MUNISING RAILWAY COMPANY.
OTHER ACCOUNTS PAYABLE, ETC.

FORWARD,.....		$3,939.47
OTHER COMPANIES AND INDIVIDUALS - (Forward),.....	$ 3.75	
Hammond Refrigerator Line,.....	2.46	
Merchants Despatch Transportation Company,.....	.18	
Morris, H. N.,.....	321.09	
National Despatch,.....	.07	
Nelson Morris & Company Line,.....	.09	
National Car Company,.....	.09	
North & South Rolling Stock Company,.....	.57	
Swift Refrigerator Line,.....	4.20	
Union Refrigerator Transit Company of Wisconsin,....	2.01	334.51
TOTAL,.....		$4,273.98

Exhibit "A"
Schedule #2

(Concluded) - 2.

MUNISING RAILWAY COMPANY

STATEMENT OF INCOME -
FOR THE YEARS ENDED DECEMBER 31, 1903 AND 1902 - AND COMPARISON.

	YEAR ENDED DECEMBER 31, 1903	1902	INCREASE	DECREASE
MILES OF ROAD OPERATED,	62.93	62.93		
GROSS EARNINGS:				
Freight,	$ 91,818.33	$ 44,782.24	$47,036.09	
Passenger,	21,189.35	16,910.49	4,278.86	
Mail,	1,642.74	1,628.64	14.10	
Express,	2,444.13	1,460.27	983.86	
Excess Baggage,	215.75	263.58		$ 47.83
Miscellaneous,	20.28	938.39		918.11
Total,	$117,330.58	$ 65,983.61	$51,346.97	
OPERATING EXPENSES:				
Maintenance of Way and Structures,	$ 29,429.86	$ 30,867.31		$ 1,437.45
Maintenance of Equipment,	10,119.93	6,785.05	$ 3,334.88	
Conducting Transportation,	52,602.76	31,672.51	20,930.25	
General Expenses,	11,671.62	5,135.67	6,535.95	
Total,	$103,824.17	$ 74,460.54	$29,363.63	
Ratio to Gross Earnings,	88.49%	112.85%		24.36%
NET EARNINGS,	$ 13,506.41	$ 8,476.93	$21,983.34	
OTHER INCOME:				
Rentals from House and Ground,	196.55	96.33	100.22	
GROSS INCOME,	$ 13,702.96	$ 8,380.60	$22,083.56	
DEDUCTIONS FROM INCOME:				
Interest on Bonds,	$ 6,400.00	$ 6,400.00		
Miscellaneous Interest,	27,587.04	23,683.37	$ 3,903.67	
Taxes,	6,000.00	5,622.51	377.49	
Land Department Expenses, Improvements and Taxes in excess of Earnings - Schedule #1,	3,205.70	9,776.78		$ 6,571.08
Expenses of Engineering Party scouting for prospective line to Manistique (Line Abandoned),		399.58		399.58
Total,	$ 43,192.74	$ 45,882.24		$ 2,689.50
INCOME DEFICIT,	$ 29,489.78	$ 54,262.84		$24,773.06

EXHIBIT "B"

MUNISING RAILWAY COMPANY

LAND DEPARTMENT EXPENSES, IMPROVEMENTS AND TAXES IN EXCESS OF EARNINGS - FOR THE YEAR ENDED DECEMBER 31, 1903

EXPENSES, IMPROVEMENTS AND TAXES:		
Expenses,	$ 716.50	
Town Site Improvements,	222.17	
Taxes,	4,551.93	
Total Expenses, Improvements and Taxes,		$5,490.60
EARNINGS:		
Lease Lot Collections,	$ 2.00	
Interest,	2,239.03	
Miscellaneous Receipts,	43.87	
Total Earnings,		2,284.90
EXPENSES, IMPROVEMENTS AND TAXES IN EXCESS OF EARNINGS,		$3,205.70

Exhibit "B"
Schedule #1.

MUNISING RAILWAY COMPANY

STATEMENT OF PROFIT AND LOSS - FOR THE YEAR ENDED DECEMBER 31, 1903

BALANCE - DEFICIT, DECEMBER 31, 1902,.....			$49,617.80
PROFIT AND LOSS CHARGES:			
Accounts of prior period written off as uncollectible:			
Powell & Mitchell,.....	$170.86		
Rock River Township,.....	150.00		
State Board of Agriculture,.....	775.92	$ 1,096.78	
Interest on Notes Payable accrued in the month of December, 1902,.....		1,622.02	
Interest on open account with Cleveland-Cliffs Iron Company, accrued in the month of December, 1902,.....		720.72	
Adjustment of "Notes Receivable Account" Land Department,.....		8,789.18	
Deficit from operation for the year ended December 31, 1903,.....		29,489.78	
Total,.....			41,718.48
BALANCE - DEFICIT, DECEMBER 31, 1903,.....			$91,336.28

Exhibit "C"

MUNISING RAILWAY COMPANY

TRAFFIC STATISTICS -
FOR THE YEARS ENDED DECEMBER 31, 1903 AND 1902 - AND COMPARISON

	YEAR ENDED DECEMBER 31, 1903	1902	INCREASE	DE-CREASE
FREIGHT TRAFFIC				
Earnings from Freight,....	$91,818.33	$44,782.24	$47,036.09	
Tons Carried one Mile,....	6,485,038	2,038,904	4,446,134	
Average ton Miles per Mile Operated (density),.....	103,052	32,399	70,653	
Earnings per ton Mile - in Cents,.....	1.42	2.20		.78
PASSENGER TRAFFIC				
Earnings from Passengers,.	$21,189.35	$16,910.49	$ 4,278.86	
Passengers Carried one Mile,.....	832,624	608,761	223,863	
Average Passenger Miles per Mile Operated (density),.....	13,231	9,674	3,557	
Earnings per Passenger Mile - in Cents,.....	2.54	2.78		.24

February 8th, 1904.

Mr. Wm. P. Belden,

Solicitor,

Ishpeming, Mich.

Dear Sir:-

I have yours of the 5th, with copies of certain letters, etc.

With reference to the rights of way across the Negaunee Mine property; I think you will find, as you yourself suggest, that there are many records regarding this on hand in Mr. Redfern's office. Several years ago he got up a map book showing all the rights of way across all the lands of the Company, and I think that both of these mentioned in your letter to Mr. Harris are noted in Mr Redfern's report concerning the Company's lands in the vicinity of Negaunee.

Yours truly,

President

WGM

K-R

THE CLEVELAND-CLIFFS IRON CO.

CLEVELAND IRON MINING CO.
IRON CLIFFS CO.
PIONEER IRON CO.

OFFICES: PENINSULA BANK BUILDING,

WILLIAM P. BELDEN, SOLICITOR.

ISHPEMING, MICH., Feb. 5th, 1904.

Mr. William G. Mather, President,
Mercantile Bank Building,
Cleveland, Ohio.

Dear Sir:-

I have yours of the 2nd inst. requesting copies of certain letters sent to the different departments, and enclose them herewith as follows:-

1. Letter to Mr. Duncan relating to form of Mining lease.

2. Letter to Mr. Harris relating to rights of way across Negaunee Mine property. You will notice my suggestion in this letter about having certain abstract work done. I think nothing more has been done with this matter.

3. Letter to Mr. St. John relating to claim of Ferguson Bros. In this matter I prepared the papers to commence suit and then went to Mr. Ferguson, who, finding that the matter could not be delayed any longer, settled in the manner stated in the letter.

4. Letter to Mr. Redfern, Sept. 28th, relating to Sutherland-Innes Contract. I have also added copy of my letter of Oct.17 on the same subject.

5. Letter to Mr. Redfern, Nov. 17th, relating to Munising Co. vs. Swett. Mr. Redfern has not yet made any recommendation on this subject.

6. Letter to Mr. Farrell of July 10th, relating to timber reservation in Mathews deed. In order to make this letter clear I have added copy of Mr. Farrell's letter to which mine was a reply, also a copy of the notice that I prepared and which was served by

THE CLEVELAND-CLIFFS IRON CO.

CLEVELAND IRON MINING CO.
IRON CLIFFS CO.
PIONEER IRON CO.

OFFICES: PENINSULA BANK BUILDING,

WILLIAM P. BELDEN, SOLICITOR. ISHPEMING, MICH.,

W. G. M. #2.

Mr. Noble.

In reference to the report on the Munising contracts, Mr. Redfern and I planned to report together, and the portion that he wrote was called Section II.

Very truly yours,

William P. Belden

Solicitor.

Copy.

Ishpeming, Michigan, Oct. 26, 1903.

Mr. M. M. Duncan, Agent,

Ishpeming, Michigan.

Dear Sir:-

In reference to your question as to the time when the form of mining lease granted by this company, would permit it to terminate the same for default in payment of royalties, would say that I find this provision in the form of lease:-

"Provided, further, that this lease shall not be so declared forfeited for nonpayment of royalty or rent, until the expiration of ten days after written demand to pay such royalty or rent is given by said party of the first part, its successors or assigns."

You will note that this clause requires a written demand for payment before the notice of forfeiture be given.

Very truly yours,

William P. Belden,

Solicitor.

COPY.

Ishpeming, Michigan, July 28, 1903.

Mr. H. R. Harris, Gen'l Manager,

Marquette, Michigan.

Dear Sir:-

In looking over the index in the abstract book in the office of the Register of Deeds at Marquette, in relation to the question of railway rights of way across the Negaunee Mine property, I found two right of way deeds. One of them was a quit-claim deed from O. P. Norton to the Iron Mountain R'y Co., dated March 16, 1855, conveying a right of way 100 feet wide across NW 1/4 of NW 1/4 of Sec. 5-47-26, this right of way to be selected by said Iron Co.

The other deed was from David Hinood to the Iron Mountain R'y Co. also dated March 16, 1855, conveying right of way 100 feet wide "upon the most feasible route"from Marquette Bay to Jackson Iron Mountain, across the W 1/2 of SW 1/4 and S 1/2 of N W 1/4 of Sec. 5-47-26.

On examining these deeds, I find that each of them also refer to numerous other descriptions of land. I find no transfers from the Iron Mountain R'y Co. to any other Company. As these rights of way are not located definitely I am unable to determine whether or not they refer to the tracks now laid on the premises.

The abstract book shows a great number of conveyances, leases and sub-leases relating to this property, and one cannot say definitely whether or not the railroads in question have any rights which we are estopped to deny without a careful and complete review of all these conveyances. Such a review Mr. Primeau can make in a much smaller portion of time than it would take me to do it, and it is my judgment that we better have such an examination made at once,

On receipt of this letter please telephone me what you think about it.

Very truly yours,

William P. Belden,

Solicitor.

COPY.

Ishpeming, Michigan, Oct. 28,1903.

Mr. H. A. St John, Auditor,

Marquette, Michigan.

Dear Sir:-

I have seen Mr. Ferguson and obtained from him a check dated November 15th, for $569.15, being the amount of principal and interest to that date, and have given him a receipt written on one of my railroad heads, of which I enclose a copy. He claimed that he could hardly be sure of getting returns on his money before the 15th so made the check payable at that time.

If you will kindly advise me when the check is paid I will attend to delivering the note to him.

He also told me something of his claim at Munising against the Company, and will soon present a bill for it.

Very truly yours,

William P. Belden,

Solicitor.

COPY.

Ishpeming, Michigan, Sept. 28,1903.

Mr. Samuel Redfern, Land Agent,

Negaunee, Michigan,

Dear Sir:- Sutherland-Innes Contract.

I have yours of the 21st inst. containing copy of contract between the Munising Company and the Sutherland-Innes Company, and have considered the same,

The Contract is rather loosely drawn but I think its meaning is clear, as to the manner of cutting and removing timber.

On page three of the contract it is stated that,"It is obligatory upon the party of the second part when it has entered upon a description to cut and remove the timber therefrom as soon thereafter as is reasonably practicable, and when the same is removed to give the party of the first part written notice that the timber has been removed and thereafter the party of the second part shall have no right to enter upon the descriptions of land contained in the notice, for the cutting and removal of timber, unless there has been a manifest error in the description given in the notice; but such notice shall not prohibit the party of the second part from hauling timber from other descriptions of land lying beyond the same."

On the next page, in connection with the provision for clearing parcels of land covered by this contract, which have been sold by the Munising Company to settlers, the contract states that as to such lands, "the provisions hereinbefore stated requiring the party of the second part to lumber cleanly and continuously a description when entered upon shall not apply."

The last clause shows more clearly what the parties meant by the first, namely, that the second party was "to lumber cleanly and continuously a description when entered upon."

While the contract does not provide the penalty for failing to comply with these provisions, I am satisfied that a breach of this clause with reference to a particular description would amount to a forfeiture of the rights of the Sutherland-Innes Company on that description; and a failure to comply as to the whole tract, or substantially the whole tract, would amount to a forfeiture of the whole contract.

The contract does not define what is meant by"a description", and unless that word has by custom been deemed to mean always a forty, I think it may be taken as referring to any one of the numerous descriptions contained in the contract, which vary in size from a forty to a whole section.

As to the elm and basswood, I note that you say that the Sutherland-Innes Co, has cut over practically the whole tract, leaving a good many trees standing that are perhaps not merchantable, yet are of value for some purposes. I am well satisfied that the Sutherland-Innes Co, has by abandonment, forfeited all its rights to cut such remaining timber, and that this company may cut such trees as it pleases.

As to the birch timber, I think that the same rule should without doubt be applied as to all descriptions on which the Sutherland-Innes Co. cut some birch timber two or three years ago, and then ceased operations. According to your letter, they had cut all the elm and basswood on the whole tract, and on any possible theory of construction, the company should, on commencing to cut the birch, have completed its operations. I think you may safely proceed to cut all the remaining birch on such descriptions, whether merchantable, or fit only for cordwood.

The most difficult question arises in reference to descriptions on which they have cut no birch at all. First, I think there is no doubt as to the right of the Munising Company to cut the scrub birch for cordwood. It did not agree to sell such birch under this contract, and even if the Sutherland-Innis Co. had lived up to its terms, the Munising Co. might still have cut such birch trees, or disposed of them to other parties, as it did the hemlock and the cedar, without waiting until this contract expired, or until the operations of the Sutherland-Innes Co. had ceased. I note that you say that it is entirely practicable to separate the scrub birch from the merchantable timber.

