

Mar. 15th, 1902

*** ANNUAL REPORT- L. S. & I. ***

Mr. H. R. Harris, Genl. Mgr.,
Marquette, Mich.

Dear Sir:-

I think I wrote you sometime ago, and also sent a copy of the letter to Mr. Hayden, asking that there be included in the Annual Report, a statement showing the condition of our unsettled rights of way claims, the status of the contracts for land which was going to be given us as bonuses for the construction of the road, etc. I have not yet received this. Let us try to get all these things straightened out and put behind us at as early a date as possible.

Yours truly,

President

W. G. H.

**Lake Superior & Ishpeming Railway Co.
Munising Railway Co.
Marquette & Southeastern Railway Co.**

W. G. MATHER,
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H. R. HARRIS,
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H. A. ST. JOHN,
SUGGESTOR & GENL. PRY. & PASS. AGT.
A. WARD,
SUPT. MUNISING RAILWAY.

Office of General Manager.



MARQUETTE, MICH. January 16th., 1902

Mr. W. G. Mather,
President, L.S. & I. Ry.,
Cleveland, Ohio.

Dear Sir:-

I hand you detailed report of operations for the year 1901.

Length of Tracks Owned and Leased.

MAIN LINE	Miles
Owned - West End Merchandise dock to C. & N.W. Conn., Ishpeming	19.94
Leased- C. & N.W. Connection to Cleveland Lake Connection	.92
	20.86

SIDINGS OWNED.

Presque Isle	36652.8	
Dead River	2091.5	
Eagle Mills	1562.6	
Queen Mine Station	1522.8	
Queen Mine spur	1353.0	
Foster Connection	947.3	
Ishpeming	13385.7	
	57515.7	10.89

*Instructed by Mr. Mather,
9/15/02, to furnish
Report of Rights of Way and
Land matters in general*

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SIDINGS LEASED - ISHPEMING.

C. & N.W.	- Lease of January 2, 1897 -	28383	
C. & N.W.	- Lease of August 1st., 1900-	5800	
C. & N.W. and D.S.S. & A.	- Lease of August 1st., 1900-	25770	
D.S.S. & A.	- Lease of August 1st., 1900-	<u>11172</u>	
		71125	13.47
	Total Sidings		24.36

	<u>Main</u>	<u>Sidings</u>	<u>Total</u>
Total Length of all Tracks Owned -	19.94	10.89	30.83
" " " " " Leased -	<u>.92</u>	<u>13.47</u>	<u>14.39</u>
	20.86	24.36	45.22

This is same mileage as for previous year, except an increase in Sidings Owned of .68 miles, located as follows:

Presque Isle - No. 3 siding		1832'
" Caboose Track		623'
" Storage Track		<u>1154'</u>

3609' or .68 miles, the reason for

the additional tracks being explained in the authorization blank.

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EQUIPMENT OWNED.

ENGINES.

Consolidated Compound	4
Consolidated Simple	2
Six Wheel Switch	5
Four-Wheel Switch	3
	14

CARS.

Combination Passenger and Baggage	1
Coaches	3
Steel Ore Cars- 100,000 lbs.capacity	90
Wooden " " - 60,000 " "	400
Flat and Gondola Cars - 60,000 lbs.capy.	20
Four-Wheel Cabooses	4
	518

Engines 12,13 and 14, the four-wheel switch engines, were purchased second-hand in 1897. They are not in as good condition as the inspection made at the time of the purchase indicated, and we propose to exchange them for better second class engines of about the same size. We have in view now three engines about eleven years old, a little heavier and in good condition, which will cost us \$3500.00 each, the old engines being taken in exchange for \$1000.00 each at Chicago. Engines of this size are desirable for stock pile work and other work about the mine tracks.

We have had several opportunities to rent our engines this winter but with the great shortage of power on all roads now they are certain to be

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overworked and possibly returned to us in such shape that we cannot put them in good, serviceable condition for our own work in the summer.

We have rented to Jones & Laughlin, Ltd. fifty of our steel ore cars at a daily rental of seventy-five cents per car, the cars going to them with ore from Ishpeming on or about December 25th, and will be returned to us by March 15th, in time to make necessary repairs for summer business.

Repairs to engines were as follows:

<u>Eng.</u>	<u>Labor</u>	<u>Material</u>	<u>Total</u>	<u>Mileage</u>	<u>Cost per Engine Mile for Repairs - cents -</u>
1	976.53	717.58	1694.11	13271	12.77
2	553.02	457.63	1010.65	17032	5.93
3	289.62	259.10	548.72	22438	2.44
4	304.66	259.36	564.02	21535	2.62
5	277.80	186.50	464.30	14514	3.20
6	396.44	612.59	1009.03	16964	5.35
7	197.07	177.67	374.74	17843	2.10
8	627.08	518.35	1145.43	19809	5.78
9	118.70	151.78	270.48	16785	1.61
10	521.08	386.35	907.43	13843	6.55
11	228.62	183.78	412.40	11384	3.62
12	63.04	26.45	89.49	8068	1.11
13	88.08	60.46	148.54	9574	1.55
14	127.82	163.95	291.77	3940	7.46
	<u>\$4769.56</u>	<u>\$4161.55</u>	<u>\$8931.11</u>	<u>207000</u>	<u>4.32</u>

The above mileage includes 9659 miles made for other roads and individuals.

Comparison with 1900.

	\$3351.69	1997.80	5349.49	220331	2.43
Inc. for 1901-1417.87		2163.75	3581.62		1.89
Dec. for 1901-				13331	

Foreign mileage made by engines in 1900 amounted to 41680 miles, leaving 178,651 miles for L.S. & I. Deducting foreign mileage for 1901, leaves

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197341 miles for 1901 or an increase for 1901 of 18690 miles.

Comparative Engine Expense per mile was as follows:

		<u>1901</u>	<u>1900</u>	<u>1899</u>
For repairs	cents	4.32	2.43	4.21
" fuel	"	12.89	13.32	10.50
" stores	"	.47	.47	.50
" engineers and firemen"		6.28	6.44	6.23
" Hostlers and Wipers "		<u>1.83</u>	<u>2.01</u>	<u>1.88</u>
		25.79	24.67	23.32

Repairs have increased 1.89 cents per mile

Fuel has decreased .43 cents " "

Wages Engineers and firemen has decreased .16 cents per mile

Hostlers and Wipers has decreased .18 cents per mile

Total cost has increased 1.12 cents per mile.

Fuel charged out in 1900 \$2.85 and in 1901 - \$2.90 per ton.

Pounds of coal consumed per engine mile is as follows:

	<u>1901</u>	<u>1900</u>	<u>1899</u>
Passenger	48.66	48.17	49.91
Freight	111.70	110.99	107.38
Switching	80.34	85.56	98.27

for the first ten months freight figures 109.13 pounds per mile, showing that the extra consumption was in November and December.

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W.G.M.#6.

Progressive statement of repairs to engines, per engine and per mile, since road was opened, is as follows:

REPAIRS ENGINES.

	<u>Per Engine</u>	<u>L.S. & I. Miles</u>	<u>Foreign</u>	<u>Total</u>	<u>Per Mile (cents)</u>
1896	\$ 46.96	27,472	None	27,472	1.71
1897	338.52	111,699	None	111,699	3.04
1898	573.37	112,158	39873	152,031	4.89
1899	536.18	153,435	70613	224,048	3.35
1900	382.10	178,651	41680	220,331	2.43
1901	637.93	197,341	9659	207,000	4.31

The increase in repairs to engines was caused by engines 1,2,8 and 10 receiving general repairs and the age of the engines has necessitated heavier repairs than ever before, a great deal of new material being used.

Munising RY. engines 1,2 and 3 were given general repairs in September, October and November, 1900, reducing cost of repairs to our engines in that year but throwing the work into the year 1901 instead.

PASSENGER CAR REPAIRS.

