the most eminent geologists and consulting mining engineers in the United States, with offices in New York City and Denver, Colo.

O.C. Davidson, who has been on the range for more than 40 years, connected with the management of some of the best properties always, and for the past 22 years in charge of our company's mines on this and the Gogebic range.

Dr. J.A. Crowell, who has almost continuously for nearly 40 years been our mine physician and surgeon, and who ranks with the best in his profession.

I also want to mention Judge R.C. Flannigan, who was our company attorney for many years up to the time he was chosen for the office he now holds. His good counsel kept up out of trouble always and to this day the Chapin mine has never had a case in court.

These men are all still in harness, and I am proud to say that I have worked with all of them – not way back in the eighties, but for a long time.

**Some Who Have Gone.**

Among those who have passed away and whom I have the honor to say I worked with and for at the Chapin, are:

The late Nelson P. Hulst, discoverer of the Chapin mine, who, after severing his connection with the Chapin Mining company, became in later years, I think the first general manager of the Oliver Iron Mining company.

F.E. Woodbury, at one time mining engineer at the Chapin, later becoming general manager for the Newport Mining company, now known as the Steel & Tube company of America, and still others I'll not take your time to refer to.

Inclosing *[sic – In closing,]* I wish to refer to this news item on the iron industry:

BETHLEHEM, Pa. – More iron and steel will be made in the next generation if the present ascending rate of production continues "than has ever been made since man appeared on earth." Eugene C. Grace, president of the Bethlehem Steel Corporation declared in a statement in a Lehigh University publication.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, Volume 6, Number 54 [Monday, June 14, 1926], page 1, column 8; page 2, column 2

## SIX OVERCOME IN CHAPIN FIRE

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## BLAZE FOUND EARLY TODAY IN OLD SHAFT

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### Unconscious Men Revived And Suffer No Injury

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### RESCUE CREWS AID

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### No Danger In Situation But Work Is Sus-

## pended

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Six members of an exploration crew sent down the Hamilton shaft of the Chapin mine here shortly after 9 o'clock this morning to determine the source of a blaze discovered at a point between the sixteenth and eighteenth levels, were overcome by gas and smoke and revived only after vigorous artificial respiration had been applied. None was seriously affected, and all were still about the workings this afternoon, assisting in the work.

The men were Fred Knight, mining engineer, who fell to his knees while walking along the sixteenth level near the abandoned shaft wherein the blaze was later discovered; and Sam Trethewey, Joseph Graffe, A. Killinger, John Cesare and William Trembath. Trembath, Graffe and Killinger are pump men, Cesare is a pipe man and Trethewey is head mine electrician and city electrical inspector.

It was a lucky turn of events which saved the life of Trembath. He was stationed at one of the pumps below the twelfth level and it was when crews working in the deeper levels sent for his help that he was found lying unconscious near his pump. He was rushed to the surface and revived.

**Day Crew Finds Smoke**

The presence of fire was discovered about 7:30 o'clock this morning, when the day shift of miners descended at the Hamilton shaft. As the cage dropped deeper and deeper smoke and gas became more apparent and was especially dense at the sixteenth level. The miners ventured into the drift at the sixteenth level only a few feet before returning to the cage and giving the signal to be hauled to surface, where they reported their discovery. The sixteenth level is 1,660 feet under ground.

The source of the fire was soon traced to the old shaft, which runs between the sixteenth and eighteenth levels and has not been in use for some time. The dried timbers at the shaft furnished excellent fuel for the flames.

The origin of the fire is unknown but it is believed it may have been caused by short circuited wires. More definite information was expected late this afternoon, when special crews, equipped with oxygen helmets and working in relays, return to the surface. The first of these crews descended into B shaft of the Chapin at about 1:30 o'clock this afternoon.

**Overcome by Fumes**

It was while working away fro the burning shaft that the men were overcome by smoke and gas. Stories rivaling in thrills and interest those of the early mining days throughout the region, *[sic]* were told by companions of the men after the incident. One of the party, overcome when only a part of the distance to the cage had been accomplished, pleaded to lie down and rest, but was dragged on by his companions. Another collapsed on the floor of the level, declaring he could go no farther. He

**(Continued on Page 2, Column 2)**

## Six Overcome In Chapin Mine Fire

**(Continued from Page 1)**

Was half carried and half dragged to the cage.