It is important for us to settle upon the proper policy to be pursued, because by marking and leaving the merchantable birch we are in a sense placing a practical construction upon this clause in the contract.

Finally, in reference to your supposed case of a forty from which the Sutherland-Innes Co, has cut the elm and basswood, but no birch, and then have not done anything for two or three years.

I think the same rule must be applied, and such action be regarded as a breach of their obligation "to lumber cleanly and continuously" which amounts to a forfeiture and an abandonment by the Sutherland-Innis Co. of its rights to the remaining timber. Logically, there can be no difference in principle between violating the contract, by taking all of the merchantable timber of two of the three named woods and leaving the other, and violating it by taking only two-thirds of each of the three.

The next question is how to take advantage of the forfeiture Courts of equity will not usually lend their assistance to enforce the forfeiture of a contract, though ever ready to aid in preventing a violation thereof which would amount to an irreparable wrong. Forfeitures not insisted upon will be regarded as waived.

One good way to take advantage of the forfeiture is for us to go on and cut the timber making a clean sweep of everything. But obviously this course will take years to be carried out.

Meanwhile, the Sutherland-Innis Co. might assert its claims, and resume operations on descriptions not yet reached by the Munising Co., and attempt to avoid the effect of its delay, by saying that the Munising Co. having acquiesced in this delay, or at least having remained silent except as to the few descriptions we are now cutting over, would be estopped from asserting the forfeiture. Or, the Sutherland-Innes Co. might sell the contract to some one else not familiar with the facts, against whom it might be even more difficult to enforce the forfeiture.

As a practical question, what do you think of the advisability of preparing and serving a notice upon the Sutherland-Innis Co. to the effect that, the Sutherland-Innis Co. by cutting over the entire tract and removing such timber as it saw fit to take, and thereafter ceasing operations entirely doing the past three years, has abandoned all further rights under the contract, to cut and remove any more of the timber on said premises, and that the Munising Co. therefore elects to declare said contract and all rights of the Sutherland-Innis Co. thereunder, forfeited.

Such a notice served upon the Sutherland-Innis Co. and recorded in the Register of Deeds office, would obviate any question of waiver, would so inform the Sutherland-Innis Co. or any purchaser from them, of the claims of the Munising Co., and if this view of the contract is correct, would make them liable as trespassers if they attempted thereafter to cut or remove the timber.

There is, however, another point to be considered. We certainly want a liberal construction placed on the hemlock bark and log contracts, and don't want to set a precedent in the way of enforcing forfeitures, that may set others thinking, although I think the question of forfeiture in reference to those contracts has been already waived by the Lac La Belle Co. and Berry Bros., Ltd.

I shall be glad to have the benefit of your views on this subject, and will then advise further on the course to be pursued with reference to the merchantable birch on forties, from which no ~~birch on forties, from which no~~ birch has been taken by the Sutherland-Innis Co.

In this connection I should like to ask what payments have been made by the Sutherland-Innes Co. on this contract, and whether the amount paid is in excess of the value of the timber removed, estimated at the contract price.

I enclose herewith copy of the contract for your files.

Very truly yours,

William P. Belden.

Solicitor.

COPY.

Ishpeming, Mich., Oct. 17, 1903.

Mr. Samuel Redfern, Land Agent,

Negaunee, Michigan.

Dear Sir:- In re Sutherland-Innes Contract.

I have your letter of the 29th ult. on this subject and have given this matter some further consideration.

I note your explanation that the marking of the merchantable birch timber was for the purpose of having it left standing for sale or such other use as you might desire to make of it, rather than to save if for the Sutherland-Innes Co. In that view, such a course could not fairly be regarded as an unfavorable practical construction of the contract. I agree with you that it is better not to serve notice of forfeiture, if it can be avoided, and I think it can. The fact that Mr, Bushong has full knowledge of the cutting of the birch, and does not object, but on the contrary wants to contract for the elm and basswood on other lands, would indicate that he places the same construction on this contract that we do. The last payment on the contract was made six years ago, and work was abandoned under it two or three years ago. Furthermore, there was only 3,955,854 feet of birch, as compared with 13,656,450 feet of elm, and 1,089,624 feet of basswood.

As suggested in my letter of the 28th ult. forfeitures not insisted upon will be regarded as waived, hence, I think the safest course for our Company is to treat the contract as forfeited, but without giving notice, as the contract does not contain any provision requiring notice, and this company may proceed to sell or cut the birch as it sees fit.

This course will fully protect the rights of this company and be less likely to provoke a controversy, than to give notice of forfeiture before taking any action.

Of course if Mr, Bushong should attempt to resume cutting then we would give notice to desist.

Very truly yours,

William P. Belden.

Solicitor.

COPY.

Ishpeming, Michigan, Nov.17, 1903.

Mr. Samuel Redfern, Land Agent,

Negaunee, Michigan.

Dear Sir:- Munising Company vs. Swett.

Mr. Swett has given up the fight as you will see by the enclosed letter from him which was probably dictated by Mr. Mills.

As Mr. Swett has lived on the land for more than six years he is entitled to make a claim for compensation for improvements if he has made any. The amount of the compensation he would be entitled to, is not governed necessarily by the amount of his expenditures. He could recover only such a sum as would equal the extent that his buildings or improvements have increased the present value of the premises. On the other hand the Munising Company would be entitled to offset against his claim, a claim for rent and profits growing out of his use of their land, and also a claim for damages for such timber as he may have cut or for any other injury done to the property and also a claim for about $20 in court costs. It is quite likely that one claim would about offset the other. It occurs to me that it would be well to have these questions investigated by some one familiar with the premises. If Swett and his wife will give the Company a quit claim deed to the premises, we might give them a lease until the first of next May, which would give them a home for the winter. After investigation, will you kindly advise me what your recommendation would be as to the terms of settlement and I will carry it out.

Very truly yours,

William P. Belden.

Solicitor.

COPY.

Ishpeming, Michigan, July 10, 1903.

Mr. Austin Farrell, Manager,

Gladstone, Michigan.

Dear Sir:-

Yours of the 6th inst. relating to Timber Reservations in the Mathews Tract has been received and considered.

I can readily agree with you that the wording of the reservation clause in the deed "is bad if not obscure".

However, this seems to be a fair construction of the clause.

First. That it gave first parties the absolute right dur- the first two years to remove the pine, cedar and spruce timber at will.

Second. That after two years, the second party might, by serving written notice and demand, require first parties to remove said timber within a period of two years from and after service of said notice, and in case of failure to comply with the notice, first parties would forfeit all right title and interest in the timber, which would then become the property of the second party.

Third. That this notice may be given any time after, but not before, June 25, 1899. There is no requirement that it be served on any particular day.

My conclusion therefore is that it is unsafe to proceed to cut this timber without serving notice on Mathews, and waiting two years; but that the company has not lost its right to give this notice by delay.

I enclose herewith four copies of notice, with the request that you fill in the blanks to correspond with the deed. The address at the top of the page should contain the names of all persons joining with Peter Mathews as first parties. Be sure that the Cleveland-Cliffs Iron Co. is the grantee named in the deed. Also fill in the Liber and page number where the deed is recorded. Sign all the copies in the company's name by yourself-adding your official title in that department. One copy of this notice, signed as above, should be handed personally to each of the first parties named in the deed, and a memorandum made of the time and place of service on each

and by whom made.

Would it not be well to send a copy of our correspondence and of this notice to Mr. Mather, if there is a possibility of future trouble about it; and please return one completed copy of the notice to me, with the above memorandum thereon as to proof of service.

Very truly yours,

William P. Belden,

Solicitor.

COPY.

Gladstone, Mich., July 8th, 1903.

Mr. W. P. Belden,-Atty.

Ishpeming, Mich.

Dear Sir:-

TIMBER RESERVATIONS- "MATHEWS TRACT".

Refering to a converstion recently had with you relative to the above, I beg to say:-

We make the following quotations from the deed in the Register's office for Delta County:-

"For a consideration of $27,000,.....and in final execution by said first parties, of the contract of conveyance, executed by them to the second party, dated June 25th, 1894, covering the lands hereinafter described, the full consideration provided for, in which, has been paid, to the first parties herein, do by these presents, grant, bargain and sell &c,&c."

Contract dated.....June 25th,'94
Deed in pursuance of above June 25th '97
Deed received for record June 25th '97

Further:-

"Reserving to the parties of the first part, all such pine, cedar and spruce timber, as still remains uncut upon and unremoved from said lands, where such pine, cedar and spruce may still remain, within two (2) years from the date above written, provided that after the elapse of said two (2) years the first parties or their assigns may remove the same within two (2) years after notice in writing served upon them or their assigns personally or at their last place of residence, but not afterwards, in which notice, the second parties or its assigns, shall make demand for such removal within such time."

It strikes us that the wording of the next above clause is bad if not obscure, and our action in this matter must depend entirely on the legal interpretation of it.

As I understand it, we should have served formal notice on Peter Mathews of Escanaba on June 25th 1899, (2 years after the execution of the deed). We failed to do this. Now it remains to be determined by you whether or not we have a right to remove the timber in question--say this year or next, or serve notice now, and wait 2 years longer to see what action Mathews will take.

It must not be supposed for a moment that Peter Mathews has overlooked the terms of this deed, for he is extremely shrewd, and he is either sure that he owns this timber, and is looking for a profitable sale of it, or he is taking his chances on our tampering with the stuff, and thereby getting us into a lawsuit which he delights in.

There is really only one section of this tract of land which will be less accessible to rail road tracks in 1905 than it is now, and the value of the timber will not depreciate in the next 2 years except in case of a general fire, and if you find that our right to operate the timber now is questionable, the writer would advise that notice be served now, and that we wait 2 years before operating. Please formulate such a notice for us if you find it necessary.

Yours Truly,

Austin Farrell, Manager.

By T. H. N.

TO P E T E R M A T H E W S and

S A R A H M A T H E W S, his wife,

Escanaba, Michigan.

YOU ARE HEREBY NOTIFIED, That in pursuance of the terms of a certain deed executed by you to the Cleveland-Cliffs Iron Company on the 25th of June, 1897, which deed was recorded in the Office of the Register of Deeds for Delta County, Michigan, on the 28th of June, 1897, in Liber 6 of Deeds p. 571 (reference to which deed and the record thereof and to the lands therein described is hereby made for greater particularity, and to avoid the necessity of repeating the same herein), the undersigned, Cleveland-Cliffs Iron Co. hereby demands that you cut and remove "all such pine, cedar and spruce timber, as still remains uncut upon and unremoved from said lands," being the lands described in the deed above referred to, within a period of two years but not afterwards, from and after service of this notice upon you.

And that in default of your removing said timber within the time above specified, your right, title and interest therein will be deemed to have ceased.

Dated, at Gladstone, Michigan, this 28th day of July, 1903.

Yours, etc.,

CLEVELAND-CLIFFS IRON COMPANY.

By Austin Farrell, Mgr.

Feb. 2nd, 1904.

Mr. Wm. P. Belden,

Solicitor, Ishpeming, Mich. ANNUAL REPORT.

Dear Sir:-

I have yours of the 26th ulto. with your annual report, which is in very satisfactory shape.

Send me a copy of your letter to the Mining Dep't, dated Oct. 26th, relative to the form of mining lease.

Also copy of your report, dated July 28th, to the Railroad Dep't, on the question of railroad rights of way across the Negaunee Mine property.

Also to Mr. St. John, dated Oct. 28th on the Ferguson Bros.' bill.

Also letter to Land Dep't, dated Sept. 28th, relative to the Sutherland-Innes Co. contract.

Also to Land Dep't, Nov. 17th, relative to Sweet.

Also July 10th, to Furnace Dep't, relative to Peter Matthews.

In a part of your report you say that you have prepared three sections of report on the Munising contracts. I do not find here however, but Sections 1 and 3.

Yours truly,

WGM-EWB

President.

ask copy to Office for report
present Conference

THE CLEVELAND-CLIFFS IRON CO.

CLEVELAND IRON MINING CO.
IRON CLIFFS CO.
PIONEER IRON CO.

OFFICES: PENINSULA BANK BUILDING,

WILLIAM P. BELDEN, SOLICITOR.

ISHPEMING, MICH., Jan 26, 1904.

Mr. William G. Mather, President,
Cleveland, Ohio.

Dear Sir:- Annual Report.

Enclosed please find my first annual report, covering the period from May 1st, 1903, to January 1st, 1904. It sets forth in substance the work done in connection with the cases that have been disposed of or are now pending; also the written opinions and reports prepared for the various departments. Those mentioned are all matters that required some study or work, other than the ordinary business letters. It also deals briefly with the other work which I have done with and for the departments, states the number of trips made for them, the expenses involved, and states the extent to which outside attorneys have been employed, and what my policy will be in that regard.

If this report is not as full and complete as you would like to have, or if on looking it over there is any part of the work which you would like to have done in any different manner, I shall certainly be pleased to hear from you and will endeavor to adopt and follow any suggestions you desire to make.

Hereafter you will receive on or about the first of each month a statement giving somewhat more in detail the work done during the preceding month, than it seemed advisable to include in this report owing to its length.

Very truly yours,

William P. Belden

Solicitor.

REPORT OF SOLICITOR.

January 1st, 1904, Covering Period Since May 1st, 1903.

Note date Brochu pool found

Cases and Proceedings Disposed of.

1. Maas vs. Kirkpatrick. Marquette Circuit Court, in Chancery. Bill to enforce specific performance of an option to purchase certain real estate, which option was assigned by Mr. Maas to the Cleveland Cliffs Iron Co. Tried before Judge Stone, June 10, and resulted in a decree for complainant. Mr. Bell and I appeared for complainant and Mr. Young for the defendants. This case involved the question of our right to enforce an option which had been accepted orally. It was a close question but there were circumstances in the case which we urged amounted to a waiver of any more formal acceptance, under a late Wisconsin case, which I found just before trial, and Judge Stone took that view of the case. No appeal was taken.

2. In Re Minnie C, Stevens, a Minor. Marquette Probate Court. Proceedings taken to appoint a guardian and authorize execution of option for a mining lease on W 1/2 of S W 1/4, Sec. 30-45-25. Concluded September 12th.