Total cost \$600.89 - an increase over 1900 of \$267.37, the increase being account of cleaning two coaches inside and painting and varnishing outside of two coaches.

connections were also put on so as to heat coaches with steam from engine.

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W.G.M.#7

Progressive statement of repairs to passenger cars per car and per mile since road was opened is as follows:

REPAIRS PASSENGER CARS.

	<u>Per Car</u>	<u>Per Mile (cents)</u>
1896	None	
1897	None	
1898	\$59.80	.46
1899	22.71	.40
1900	83.38	1.61
1901	150.02	3.22

REPAIRS FREIGHT CARS.

Total cost for the year - \$6360.01, a decrease over 1900 of \$186.36

Cost per mile - .34 cents, or a decrease per mile over 1900 of .02 cents

Cost per car for all freight cars of \$12.37, a decrease over 1900 of 36 cents per car.

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W.G.M.#8.

The total expense is divided as follows:

	Wooden Ore 400	Per Car	Steel Ore 90	Per Car	Other Freight 24	Per Car
Bodies	810.65	2.03	267.86	2.97	49.30	2.05
Draft Rigging	78.20	.19	3.16	.04	1.12	.05
Drawbars	65.70	.16	46.17	.51	.65	.03
Knuckles	160.96	.40	42.89	.48	2.47	.10
Trucks	1618.77	4.05	143.94	1.60	14.24	.59
Air Brakes	995.12	2.49	360.73	4.01	24.83	1.03
	<u>\$3729.40</u>	9.32	864.75	9.61	92.61	3.85
Inspection	570.10	1.43	156.95	1.74	42.33	1.76
Accident Repairs	197.95	.49	15.76	.17	14.86	.62
Shop Expense	557.51	1.39	104.88	1.17	12.91	.54
Grand Total- 1901	\$5054.96	12.63	1142.34	12.69	162.71	6.77
Grand total - 1900	5123.93	12.83	997.05	11.08	425.39	17.72
Increase			145.29	1.61		
Decrease	68.97	.20			262.68	10.95

Extraordinary repairs to steel cars were \$212.36 for painting bodies of first lot of forty cars, or an average cost ^{of 5.31 per car} for the 90 steel cars of \$2.36. This leaves ordinary charges to bodies 61 cents, or compared with 52 cents for 1900. Stirrup brake hangers were also applied in place of those coming with the cars at a cost of \$114.84, or an average cost for the 90 cars of \$1.27, making ordinary repairs to brakes \$2.74, or compared with \$6.07 for 1900 these two extraordinary repairs reduce repairs of steel cars \$3.63 or making ordinary repairs \$5.98, as compared with \$8.67 for 1900.

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W.G.M.#9

214 wheels under freight equipment were changed, the following for defects - 62 seamy treads - 16 broken flanges - 5 cracked in hub - 2 cracked in rim - Total 85. The balance - 129 - being worn out.

Progressive statement of repairs to freight cars, per car and per mile since road was opened, is as follows:

REPAIRS FREIGHT CARS

Wooden - 424			steel - 90		
Per Car	Per Mile -cents-	Average Miles	Per Car	Per Mile -cents-	Average Miles
1896	\$2.08	.18	1184	None	None
1897	10.41	.31	3538	"	"
1898	11.24	.33	3478	"	"
1899	10.68	.28	3825	Not kept separately	
1900	13.09	.37	3506	\$11.08	.33 3328
1901	12.30	.33	3667	12.69	.37 3434

under head of Improvement there has been transferred to Maintenance of Equipment the following items:

Shop Machinery and Tools - new tools	\$2200.73
Repairs Work Cars - new snow plow	95.86

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W.G.M.#10.

MAINTENANCE OF WAY - Including Structures.

Charges to Improvement Account, have been transferred under their proper head for 1902 and 1901 but shown in separate amounts.

Total Maintenance of Way Expenses for 1902 are \$21249.85, a decrease from previous year of \$2344.75. details are as follows:

DOCK.

Repairs to dock cost \$3835.86, an increase over previous year of \$1697.98. These repairs consisted of new linings for forty four chutes, in the hard ore section, costing \$986.07; putting on an iron guard over the gear wheels on the hoisting drums for protection of men's hands; replacing fender piles at sea end of the dock; putting on iron cleats in place of snubbing piles worn out and cut by steel cables and relining floor of about one half of hard ore pockets.

The severe storms during 1901 created havoc with the dock fender, both by boats striking it at end when coming in and by pulling off fender and piles when laying at dock. This expense for repairs to be made in 1902 will amount to about \$3000.00 and for improving end crib about \$2000.00 - total \$5000.00

REPAIRS ROADWAY.

Ordinary Repairs of Roadway decreased \$2014.44.

Improvement Roadway increased \$2746.97, caused by putting down 3609 feet sidings at Presque Isle at a cost of labor and material of \$3167.94.

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W.G.M.#11.

Repairs and Renewals of Bridges and Culverts.

Charges to this account show a decrease of \$344.76. The usual repairs were made to bridges and culverts and in addition, owing to badly rotted piles in bridges 11 and 13, it was necessary to replace the piles by bents in each bridge, the expense being -

Bridge 11	\$478.86
" 13	368.54

Repairs and Renewals of Buildings and Fixtures.

Improvement Buildings cost \$2650.39, a decrease from 1900 of \$4640.38, the cost being made up as follows:

Water Station - Presque Isle - \$142.10. Well deepened to increase water supply.

Water Station - Ishpeming - \$150.93. Owing to introduction of meters by Board of Public Works, we were obliged to abandon taking water direct from main by stand pipe and erect a 16' x 24' standard railroad tank at round house. The amount authorized for this expense is \$1500.00, but the amount charged in 1901 is only as above.

Turn Table - Presque Isle - \$772.57. The table was covered to keep out snow from pit at a cost of \$290.98. A small hoisting engine in the rough was purchased and fitted up to operate table by steam from shop boiler. The table has always turned hard with our large engines and this power will enable us to do with one less man at round house in summer at least. Cost - \$436.54. An erroneous charge credits this expense with \$45.05 in 1902.

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Coal Trestle - Presque Isle - \$52.66. The amount authorized for this expense is \$5500.00. The trestle will be erected in 1902 near round house and will take coal storage away from Merchandise Dock.

Yardmaster's House - Ishpeming - \$1522.13. Owing to scarcity of houses to rent at Ishpeming and especially in proximity to yard, it was decided to put up, on ground leased from the Cleveland-Cliffs Iron Company at an annual rental of \$15.00 a year, a residence for yardmaster. We will receive \$144.00 a year rent from it.

Ordinary Repairs to Buildings increased \$52.31, the principal item of increase being \$114.27, enlarging and repairing cinder pit at Presque Isle engine house.

Detailed cost of Track Maintenance is as follows:

	Main Line - 19.94 miles			Sidings - 10.89 miles		
	Labor	Material	Total	Labor	Matl.	Total
	6140.14	562.00	6702.14	\$1276.72	405.99	1682.71
Per Mile	307.94	28.18	336.12	117.24	37.28	154.52
Per Ft. -cents-	5.83	.53	6.36	2.22	.70	2.92
Comparison 1900.						
Per Mile	331.93	65.50	397.43	121.09	106.33	227.42
Per Ft. -cents-	6.28	1.24	7.52	2.29	2.01	4.30

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Total Main Line and Sidings - 30.83 miles.

	1901	1900
Labor and Material	\$8384.85	\$10399.29
Cost per Mile	271.96	339.86
Cost per Foot - cents -	5.15	6.43

Queen mine Tracks - 4.11 miles.

(Owned jointly by C. & N.W. Ry. and Cleveland-Cliffs Iron Co.)

\$525.80 for additional stock pile track.