Fred Knight, mining engineer, remembered little of his own experience, declaring simply that he recalled only a tightening in his chest, and he fell to the ground. When he awoke, he said, men were working over him.

Others who were overcome declared that the first sensation they experienced

was a weakening in the knees, when they felt they could not take another step. They were helped to the cage by companions.

**Mine Idle Sunday**

Fortunately, no one was on duty in the mine last night, as it was Sunday. While a night crew, had it been working, might have been warned in time to reach the cage and ascend to safety, officials of the mine were grateful that no such hazard was presented to the workers.

Work at the Chapin was suspended today and there was no indication this afternoon how soon it would be resumed. Part of the exploration crews to go into the mine late this afternoon with oxygen helmets were instructed to direct water from the pumps on the sixteenth level into the burning shaft. The winze, or shaft, will be blocked at that point to prevent the fire, smoke and gas from spreading into the mine.

**An Interesting Scene**

The scene about the mouth of Hamilton shaft early this morning, and continuing throughout much of the day, was an interesting one. As news of the situation spread the grounds about the shaft became strewn with cars and crowds of the curious hovered about waiting for developments, which came in the sight of five unconscious men being hauled out of the cage and the feverish efforts made to revive them.

Sprinkled among the spectators were friends and relatives of the exploration crews. They watched each signal anxiously. Three women – wives of members of the first crew to descend this morning, refused to leave the mouth of the shaft when ordered to do so by officials on duty there. They moved off a few feet, but stood in silence watching the huge cables for the signal that would bring their "men" back to safety.

It was estimated that by 1 o'clock this afternoon from 50 to 60 cars were parked about the shaft. Two special police from the Oliver Iron Mining company were pressed into service to segregate the cars and keep the crowds away from the shaft.

Officials could not say today whether work would be resumed tonight or tomorrow, depending entirely on the nature of the blaze and the condition of the lower levels when the fire has been extinguished.

Assurance was given by the officials that there is no immediate danger in the situation and that once the blaze is definitley *[sic – definitely]* located little difficulty will be experienced in getting it under control. Equipment for that purpose was lowered into the mine early this afternoon.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, Volume 6, Number 55 [Tuesday, June 15, 1926], page 3, columns 3-6

## *Crews From Other Mines Assist In Fighting Fire*

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### Flames Still Rage In Old Shaft; Work in Short Shifts Underground.

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Trained exploration crews composed of expert miners and engineers from the Oliver Iron Mining company's properties at Ironwood, Iron River, Iron Mountain, and the Penn Mining company at Vulcan, equipped with oxygen helmets, were still working vigorously today to quell the fire, smoke and gas which, starting in an abandoned shaft between the sixteenth and eighteenth levels of the Chapin mine some time *[sic – sometime]* Sunday night or Monday morning, yesterday sent five

workmen to the surface unconscious, while a sixth, overcome by smoke and gas, was revived by his companions underground.

The fire is still unabated in the shaft, although the smoke and gas decreased somewhat last night, according to the report of the last of the crews coming to the surface shortly before noon today. Effort is now confined largely to keeping the pumps in condition and preventing the spread of smoke and gas through the mine, the intense heat in and about the burning shaft making work at that point practically impossible.

One trip each half hour and then only for five of six minutes at a stretch is being made by the special crews. No effort is being made to work any portion of the mine as yet.

**Timber Is Dry**

Although a steady stream of water has been played upon the floor of the burning shaft since early yesterday, workmen report that because of the heat, smoke and gas little can be done to reach the flaming timbers which line and support the shaft. The timbers are old and rotted and provide ready fuel.

Workmen today dammed up the sixteenth level at a point about 150 feet from the Hamilton shaft, through which much of the exploration work has been accomplished. Thus the smoke and gas has been cut off from the rest of the mine and is prevented also from hindering the work at any of the three shafts – the Hamilton, B Ludington and C Ludington.