3. In Re Estate of Peter King, Deceased. Marquette Probate Court. King was injured at furnace of Pioneer Iron Co. Sept. 16, and died Sept. 18. His widow was appointed Administratrix, and authority obtained from the Court to settle for $1,000. Settlement was made Oct. 16. Confirmed and special Administratrix discharged Nov. 9th. I thought it best to take all of these proceedings, as there were rumors of another claimant, a woman in Montreal, who claimed to be his widow.

4. Inquest In Re J. H. Brown, held at Marquette, Oct. 12, before Coroner Crary. Brown was an L. S. & I. brakeman who was killed at Pickands & Co's coal dock that date. The jury exonerated the L. S. & I. R'y Co., but found that Brown's death was due to the negligence of Pickands & Co.

5. Also a large number of garnishment cases, many of them growing out of the failure of the Finnish Mercantile Association.

These cases caused considerable work but were disposed of without loss to the company.

II.

Cases commenced and Pending.

1. Railway Taxation Cases. Commenced June 16. There are three cases, one for each of our Railroad Companies. The defendant is Perry F. Powers, Auditor General. Suit was brought in the U.S. Circuit Court for the Western District of Michigan, Southern Division, in Chancery, before Judge Wanty at Grand Rapids. No actual work has been required in these cases, as a test case is being made in the name of the Michigan Central R. R. Co. but I am reading the briefs and keeping in touch with all the proceedings.

2. Louis Girard vs. Peter McRae, The Cleveland-Cliffs Iron Company et al. Marquette Circuit Court, in Chancery. Suit to set aside deed from McRae to the Company to N W 1/4 of N E 1/4, N W 1/4 of S W 1/4 and S E 1/4 of S E 1/4, Sec. 16-45-23, on the ground that McRae held title in trust for Girard, who did not authorize sale. We have a valid defense in that the company took title by warranty deed from McRae, the apparent owner, without notice or knowledge of any claim on the part of Girard. Have filed a cross-bill to quiet our title.

3. Hutchinson vs. The Cleveland-Cliffs Iron Co. Delta Circuit Court. Declaration served Sept. 19. Action for damages alleged to have been received by falling through an open hatchway on the second floor of the chemical plant at Gladstone, while it was being reconstructed. Hutchinson was employed by the Johns-Manville Co. Amount of claim, $20,000. The hatchway was necessarily left open for hoisting building material etc. up from lower floor. I think Hutchinson assumed such risks by accepting employment on a building undergoing repairs, and the reports of the men show that it was unnecessary for him to go near the hatchway. Also that he was guilty of contributory negligence. I think Judge Stone would take this case from the jury, and we propose to contest it

vigorously. The case has gone over to the April term. At Mr. Farrell's suggestion we have employed Mr. Empson to assist in this case on account of his local acquaintance.

4. The Munising Co. vs. Edgar P. Swett et al. Alger Circuit Court. Commenced October 14, Ejectment to try title to N. W. frac'l 1/4 of Sec. 19-47-19. Defendants have now acknowledged tha t they have no title, and I am taking up the question of settlement through Mr. Redfern.

5. George W. Shaw vs. Munising Railway Co. Alger Circuit Court, in Chancery. Bill to enforce tax title against six of our lots on Walbridge Addition in the Village of Munising. On Oct. 20, I filed a demurrer, raising several objections to the form of the bill, and the further objection that, as we are in possession such claims could only be enforced in a court of law by ejectment. This objection will prove fatal to the pending case, and nothing more has been done with it.

6. Margaretha Lonstorf vs. George J. Maas and The Cleveland-Cliffs Iron Company. Suit commenced Oct. 15, in U. S. Circuit Court for the Western District of Michigan, Northern Division, in Chancery. Bill to reach interests acquired by Mr. Maas in the transfer of the Maas mine property. Our company is interested only as a stakeholder, the prayer of the bill being that we should be directed to attorn to complainant in respect to a certain proportion of the interests which we now recognize as belonging to Maas. This case will not be tried until about July.

7. The Cleveland-Cliffs Iron Company vs. Charles Muck et al. Marquette Circuit Court, in Chancery. Bill filed Oct. 26, to enforce specific performance of a written agreement for a lease on about 46 acres in Sec. 31-48-26 The defense set up is fraud. It is charged in substance that the written agreement prepared by Mr. Hayden and Mr. Bell was incorrectly read to defendants, that Mr. Duncan made false representations to Muck, etc. The answer is not only false but inconsistent, and I think Judge Stone will make short work of the case. We shall place it on the February Calendar, and

insist on its being tried. At Mr. Duncan's suggestion, we have employed Mr. Bell in this case. He will be a necessary witness anyway.

8. Iron Cliffs Co. vs. City of Negaunee and The Cleveland-Cliffs Iron Co. Marquette Circuit Court, in Chancery. This is known as the Baldwin Kiln Road case and was commenced Dec. 9, to quiet the title of the Iron Cliffs Co. to the iron ore under this road, on the theory that when that company transferred the road to the city, it was only intended that the latter should take an easement or surface rights for street purposes, and that as a matter of law, that was all the title the city could take for street purposes. I have read and briefed all Michigan statutes and decisions relating to this subject, and think we have a fair chance to win. In 1900, the city leased this ore to the Cleveland-Cliffs Iron Co. both parties recognizing that there was a question as to its title, and leaving that to be settled by the courts. Mr. Bell was then City Attorney and acted for both parties and will probably be a witness in the case. He was also engaged, under the direction of Hoyt, Dustin & Kelley, in preparing the bill of complaint in this case and had interviewed some of the witnesses, when I came here last May, and Mr. Duncan and I have thought it best to employ him further in the case. Mr. Andrews was here when the bill was filed and assisted in its preparation. The defendants answer has not yet been received, but I think the case will be tried about the first of March.

9- The Cleveland-Cliffs Iron Co. et al, vs. Lewis Corbit et al. Marquette Circuit Court, in Chancery. Bill filed Dec. 22, to quiet title to a strip of land extending across the Maas Mine property from north to south along the former boundary line between the so-called Barabe and Gauthier farms, which strip of land is 100 feet wide at the north end and runs to a point at the south end and includes the site of the Maas Mine shaft. Two sets of claimants are made defendants, namely the Gauthier heirs and the Barabe heirs, The former have contained a decree against the heirs of Augustus Delorier, who once owned jointly with Stephen Gauthier a tract in-

cluding the so-called Gauthier farm, to the effect that in the partition that was made, it was intended that the strip now in dispute should pass to the Gauthiers. Our position is that whether the Barabes or the Gauthiers owned it we bought all the interest that either or both had in it and that they both recognized this by giving us immediate possession. Also, that the description in the deeds as construed by the parties, taking their old line fence to be true boundary, includes this wedge shaped strip in the land we bought from the Barabes, and that any apparent conflict in description can be explained by the difference in methods used in surveying the land at different times. Ball & Ball have appeared for the Gauthiers, The Barabes have not yet appeared and none of the answers have been filed. Mr. Bell appears for Mr. Maas who is a party complainant with our company, and Mr. Andrews assisted in the preparation of the bill of complaint. This case is likely to be closely contested.

LIST OF WRITTEN OPINIONS RENDERED.

I.

MINING DEPARTMENT.

May 25- Relative to option on Barasa Iron Mining Company lease and right to terminate same, advising that it be terminated by written notice.

May 28- Relative to surface leases at Ashland Mine.

May 30- Opinion on title of Patrick Glynn to S W 1/4 of N W 1/4, Sec. 4-44-24 (Central Land & Timber Co., Ltd.), after investigation of records in office of Register of Deeds.

June 1- Relative to the right of the City of Negaunee to change its source of water supply and authorize the drainage of Teal Lake, holding that it might, for good cause, do so.

June 6- Ashland surface leases, holding that they should not be renewed without authority from fee owners.

June 15- Suggesting form of license to Oliver Mining Company for Railroad right of way at the Moore Mine.

June 15- Approving form of agreement of release from the Cleveland-Cliffs Iron Co. to Louis W. Hill.

June 15- Opinion on Chesebrough agreement to the effect that $10,000 payment for option did not under its terms apply on the purchase price of the iron.

June 27- Report showing status of all Nester cases in the Land Office under the Timber & Stone and Homestead Acts.

July 3- Letter containing draft of communication to Ayer and Longyear requesting consent to renewal of surface sub-leases to tenants.

July 6- Report on Nester vs. Mrs. Jennie Morris in the Land Office (Timber & Stone case).

July 10- Opinion on Charles Muck case, and preparation of demand and form of lease to be presented to him.

July 21- Report to Superintendent Jackson at Princeton as to title of William R. Calhoun et al. in W 1/2 of S W 1/4 of Sec. 30-45-25, based upon investigation of records in Register of Deeds office.

July 29- Relative to proposed lease with the Hayes Mining Company of land in Sec. 27-47-47, enclosing copy of same.

July 31- Opinion on the title of William C. Weber to land in Sec. 20-28-32 T. 45, R. 25, based upon examination of the records and interviews with witnesses.

Aug. 17 Relative to option with William R. Calhoun, et al.

Sept. 2- Relative to Buffalo Mine lease to the Regent Iron Co., enclosing copy of the same.

Sept. 23- Report to Mr. Jopling as to title of Lot 1-Sec.18-45-25, opinion based upon investigation of records.

Sept. 28-Report as to proceedings in the Maney and other Timber & Stone cases.

Sept. 29- To Mr. Youngbluth relative to procedure in garnishment cases, advising that the distinction between our different companies be carefully observed, and advising as to method of filing disclosures.

Sept. 30- Opinion criticising Mr. Longyear's letter as to plan of Ashland leases.

Oct. 1- Relative to contract between Board of Public Works and fee owners around Lake Sally, enclosing copy of same.

Oct. 15- Further opinion as to Ashland surface leases, suggesting that if Ayer and Longyear be made parties to each lease, no other consent would be needed from them

Oct. 17- Relative to title of Iron Cliffs Co. to S 1/2 of Lot 5 (Matt. Dennison), pointing out that the indemnity agreement as to incumbrances was defective and insufficient.

Oct. 21- Opinion on Muck case, enclosing copy of proposed Bill of Complaint.

Oct. 26- Relative to form of mining lease, advising that our form required a written demand for payment of royalties before it could be forfeited.

Nov. 9- Relative to the right of surface owners where all mineral and ~~xxxxxx~~ mining rights are reserved, holding that the right to cave in the surface does not exist unless express-

ly granted, reviewing leading cases on the subject.

Nov. 14- Same subject, holding that the Iron Cliffs Co. form is not sufficient to authorize the caving in of the surface.

Nov. 17- Relative to terminating tenancy of Public Schools of Ironwood at Ashland Mine, advising against signing notice prepared by Mr. Cooper, or any notice, as we had given them no lease and had never recognized their title, holding that the fee owners should serve the notice.

Nov. 24- Same subject, including proposed amendment to Iron Cliffs form and reasons for change.

Nov. 30- Prepared and forwarded report to be adopted by Board of Public Works in reference to Lake Sally leases.

Dec.1- Complete report as to status of all Nester land contest cases.

Dec. 1- Relative to proposed notice to be served by fee owners at Ashland Mine of Public Schools of Ironwood, and enclosing copy of same.

Dec. 3- Relative to Baldwin Kiln Road case, advising that we have good case,

Dec. 9- Relative to Ashland surface leases, setting forth objections to form proposed by Mr. Sherman.

Dec. 14- Opinion on question as to error in assessment of Iron Cliffs Co., holding that the company was entitled to relief and advising that it be taken through the City Council.

Dec. 15- Relative to Ironwood Water Works advising that the Water Works franchise is not illegal in form, but that it seems to have been violated by the Water Works Company, so as to permit both the City and Tax payers to attack it, reviewing the leading cases and discussing these questions quite thoroughly.

Dec. 16- Relative to Ashland leases, reporting as to my interview with Mr. Ball and our agreement as to its form.

Dec. 17- Relative to payment of taxes at the Barasa and Negaunee Mines, holding that taxes are not "assessed" until the amount is definitely ascertained and extended on the roll, which cannot be done until after the October meeting of the Board of Supervisors.

Dec. 19- Drafted and forwarded proposed agreement reforming and correcting the Matt. Dennison indemnity agreement, which I had previously advised was defective.

Dec. 23- Report to Mr. Duncan relative to plan for commencing Barabe case and discussion of situation.

II.

RAILROAD DEPARTMENT.

May 21- Relative to Elm Avenue, advising that the request of the Village of Munising for the dedication of Elm Avenue, should only be granted upon reserving the riparian rights as otherwise they would pass to the Village.

July 2- Relative to holding upper track of the Dead River Railroad in the name of the Marquette & Southeastern R'y Co., holding that there was no objection to doing so.

July 8- Relative to fire escapes on Beach Inn, quoting the statute requiring such safe guards.

July 13- Relative to form of right of way deed from Arctic Iron Co. for Maas Mine right of way, advising some changes.

July 21- Report on Arctic Iron Co. right of way deed, enclosing form agreed upon with Mr. Shaull.

July 24- Relative to form of deed from Pioneer Iron Co. to Lake Superior & Ishpeming R'y Co., enclosing same.

July 28- Report on question of railroad rights of way across the Negaunee Mine property, showing old deeds to Iron Mountain R'y Co.

Aug. 10- Investigated and sent opinion as to the claim of Bauer vs. M. & S. E. R'y Co. for damages on account of train frightening horse on Lake Street, advising that not more than $50 be paid in settlement.

Aug.-14- Relative to Lucy Mine track agreement with C. & N. W. R'y Co., advising that the Cleveland-Cliffs Iron Co. should not be a party to it, and suggesting other changes.

Sept. 5- Relative to lease of John H. Gatiss at Chatham of small parcel of land adjoining right of way of Munising R'y Co. near depot, advising that Gatiss could not block construction of proposed side track.

Sept.11- Relative to Clyde Leveque, boy injured at L. S. & I. depot, advising that no liability rested upon the L. S. & I. as result of the accident.

Sept.12- Sent summary of the law prohibiting persons not employees from Jumping on trains.

Sept.14- Relative to proposed transfer of the L. S. & I. R'y Co's Maas Mine branch to the C. C. I. Co., advising that this should not be done, part of the right of way having been acquired by condemnation proceedings.

Oct. 2- Relative to Beach Inn lease with Mr. Redfern, suggesting proposed changes and explaining why necessary.