	1901	1900
Total Maintenance	\$2960.35	\$1903.54
Per Mile	720.28	463.15
Per Foot - cents -	13.64	8.77

C. & N.W. Lease of 1897 - 6.29 miles.

\$931.65 of total maintenance due to material for stock pile track
at Salisbury and Cliffs shaft mines and \$323.08 for readjustment 1900 accounts

	1901	1900
Total Maintenance	\$3919.57	\$2469.79
Per Mile	623.14	392.65
Per Foot - cents -	11.80	7.43
<u>L.S. & I?proportion</u>	3268.91	2100.11
Per Mile	519.70	333.86
Per Foot - cents -	9.04	6.32

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W.G.M.14.

C. & N.W. and D.S.S. & A. Lease, 1900 - 8.10 miles.

(1900 charges paid in 1901 deducted in these figures, viz.: \$1493.85
 from Total Maintenance and \$473.35 from L.S. & I. proportion.)

	<u>1901</u>	<u>1900</u>
Total Maintenance	\$4423.43	
Per Mile	546.10	
Per Foot - cents -	10.34	Nothing Charged.
<u>L.S. & I. proportion</u>	1143.34	
Per Mile	141.15	
Per Foot - cents -	2.68	" "

OPERATING.

The General Exhibit book gives in detail the different items of expense compared with the year 1900 and below is shown a tabulated statement of Tonnage and Earnings and Expenses since opening of road.

Progressive Statement of Tonnage and Earnings and Expenses.

	<u>Ore</u>	<u>Coal</u>	<u>Other</u>	<u>Total</u>	<u>Expense per Ton</u>
1896	290,813	8,523	220	299,556	14.19
1897	1,041,408	20,793	26	1,062,227	11.98
1898	1,079,169	29,914	90	1,109,173	13.62
1899	1,417,600	40,359	1190	1,459,149	12.51
1900	1,509,796	43,900	3767	1,557,463	10.17
1901	<u>1,538,159</u>	<u>55,832</u>	<u>16569</u>	<u>1,610,560</u>	10.65
Total	6,876,945	199,321	21862	7,098,128	

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W.G.M.#15.

Earnings and Expenses, including Improvement and Taxes.

	<u>Earnings</u>	<u>Expenses</u>	<u>Percent</u>	<u>Net</u>	<u>Improvement</u>
1896	\$96147.75	\$41278.13	.4293	\$54869.62	None
1897	343020.73	127350.07	.3712	215670.66	None
1898	365344.11	154716.35	.4235	210627.76	\$23336.17
1899	481762.05	186719.99	.3876	295042.06	43623.01
1900	509884.70	164424.58	.3225	345460.12	8437.32
1901	522869.83	184958.81	.3537	337911.02	8114.92
Total	2319029.17	\$859447.93	.3706	\$1459581.24	\$83511.42

Taxes for 1901 *estimated* at 6786.17 making two years taxes shown in 1901 viz. for 1900 actual and 1901 *estimated*

Passenger and Express Earnings for the year were \$2253.07, a decrease from 1900 of \$348.26, caused by cold, rainy weather preventing excursions to presque Isle.

Expenses incident to Passenger Earnings were \$2821.87, a decrease from 1900 of ⁵¹ \$47.44 and a deficit in Passenger business of \$568.80.

as against 271.77 deficit in 1900.

The total Operating Expenses, including Winter's maintenance were 10.65 cents per ton - an increase over 1900 of .48 cents.

The expense for Operating Season only was 8.72 cents per ton - a decrease from 1900 of .26 cents.

Deducting the charge of \$5000.00 for Rental of Dock, which is a book charge, the year's Operating Expenses remains 10.34 cents per ton and the Operating Season Expenses remains 8.41 cents per ton.

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MARQUETTE, MICH.

W.G.M.#16

Improvement Account equals .51 cents per ton, a decrease of .03 cents per ton from 1900.

Deducting charge for Improvement, Rent of Dock and Passenger Service from Total expenses, leaves 9.65 cents per ton, an increase over 1900 of .52 cents per ton. Deducting same items from actual Operating season leaves 7.72 cents per ton, a decrease from 1900 of .22 cents per ton.

Switching at Presque Isle increased .09 cents per ton, caused principally by mixing of ores in the dock and by increased work in November and December.

While dock wages increased from \$1.85 days and \$1.95 nights to \$2.00 and \$2.10 October 10th., and to \$2.50 and \$2.75 November 18th., the cost per ton on the dock was .02 cents decrease from 1900.

Fuel for the year was charged out at \$2.90 per ton, an increase over 1900 of 5 cents per ton. One inch and one-quarter coal was used, which I consider economical for us to use, but owing partly to condition of boilers in our road engines, the latter end of season, the consumption per mile was increased in that class of engines over 1900. We also got back into the stock of coal on dock, placed there a year previous, which had deteriorated and increased the consumption.

Conducting Transportation charges increased \$9969.10 over 1900. Of this amount \$1240.98 was due to Rental, Maintenance and Operation C. & N.W. tracks, Lease, 1897, and \$3053.59 was due to Rental, Maintenance and Operation C. & N.W. and D.S.S. & A. tracks - Lease, 1900, the latter having no charge for 1900. \$899.87 paid for Lease, 1900 was for 1900 expenses not paid until 1901.

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MARQUETTE, MICH.

There was also an increase of \$465.50 switching charges paid C. & N.W. on ore from Foster Mine.

These three items deducted from the total increase leaves \$5209.03, which is amount of increase for strictly Conducting Transportation.

This was due principally to following causes. There was an increase in train mileage of 5473 miles or 161 round trip trains. This was caused by our handling more coal which increased the number of west bound trains run.

There were also more cars handled, viz. 1276, due partly to an increased tonnage of ore, viz.: about 547 cars - and also from decreasing the tonnage in wooden cars, which had grown to excessive loading, and which was decreased because it was thought safer on account of wheels. The decrease in wooden car loading was .6 tons per car, which increased the number of cars from that source about 700.

86,192 less tons were handled from Regent Iron Co. which increased a certain amount of mileage to Ishpeming.

In September, November and December, a great number of trains were not loaded to their capacity, owing to bad weather, and cars not being unloaded on the dock promptly and not best to hold trains for full trains on account empties being needed at the mines.

There was an increase in switching mileage of 9520 miles, divided about equally between Ishpeming and Presque Isle, and due to increased difficulties in doing the work.

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W.G.M.#18.

The total engine mileage increased 18690 miles or 10.5%.

This accounts for the increase in Fuel which amounts to 9.9%.

Ore season opened April 24th., the first boat arriving May 5th., and closed December 10th., but a coal boat unloaded December 13th. Owing to the great delay to boats at lower Lake ports, there was considerable delay to shipments which were probably decreased on that account, and Expenses were increased thereby by waiting for boats and also by handling a large tonnage in November and December, viz.: 216678 tons. The cold weather started in November 5th. and continued freezing weather up to the close of the season.

I consider the showing a favorable one considering the great disadvantage we were working under.

We had one serious accident in November caused by a derailment on C. & N. W. tracks near their round house at Ishpeming, the derailed car running into an open culvert which threw several following cars off track. Ends on three steel cars stove in and ends on three wooden cars broken; also two C. & N. W. ore cars on a parallel track destroyed. Whether the accident was caused by a broken flange on one of our cars or poor track, it was unable to decide. The total damage to Equipment was \$592.28, and to track - \$230.00 - Total, \$822.28

I am also much chagrined to state that we had a slight rear end collision in November, just west of Presque Isle yard, caused by a new conductor not properly protecting the rear of his train. No derailment occurred and the damage to engine amounted to \$150.00 and to caboose \$65.00 - Total, \$215.00.

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MARQUETTE, MICH.

W.G.M.#19

These two accidents make a bad showing for the year, the expense for the two being \$1037.28.

I give below a statement showing amount of damage from accidents, May to December inclusive.

Kind of Damage	1901	1900
Engines	312.26	273.17
Cars	1108.04	583.29
Track	797.79	522.61
Freight		138.01
	\$2218.09	\$1517.08

Increase for 1901 - \$701.01

Location	No.	Total Cars Handled	Amount
Ishpeming	48	69896	\$1385.19
Queen	16	17786	142.16
Presque Isle	34	88273	205.03
Road	25	88273	485.71
	123	221809	2218.09
For 1900	139	81924	1517.08

CAUSE OF ACCIDENT.