Members of the crews going down this morning declared that although they were required to stay a considerable distance form the burning shaft they could hear the crackle of the flames and feel the intense heat.

**May Block It Up**

There was some talk this morning of atempting *[sic – attempting]* to block the shaft at both ends – or at both the sixteenth and eighteenth levels which mark its upper and lower extension – and permitting the timber to burn itself out, rather than risk further danger in attempting to quench the blaze.

Members of the Ironwood rescue crew, with full equipment, arrived here at about 11 o'clock last night. They centered their efforts this morning about the C Ludington shaft, while the crews from Vulcan, Iron River and Iron Mountain were distributed between the B Ludington and the Hamilton.

There was little of yesterday's excitement about the Chapin property today as far as spectators were concerned, only a scattering few of the curious ones appearing throughout the day.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, Volume 6, Number 56 [Wednesday, June 16, 1926], page 3, column 1

## *Plan to Cut Off Levels In Attack on Shaft Fire*

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### Flames Still Raging in Chapin; Outside Crews Remain on Duty Here.

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Miners equipped with oxygen helmets and working in short shifts were engaged today in cutting off all approach to the shaft between the sixteenth and eighteenth levels of the Chapin mine which broke out in flames some time *[sic – sometime]* Sunday night, sending smoke and gas through the two levels. It is the plan now to construct air tight partitions or obstructions in the approaches, with the view to stifling the

blaze, that being the only possible method of attach, according to the officials.

It is expected that this work will be completed throughout the eighteenth level today and night crews will begin the same process on the sixteenth level.

**Fire Still Burning**

Exploration crews have been descending into the three main shafts of the mine regularly since Monday morning, checking the pumps and determining the effect of the fire upon the workings over the sixteenth level. Crews coming out of the Hamilton shaft at noon today declared that the blaze is still brisk and that there is intense heat and smoke, with considerable gas, near the shaft itself.

Although a six-inch water pipe on the sixteenth level has played a steady stream of water into the shaft since early Monday it is not believed that the water is reaching the dry burning timbers. It is explained that the shaft is sloping rather perpendicular and the possibility is that much of the water is simply coursing along the floor of the shaft rather than reaching the burning timber above.

**Debated Two Methods**

Mine officials and engineers for some time Monday and yesterday discussed the advisability of either blocking the shaft from the rest of the workings and permitting it to burn itself out, or attempting to seal the openings at either end and thus stifle the flames. The latter plan was finally declared upon and is now in progress.

There was no indication today how long the mine will be inactive as the result of the fire, that depending wholly upon the success of the plan now in operation. Officials today declared that some time may be required after the fire is out in clearing the levels of smoke and gas as well as surveying all other underground workings for traces of resultant trouble.

Meanwhile the crews from the company's properties at Ironwood, and Iron River, and from the Penn mines at Vulcan, are still assisting the Chapin organization and will perhaps remain here until the fire is extinguished.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, Volume 6, Number 57 [Thursday, June 17, 1926], page 2, columns 3-4

## FINISHING WORK OF CUTTING OFF LEVELS IN MINE

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### Hope to Stifle Shaft Fire; Smoke and Gas Less

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Operating in the sixteenth level of the Chapin mine workmen today were completing the job of blocking all passageways to the shaft which, breaking out in flames some time *[sic – sometime]* last Sunday night, sent smoke and gas out into the sixteenth and eighteenth levels, causing a complete suspension of work throughout the mine.

It is the plan of the officials to seal the approaches in such a way as to prevent any air from reaching the shaft, thus stifling the blaze. The shaft is about 200 feet in depth, extending from the sixteenth to the eighteenth levels.

Considerable improvement in conditions underground was reported by crews coming out of the mine at noon today, the men declaring that there is a decided decrease in the smoke and gas today, compared with yesterday and last night.

Blocking of the approaches in the eighteen level has also lessened the heat which penetrated much of that section of the mine, it was reported. The same result is sought in the work now in progress on the sixteenth level.