Oct. 8- Enclosing contract and opinion relating to Anna River and its use by the Munising Paper Co., Ltd.

Oct. 29- Relative to proposed contract between Munising Railway Co. and the Munising Handle & Lumber Co. with comments thereon.

Dec. 9- Letter enclosing copies of Lucy Mine spur contract with C. & N. W. R'y Co. advising that it conforms to our agreement with that company's officials at Chicago.

Dec. 22- Letter advising that we drop all negotiations with Mr. Longyear and recall the jury in the condemnation proceedings to assess the damages, if any, to which they were entitled.

Oct. 28- Report to Mr. St John, showing settlement of claim vs. Ferguson Bros. for unpaid freight bill of $454.12.

Aug. 12. Opinion to Mr. St John as to bill of lading, freight bill and release in case of personal injury, approving forms in use.

Sept. 3- Report to Mr. Deimling as to measure of liability of M. & S. E. R'y Co. to Mr. Hughitt for timber cut on its right of way in Sec. 17 of Skandia Township, advising that the company could not be held for the liability of trespassers.

Sept. 4- Letter to Mr. Deimling relating to form of right of way deeds.

III.

LAND DEPARTMENT.

May 27- Relative to contract between Lac La Belle Co. and Munising Leather Company, noting principal points which the latter was obliged to comply with.

June.26- Enclosing first section of my report on Munising contracts.

July 13- Relative to road tax in district No 3, of Skandia Township, advising that it could be collected.

July 14- Relative to notice to be posted on Grand Island, enclosing same.

July 31- Relative to title to right of way wanted by the South Shore for a spur track to the Mary Charlotte Mine, advising that the Iron Cliffs Co. had title to the center only of the strip of land desired.

Aug. 10- Relative to floating logs in Anna River, reviewing the cases and advising that this was a right that could be exercised only by owners immediately adjoining the stream.

Aug. 11- Relative to Grand Island Township, summarizing the statute and cases and pointing out how said Township could be organized.

Aug. 13- Further opinions relative both to floating logs in Anna River and to organizing Grand Island Township.

Sept.4- Opinion as to Mrs. Orcusk's tax claim, advising that purchaser at tax sale was not obliged to serve notice on a tenant under an unrecorded lease.

Sept.7- Drafted and enclosed notice to quit to terminate the tenancy of William Northey.

Sept.18- Drafted and enclosed proposed deed of the Wallbridge lands at Munising.

Sept. 20 Relative to Girard vs. McRae and C. C. I. Co., advising that we have good defense to the case.

Sept.26- Advising that Edgar P. Swett had no title to certain land in Alger County and recommending we commence suit for the Munising Co.

Sept. 28- Relative to Sutherland-Innis contract, reviewing its provisions and advising that that company had by abandonment forfeited its rights in the timber.

Oct. 14- Relative to garnishment case of Elliott vs. C. C. I. Co., advising that proceedings were fatally defective and should be disregarded.

Oct. 15- Advising changes in the Oliver deed, and discussing abstract of title.

Oct. 15- Advising that I have concluded to approve the title of the Alger lands.

Oct. 17- Further opinion relative to Sutherland-Innis contract, advising that no notice of forfeiture was necessary.

Oct. 19- Relative to Ida A. Olson's tax title claim, advising that Munising R'y Co. was interested, and must defend its rights.

Oct. 23- Opinion relating to Elm Avenue and the right of the Village of Munising to condemn riparian rights, advising that this could be done.

Oct. 30- Letter enclosing proposed draft of contract of Munising Handle & Lumber Co., with comments thereon.

Nov. 8- Relative to contract with State Bank of East Jordan, enclosing same.

Nov. 17- Relative to Munising Co. vs. Swett, advising that Swett had given up the fight.

Nov. 21- Relative to provision for payment of taxes in lumber contracts, advising that present form was as effective as can be made.

Nov. 21- Relative to Obenosh title at Munising, advising that Probate prodeedings should be taken to clear it up.

Nov. 24- Relative to Doty contract, enclosing same.

Nov. 25- Relative to free water annalysis at the University of Michigan, advising that this could not be obtained by our Fish Hatchery, as a matter of right.

Nov. 25- Relative to amendment of 1903, as to tax titles, advising as to changes made.

Dec. 23- Report as to collection on Dr. Trueman's lot contract at Munising.

IV.

FURNACE DEPARTMENT.

May 27- Relative to contamination of Marquette City Water supply, advising that notice of May 13th had been withdrawn.

June 15- Relative to right of City of Marquette to preserve its water supply from contamination, advising that the legislature had granted this right and that the court would enforce it.

July 9- Relative to purchase of Towar property in Marquette, advising changes in papers.

July 10-, (Gladstone office) Relative to Peter Matthews deed, advising that it gave grantors right to remove pine, cedar and spruce timber, until two years after service of notice, that we had not waived our right to serve this notice, and that it should be served at once, enclosing four copies of notice with instructions for signing.

Sept. 3- Relative to deed for Towar purchase, enclosing same.

Oct. 10- Relative to death of Peter King through an accident at the furnace, advising after personal investigation of facts that a liability existed which had better be settled.

Nov. 17- Relative to death of Peter King, reporting confirmation of settlement.

Nov. 18- Relative to insurance on Towar property.

Nov. 24- Relative to form of land contracts and deeds, which were enclosed.

Nov. 24- Relative to Powell & Mitchell bond, enclosing release to be signed and delivered.

V.

CLEVELAND OFFICE.

To Mr. Mather.-

May 8- Relative to railroad taxation cases, advising that Bill of Complaint of Munising Railway Co. was defective.

June 1- Relative to construction to be placed upon East Itasca contract with reference to explorations.

July 24- Relative to Alger lands, advising that title of the Gamble tract was imperfect.

Aug. 6- Relative to report on Munising contracts enclosing sections I and III.

Sept.21- Relative to execution of Buffalo Mine lease, calling attention to new law requiring Notaries Public to add date of expiration of commission.

Sept.28- Relative to Alger lands, advising that the title of the land in Schoolcraft & Luce counties was satisfactory, and that I was at work on the Alger County titles.

Oct. 7- Relative to contract of purchase of Alger lands enclosing copy of the same, and discussing new terms and conditions.

Oct. 15- Relative to payment of royalties on Negaunee Mine lease, advising that commencement of suit in Lonstorf case made no difference at present as to whom they should be paid.

To Mr. Mann.-

July 30- Relative to Towar purchase, advising that it was unnecessary for Mr. Towar to join in the deed, and stating the construction which our Supreme Court has placed upon land contracts.

Sept. 3- Relative to Towar purchase, advising that same has been closed up.

To Mr. Morse.-

Dec. 13- Relative to filing annual reports, and explaining amendments of 1903.

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To Hoyt, Dustin & Kelley.-

May 22- Report as to interviews with witnesses in Lac La Belle case.

May 26- Enclosing certified copy of Murray contract for Lac La Belle case, and report as to subpoenaing witnesses.

June 20- Relative to Maas vs. Kirkpatrick, advising that we had won case and enclosing copy of opinion.

July 23- Advising that Negaunee Mine lease had been executed by Mrs. Sarah Winter.

Oct. 24- Relative to Baldwin Kiln Road case, discussing question of law involved and best method of beginning suit.

Nov. 21- Relative to Corbit case, reviewing questions of law, pointing out Michigan statute on the subject, and discussing best method of beginning suit.

Dec. 11- Relative to Cleveland-Cliffs Iron Co. vs. Corbit enclosing proposed Bill of Complaint.

Dec. 17- (Mr. Andrews) Relative to Elm Avenue, reviewing the Michigan cases.

Dec. 19- Relative to Corbit case discussing advisability of making the Barabes parties.

Dec. 23- Relative to Corbit case, holding that the only proper way to commence the Corbit case was to make all claimants parties defendant, and advising that that had been done.

Dec. 31- ,Relative to tax case of Pioneer Iron Co. against Rock River Township, outlining proposed method of beginning case and discussing authorities.

SUMMARY.

Total Number of Reports and Opinions Rendered.

To the MINING DEPARTMENT,	41
To the LAND DEPARTMENT,	29
To the RAILROAD DEPARTMENT,	22
To the FURNACE DEPARTMENT,	10
To the CLEVELAND OFFICE,	11
To HOYT, DUSTIN & KELLEY,	11
Total	124

List of Contracts, Notices and Agreements Drafted.

1. Notice to terminate option on Barasa lease.
2. Notice to Louis W. Hill to terminate option agreement of May 7, 1902.
3. Notice to Peter Matthews and wife to remove such pine, cedar and spruce timber within two years as they may claim, upon lands sold to this company.
4. Request to Ayer and Longyear for leave to renew surface tenant leases at Ashland Mine.
5. Land contract. The Cleveland-Cliffs Iron Co. to Dalton Lumber co.
6. Contract for mill site. The Cleveland-Cliffs Iron Co. to Dalton Lumber Co.
7. Timber Contract. The Cleveland-Cliffs Iron Co. to State Bank of East Jordan.
8. Timber Contract. The Munising Co. to Munising Handle & Lumber Co. (Thompson contract, not signed).
9. Timber Contract. The Cleveland-Cliffs Iron Co. to Munising Handle & Lumber Co. (Thompson contract, not signed.)
10. Transportation Contract. Munising Railway Co. to Munising Handle & Lumber Co. (Thompson contract, not signed).
11. Timber Contract. The Cleveland-Cliffs Iron Co. to Marcus A. Doty and Melissa Doty (redrafted for Tindle & Jackson).
12. Timber Contract. The Munising Co. to Marcus A. Doty and Melissa Doty (redrafted for Tindle & Jackson).
13. Transportation Contract. Munising Railway Co. to Tindle & Jackson.
14. Option agreement for Mining lease. William R. Calhoun, et al. to The Cleveland-Cliffs Iron Co.
15. Bond. L. E. Chaussee to the Cleveland-Cliffs Iron Co.
16. Lease. Hayes Minisng Co. to Clev land-Cliffs Iron Co.
17. Indemnity agreement. Matthew Dennison, et al., to The Cleveland-Cliffs Iron Co.
18. Lake Sally Contracts. Iron Cliffs Co. and Cleveland Iron Mining Co. to Board of Public Works.

19. Warranty Deed. Isabella C. Towar to Pioneer Iron Co.

20. Mortgage. Pioneer Iron Co. to Isabella C. Towar.

21. Lease. (Buffalo Mine). Pioneer Iron Co. to Regent Iron Co.

22. Lease. (Buffalo Mine). Arctic Iron Co. to Regent Iron Co.

23. Deed. (Maas Mine right of way). Pioneer Iron Co. to L.S.& I. Railway Co.

24. Deed. (Negaunee Mine right of way). Pioneer Iron Co. to L. S. & I. R'y Co.

25. Agreement renewing lease. Mrs. Sarah Harvey to Marquette & Southeastern R'y Co.

26- Deed. (East Branch right of way). Emmett H. Scott and wife to Munising R'y Co.

27. Deed. Walbridge estate to Munising R'y Co.

28. Lease. (Ashland Mine). Form of tenant lease.

29. Anna River Grant. Munising R'y Co. to Munising Paper Co.,Ltd., (not used).

30. Land Contract. Manistique Lumbering Co. to Cleveland-Cliffs Iron Co.

OTHER WORK.

1. The purchase from the Lumbering Co. involved examination of thirty-two (32) abstracts of title, a personal investigation of the records in the Register of Deeds office in Alger County, and much correspondence.

2. Petition of Iron Cliffs Co. to City Council of Ishpeming for correction of error of $83,746 in assessment, making difference of $1870.89 in taxes. I drafted the petition, attended special meeting of the Council held to consider it, and assisted in securing the allowance of our request.

3. Controversy in Marquette relating to contamination of water supply by Pioneer Furnace. I have attended Council meetings, drafted notices and done such other work as became necessary.

4. Munising contracts.-When I first came here, I spent a great deal of time examining the land and timber contracts which had been executed at Munising by the Lac La Belle and Munising Companies, and which our companies have purchased. Mr. Redfern and I undertook to make an extensive report on these contracts, the first three sections of which have been forwarded. This report has never been completed, largely because of the pressure of other work, and also because there seemed to be no immediate necessity for this report. Nevertheless, I have kept close watch of the matter and have been in constant communication with Mr. Everard in regard to all that has been done, and think the situation is on the whole very satisfactory. As the general policy to be pursued seems to be well understood by the Departments there is perhaps no great need for a further report, but I intend as soon as I can, to complete it.

5. In addition to the above work, I have visited the various heads of Departments at their offices in Ishpeming, Negaunee, Marquette and Munising, whenever requested for consultation and assistance. I find by reference to my expense account, that between May 1st and January 1st, I made 53 trips to Marquette, 12 trips to Munising, 8 trips to Negaunee and one each to Detroit, Sault Ste. Marie and Chicago.

The traveling and other expenses which I have incurred in behalf of this company, and which have been paid by it as per monthly statements to Mr. Mann are as follows:

May	$56.55
June	19.05
July	34.25
August	15.80
September	41.55
October	32.16
November	60.46
December	48.49
Total	$308.31

OUTSIDE ASSISTANCE.

The only time that I have employed outside help to relieve my work was in connection with the examination of the abstracts of the land purchased from the Manistique Lumbering Co. These abstracts involved a great amount of work, which it was desirous to have done as speedily as possible, and I employed Judge Edwin A. Burlingame of Grand Rapids to assist me in this work. His bill for $100 was approved and paid. In all other instances above mentioned where other attorneys have been employed, as for instance Mr. Bell, Mr. Empson or Mr. Hill, it has been done at the request of and under the advice of the head of the Department whose work was being done, and because of some special knowledge or acquaintance with the particular facts that made it seem desirable to do so. As these cases are closed out, it is not likely that such special reasons will exist for further employing these attorneys, and it will be my policy in all cases so far as possible to avoid employing other attorneys.

William P. Belden.
Solicitor

THE CLEVELAND-CLIFFS IRON CO.,

ISHPEMING, MICHIGAN.

MASTER MECHANIC'S REPORT.

FOR YEAR ENDING NOVEMBER 30th., 1903.

(DATED,) JANUARY 20th., 1904.

INDEX.

Mr. M. M. Duncan, Agent,

Ishpeming, Mich.