	1901		1900	
	No.	Cost	No.	Cost
Defects of Road - L.S.& I.	8	76.20	4	14.06
" " " - Queen Mine	10	85.96	14	350.79
" " " - C.& N.W.	18	1201.63	17	191.53
" " Equipment	44	192.39	21	82.27
Negligence in Operating	34	566.41	49	602.55
Unforseen Obstructions	9	95.50	34	275.88
Total	123	\$2218.09 ✓	139	\$1517.08

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W.G.M.#20.

Injuries to persons were as follows:

- Feb. 18 ✓ James Noctor, Car Repairer - while in act of moving ore dock chutes, slipped and caught his finger (index finger on right hand) between the bar and another chute, mashing end of finger - Disabled 15 days.
- Feb. 26 John O'Neill, Shop Engineer - while assisting machinist with steam chest cover from work bench to machine, his foot caught an piece of pipe and tripped him. In an endeavor to prevent cover from dropping, he made a quick move and the cover dropped on edge of work bench and onto his little finger of left hand, smashing end of finger. Disabled 6 days.
- May 31 Fred Zimmerman, Dock Laborer - was cleaning ore away from the rails over the pockets when he saw engineer backing down on him. In trying to get away was caught by the rear running board or brake beam and dragged over one pocket and dropped into the next pocket which contained hard ore. Slightly cut about head and hip bruised. Disabled 17 days. Release secured
- June 7 Joseph Bertrand, Dock Laborer - while putting a plank on steel ore car, plank slipped striking him on right foot, smashing large toe, breaking bone. Disabled 44 days - release secured.
- June 15 Fred Sharland, Brakeman - got off caboose to get on engine; as he reached for hand hold on engine stumbled on box of rivets which was lying on side of track and was thrown against engine, striking side against engine step, bruising his ribs. continued at work till June 24th. Then layed off 7 days.
- July 29 ✓ James Carpenter, Shop Engineer - cleaning some oil from a drip pan which hung under the eccentric strap and in doing so, laid his right hand on the frame of engine for support. The two middle fingers extended over the frame in such a way as to come in contact with the wrist of connecting rod, smashing both fingers. Both amputated slightly above first joint. Disabled 28 days.
- July 31 ✓ James Beere, Miner, Lake Angeline Mine - Fell asleep on track (intoxicated) with right arm across rail. Switch engine going to mine with train empties after dark found man as stated above. Before they could stop train, 3 cars passed over arm. Arm amputated near shoulder.
- AUG. 10 S. Avery, Brakeman - getting off passenger train at yard to go out on his run slipped and fell, cutting forehead and side of forehead scratched. Disabled two days.

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W.G.M.#21.

- Aug. 3 ✓ Dan Morgan, Section Laborer - Lineman threw bar down dump thinking it would stick in sand but it slid down bank, striking Morgan in calf of leg, causing painful bruise. Disabled 30 days - release secured.
- Aug. 30 ✓ Emil Lindgren, section Laborer - Assisting to put hand car on track slipped on tie and fell with hand car. Left hand got caught between frog and wheel of hand car, bruising hand. Disabled 3 days.
- Sept. 10 Robt. McKelvie, Switchman - putting bad order car on cripple track. Cars did not couple, got onto cars to set brakes to prevent them striking other bad order cars on east end of track; did not know draw bar was out of one car; when cars came together caught his left hand between brake wheels. Hand slightly bruised. Disabled 6 days.
- Oct. 15 ✓ John Healy, Brakeman, C. & N.W. Ry. - was standing on side of track facing C. & N.W. main line; switch engine going to mines with train struck him in side, breaking two ribs. Disabled 30 days - release signed.
- Nov. 7 Jacob Hendrickson, Dock Laborer - raising spout on ore dock; crank handle struck him on right arm, dislocating elbow. Disabled 10 days. Release signed.
- Dec. 2 H.L. Sisson, Switchman - spotting cars on coal dock was standing on top of cars. Signalled engineman to stop. Slack ran out and he lost his balance, falling from top of car, striking on his back across rail. Back and hip bruised? Disabled 10 days.

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W.G.M.#22.

There was a scarcity of labor all the summer and fall owing to construction of Marquette & Southeastern, new furnace and other various industries in this vicinity and it was necessary to increase wages on dock from \$1.85 days and \$1.95 nights to \$2.00 and \$2.10 October 10th., and a further increase was advisable to \$2.50 and \$2.75 November 18th. in order to hold men to take care of ore which had to go forward.

Wages for 1902 will undoubtedly be same as for 1901.

trimmers are handled under our supervision and earned a total of \$1597.22. Boats trimmed - 223. Average number of trimmers - 25. Average amount earned per man - \$631.88, for practically seven and one-half months. = *14.24 per month, as against 97.32 last year*

The Cleveland-Cliffs Iron Company were short of stock pile ground at their Lake Mine and have arranged to stock about 100,000 tons of Lake ore at Presque Isle, hauling it down during the winter months at the rate of about 800 tons per day. A pocket was built under the dock approach into which the ore is dumped from our cars and then unloaded from a trestle north of the ore dock approach onto stock pile, with the help of a hoisting plant erected south of the dock near Presque Isle station. 15 cents per ton is paid to apply on freight earnings as our winter expense, the remaining part of 32 cents per ton being paid when ore is shipped. No definite arrangement has been made for extra expense hauling the ore during the winter. We will haul it at the regular rate of 32 cents per ton and use this winter's operations to calculate the proper charge hereafter.

we will also haul ore for Carp Furnace which will go into blast about January 18th., reaching the furnace over M. & S.E. tracks. The average daily

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W.G.M.#23.

tonnage to this furnace will be 100 tons, but it must be at a rate of twenty five cents per ton, the same as charged by D.S.S. & A. Ry.

The Marquette & Southeastern Railway connecting L.S. & I. Ry. at Presque Isle with Munising Railway at Lawson will be ready for operation in June or July, 1902, giving the L.S. & I. an entrance into Marquette and also a connection to the east and southeast of there into territory covered by M. & S. E. Ry. and Munising Ry. and their connections. This brings the mining territory in close touch with the vast timber belts and the excellent agricultural country along those two roads, and in all probability with Gladstone and Manistique from connections which will be made by Munising Ry. with the Goo Line and Manistique & Northwestern Ry.

These connections insure a general traffic for the L.S. & I., in addition to its large ore business which although small to start with should develop into a paying business and result in mutual benefit to the mining, the agricultural and the timber industries.

ORE DOCK.

Dock was worked 231 days from April 24th. to December 10th., but one coal boat was unloaded December 13th.

511 boats were loaded at the dock with 1,528,798 tons ore, the average tonnage by boat being 2991 tons. Compared with 1900, the number of boats decreased 13 and the tonnage increased for each boat 110 tons.

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W.G.M.#24.

Divided by companies, the average tonnage is as follows:

P. & L.A.	165 boats	2913 average tonnage
C.C.I.Co.	284 "	2854 " "
Regent	62 "	3830 " "
	<u>511 "</u>	<u>2991 " "</u>
For 1900	524	2881
" 1899	583	2431
" 1898	488	2223
" 1897	555	1866
" 1896	171	1700

Average time of vessels at the dock, excluding weather detention and the average loading time of each vessel is as follows:

	<u>No. vessels</u>	<u>Time at dock</u>	<u>Loading Time</u>	<u>Average Tonnage</u>
P. & L.A.	165	20.0 hours	6.7 hours	2913
C.C.I.Co.	284	25.5 "	5.8 "	2854
Regent	62	14.5 "	5.6 "	3830
Average, 1901		22.4	6.1	2991
" 1900		15.9	4.5	2881
" 1899		12.0	3.6	2431

The cause for increased time at the dock is due to bunching of boats during the season and delays to boats account of handling frozen ore in November and December, when boats were at the dock as long as four and five days.