Again today officials could not indicate when work will be resumed at the mine. When the task of blocking the approaches on the sixteenth level is completed work will begin at once on clearing both levels of whatever accumulation of smoke and gas main remain, and of surveying all other passageways throughout the mine for any unfavorable conditions which may have resulted from the fire.

When that has been accomplished the first working crew will go down to resume operations, it was said.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, Volume 6, Number 58 [Friday, June 18, 1926], page 1, column 1

## CHAPIN CREWS MAY RETURN TO JOB NEXT WEEK

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### See Possibility That Part Of Operations Can Be Resumed

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### EXPLORERS RETURN

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### All Approaches to Burning Sections Are Blocked Off

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A possibility that a part of the regular mining crews may begin work at the Chapin Monday morning was expressed by an official of the Oliver Iron Mining company today in reporting progress on checking the blaze which started in an abandoned shaft some time last Sunday night and caused a complete shut-down of operations. It may be, the official declared, that a part of the mine away form the burning shaft will be opened.

Workmen this morning completed the job of blocking all approaches to the burning shaft on both the eighteenth and sixteenth levels, and of sealing the approaches to stifle the flames. It is believed that through this method the blaze will die down within a day or two and be completely extinguished by early next week.

The task of blowing the smoke and gas out of the working portions of the mine will then begin, and crews will be sent in for regular work as fast as the levels can be cleared and determined safe for further operation.

**Crews Are Returning**

The crew of exploration workers from Iron River and Vulcan, who have assisted in the task since Monday, have returned and the Ironwood crew leaves tomorrow morning.

Marvin Orfald, chief safety engineer for the Penn Mining company's properties in the Vulcan district, has been in charge of exploration since early in the week, and has also supervises the blocking and sealing of the burning shaft. If is said that Mr. Orfald will remain at the Chapin until the task has been completed and the full crews are again at work.

Officials today could not say when all of the underground operations will be resumed, declaring that it is solely dependent on the rapidity with which the

levels can be cleared of smoke and gas and finally inspected for safety.

*Iron Mountain News*, Iron Mountain, Dickinson County, Michigan, Volume 6, Number 60 [Monday, June 21, 1926], page 1, columns 5-6; page 2, columns 2-8

## *Chapin Mine Resumes Operations As Fire In Shaft Is Extinguished*

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### Exploration Reveals Levels Free of Gas; Story Of Fight is Related.

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With the report of officials that the fire which started some time *[sic – sometime]* Sunday night, June 13, in what is known as the "boundary shaft" between the sixteenth and eighteenth levels of the Chapin mine was extinguished, regular working crews descended into the mine this morning for the first time since Saturday, June 12.

To determine to just what extent the gases had penetrated the mine and before permitting the men to resume work, all of the working levels and stopes were inspected late Saturday afternoon. No signs of gas were found. In making this inspection two survey parties were used, each taking a portion of the mine.

An interesting feature of the final inspection was the use of canary birds to determine the presence or absence of gases in the levels. Each crew carried a bird. The birds, according to mine experts, are more susceptible to gases than any human and are more quickly overcome. They are used primarily to give warning for a retreat in the case of the presence of gas. The birds used Saturday were in no way affected and appeared none the worse for the experience after being brought to the surface.

Inspections were again made early Sunday morning and at 8 o'clock last night conditions were declared normal.

**Story of Fire.**

Officials this morning described in detail the method employed in combating the fire.

Here is the story as given by a mining company official:

"In order to extinguish the fire or confine it below the sixteenth level, the approaches to the shaft on the eighteenth level were blocked off, and the openings of the shaft were sealed at the collar on the sixteenth level. Partitions, or bulkheads, were placed at three different points on the eighteenth level. These partitions were built by placing or fitting in uprights on which ship lap was nailed. This was then covered with roofing paper. Any openings around the top and edges were plastered with apulp material for which asbestos sponge was used. The sealing of the shaft on the sixteenth level consisted of laying plank across the opening, which was then covered with a brattice cloth, and this in turn was covered with a thick layer of an airproof substance. The dimensions of the opening on the eighteenth level, which were bulkheaded, were about eight by 10 feet and the opening of the shaft on the sixteenth level was approximately six by 14 feet.