Dear Sir;-

Following is the annual report of your Master Mechanic on the mechanical equipment of our various mines. Accompanying this report is a monthly summary of our Engineer's logs showing the amount of work done, fuel consumed, refuse from fuel, oils used, amount of water pumped and amount of air used for the year.

CLIFF SHAFT MINE.

There has been little change in the equipment at this mine during the year, and we have been more than usually fortunate regarding break-downs and repairs. We began hoisting on one shift only, Oct. first (Ist), since which time the product has been kept as high as possible with one shift working.

HOISTING.

The Hodge hoist is still working under the same conditions as last year. The only repairs it has had during the year has been to replace some of the bolts with which the cracked hubs of the large drum gears have been repaired. We have one spare pinion and gear at hand to replace these if they should let go altogether, but since we would have to order new ones if the present pair was installed we will not proceed to put them in, unless the old gears and pinions give positive evidence of breaking down.

We have had rather less trouble than usual this year with the "B" shaft rope and think it was owing to the installation of a few more carrying idlers. in the tunnel.

It seems to me that the present method of hoisting ore at the Cliff Shaft is very uneconomical, and subjects our rope and plant to excessive strain, as well as greatly increasing the fuel consumption. With every car of ore that is brought to the surface we also hoist the car, making about 3500# extra dead load,

Which is handled continuously using a large amount of steam coming up and giving excessive wear on the blocks going down.

It appears to me that it would be much better to install skips and dump the cars directly into them in the mine allowing the skip to dump directly into the cars on the tresle on top. This would obviate the necessity of always returning the skip with the empty car from the level from which its last load was taken before it can go to some other level for a load. Owing to the necessity for returning the empty car, the men who have just placed the car on the cage are obliged to wait at the shaft until the cage goes to the top and returns to them with the empty car, before they can return to their stope. I do not know what this change would cost. I do not know that the condition of the mine would warrant it, but I believe it would save considerable time now lost by the trammers, and would also save us considerable fuel now used by the hoist. I do not believe the cost of the change would be very great. But it appears to me that it would save the time of the trammers underground equivalent to about four (4) men each shift, as whenever the cage is up there are always two (2) men waiting until it returns to them with their car.

PUMPING ENGINE.

The pumping engine and Cornish pump have given almost no bother at all during the year, and have had very little repairs.

The following table gives the precipitation for the year 1903 in which it is seen the precipitation has been unusually large.

TABLE NO. I.

MONTH.	YEAR.	SNOW.	RAIN.
Dec.	I902	I4	
Jan.	I903	3	
Feb.	I903	I3	
Mar.	I903	7	3.
Aprl.	I903	I2	3.34
May	I903		7.8I
June	I903		4.39
July	I903		6.53
Aug.	I903		7.I6
Sept.	I903		4.50
Oct.	I903		4.67
Nov.	I903		.6
		79.25	42.00
			7.92
		Total	49.92

From this it will be seen the total of precipitation, the equivalent of snow counted as rain, is 49.92 inches. In spite of this fact, however, the total amount of water pumped is about three and three quarter million gallons less than last year. The following table No. 2. gives the total amount of water pumped, the years and the total precipitation.

TABLE NO. 2.

YEAR.	TOTAL PRECIPITATION.	TOTAL WATER PUMPED.
I900	40.66	345,630,I30
I90I	27.84	353,3I4,005
I902	30.I0	377,9I0,450
I903	49.92	374,292,965

The total amount of water pumped by this pump may not be exactly correct as it is necessary in "B" shaft to let a

certain proportion of water back in order to prevent the "B" shaft pole from " going afork " so that the total volume displaced by the plungers during the year is considerable larger than the actual amount of water pumped, since the poles in both "A" and "B" shaft are connected to the same engine and it is necessary to run the "A" shaft at sufficient speed to keep the "A" shaft dry.

The Cornish pump has always been run condensing, but we ordered, and received the material at the end of November for changing this pump to non-condensing in order that the steam may be used for heating the feed water and buildings during Sundays, and over night during the week while the mine is running one shift only. This will show considerable saving in fuel,which will appear by the "logs" for I904.

COMPRESSORS.

We have been very fortunate with the two compressors through-out the year, as we have had no break-downs or delays, and nothing but the ordinary repairs to the inlet valves of the air cylinders. The total number of cubic feet of free air made has averaged somewhat less than during the preceeding year up till September 30th. , since which time it has been reduced more than one half (I/2) owing to the change to one shift. The cubic feet of free air per ton has been greatly reduced since we began working one shift, which is due to the fact that it is not now necessary to use air for blowing out powder smoke. I would earnestly urge that these old compressors be replaced with a more economical type of machine,as they are the greatest source of fuel loss at this plant.

CLIFF SHAFT CRUSHER.

There has been no change in the crusher plant during the present year, but we had one accident rather expensive to repair, caused by the breaking of the line shaft in July. This cost $89.I5 and was the most expensive accident we had during the year. I believe this shaft broke because of the poor construction of the crusher building in which the supports for the shaft are not heavy enough to carry it properly, so that it is not possible to keep it in perfect alignment at all times.

Table No. 3. gives the total number of tons crushed, and the average cost per ton for the past three (3) years.

TABLE NO. 3.

YEAR.	COST.	TONS.
I903	5.4¢	22I,480
I902	5 ¢	229,I24
I90I	5.8¢	24I,330

I believe, however, that the cause of the increased cost for I903 over that of I902 is due largely to the fact that in I90I we equiped all of our crushers with manganese face plates, and as these plates run us on an average, some thing over one year each, we had the larger cost of renewal of these plates for I903 than was the case in I902, as we replaced but one (I) face plate in I902 at a cost of $I75.23 while during I903 we replaced three (3) face plates and two (2) liners at a total cost of $650.27 which alone amounted to three tenths cents (3/I0) per ton. The ordinary repairs to the crushers have been about the same for I903 that they were for I902.

The old slide valve engine is still in service, but we hope during the coming year to install a I6X24 Allis Corliss engine which is now driving the electric plant at the "Lake". This will enable us to scrap our most uneconomical large engine.

This entire crusher plant is not well arranged for economical handling, and we believe we could effect a saving of $6,000.00 or $7,000.00 per year in labor by erecting the old Michigamme crusher plant down by the pocket, making this change together with the installation of skips to dump into tram cars at the collar of the shaft, changing the trestle to run from the collar of the shaft to the crusher house, arranging drums driven from the main engine to haul the cars up to the crusher house, from which they would run back to the shaft by gravity. By this arrangment we would get rid of one man in the shaft house, one or two feeders, and three lower tram men during the summer season on each shift.

CLIFF SHAFT AUXILIARIES.

There has been no change whatever in the auxiliaries at this mine during the year. We still use the pair of 8XI0 engines for pulling the cars from the crusher house to the shaft house. The 8XI0 Russell automatic engine for driving the arc dynamo, and the 8XI2 shop engine. None of these are at all economical and we could effect a considerable saving in fuel if we had some source of electric power for displacing these small units.

The Webster vacuum system of steam heating is proving very satisfactory using steam from the No. I. compressor, but we are also arranging it to use steam from the pumping engine when the mine is not working.

BOILER PLANT.

There has been no change whatever in the boilers or piping, and we trust it will not be necessary to make any further repairs or alterations to this plant, as we hope to remove the present "Lake" boilers to this location by mid-summer. We are still permitted to carry insurance on the "Cliff Shaft " boilers, and they should have been replaced this year, but under the circumstances it was impossible to do so.

SALSBURY MINE.

There has been no change in any of the equipment at this mine during the present year.

HOISTING ENGINE.

There has been no change made, nor any extensive repairs made to either hoist. The repairing of the broken arms in the drum handling the skip has proven effective so far, and with the occasional renewal of bolts which is necessary, we hope to be able to continue this plant in service. This plant is now running excessively fast when lowering, and we would not like to answer for what may happen to it at any time. We still have a great deal of wear on the hoisting ropes and on the sheavesat the knuckle. The depth at this mine is continually increasing, and the present plant has all it can do to take away the ore, and if any considerable further body of ore is opened up I would earnestly advise a rearrangment of the present method of hoisting.

During November we began using on the ore skips a new type of self-oiling box with the wheels pressed on the axle, which we are now using on the cage and through-out the Ashland mine with a great deal of satisfaction. At the Salsbury mine we are having some trouble from breaking wheels in the dump and knuckle caused from the severe usage to which these wheels are subjected at this style of dump. We hope very shortly to receive heavier wheels, after which this trouble will be overcome. The self-oiling feature has proven very satisfactory.

The engine and drum handling the cage give us no trouble whatever as it has very little work to do. The new cage has given perfect satisfaction, and the amount of oil used has been reduced to a minimum, in addition to which we have had absolutely no repairs to wheels or box so far, though it has been in service just about one (I) year.

We believe this self-oiling box the most satisfactory method of attaching skip wheels, and expect to use it here-after when-ever we are compelled to run skips on wheels.

CORNISH PUMP.

There has been one lift added to the Cornish pump during the past year, which caused the pump to work very heavily for some time until the weight on the hydraulic balance was increased by adding more pipe. We were not able, however, to entirely overcome this increased weight by this method, so are now substituting with the wheels which formerly carried the rods, and which were attached to the rods, a system of dead rolls upon which the rod rides, but which does not add any weight to the rod. The engine and gearing has given less trouble than usual, and we do not expect any further trouble from the foundation or machine.

The following table gives the total amount of water pumped during each of the past four (4) years.

TABLE NO. 4.

Year.	Gallons of water pumped.
I900	65,724,I95
I90I	7I,466,792
I902	7I,962,803
I903	88,636,3I2

This table shows about I5,000,000 gallons more water pumped in I903 than in either I90I or I902 and about 22,000,000 gallons more than was pumped in I900. This increased amount of water is due to the fact that the ground above the Salsbury mine is very badly broken up and all of the water that falls in the area tributary to the mine drains into it, from which fact we would naturally expect a much greater amount for I903 with its heavier precipitation than for any one of the other years.

I do not believe the amount of water has increased materially because of the sinking of the mine to greater depth. We still maintain the auxiliary pumping station in the swamp above the mine, with which we pump a great deal of water over the hill to the south when there are heavy rains. Were it not for this station we would have the bottom level of the mine flooded for several days every time it rains.

AIR COMPRESSORS.

We have had two explosions in the air compressor, both of which did considerable damage. The first explosion occurred early in December, I902, but did not cause any delay of importance to the machine. This explosion of air was probably due to the fact of the water passages around the bushing becoming partly choked, permitting the temperatures to rise on account of restricting the flow of water. There was no way of cleaning this out with-out shutting the compressor down for several days, and this we could not do with the mine running. The first explosion started all the studs in the bushing which holds the head on. We made temporary repairs by bracing the head with jacks against the building wall, and ordered a new bushing at once from the Lake Shore Engine Works to be finished in our own shop. It took us a long time to get a good casting, but we finally got the casting and had it finished, and had selected a Sunday to put it in, but owing to some other work at the mine it had to be allowed to go over for another week, and on Wednesday, May 6th., there was another explosion which broke the head and laid the machine up. The air cylinder was then brought to the Hard Ore Shop , a new bushing was put in, and a new head ordered made, and the compressor started on May IIth., since which time we have had no trouble with it whatever. The amount of air made this year has been larger than any previous year, and the number of cubic feet of free air per ton has also been larger, so that this machine has had a hard years work.

We have had no other repairs on it as the working parts of the engine were re-built in 1902. I do not know why the amount of air required should increase so rapidly at this mine, unless, it is due to the fact that as the mine grows deeper, and since there is but one shaft, the natural circulation of air becomes more sluggish with depth, and by far the greater part of the air is used for ventilation.

BOILER PLANT.

There has been no repairs or alterations to piping or boilers, except some new screws for the vertical boilers and over-hauling the feed pump.

The Hartford Insurance Co. still pass this plant and permit us to carry 90# with-out comment. We do not use live steam out-side of the main boiler house, except, for heating the office and running the pump part way down the hill, which takes water from the City main and puts it in the tank at the boiler house: the plant at this mine being above the level from which water would flow from the City water works.

The only engine running out-side of the main engine house ia a small one in the shaft house for pulling the top tram car back from the stock pile, and is run with air.

The large table at the end of this report gives the total amount of air made, the total amount of ore and rock hoisted, the coal burned, the cubic feet of air per ton hoisted, the tons hoisted per ton of coal burned, the gallons of water pumped and the number of shifts in the mine worked for each of the years indicated.

LAKE MINE.

There have been no changes nor repairs at this plant during the year I903, and we are making every effort to carry things along with-out further repairs until such time as this plant would be pulled out, which we trust will be early in the summer of I904. The hoisting engine has given no trouble whatever, nor has it had any repairs during the year. It is still run condensing and we carry II5# of steam, but the engine still has all the load it can start in the majority of cases.

AIR COMPRESSORS.

We have had very little repairs on the air compressor during the year. The only thing of importance on the Rand Duplex machine was a new crank pin. The pin on the left hand side broke about 9 o clock P. M. Friday, November I9th., and was repaired Sunday, November 2Ist. The machine lost very little time and caused no delay to the mine. The Ingersoll-Sargeant compressors has had no repairs during the year, whatever. Both of these machines were kept very busy throughout the year until October Ist., when the mine changed to two (2) ten (I0) hour shifts. In spite of this reduction the amount of air made has been the largest since we have been keeping logs. It has been necessary to keep the air pressure up, as the larger proportion of the air has been used by machines than previously, owing to the large amount of rock work done in connection with the No. 4 shaft. An effort has been made during the latter part of the summer to further reduce the amount of air used for ventilation at this mine by substituting three-eighths (3/8) and half (I/2) inch air pipes in place on inch (Iin.) pipes ordinarily used in the stopes. These small pipes were for ventilation only, and are only run into the stopes where no machine drills are used.

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ELECTRIC TRAM PLANT.

The I6 x 42 Allis Corliss engine and the 75 K. W. General Electric Generator are still in use, and we have had but little trouble with the engine during the year, due largely to the rather extensive repairs we made on it last year. We have had quite a little trouble during the latter half of the year with the armature of the generator as there are two coils in it the insulation of which is getting very weak, and which will probably burn out before great while. This has caused considerable trouble with the commutator and brushes, and we have had the armature taken to the shop for trueing the commutator on three (3) different occasions. This machine has been in use since I893, and has never before given any trouble, though it has been worked very hard the greater part of the time, and has been run almost continuously from Monday morning at 7 o clock until Saturday at II o clock P. M. with-out stopping. We have purchased no additional mining locomotives during the year, but our repairs have been rather heavy, largely due to some accidents in the mine causing collisions which necessitated heavy repairs. The larger portion of ore coming from the mine is from the 3rd. level.