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MARQUETTE, MICH.

W.C.M.#25

The average daily storage in dock and cars compared with shipments is, as follows:

STORAGE.				
<u>1901</u>				
	<u>P. & L.A.</u>	<u>C.C.I.Co.</u>	<u>Regent</u>	<u>Total</u>
Tons Storage	7336	11492	3946	22774
Percentage	32.2	50.4	17.4	
<u>1900</u>				
Tons storage	7449	12565	4962	24977
Percentage	29.8	50.3	19.9	

SHIPMENTS.				
<u>1901</u>				
Shipments	480673	810682	237442	1,528,798
Percentage	31.4	53.2	15.4	
<u>1900</u>				
Shipments	385128	824112	300922	1,510,162
Percentage	25.5	54.57	19.93	

COAL DOCK.

46 boats were received with coal, having a total tonnage of 66685 tons, an average per boat of 1450 tons. Compared with 1900, the number of boats increased 4 and the tonnage increased per boat 169 tons.

Average time at Dock	56.5 hours
Average - 1900	62.7 "

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W.G.M.#26

Average time unloading	18.0 hours
Average - 1900	17.2 "
Tons unloaded per hour	80.4 tons
Average - 1900	74.4 "

REQUIREMENTS.

An addition to Shop building is required to allow for erecting shop for overhauling locomotives, about 65' x 60' - Machine shop, 40' x 50' - Blacksmith shop, 28' x 40' - tin shop, 12' x 40' - addition to store room - 30' x 40', all under one roof. The present shop to be used for car repairs and wood working machinery. Estimated cost for building, \$7650.00. With the five engines owned by Munising Ry. and two by M. & S.E., we have 21 engines and a total of 10 coaches to keep up and we should also have a shop to make repairs to freight cars, both wood and steel. The bulk of car repairs must be made in the winter and it is not economy to do heavy repairs outdoors in cold, stormy weather. The cost of the shop, which is partially for equipment of Munising Ry. and M. & S.E. Ry. can be arranged for by charging them a certain percentage above cost of repairs for use of tools and shop.

Additional tools required will be - Steam hammer, about 800# capacity, about \$900.00 - Radial drill, about \$600.00 - one rip saw, one cut off saw, about \$500.00 - one 50 H.P. engine for machine shop, about \$400.00. Total for tools about \$2400.00.

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W.G.M.#27

We have now a two-stall engine house at Ishpeming, but I think it desirable to add four stalls for the purpose of taking care of engines during the summer and storing engines during the winter. Cost - \$4000.00.

Electric light contract with the city for lights for the dock expired in May, and the price was raised from \$5.00 per light per month to \$7.00. The Cleveland-Cliffs Iron Co. have erected a hoisting plant at Presque Isle for placing ore on stock pile, which is brought down during the winter. It is proposed to purchase the house, boiler and engine, etc. in the hoisting plant, charging Cleveland-Cliffs Iron Co. for use of it, and transfer our pumpmen and pumps to this house. The old boiler in pump house purchased second hand in 1896 is too small for proper fire protection. The new boiler and engine are large enough to take care of hoisting plant, two pumps for fire protection and a dynamo for lighting. The plant can be put in our charge, saving wages of two men and by purchasing a 50-arc light for about \$1100.00 we can furnish our own lights on dock for about \$4.00 per light per month, but making total charges lower as many nights especially in fall, we will not use them at all.

The estimated cost of hoisting plant as constructed by Cleveland-Cliffs Iron Company is for building - \$1800.00; for engine, boiler, etc. - \$4181.36; total - \$5981.36, or say \$6000.00.

A coaling station for coaling engines has already been authorized at a cost of \$5500.00, to be erected near round house, and take the storage of coal and coaling of engines away from merchandise dock.

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W.G.M.#28

A wrecking derrick on a car and a tool car are also required to facilitate work at wrecks - approximate estimate for both being \$3500.00. It is much preferable to buy a derrick car from some of the manufacturers like the Bay City Industrial Works, which make a steel car, with derrick having a capacity of 15 tons or a swinging load capacity of 10 tons, to be handled with a hand rigging or by a locomotive, than to have a home made affair, and with the heavy ore traffic, we need a car of that kind. In case of a serious wreck now we send for C. & N.W. car if on their track which costs about \$200.00. With a different class of passenger traffic, we should be prepared to clear road without serious delay.

As we will handle general traffic commencing in summer of 1902, a freight station will be required at Ishpeming which with necessary tracks, will cost about \$3500.00.

A freight station will also be required at Negaunee which with the necessary tracks will cost about \$2500.00, but the present grounds, temporarily leased from Captain Samuel Mitchell are not satisfactory and we should have another location.

Water Station at Ishpeming which has been erected, but not yet completely paid for, will cost in 1902 about \$1200.00.

pile driver already authorized - \$1945.00

Three second-hand engines to be exchanged, including freight - \$8000.00

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W.G.M. #29

TOTAL REQUIREMENTS.

Addition to Shops	\$7650.00
Tools for shop	2400.00
moving Tools	200.00
Addition to Round House, Ishpeming	4000.00
Hoisting Plant - Presque Isle	6000.00
Dynamo	1100.00
Moving Pump and connecting up	400.00
Coaling station - Presque Isle	5500.00
freight station - Ishpeming	3500.00
Freight Station - Negaunee	2500.00
Wrecking Outfit	3500.00
Water Station - Ishpeming	1200.00
Pile driver	1945.00
Three Engines	8000.00
	\$47895.00

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MARQUETTE, MICH.

W.C.M.#30

SUGGESTIONS.

We were prepared to handle 1,700,000 tons ore as shown in last annual report, but it was not offered.

The estimate and the amount handled was as follows:

	<u>Amount Shipped</u>	<u>Estimate</u>
April	None	100,000
May	154,147	275,000
June	237,025	275,000
July	239,155	275,000
August	237,123	275,000
September	224,019	225,000
October	220,650	200,000
November	<u>216,679</u>	<u>100,000</u>
	1,528,798	1,725,000

The condition at lower lake ports was responsible for bad delays to boats, throwing heavy shipments into September, October and November. It was disastrous to our expenses as well as to the boats.

I strongly urge the arrangement of shipments if possible so that the maximum tonnage, viz. about 275,000 tons be handled in May, June, July and August and that tonnage be decreased in the following months, and that not more than 100,000 tons be handled in November, owing to great liability of storms and freezing weather. It is also extremely difficult to hold the dock

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W.G.M.#31.

men after October 1st., and it is always necessary to increase their wages about that time and again in November, if weather is at all bad.

You wrote me October 14th. to try and get all Right-of-way matters settled up by end of fiscal year but we have neglected it because of other matters, and will take up the matter now and try and settle them. Will write Mr. Hayden giving him a list of unsettled matters and request him to attend to those which are his particular care.

The unsettled matters are as follows:

	Description.
our file No.10	N.W. $\frac{1}{4}$ of N.W. $\frac{1}{4}$) S.E. $\frac{1}{4}$ of N.E. $\frac{1}{4}$) Sect.10, T.48 N., R.25 W. John M. Longyear and Frederick Ayer.
Nos.12 D. and 12 E.	Sect.12, T.48 N., R.26 W. D.H. Ball and Mary W. Bigelow. deed given but cannot be recorded on account of back taxes unpaid. Matter of taxes is in the courts.
No.13	S.E. $\frac{1}{4}$ of S.E. $\frac{1}{4}$) S.W. $\frac{1}{4}$ of S.E. $\frac{1}{4}$) Sec.24, T.48 N., R.26 W. Edward Breitung and James E. Jopling have same title but title is very much complicated.
No.13 A.	N. $\frac{1}{2}$ of N.E. $\frac{1}{4}$ - Sec.25, T.48 N., R.26 W., same as No.13.
No.14	N. $\frac{1}{2}$ of N.W. $\frac{1}{4}$) S.W. $\frac{1}{4}$ of N.W. $\frac{1}{4}$) Sec.25, T.48 N., R.26 W. Owned by Iron Cliffs Co.