**Worked Under Difficulties**

"The shaft in which the fire occurred is located about 1,100 feet from C Ludington and the work had necessarily to be carried on under difficulties that seemed almost too great to overcome. The men engaged in the work, numbering 37, had all been trained in the use of oxygen apparatus designed for work of this kind. This apparatus, with its head gear, oxygen tanks

and breathing bag, weights about 50 pounds. The density of the smoke was so great that the men to first find their way to the location of the fire did so only by feeling their way along the sides of the drifts. On

**(continued on page 2, column 3)**

## Work at Chapin Mine Is Resumed

**(Continued from Page 1)**

the next trip a lifeline was extended from the opening on the eighteenth level at C Ludington to the point of the fire, and this was used as a guide in reaching the place of operations with the material needed. Under all of these difficulties, with the vision so bad that the rails of the level could only be seen by stooping down and placing flashlights close to the bottom, the work as carried on.

"The men worked in crews of five and six, and the time underground varied from 50 minutes to two hours and 10 minutes. One crew was constantly on hand prepared to relieve the other on its return to the surface. The work was directly in charge of Marvin B. Orfald, safety engineer for the Penn Iron Mining company in the Vulcan district, and to his supervision and direction of the safety crews is due much of the success of the work accomplished. Mr Orfald was ably assisted underground by Albert H. Trestrail, safety engineer for the Pickands-Mather mines in the Iron River district, and V.P. Chappel, safety engineer of the Oliver Iron Mining company mines in this district. Mr. Trestrail is a former Iron Mountain man and the son of Mr. and Mrs. William Trestrail who reside here. B.W. Shoves, safety engineer for the Oliver Iron Mining company mines at Ironwood, accompanied the crew from that district to this city and rendered much service on surface. Due credit is also given to the various crews who remained on the job until their services were no longer needed.

**First To Go down**

"The party making the first trip to the eighteenth level with smoke helmets and apparatus included Mr. Orfald, Mr. Cahppel, Ernest L. Anderson, miner at the Chapin, and the Penn Iron Mining rescue crew of Vulcan. Louis Mochen, miner at the Chapin, accompanied the Oliver Iron Mining company rescue crew of Iron River on the second trip, and rendered value *[sic – valuable]* service in starting a pump at the shaft in which the fire occurred, the continuous operation of which was necessary to keep the bottom level free from water. William Martin, underground pipe foreman at the Chapin, went regularly into the mine with the second Iron River crew and kept the pumps on the eighteenth level in operation. Frank Antonio, with a short training in the rescue apparatus, aided in the inspection work Saturday and Sunday.*["]*

The following is a list of men engaged directly in operations underground in connection with the fire:

**Personnel of Crews**

Penn Iron Mining Company Crew, Vulcan – Marvin B. Orfald, safety engineer, Frank E. Bolan, Richard Piper, Joseph Butler, Peter Orler, Emmanuel Pancheri and Fred Denton.

Pickands Mather & Co. Crew, Caspian – A.H. Trestrail, safety engineer, Edward James, William Brooks, Frank Parvie and William Frederickson.

Oliver Iron Mining Company crew *[sic – Crew]*, Ironwood – William Eddy, captain, Willard Dahlen, Paul Peterson, Fred Gribble, Joseph Mitchell, Frank Walz, captain, Arnold Richards, Gust Sell and Frugal Sjabloom.

Oliver Iron Mining Company crew *[sic – Crew]*, Riverton mine, Iron River – Frank Shepich, captain, Bert Danobrocki, G.

Bezzi, John Jank, Jack Shubat, Ed Anderson, captain, Matt Today, James Angeli, Clem Cregari and John Today.

Oliver Iron Mining Co. crew *[sic – Crew]*, Chapin mine, Iron Mountain – V.P. Chappel, safety engineer, William Martin, Sante Secenaro, G.O. Stoneman, Ernest L. Anderson and Louis Mochen.