The saddle back tram cars are giving fair satisfaction, but the repairs have been somewhat higher than I had expected.

MINE PUMP.

The I2XI8 and 6XI2 Deane pump has handled the mine water, except for occasional shut downs, due to the mud in the mine, which is always handled by the Knowles pumps. The amount of time this pump was idle is indicated on the logs, nearly all of which time was lost on account of bad water, and not on account of repairs to the pump its-self. This pump is now located on the 3rd. level, but we will, undoubtedly, during the coming year locate it on the 4th. level of No. 4 shaft, and it will be necessary to put in an additional pump of considerable larger capacity to assist in taking care of floods, as the Knowles pumps which we now have, will not work against this pressure.

The amount of water made at this mine under normal conditions is not large, and when we secure some source of electric power by which we may have current all the time I would advocate the installation of an electric pump for normal conditions, thereby obviating the necessity of having steam in the shaft, as there is no other need for it except, to pump a small amount of water. We could install our steam pumps for use in case of emergencies, and we would not need steam in the mine at any other time.

LAKE ANGELINE DRAINAGE.

There have been some changes in the Lake bottom, due to caving ground and changing conditions. At present the mine pump discharges directly across the Lake into the launder, as we do not use the mine water in our condenser. The pump has been taken out back of the " dry" and the water which formerly came to this point is now handled from the No. I Emergency Station, which has been moved about 500 feet east of its former position.

The I4 and I0XI2 Worthington Duplex pump formerly located in the scow has been taken out, as there is now but little water making at this point.

We had one bad cave under the launder, whcih broke the launder and caused the water to all go into the caves. This occurred September I5th., and owing to the danger from water on the surface the mine was idle until September I8th. This caused a considerable re-arrangement of out-side piping on the Lake bottom, and entailed considerable expense for repairs.

I would most earnestly reccommend that some permanet provision be made for carrying the water across the Lake bottom, as a repetition of this accident is probable at any time.

STEAM AUXILIARIES.

The auxiliary service at the Lake consists of a Duplex 7XI0 engine in the shaft house for handling tram cars to the pockets, and a 6XI2 engine in the shop. The shop engine runs very little. We are still running the Sturtevant engine and blower in the boiler room for forced draft.

STOCK PILE TRAM SYSTEM.

The pair of old I0XI2 engines on the tram plant did not give us a great deal of trouble last year, and there was comparitively no trouble with the sheaves and clutches. This was largely due to the fact that we had only one half (I/2) the length of tram that we had been using formerly, so that they only handled the Bessemer, and that on a comparitively short haul.

We have ordered from the C. A. Laughton Co. of DePere, Wis. a new tram plant consisting of a I2X30 Weisel & Vilter Corliss engine with Laughton clutches and sheaves. This plant was ordered for installation at the new No. 4 shaft, but it was decided to set it up at the present shaft as the original intention was to stock ore on both sides of the shaft, which would give us a very heavy load to handle for which the old engines were not at all suitable. Owing to the reduction of the force at the mine to one full shift this would have been unnecessary, but all

arrangements were made, foundations were in, and the old plant torn out, making it necessary to install the new plant.

LAKE BOILER PLANT.

We have had no changes nor repairs in this plant this year, and I do not expect any before the plant is removed.

These boilers are to be installed at Cliff Shaft as soon as the old plant is shut down.

PRESQUE TRAM PLANT.

This plant was run day shift only, during last winter, and we now have the present stock pile ground pretty well filled up. The I4X36 Corliss engine was sold to the L. S. & I. Railway Co. and the only thing we now have down there is a pair of 54 inch drums. We do not anticipate that these drums will be used further at this point, but they will not be removed until needed else-where. This plant worked very satisfactorily last winter, and gave us no trouble, whatever.

NEW LAKE PLANT.

At No. 4 shaft we are installing a complete new plant. Owing to the location of No. 4 shaft and the limited room on surface at this point it was necessary to locate the plant about 6I feet above the collar of the shaft, which brought it way up on the side of the hill where it was necessary to do a great deal of blasting and excavating in order to level off sufficient space in the Diorite bluff. The boiler room is 64X45 feet and 30 feet from floor to roof trusses with the long way of this building standing almost north and south with an addition on the north end 20X45 feet for an economizer room, which is 20 feet high.

The engine room is 80 feet long by 52 feet wide and 20 feet high the end of which joins the side of the boiler room about mid-way, forming a T shaped building. The engine room is equiped with a crane and traveler running the full length of the building capable of handling eight (8) tons, and which we have found a very great convenience in erecting machinery.

The general construction is brick walls with steel roof trusses with roof consisting of two inch matched flooring covered with rubberoid. The engine room has a basement I0 feet deep where the condensers exhaust steam feed water heater and the pipe leading to the separate engines will be installed.

The boiler room trusses are carried on steel columns because of the fact that we are installing overhead coal bins, with a capacity of about six (6) tons each , above each boiler.

The smoke stack is of radial brick construction built by the Alphonse Custodius Chimney Construction Co. is six feet six inches smallest internal diameter and I66 feet six inches high.

The first estimate made on this plant contemplated the use of a stack brick lined, and as this estimate was made before the location was selected it was supposed that a stack six feet in diameter and I50 feet high would be sufficient, but it was thought desirable to add some what to the height, and upon getting estimates for a steel stack brick lined it was found the cost was almost as high as that of brick; and since the steel stacks are short lived and since none of the material entering into their construction can ever be used again, it was decided to erect a brick stack, which will last an indefinite period, and when it is desired to remove the plant the stack may be torn down and the greater part of the material will be fit for use else-where.

We ordered five new horizontal, tubular boilers 72 inches in diameter I8 feet long for I50# steam pressure. This was decided upon after the Cliff shaft boilers were condemned by the Insurance Co. with the idea of removing our present Lake boilers

to Cliff shaft after our new plant is working. The original estimate contemplated two (2) new boilers to be first installed, then to remove the old boilers one at a time to the new plant. These boilers are equiped with Murphy automatic stokers. There are hoppers under the ash bins underneath which a tram car is hauled to receive the ashes when they are run down through the tunnel leading from the coal dock to the boiler house, and are to be dumped into a cave on the Lake bottom. The top coal dock is on a level with the railroad tracks at the collar of the shaft, and immediately south of the shaft: the bottom of the dock being down on the Lake bottom having a dock 20 feet high, which will hold about 5,000 tons of coal. A drift is driven through underneath the tracks and under the coal dock floor, and the coal will be shoveled into a small tram car on the coal dock floor, and will be dumped into the large tram car which travels through the tunnel under the track, then rises on the trestle work going into the boiler room, and automatically dumping into the bin. By this method there will be no shoveling of coal or ashes in the boiler house, and we hope to greatly reduce the labor of firing. The hoist for tramming the coal and ashes will be located in the economizer room, and will be operated by the firemen.

We have installed a Greene economizer in the up-take connection between the boilers and stack to heat the feed water to the highest possible temperature after passing same through the exhaust steam heater.

This plant is above the point to which water from the City mains will rise, so that it will be necessary to pump all the water we use at this plant from the City mains.

We have ordered and received a new Sullivan hoist having two (2) , seven (7) feet drums driven by a pair of 20X42 inch Corliss engines. Both of these drums have independant, steam operated frictions and brakes, and the reversing is also done by steam.

The left drum will operate both the skips in balance while the cage will be operated by the other drum, but not in balance.

To facilitate the handling of the timber a drift has been driven into the shaft from the old Lake bottom and timber cars from the mine will be hoisted on the cage to this drift, run directly to the timber yard and loaded,and taken down on the cage, and directly to the stopes, so that but one handling of timber will be necessary, thus dispensing with the teaming. The timber will be unloaded from the cars,on which it is received,from the top of the coal dock, greatly reducing the cost of unloading and piling.

We also received a new, cross compound,two (2) stage, Nordberg Corliss valve, compressor having steam cylinders 22 and 45, air cylinders 37 and 23; all have 48 inch stroke with an attached air pump and condenser, and attached circulating and jacket pumps. This machine has separate intercooler and is guaranteed to make 4,000 cubic feet of free air per minute at 80# pressure with I73# of steam at I50# pressure when run condensing.

We will erect a natural circulation cooling tower to cool the water for the condenser, and condenser water jackets and intercooler for this machine , as well as for the condenser of the electric machine.

We have ordered a new, tandem, compound, ideal engine having high pressure cylinders II inch diameter, low pressure 20 inch diameter, I4 inch stroke, for driving the electric generator. It was decided to do this because of the fact that it would have taken us at least one week to move and erect the present Corliss engine now driving the electric generator, thus necessitating closing the mine for that length of time. The new engine is compound and will be run condensing, thereby getting better efficiency than it is possible to do with the present Corliss engine.

We hope to erect the present generator engine at the

crusher plant at Cliff shaft, thus providing a fairly economical engine for that service in place of our most uneconomical large engine.

The new shaft house is of steel and is being erected by the Wisconsin Bridge & Iron Co., and the skips will dump directly into the pockets for shipping. The new skips will be of the Kimberly type running on guides, which have proven the most satisfactory type for this service.

CLEVELAND.

No. 3, Engine House.

We have made no changes at the No. 3. engine house during the year. There have been no repairs of importance on any of the machinery at this house during the present year. This plant ran through-out the year furnishing air, and hoisting ore from the Moro mine, and furnishing steam for operating the shaft.

On December Ist., the mine was closed down stopping work in this engine house, and we now run but one boiler to furnish steam for operating the shop.

No. 4, Engine House.

This plant has run continuously through-out the year pumping water from the Moro mine. We have had no repairs to boiler or engine during the year. We have had some trouble with the Cornish pump under ground at different times due to the breaking and giving out of old parts: these have now all been put in good condition.

We have been authorized to lower the IIth. level pole down to the I3th. level, thereby getting rid of the troublesome drawing lift which has been running since the mine was sunk to the I3th. level. This aparatus has given us a great deal of trouble, but we expect the lowering of the pole will overcome it.

We installed in March the I4 and 24 and 6X20 Smithvale, Duplex, compound steam pump. This pump was installed for use for two purposes: first, owing to the condition of many of the parts of the Cornish pump which needed repairs; and second, owing to the fact that in opening new ground the mine was making considerable more water than previously, and was up to the capacity of the Cornish pump, so that when the Cornish pump was idle the bottom level immediately flooded, and it took us a very long time to get it dry. We have found the coal consumption very much higher when running the steam pump, which we fully expected. After the bottom pole was lowered and the drawing lift dispensed with we will have very little use for this pump. We are now keeping this mine dry and mining operations have been suspended.

The boilers at this plant are very old and we do not expect to be able to keep them insured much longer. If this mine is allowed to fill again it will be necessary to install two (2) new boilers before attempting to un-water it.

HARD ORE SHOP.

During the summer we built a new blacksmith shop, the inside dimensions of which are 28X60 feet by I4 feet to the bottom of the roof trusses. This shop is located across 7th. street, just south of the old hose house. It is equiped with four (4) forges, steam hammer and one swinging crane. The walls are of brick with wooden roof trusses and boards covered with rubberoid.

After moving into the new blacksmith shop we tore out the wall between the old blacksmith shop and machine shop, laid floor in the old shop, and moved the large tools over into what was formerly the old blacksmith shop. We are now installing an overhead crane to reach the large tools and to cover our erecting floor; and when this is done we can back a wagon directly into the shop and load or unload material with very little labor,

and can lift stuff directly from the wagon to any of our large tools.

The old shop engine, which was a 10X10 Westinghouse Junior, broke down on June 17th. beyond repair. We installed on the same foundation the old 10X20 Sharpe engine which formerly run the arc lights in the No. 3, engine house. This engine proved very satisfactory and it has been decided to keep it in service, and when the shop machinery was changed it was erected at the east end of the shop in what was formerly the coal room.

We will use the old horse shoeing room for a tool room for the heavy tools, and will use the old tool room for the small tools, such as, taps, dies, etc., and will convert the old Master Mechanic's office into a coat and wash room for the men.

This shop is now very well arranged and we will be able to turn out work very much more expeditiously than formerly.

We have not added any more tools during the year, but will say that our lathes are always behind, and I believe that when business again opens up so that we are operating as many mines as we were last year, it will be absolutely necessary to install one or two more small lathes.

We are also greatly in need of a combined shear and punch, and a wheel press. The wheel press we need very badly, and it should be installed at once; while the shear and punch should be installed to enable us to build steel tram cars and skips economically. We have built a large number of steel tram cars this year, but with-out a punch all holes have to be drilled, which makes it a great deal more expensive, and takes a much longer time to get out the work.

We now have a pneumatic riveter, and can drive rivets as cheaply as any one; and with the installation of a few more labor saving tools could build steel tram cars as cheaply as any one.

We also greatly need a hydraulic press for pressing wheels on axles and doing other work of this class, which we now have to press with the use of bolts and long wrenches, entailing a great deal of labor.

The amount of work coming to this shop is very large and has been unusualy heavy this year. In addition to our Ishpeming mines and their demands on this shop, we have had the Maas, Barasa, Lucy, Austin, and lately the Negaunee, and also prepared a great deal of the material for the Crosby.

STEAM SHOVELS.

Last fall after the two (2) shovels were laid up the booms were taken down and taken into the blacksmith shop, and we did a great deal of work on them, driving in rivets which had become loosened, and putting on a number of angles on the out-side and laced them in such a manner as to greatly strengthen them, and during the past summer they have run with-out loosening any rivets, so that we do not expect soon again to have to re-drive the rivets.

We have found the manganese dipper lips very satisfactory, and the first one we put in is still running, though it is getting pretty well worn out. It has made a run of two and one half (2, I/2) years and we do not find it necessary to use teeth with them, except when digging frozen ground.

MAAS MINE.

We have made no changes in the surface equipment at the Maas,but find necessary to keep the three pumps in operation in order to handle the amount of water this shaft is now making.

We have had no repairs to the boilers this year except, the ordinary furnace repairs. There has been no repairs to the hoist and it causes no trouble,whatever.