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W.G.M.#32

- No.19 S.E. $\frac{1}{4}$ of S.E. $\frac{1}{4}$ - Sec.34,T.48 N.,R.26 W. - owned by Henry Hewitt, Jr.
 probably controlled by Peter White. Title is much complicated.
- No.20 Sections 3,4 and 5,T.47 N.,R.26 W. - owned by Pioneer Iron Co.
 and Arctic Iron Co. we have deed from Arctic for one-half
 of their interest only, but none from Pioneer. Ownership
 complicated.
- No.24 A. N.E. $\frac{1}{4}$ of N.E. $\frac{1}{4}$, Section 7, T.47 N., R.26 W.
 poster branch connection - owned by Edward Breitung.
- No.27 Right-of-Way through Ishpeming from Cleveland Iron Mining Co.
- No.30 Section 9, T.48 N., R.27 W.
 from 12° curve toward C. & N.W. connection - owned by Excelsior
 Iron Company.
- No.31 N.W. $\frac{1}{4}$ of S.E. $\frac{1}{4}$, Sec.9, T.47 N., R.27 W.
 Barnum Spur - owned by Lake Superior Iron Co.
- No.32 N.E? $\frac{1}{4}$ of N.E. $\frac{1}{4}$)
 S.E. $\frac{1}{4}$ of N.E. $\frac{1}{4}$) Sec.9, T.47 N., R.27 W.
 S.W. $\frac{1}{4}$ of N.E. $\frac{1}{4}$)
 Barnum spur - owned by Cleveland-Cliffs Iron Company.
- No.33 - For Cleveland-Cliffs Iron Co.
 N.E? $\frac{1}{4}$ of N.E. $\frac{1}{4}$, Sec.8, T.47 N., R.26 W. - for portion of new track
 built at Queen Mine - Breitung Estate.
 Arrangement made with N.M.Kaufman for the right-of-way for

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Marquette & Southeastern Railway Co.

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MARQUETTE, MICH.

W.G.M.#33

No. 33-contd.

which he put price of \$600.00. Deed prepared and sent him with voucher and check but he has never signed voucher, returned deed or cashed check. C. & N.W. Ry. paid Cleveland-Cliffs Iron Co. one-half of the amount, viz. \$300.00, when paying for construction of new tracks.

The Cleveland-Cliffs Iron Company's deeds for right-of-way at Ishpeming have been prepared and checked by us as to description.

The entire property is in good condition and I do not anticipate any unusual expenses.

Yours truly,



General Manager.

MINING BOND

MINING BOND

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Office of General Manager.

1901

MARQUETTE, MICH. February 10th., 1902

Mr. W. G. Mather,
 President, M. & S. E. Ry.,
 Cleveland, Ohio.



Handwritten initials

Dear Sir:-

I hand you report of the M. & S. E. Ry. for the year ending December 31st., 1901.

MAIN LINE.

	<u>Miles</u>
Presque Isle to Lawson	26.83

SIDINGS.

Street Railway Spur	650'	
Bazler's	500'	
Joint with D.S.S. & A. - M. & S. E. owing $\frac{1}{2}$ interest		
Lake Shore Engine Works, Marquette	616' - $\frac{1}{2}$ - 308'	
Carp Furnace	6071' - $\frac{1}{2}$ - 3035'	
Prisen	1900 - $\frac{1}{2}$ - 950'	
	5443'	1.03
		27.86

The one-half interest in the tracks purchased from the D.S.S. & A. was on a whole valuation as follows:

Lake Shore Engine Works - \$2.00 per foot

Prisen and Carp Furnace Tracks - \$1.00 per foot,

the cost to this company being \$4601.50

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MARQUETTE, MICH.

W.G.M.#2.

Temporary Tracks for Construction Purposes have been put down as follows:

Morgan gravel Pit	600'	
Sand Pit - Presque Isle	500'	
Pioneer Furnace " "	3116'	
Harvey	650'	
½ mile South Mangum	600'	
Camp No.2	350'	
Skandia	600'	
	6416' or	1.21 miles

EQUIPMENT OWNED.

ENGINES.

8-wheel Road Engines - second hand 2

CARS.

40' - 80,000 lbs. capacity pressed steel flats 100

36' - 7,000 lbs. " " " underframe
box 25

125

Lake Superior & Ishpeming Railway Co.
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A. WARD,
SUCR. MUNISING RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#3.

The amended ordinance granting franchise through the city of Marquette was approved September 8th., 1900.

On January 6th., 1901, the time for completion of road and inauguration of regular passenger and freight service was extended to July 1st., 1902.

Surveys were commenced and completed to Lawson, the connection with Munising Railway, December 7th., 1900.

grading was commenced at L.S. & I. Ry. connection at Presque Isle December 1st., 1900 and continued to Pine street and then suspended January 11th., 1901 for the winter.

The contract for clearing and grading right-of-way south of city limits at Marquette was let to McDonnell Bros. & Co. and they commenced work March 15th., 1901, the grading being completed October 1st., 1901.

Several injunctions were asked and granted, through the city of Marquette, the greatest delay being from that granted Mrs. J.M. Longyear, who objected to the road going around Lighthouse Point. This injunction was issued December 24th., 1900. Condemnation proceedings against the property of Mrs. J.M. Longyear and others in the same vicinity were commenced May 15th., 1901; the award of the jury was made July 10th., 1901, and the injunction was dissolved July 20th., 1901.

On account of heavy work at Lighthouse point, principally rock cuttings, and the injunction, the grading was delayed and track laying could not be commenced south of Lighthouse Point until October 8th.

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H. A. STE. JOHN,
AUDITOR & TRAVEL, FREIGHT & PASSENGER AGENT.
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SUPV. MUNISING RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#4.

Poor men, bad weather, heavy snows, still further delayed track laying so that it could not be finished to Lawson until December 24th., 1901.

The track must be ballasted in the spring and it will be safe to estimate that the road will not be ready for regular operation much before July 1st., 1902.

This will be about the time that passenger and freight stations are ready for use.

While the road is not ready for general traffic, we are handling ore, wood and pig iron to and from the Carp Furnace and material to the new Pioneer Furnace, coming via the L.S. & I. Ry. and will be ready to handle car loads via M. & S.E. probably in May.

Yours truly,



General Manager



CHINA WATER

CHINA WATER

Mar. 15th, 1902

*** ANNUAL REPORT- Munising Railway Co. ***

Mr. H. R. Harris, Genl. Mngr.,
Marquette, M i c h.

Dear Sir:-

I have your report of the 10th ^{inst.} ~~inst.~~. Allow me to call your attention to the fact that you have not made out the report I requested, viz: "How many car loads of freight, as near as can be estimated, and of what kind, goes out of Munising by water, and also how many come in by water".

The total number of tons carried in 1901 is less than in any year since 1896. This only emphasizes the necessity of extraordinary efforts this year to induce industries to establish, to justify our purchase of this property.

I am surprised to see that the amount of bark hauled is less than in any year since 1896. The tannery is doing a larger business than ever, and yet the railroad does not seem to get a corresponding benefit. Wines, liquors and beer are one of the few things which shows an increase; perhaps this accounts for the decrease in the others.

I am not calling attention to the decrease in products in the way of complaining, of course, but only to emphasize the situation.

I note your suggestions for new works and will be glad to go over these matters with you as soon as possible.

In a general way I want to compliment you on the intelligent and

To Mr. H. R. H.

- 2 -

3/15/02

energetic interest you have displayed in developing and protecting our railroad interests. I feel that you are giving us your very best efforts and thought on the subject, and I want you to know that we appreciate it.

Yours truly,

President

W. G. M.

Lake Superior & Ishpeming Railway Co.
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A. WARD,
Supt. MUNISING RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W. G. MATHER
MAR 10th., 1902
ANSWERED.