We installed the compressor from the Imperial mine, which we started in July, I903, for furnishing air for sinking the shaft. This shaft now makes a considerable quantity of water, running at times above I,000 gallons of water per minute: we expect the water at the ledge in this shaft to vary from I,000 or I,200 gallons per minute in very wet weather to possibly 700 gallons per minute in very dry weather, as there is a large area which drains to this point, and the soil is all sand, so that a large part of the water which falls on this field drains into this shaft.

We have ordered from the Fred. M. Prescott Steam Pump Co. two (2) triple expansion, Missaba type pumps to be located in a pump chamber 220 feet from surface. These pumps are I0 - I5,I/2 - 26 and I2X24 inches, with independant jet condensers, and have a nominal capacity each of about I,200 gallons of water per minute, and are to have a guaranteed duty of 85 million foot pounds per thousand pounds of dry steam. It was thought best to install two pumps on account of the large quantity of water making at this point, and if there was but one pump when it was stopped for packing or repairs this water would all go into the mine, fill the bottom level very rapidly, and make it impossible to go up and down the shaft while the water was going down. We pumped immense quantities of sand from this shaft while they were sinking in sand, and by far the largest quantity of sand raised from this shaft was done with the pumps. We learned a number of things on this work, and have found the most satisfactory packing to be pure rubber as it wipes the sand off ahead of the piston instead of permitting it to work into the packing and cut the bushings.

The most satisfactory pumps for this work we found to be the No. I0 Knowles pumps. I do not believe these pumps have a duty above 5 million foot pounds per thousand pounds of dry steam, so that it has cost us a great deal to do the pumping.

At present there is no sand in the water and I do not anticipate and further trouble from this score, and when our new pumps are installed we will greatly reduce the cost of pumping.

The present hoist at the Maas mine will be able to hoist from a depth not to exceed 700 feet and I believe could handle a product of I25 to I50 thousand tons per year, so that it will not be necessary to install a new hoist until the mine is brought up to that capacity. The compressor, however, is capable of running 5 drills only, as a maximum so that as soon as drifting begins we would have to install increased compressor capacity. The only machine which we will have readily available will be the Ingersoll Sargeant, straight line, now in use at the Lake mine. We will be through with this machine early in the summer, and by installing it at the Maas we would be able to get along with the present plant for another year. It is my opinion, however, that we should begin installation during the coming summer of a suitable plant to take care of the future work at the mine, which should consist of a cross, compound two (2) stage compressor of about 2,500 cubic feet capacity. A new hoist with a pair of clutch operating drums working in balance for handling the ore skips, and it is my opinion that we should have an independant hoist at this mine for handling the cage. This is a different idea from that advanced at our new Lake plant, but there the mine will always be shallow, the product probably never greater than during the past two (2) years, and our present machine will have time to handle the cage in this shallow shaft, as well as take care of the ore. At the Maas mine, however, we have a different proposition, which will consist in hoisting probably a larger capacity than our Lake mine, and owing to the nature of our shaft with skips probably three and one half (3,I/2) or four (4) tons capacity from a depth of 800 to I,500 feet: in addition to this there will be a great deal of timber to be handled by the cage, and since it will take from one (I) to one and one half (I,I/2) minutes for the cage to make a trip one way

I believe it would interfere with hoisting ore too much to have the same engine handle the cage.

I would advise the installation of a boiler plant with stokers and overhead coal bins to reduce the labor of firing to a minimum. We will probably need at this plant,at least 6 boilers on account of the large amount of water we will have to handle, and the large engines we will have on our hoist. I do not anticipate any very great quantity of water in the ore, though I believe we will have to handle about 750 gallons per minute from the bottom of the shaft after we have opened into the ore, and if the capping is broken by caving at any future time this quantity,I believe, would be increased to I,500 or 2,000 gallons per minute. For these reasons we should provide a boiler room capable of sufficient extension to meet further requirements.

BARASA MINE.

This mine was closed down in June. All of the machinery was taken out. The new 50 horse power, fire box, boiler, and the small compressor was sent to the Ogden mine, while the hoist and pumps were stored in the Hard Ore Yard; the old, fire box, boiler sold for scrap, and the small Lake Shore winze hoist was sent to the Lucy to handle the top tram car.

In the latter part of March we struck a large flow of water, which made it necessary for us to send the steam shovel to the mine to help out the other boilers, as this was the only acceptable portable boiler we had.

The amount of ore hoisted was very small, but the quantity of water pumped was considerable.

THE OGDEN MINE.

The Ogden mine was started up in June. We installed the 50 horse power, fire box, boiler, and a small compressor from the Barasa mine. It was not necessary to do any pumping or hoisting at this place, the only pump run being to supply water for the boiler.

LUCY MINE.

We installed at the Lucy mine two (2) , 50 horse power, fire box, boilers, a small Knowles feed pump, and purchased a second hand bullock hoist from the Jackson Iron Co. This hoist has two (2), 5 foot drums with independant clutches and brakes, and a pair of I0XI2 slide valve engines. It was the original intention to install a six (6) drill compressor, but before the compressor was ordered it was decided to install a ten (I0) drill machine, for which we ordered a cross compound, Imperial type Rand with I2 and 24 inch steam cylinders; 22 and I3 inch air cylinders , all of I6 inch stroke; the steam cylinders equiped with Meyer cut off: the air cylinders having rolling inlet valves and poppet outlet valves. This machine appeared to be very economical, though we did not use it to its full capacity, and have made no tests to determine the efficiency of it. When it was decided to install a ten (I0) drill compressor our two (2), 50 horse power, fire box, boilers were already at work and would have been large enough for the work at this mine with a six (6) drill machine, but were not large enough for a ten (I0) drill machine. We therefore, took the I25 horse power, fire box, boiler from the Lake Superior Boiler Works, which was ordered for the Barasa mine and installed at the Lucy and took out one (I) 50 horse power fire box, boiler, and sent it to the Austin mine. One other change that was made at this plant was to install a larger feed pump for use in case of fire, as our buildings were all mere shells

of wood and would have burned very readily, and owing to the elevation of the mine above the City of Negaunee, we found the pressure too low to take care of fire. We, therefore, chnaged the feed pump and installed a new 8 and 5XI0 Duplex regular pattern Prescott and purchased 250 feet of fire hose. For a mine pump we used the I4 and 8XI2 Prescott sinking pump with which we unwatered the mine. This mine does not make a great deal of water, the regular quantity in normal weather would probably not exceed 250 gallons per minute.

We had a fairly economical plant at this mine, but the amount of work done underground was not sufficient to keep it very busy, and the mine was shut down December Ist. When we shut down we arranged a blower on the discharge column of the pump so that when it is desired to unwater this mine a large amount of water can be taken out with the compressor, instead of going to the expense of lowering and connecting pumps.

NEGAUNEE MINE.

We obtained possession of this mine September Ist. Our logs were started September I6th., but owing to the large amount of work, and getting things in fair condition about the plant, we did not get our gauges and counters installed until some time later, so that our logs for this mine do not give us much information until November 30th.

The machinery at this mine, when taken over, was in fair condition, though a considerable amount of work was necessary on piping and pumps, and we had to unwater a portion of the old part of the mine.

NO. I, BOILER HOUSE.

This plant consists of three (3) horizontal, tubular boilers, all of 72 inches diameter and 20 feet long. Nos. I and 2 were built by John Mohr & Son of Chicago in I899,

of 7/I6 steel, no tensile strength stamped(but assumed to be 55 thousand pounds). These boilers have double riveted lap joint, I5/I6 rivet holes, 3,I/4 pitch rivets, one top and one bottom sheet with straight horizontal seam 20 feet long, heads I/2 inch, I4 braces with 56 - 4,I/2 inch by 20 feet tubes. These two (2) boilers have 4,7/I0 factor of safety with I25 pounds of steam pressure.

No. 3, boiler was built by the Excelsior Iron Works Co., of Chicago, furnished by the M, C, Bullock Man'f'g, Co. in I892, is 72 inches by 20 feet, of 3/8 steel (assumed tensile strength of 55 thousand pounds), double riveted lap joint, I3/I6 rivet holes, 2,I/2 inch pitch, shell in three (3) crosses, I/2 inch heads, I0 braces in each end, 56 - 4,I/2 by 20 feet tube. This boiler has a factor of safety of 4,I/I0 with 95 pounds of steam.

These boilers do not have flanges for the feed pipes, but we are having them put on as the boilers come off for cleaning.

The steam connections of No. I, are not what they should be, and the header going to the engine room is too small for the work. We are informed by the men at the mine that the Oliver Mining Co. had commenced the installation of a header, and had the material on the ground and part of it installed when this Co. leased the mine, after which, they took down this header and removed nearly all the fittings. I would advise the installation of a larger header.

HOISTING PLANT.

The hoist consists of a pair of 8 foot Webster, Camp & Lane drums, geared two (2) to one (I) to the 24X48 inch W. C. & L. Corliss engine. This engine has been equiped within the last three (3) years with a link reversing gear, with the idea of handling two (2) ore skips in No. 2,shaft from one drum and using the other drum to handle the cage in No. I, shaft. This device has never been put in operation, but we expect to do so some time this coming spring.

I do not like the idea of reversing this engine with the fly wheel it now has, though it may be all-right with very careful handling, but if at any time this engine is reversed under any considerable speed it will be a very severe strain on this wheel. We hope, however, to be able to run this engine in this manner.

COMPRESSOR PLANT.

The compressor consists of a 24X30 straight line Rand machine having a capacity of about I,400 cubic feet of free air when run at 90 revolutions per minute. This machine cannot at present be worked at an earlier cut off than I2 inches, which is 40% stroke, and for this reason the machine is very un-economical. The demand for air is at present well up to the capacity of this machine, and I think it would be a very good investment to replace it with a more economical type of compressor, as we will operate this machine for a number of years. This machine at present supplies air for drilling, a small hoist at No. 5, shaft, a small timber hoist, and a couple of pumps. The discharge pipe from this compressor to the receiver is only 5 inch, and should be increased in size, or the receiver moved nearer the engine house.

AUXILIARIES.

The auxiliaries on surface at this shaft consist of a No. 7, Cameron pump for boiler feed, a No. I0, Cameron pump in the old cave under the former engine house, and also operates a small Meritt hoist at present used in re-timbering No. I, shaft. This hoist will soon be dispensed with, and the cage handled from the main hoist. We also have at this mine the Webster vacuum system of heating and the Webster open feed water heater, through which all the exhaust from hoist and compressor is passed, and which heats the feed water for the No. I, boiler house; also for the No. 2, boiler house which is supplied througha three (3) inch pipe line from the heater.

The office and dry is heated by this system, but the dry has not sufficient heating surface to keep it at proper temperature, but we have commenced the installation of additional heating surface. We have some difficulty with the oil in the pumps due to the open heater, but this is an evil that nearly always follows with an open heater.

The machinery is in fair condition though the valve gear of the hoist needs some overhauling, which we will proceed to do the first time the mine is idle. The compressor does not need any repairs and is in fair condition.

NO. 2. BOILER.

The No. I, boiler in No. 2, house is a duplicate of No. 3, boiler in No. I, house, while Nos. 2 and 3 boilers were built by the Milwaukee Boiler Works in I90I, and are 72 inches in diameter and I8 feet long, 7/I6 sheets, said to be 60 thousand pounds tensile strength, has double riveted butt joint, I5/I6 rivet holes, 3,I/2 and 7 inch pitch, heads are I/2 inch thick with 2I braces in each head; has 70 - 4 inch tubes and has a factor of safety 4,6/I0 under I25 pounds of steam.

The No. 3, boiler has a small patch on the fire sheet, and the fire sheet on No. 2, boiler is slightly bulged. These boilers are otherwise in fair condition.

The No. I, boiler has settled badly and must soon be reset while none of them had flanges for the feed connections, but these are being put on. All the steam from this plant is used in the mine for pumping, and the boilers are supplied with hot water from the heater in the No. I, boiler house: they are fed with a Cameron pump having 4 inch pole.

The No. I, boiler in No. 2, house, and the No. 3, boiler in the No. 2, house should both have been installed in No. I, house,

and one of the other boilers in No. I, house should have been installed in No. 2, house, as we could then have carried I25 pounds pressure with our pumps and got much better duty from them, while No. I, house does not need steam of higher pressure at present than 95 pounds, and as the boilers are arranged at present we are not permitted to carry more than 95 pounds in either house.

MINE PUMPS.

There is a considerable quantity of water making at the ledge amounting to about 750 gallons per minute, while in the bottom of the mine on the 5th. level there are about 500 gallons per minute. The pumps to take care of the water at the ledge consisted of two) No. I0, Camerons and a No. 9, located about I40 feet from surface. Part of these pumps are in very bad condition and we re-placed one No. I0, Cameron with a I4 and 8XI2 Prescott Duplex sinking pump and have now about finished a large pump room located about I60 feet from surface, and have ordered for this place a triple expansion Duplex Prescott pump having steam cylinders 8 - I2 - 20, with I0 inch plungers and 24 inch stroke with a guaranteed duty of 85 million with an independant jet condenser.

We also had at this mine a I2 and 22 - 8X24 prescott Duplex compound with jet condenser which was not in service when we took charge of the property. This pump was brought to the Hard Ore Shop and is being repaired, and will be installed with the triple expansion pump to take care of the water at the ledge when the triple is stopped for repairs. This pump should have a duty of about 40 millions. When these two pumps are installed we will remove the three in the old pump chamber.

The water in the bottom of the mine is handled with a Duplex Worthington I5-25- I0X24 with condenser, all now located on

the 5th. level of No. 2, shaft from where it throws the water to the surface. There is no relief for this pump and if it becomes disabled we would have to install a line of temporary pumps to handle the water. Back in the old part of the mine we are unwatering part of the old workings for which we ar e useing the couple of No. I0, Knowles pumps which were built in the Hard Ore Shop. When this work is completed, I believe it is the intention of the mining department to sink the No. 2, shaft two more levels, or to the depth of the old part of the mine, when we will install the Worthington mining pump in the new pump room at this point, and should also install for service with it a triple expansion pump.

The pumping at this mine has never been economically done and the quantity of water handled has always been large.

SHOP.

There is a partially equiped blacksmith shop and a building for a carpenter shop at this mine, and we contemplate installing next spring a shop having the blacksmith and carpenter and a small machine shop all in one building. For shop tools we will probably install only a drill press and pipe cutter as there is a great deal of pipe required at this mine, and will be for some years to come.

AUSTIN MINE.

At the time it was decided to install a plant and sink a shaft at the Austin mine it was nearly the last of December, I902, and as Princeton is 6 miles from the main line of the Chicago & North-Western Railway, and the branch leading to the mine had not previously been kept up in winter, we took up for this work the first boiler and compressor we could get hold of in order to get them installed and the work started as quickly as possible.

For this purpose we ordered a 72" Burt fire box boiler I65 horse power capacity, suitable for I65 pounds of steam pressure. This was a larger unit than we would have preferred at this place but it was the only boiler we could get for prompt delivery, and as it is of an economical type we decided to purchase the same in order to get it in before the track was closed. This was the only boiler at the mine until October, when we sent down a 50 horse power,fire box,boiler, removed from the Lucy mine, to operate the pumps while cleaning the large boiler. We carry I20 pounds of steam at the mine and the large boiler is of ample capacity to do all the work required.

AIR COMPRESSOR.

We were offered prompt delivery on the Sullivan straight line air compressor having two stage air cylinders and single steam cylinder with automatic pressure regulator and Meyer cut off on the steam cylinder. The steam cylinder is I6 inches in diameter, air cylinders I6 and I0: stroke of all I6 inches, while the intake air valves have mechanically unloaded springs. This machine nominally has a 6 drill capacity and has so far proven quite satisfactory.

HOIST.

For sinking the shaft we at first purchased from the Arcadian Mining Co. at Houghton, a small Nordberg hoist having a pair of cylinders I2X20 with single rolling valve geared to a 5 foot drum, but it was afterwards decided to send this hoist to the Crosby mine and for sinking the shaft we installed the small American Hoist & Derrick Co. hoist , which had previously been in use at the Tilden mine for hauling the railroad cars away from the dump. This hoist sunk the shaft to its present depth.

For a permanent hoist we ordered from the Nordberg Man'f'g. Co. a machine almost a duplicate of the second hand machine bought from the Arcadian Mining Co., the only difference being the substitution of a hoisting clutch on the new machine. This machine will hoist either in balance , or with one skip unbalanced, and was started at the Austin mine about September Ist. We are useing Kimberly skips running on guides and have a plant which did not cost us very much money to install, but which is capable of bringing up a very fair product.

MINE PUMPS.

This shaft so far makes very little water, the quantity averaging only about 65 gallons per minute, and we have installed one No. 8, Knowles pump and one No. 6, Knowles pump for mine pumps.

AUXILIARY SERVICE.

We installed a feed water heater useing the exhaust from the compressor and hoist and have a feed water tank of I6 thousand gallons capacity, and originally installed a 6 - 4 - 6 , boiler feed pump, but later it was decided to install a larger feed pump for use in case of fire, and we brought the 8 and 5XI0 Prescott from the Lucy mine when that was closed down.

We also put in a low pressure heating system and are useing the exhaust from the pump and shop engine for heating the buildings.

We built a machine shop and installed in it a 6X8 vertical engine, a 6inch combination Merrill pipe and bolt cutter, and a 22 inch Barnes up-right drill press, and a grind-stone. We also installed a blacksmith shop and forge with necessary tools, and have a carpenter shop adjoining the blacksmith shop.

Our water supply is secured from the Escanaba river about 1/2 miles away by the pumping station, which was installed to furnish water for the diamond drills while drilling, in which we have a 10 and 6X10 Prescott Duplex pump formerly at the Maas, and an old style No. 5, Cameron together with two fire box, boilers, belonging to the diamond drills.

TOP TRAM PLANT.

For this work we built at the Hard Ore Shop an automatic end dumping car and ordered from Wickes Bros. of Saginaw, a pair of 8X9 engines direct connected with a friction clutch to the 26 inch drum. This engine has not been put in service at the present time and was not received until the end of December.

ASHLAND MINE.

We have made very few changes at the Ashland mine this year. The principal repairs to the hoisting plant has been a new valve on "B" engine and lagging the "B" shaft drum which work on one of the No. 9, skips with wood. This was found necessary owing to the collapsing strain placed on the drums by the heavy loads we are handling in the No. 9, shaft, which makes about 6 tons total, or 4 tons ore and 2 tons skip, which is entirely too heavy for these old drums as the accumulative effect of winding on rope under this heavy strain caused this drum to show signs of distress, some cracks developed, bolts were broken in the spiders, and some links at the joint inside fell off. I do not believe the collapsing strain on the drums has ever been accurately calculated, and I believe this strain is much heavier than is ordinarily supposed. However, since lagging up this drum we have had no further trouble.

The cage in this mine is kept very busy and is handled by the 5th. drum, which is driven by the "A" engine. When we installed the cage and new skips in No. 9, shaft we first ried a self oiling box with wheels pressed solidly on the axles, which has proven very satisfactory, and we have had no repairs to it after running about I8 months. These self oiling boxes are made of cast steel with the oil chamber in the bottom in which is a cast iron shell lined with genuine Babbitt to which we have added about 5% of antimony. The oil is brought in contact with the shaft by means of a strip of felt the lower end of which dips in the oil box the upper end being pressed against the shaft by a spring. These boxes are oiled and inspected twice each week and there has been no trouble with them whatever. By removing four of the bolts and taking off the cap the shells may be easily removed. We will have to put in a new exhaust pipe for our hoisting engines very shortly as the old pipe is poor and has begun to leak considerably. We have also ordered an exhaust head to take the moisture out of the exhaust and keep it from going around the No. 9m shaft.

COMPRESSOR.

The I8X42 Ingersoll Sargeant compressor has had no repairs of importance during the year. The amount of air made during the year has not been as high as previously, and has been considerably reduced by changing the mine to one shift only, October Ist.

MINE PUMPS.

On January 24th. we stopped the Worthington pump in the I0th. level of No. 3, shaft and pulled it out to be installed in the I0th. level of No. 9, shaft. We also removed the compound Prescott pump working on the bottom of No. 4, shaft and permitted the western part of the mine to fill up to the I0th. level when it would run across to the No. 9, shaft.

This took about 5 months and the pump was not started again until July. The quantity of water greatly increased, from about 8,500,000 to I0,250,000 gallons per month, but has not yet become as great as formerly. The pump handled in its former position from I4,000,000 to I4,250,000 gallons per month. The pump room is now being cut on the I3th. level for the new triple expansion Prescott mine pump which was delivered to us April Ist., I903. When this pump is installed we will considerably reduce the pumping cost over what it is at present, though the present pumping costs are not near as high as formerly as we do not at present re-handle any considerable quantity of water, and the mine does not make as much water.

BOILER PLANT.

We have made no changes in the boiler plant this year, but have had all the boilers inspected and insured by The Hartford Insurance Co., and the only changes made has been to remove the mud drums from Nos. I and 2, and put new flues in the No. 2, boiler. The boiler house at this mine is a mere shell and almost ready to fall down, and we believe we will have to re-build it before long. The old breeching serving the first four boilers is not of good section to give us good draft, and we expect to make some changes in this shortly.

AUXILIARIES.

We have made no change in the auxiliary service, but have undertaken the installation of the Van Auken Vacuum system of steam heating. We will use the old 5 inch steam line which formerly went to the pumps down No. 5, shaft for this purpose , as it is well covered and in the right location.

TRAM PLANT.

The top tram plant was started up in December, I902, and we had some trouble with it during the winter and broke the secondary shaft. Owing to the fact that we did not ship much of the stocked ore during the present summer we had to lengthen the trestles considerably, which would make a greatly increased load on these engines. We changed the pair of old I0XI2 cylinders for a new pair of I2XI2 cylinders, which have proven very satisfactory. The old cylinders were rather too small for the work they had to perform.

For handling the tram car at No. 3, shaft, where we still hoist considerable ore, we ordered from Wickes Bros., Saginaw, a pair of 8X9 reversible engines with one sheave directly on the crank shaft , and a secondary sheave mounted on the axle with boxes directly above the guides,for use as a tail rope haulage plant. This machine has been put in service and has proven very satisfactory. We also ordered for the Ashland mine a pair of 6X8 engines geared two to one (2to I) to a 26 inch 4 grooved sheave mounted on the axle with bearings above the guides, with a secondary sheave to be mounted on wooden supports in front of the engine, for use as a tail rope haulage plant under-ground. This machine has not been put in operation, but we believe will give very good satisfaction.

CROSBY MINE.

For this mine we ordered a 60 inch Burt, fire box, boiler of I25 horse power for I25 pounds of steam, and which is the only boiler they have in service, except a very small diamond drill boiler. These fire box, boilers, are very convenient for small mines where they will probably be moved, as it costs very little to erect them, and they are not excessively heavy for moving.

HOIST.

We originally ordered for this mine from the Nordberg Co. a hoist which is now in use at the Austin mine, but as we could not get prompt delivery of this machine, and we had purchased a second hand hoist of the Arcadian Mining Co.,which we could get immediately, it was decided to use the second hand hoist at the Crosby in order to get the work started.

This hoist has a pair of I2X20 engines with single rolling valve, are reversible, and geared directly to a 5 foot drum keyed to the shaft without a clutch, which is especially adapted to hoisting in balance, and we installed in the shaft two Kimberly skips. This hoisting aparatus has given very good service, and we purchased it at a very favorable price, so that the plant has not cost us very much money.

We did not install a compressor at this mine as the ground was comparitively soft, and it was decided not to use machine drills.

MINE PUMPS.

We sent to this mine two No. 9, Cameron pumps from the Ashland mine, and the mine does not make but very little water so that the pumping cost has been low, and these two pumps have very little to do.

AUXILIARIES.

For a water supply for the boilers we have built a tank of about I6,000 gallons capacity, set upon a trestle work about 20 feet above the ground on a small elevation near the engine house. Part of the water is taken from the mine, and part from a small stream a short distance away.

SHOP.

We installed a small machine shop equipemnt consisting of a 6XI2 vertical engine which we found at the Lucy and repaired in the Hard Ore Shop. We also bought a 22 inch Barnes drill, and a 6 inch combination Merrill pipe and bolt cutter, and a grind-stone. The drill and pipe cutter are duplicates of the one at the Austin mine and were ordered at the same time. We have also a blacksmith shop with forge and necessary tools; also, a small carpenter shop.

This constitutes the entire shop equipment at this mine, and I believe that up to date it has done about all of their work, though they may later need a small lathe.

GENERAL RECOMMENDATION.

The past year has been a very busy one for the Mechanical Department as we have equiped four (4) mines new, namely;- the Lucy, Austin, Crosby and Ogden, and also un-watered and started the Barasa mine, which we afterwards closed down and tore out the equipment. In addition to this we have had all of our regular run of work, have made all plans and ordered all machinery and material for the new Lake plant and have the construction well along. We also took over the Negaunee Mine.

In addition to all this work we have built a new blacksmith shop and re-arranged our machine tools, which caused us considerable delay in the Hard Ore Shop, and the out-look at present is that we will shortly have one economical plant in operation, and will soon be rid of our poorest boilers.

We have had no serious break-down during the year in spite of the fact that we have had to accept and break in a number of new men, and owing to the great demand for men during the early part of the year we were unable to get the class of men we customarily employ.

A great deal of the hard labor and care of the past year fell to the lot of Mr. Gilliland who is a very able man, but who left us in October to accept a better position else-where.

I believe the mechanical equipment of this Company, and the standing of the employees of the Mechanical Department is getting better every day, though we have a great deal of old equipment in operation which requires the most vigilant care to keep going; still all of our older men are men of a high sense of duty, and we do not at present see any way of re-placing them as they leave our service, which many of them will shortly do. Why

A number of our engineers and mechanics have been in the employ of this Company from twenty-five to thirty-five years, and I must confess I have always found them vigilant, active and truthful, and so far have been unable to find many young men that give promise of development into a class of men we must have to operate economically. The wages are not especially attractive, and we are unable to secure a better class of young men.

Respectfully submitted,

Will. E. McKee
M. M.

COMPARITIVE TABLES.

CLIFF SHAFT.

YEAR.	COAL BURNED.	ORE & ROCK.	CU. FT. AIR.	TONS HOISTED PER TON COAL.	CU. FT. AIR PER TON HOISTED.	GALLONS OF WATER.	# SHIFTS.
I900	7,969.3	28I,857	359,II5,088	35.4	I,4I0	345,630,I30	538.
I90I	8,4I2.8	283,088	447,I36,I40	32.5	I,580	353,3I4,205	549.5
I902	8,38I.8	278,756	40I,970,520	33.2	I,442	377,9I0,450	538.
I903	8,I56.4	268,568	322,753,874	34.I	I,200	374,292,965	5II.

SALSBURY MINE.

I900	3,5I3.	I77,258	I93,430,796	50.5	I,090	65,724,I95	833.
I90I	3,68I.3	I90,8I6	I84,678,547	49.6	970	7I,466,792	840.
I902	3,800.	I75,782	I9I,I00,368	46.I	I,090	7I,962,803	84I.
I903	4,I67.	I94,78I	264,830,023	46.7	I,360	88,636,3I2	828.

LAKE MINE.

I900	8,2I8.	5I0,I32	376,482,932	62.		740	
I90I	9,II7.7	472,730	393,682,563	5I.7	840	62,998,I88	803.
I902	8,460.5	470,728	440,I96,332	5I.8	958	64,I88,597	84I.
I903	8,502.8	468,277	44I,329,I98	50.	993	70,848,359	787.

ENGINE HOUSE. NO. 3. MINE.

I900	3,359.7	80,577	I56,642,5I4	23.9	I,875	I27,30I,055	544.
I90I	3,537.4	83,32I	I98,I87,706	23.5	2,375	I23,434,439	545.
I902	3,749.9	79,329	209,I40,586	2I.3	2,550	I24,952,502	56I.
I903	3,978.6	75,458	202,735,698	I8.8	2,660	I39,284,463	594.

ASHLAND MINE.

I90I	5,226.6	I62,268	22,438,648	3I.	I,385	I0I,I08,902	
I902	II,245.9	368,237	408,7I3,680	32.	I,I05		
I903	II,946	387,604	3I5,978,744	32.5	823		

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