RECEIVED
MAR 10 1902

M

Mr. W. G. Mather,
President, Munising Ry.,
Cleveland, Ohio.

Dear Sir:-

I hand you detailed report of Munising Railway for the year 1901.

LENGTH OF TRACKS OWNED.

	<u>Miles</u>
Main Line - Munising to Little Lake	38.0
Branches - East Branch, Stillman to Acker	6.5
Acker Branch, Vail to Acker's Mill	2.5
Sidings - Various places	10.0
	57.0

Length of track same as for 1900.

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MARQUETTE, MICH.

W.G.M.#2.

EQUIPMENT OWNED.

ENGINES.

Saddle Tank Switch	1
Mogul	2
Eight-wheel	<u>2</u>
	5

CARS.

Passenger .

Combination, passenger and baggage	3
Coaches	<u>1</u>
	4

Freight.

Flats - 60,000 lbs. capacity	101
Box	1
Caboose	<u>1</u>
	103

Miscellaneous.

Snow Plow	1
Boarding Cars	4
Russell Logging Cars	<u>1</u>
	6

Lake Superior & Ishpeming Railway Co.
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SUPE. MICHIGAN RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#3.

Engines have been increased by two 8-wheel engines purchased second hand from Union Pacific at an average cost of \$1406.00. Repairs to the amount of \$800.00 each will put the engines in good serviceable condition and fit for service for ten to fifteen years.

Passenger equipment has been increased by two combination cars purchased second hand from F. M. Hicks. These cars cost an average of \$2317.15, have three compartments, consisting of baggage, smoking and first class. These cars are used on regular trains, the old car will be used on East Branch and the purchase of one more car as an extra car is authorized.

Freight equipment has been decreased by three 60,000# capacity flats, burned at Munising by burning of Forster Bros. cedar mill. At the same time one N. & S.E. steel flat was badly damaged, two C. & N.W./box cars were destroyed and four C. & N.W. box cars badly damaged.

Four flat cars, 30,000# capacity, have been scrapped. They were of such light construction that it was not safe to haul them in trains with other cars.

Lake Superior & Ishpeming Railway Co.
Munising Railway Co.
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H. A. ST. JOHN, AUDITOR & GENL. FRE. & PASS. AGT.
A. WARD, Supt. MUNISING RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#4

CONDUCTING TRANSPORTATION.

The total charges to this account decreased \$4823.02 or 19.0%, the principal items of increase being \$309.33 for Train Supplies and expenses, which cannot be explained but which is probably caused by distribution of expenses not being handled the same by different clerks, who were handling it. The increase of \$504.18 is for advertising caused by the descriptive matter of Munising and vicinity printed by American Lumberman.

MAINTENANCE OF EQUIPMENT.

The total charges to this account decreased \$3168.76, or 48%.

superintendence increased \$478.33 by reason of change in manner of distributing Superintendent's salary.

Repairs engines decreased \$3244.56, on account of engines not having general repairs during 1901.

No detail of Expense to Engines and cars were kept during the year but will be commencing with 1902. The averages were as follows:

Engine Expense - per mile 1901.	<u>Cents</u>
Repairs	1.43
Fuel	8.22
Stores	.26
Engineers and Firemen, Hostlers and Wipers	7.29
	<hr style="width: 100%; border: 0.5px solid black;"/>
	17.20

Lake Superior & Ishpeming Railway Co.
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MARQUETTE, MICH.

W.G.M.#5

Repairs per engine averaged as follows:

1896	\$77.72
1897	198.45
1898	514.65
1899	1122.44
1900	1405.94
1901	324.42

Pounds coal consumed per engine mile was as follows:

All miles 50.7

Repairs Freight Cars per mile - cents - .65

Repairs Passenger Cars per mile - cents - 1.13

Lake Superior & Ishpeming Railway Co.
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 H. A. ST. JOHN,
 Auditor & Genl. Exp. & Pass. Agt.
 A. WARD,
 Supt. Michigan Highway.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#6.

MAINTENANCE OF WAY, INCLUDING STRUCTURES.

The total charge to this account increased \$276.12 or .26 of 1%.

Improvement Account made up of \$126.62 for strengthening Bridges and \$75.00 for Repairs Buildings, making a total of \$201.62, was transferred to Operating Expenses.

Renewal of Ties increased \$2098.88, ties being put in as follows :

	<u>Cross Ties</u>	<u>Long Switch Ties</u>
Main Line	10292	82
Acker Branch	353	

TOTAL COST MAIN LINE AND SIDINGS - 57.0 MILES.

	<u>1901</u>	<u>1900</u>
Labor and Material	\$10169.11	\$9988.74
Cost per Mile	178.40	175.24
Cost per Foot - Cents	3.38	3.32

GENERAL EXPENSES.

Increased over 1900 \$294.41, or 6.44%, the principal reason being \$909.55, increase in Legal Expenses.

EARNINGS AND EXPENSES.

Progressive Statement of Commodities is as follows:

Commodity	1901 Tons	1900 Tons	1899 Tons	1898 Tons	1897 Tons	1896 Tons	
Products of Agriculture	Grain	1,121	992	1,102	1,011	417	
	Flour	307	132	366	291	313	
	Other Mill Products	207	414	25		116	
	Hay	771	1,376	905	995	746	559
	Fruit & Vegetables	39	109	165	168	264	43
	Potatoes	138	89			144	160
Products of Animals	Live Stock		72	103	54	22	106
	Dressed Meats	1,544	1,476	1,425	720	15	47
	Other Packing-House Products	516	743	716	403	24	
	Hides and Leather	981	747	1,085	2,068	564	56
Products of Mines	Anthracite Coal	420	200	153	173	105	65
	Bituminous Coal	80	75		65	25	
	Stone, Sand etc.	825	20	254	52	172	1,636
	Salt	24	16	21	129		
Product of Forest	Logs	47,642	67,936	42,951	57,982	141,876	62,200
	Bark	3,517	4,647	4,387	5,583	4,310	896
	Lumber	16,817	13,538	29,211	11,959	7,086	5,366
	Shingles	2,507	2,949		9,438		193
	Cooperage	1,605	3,056	4,571	2,538		413
Manufactures	Petroleum	109	123	56	168	24	12
	Iron, Pig and Bloom	221					
	Iron and Steel Rails	726			12	149	
	Other Castings and Machinery	268	62	138	400	820	1,841
	Cement, brick and lime	910	1,439	797	378	757	2,695
	Wagons, carriages, tools etc.			10	31		12
	Wines, Liquors and beer	374	249	246	340	299	434
	Household Goods and furniture	123	125	30	33	109	195
	Sugar					7	
	Bar and Sheet Metal					3	
Merchandise	3,109	4,264	3,678	20,109	4,678	867	
Total,	84,901	104,849	92,395	115,100	163,251	78,642	

Progressive Statement of Earnings and Expenses is as follows:

EARNINGS.

Year Ending December 31st., 1901 as compared with previous years.

	1901	1900	1899	1898	1897	8 Months 1896
Freight,	40,271.30	46,537.79	42,710.86	42,189.84	55,043.09	31,449.53
Passenger	12,805.57	13,622.30	10,477.84	8,212.40	4,484.46	3,500.50
Mail	1,628.64	1,625.02	1,053.20	468.00	603.00	569.31
Express	1,174.66	1,242.27	1,437.17	271.29	357.25	264.65
Miscellaneous	738.30	2,931.53	377.92	4,477.00		118.25
Total	\$56,618.47	65,958.91	56,056.99	55,618.53	60,487.80	35,902.24

OPERATING EXPENSES.

Year Ending December 31st., 1901 as compared with previous years.

	1901	1900	1899	1898	1897	8 Months 1896
Maintenance of Way & Structures	10,911.64	10,635.52	10,664.28	7,884.37	7,358.68	2,303.28
Maintenance of Equipment	3,398.18	6,566.94	6,817.71	4,420.34	2,518.94	1,056.97
Conducting Transportation	20,571.16	25,394.18	25,071.44	29,194.59	25,956.75	12,897.13
General Expenses	4,857.99	4,563.58	4,388.06	2,065.18	2,324.08	2,003.04
Total	39,738.97	47,160.22	46,941.49	43,564.48	38,158.45	18,260.42
Specific Taxes - Based on Earnings	1,442.46	Estimated 1,500.00	Actual 1,401.42	Actual 1,414.80	Per 4 Mos. 566.38	None
	41,181.43	48,660.22	48,342.91	44,979.28	38,724.83	18,260.42
Net Earnings (Net including taxes)	16,879.50	18,798.69	9,115.50	12,054.05	22,329.35	17,641.82
Per Cent of Expenses to Earnings	70.1%	71.5%	83.7%	78.3%	63.1%	50.9%

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**Lake Superior & Ishpeming Railway Co.
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Office of General Manager.

MARQUETTE, MICH.

W.G.M.#9.

The decrease in freight earnings of \$6266.49 is caused by a less amount of logs received at the mills of the Northwestern Cooperage & Lumber Co. and H. M. Leud Sens Co., the former using basswood and elm for cooperage and have exhausted the supply contiguous to existing tracks; the latter has used all the timber which they own.

The decrease in Passenger Earnings of \$816.73, probably arises from the decreased activity in woods operations.

The decrease in Miscellaneous Earnings of \$2193.23 due to rental of ballast cars to D.S.S. & A. in 1900 amounting to \$1746.00 and of boarding cars to Michigan Telephone Company amounting to \$810.00 and nothing in 1901.

The prospects for a good business are much brighter for 1902.

The Cleveland-Cliffs Iron Company have established wood camps on East Branch and at Rumley on main line, from which wood for furnace at Presque Isle will be shipped.

C. H. Shafer has opened a camp west of Chatham where wood is cut for Carp Furnace at Marquette.

In July a contract was made with the Cedar Land & Mining Co. to haul the timber from lands controlled by them. A portion of this timber was sold to H.E. Southwell of Chicago and is being handled now by the Worcester-Munising Co. Poles, ties and posts will be shipped direct from the woods but the logs will undoubtedly be sent to Munising, where they are negotiating for a mill or a site to erect a new mill for manufacturing shingles. They are also buying

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Office of General Manager.

MARQUETTE, MICH.

W G.M.#10

cedar timber along the shore between Grand Marais and Au Train which is to be shipped into Munising to be manufactured. Twelve years is the estimated length of time required to dispose of this timber.

Ferster Bros. are also cutting cedar timber on the new extension and will ship about 1000 cars from there during the year.

The mill of Ferster Bros. was burned September 5th., cause unknown. They will in the spring erect a new mill on same location and for about same capacity.

The Tannery controlled by American Hide & Leather Co. are increasing their capacity from 250 to 350 hides a day and will be ready in a short time to handle that output.

The Northwestern Cooperage & Lumber Company will do but little business in 1902, their present intentions being to only get in about 200,000 feet of logs this winter. A year ago they put in about 4,000,000 feet.

The Peninsula Bark & Lumber Company sold their hemlock contract with Munising Company and Lac La Belle Company to Cleveland-Cliffs Iron Company and unless the logs which are cut this winter go to Burtis' mill for sawing, that mill will be idle a great part of the summer.

The excellent soil near Chatham and the fact that gte Experimental Farm is located there, gives good reason to believe that that particular territory will soon be settled by farmers; the Cleveland-Cliffs Iron Company have

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MARQUETTE, MICH.

W.G.M.#11.

sold or have under contract 1120 acres to settlers and since the advertising matter has recently been distributed the colonization agent reports many inquiries. Other parties have sold about 200 acres near Chatham to settlers.

settlers are greatly to be desired not only to buy the land owned by the Company and to furnish traffic for the railroad, but to furnish logs, bark, wood, etc. to the mills of different kinds. Labor is very scarce and high priced and the tannery especially complain of its inability to be sure of enough bark to run to its full capacity.

IMPROVEMENT.

A list of charges to Improvement are shown in Exhibit Book, page 10. With the exception of \$201.62 transferred to Maintenance of Way Expenses, all of the Improvement Expenses have been transferred to Construction Account.

The buildings, track, overhead crossing of D.S.S. & A., bridges, etc. were imperfectly constructed and not completed, and it is only fair that Construction Account bears this expense.

At Munising a new passenger station, a new freight station, a new four-stall engine house were constructed, scales moved and tracks changed to better accommodate the business and improve the looks of the surroundings.

At Munising Junction a steel girder with stone abutments was built to carry D.S.S. & A. Ry. track over our track in place of the pile bridge put in at time of construction - a contract with D.S.S. & A. required the new bridge.

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Office of General Manager.

MARQUETTE, MICH.

W.G.M.#12.

At Chatham a new station with office, two waiting rooms and freight room was constructed.

Between Merriam and Little Lake, 2445 cars ballast, having a total of 27628 yards, were distributed, the total cost for hauling and putting under amounting to \$6573.69 or 23.80 cents per yard or \$2.69 per car.

The equipment purchased is mentioned under head of Equipment.

A water tank costing \$1500.13 was erected at Slapnick Creek. This was necessary because of engines running through from Marquette and also Munising Ry. engines perhaps not always having syphons, and in that case not being able to get water. Also if tank at Little Lake was not in working order, they would not be able to make the round trip, nor the run between other tanks

PERSONAL INJURY.

But one case of personal injury occurred. Peter Schilling, a passenger on night train into Munising, night of October 26th., 1900 falling from engine. A car in the train was derailed near Hallston and in order to get passengers into Munising they were directed to get on engine. Schilling was intoxicated and was put in a gondola car next to engine and told to stay there but without any knowledge of any of the train crew, he climbed over on engine and when it rounded one of the curves, he fell off and was slightly bruised. A claim has been presented but not yet disposed of.

No accidents to train of any consequence occurred.

Lake Superior & Ishpeming Railway Co.
Munising Railway Co.
Marquette & Southeastern Railway Co.

W. G. MATHER,
PRESIDENT.
H. R. HARRIS,
GENERAL MANAGER.
H. A. NE, JOHN,
AUDITOR & GEN'L FRI. & PASS. AGT.
A. WARD,
SUPV. MUNISING RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#13.

EAST BRANCH.

A contract was made with the Cedar Land and Mining Company, July 2nd., 1901, to ship the timber owned by them from certain lands in Alger and Schoolcraft counties over the Munising Railway at a rate of \$5.50 per car for a 50,000 # car, the Munising Ry. agreeing to construct a track through the timber by October 1st., 1901, or as near that date as practicable, in view of all exigencies arising in such construction to do so.

The survey was commenced June 15th. Contract for the construction was let to McDonnell Bros. & Co. and he commenced work October 10th., which was as soon as could be done, owing to scarcity of men. The construction of the M. & S. E. Ry., the new furnace at Marquette, and various other jobs in the vicinity, made labor extremely scarce and it was impossible to sooner commence this work.

Grading of the track to the Worcester-Munising yard and camp was completed January 15th., 1902.

Track laying was commenced at end of East Branch December 31, 1901 and finished to D. S. & A. Ry. crossing, 6 miles, January 29th., 1902.

There was about three feet of snow on the grade which had to be shovelled off, but it was thought best to do track laying so that we would have that much completed and be able to finish the balance so that there would be no trouble to have it all ready for operation by shipping time in the spring.

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H. A. ST. JOHN,
AUDITOR & DEPT. FREIGHT & PASS. AGT.
A. WARD,
SUPT. MUNISING RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#14.

No complaints have been made of track not being completed and I do not think that there has been any delay or inconvenience by not doing so. All of the poles have been sold to the Western Union Telegraph Company and they will not ship until June, preferring to wait to let poles dry out and decrease weight.

The contract for hauling of the timber requires that not less than 1000 nor more than 6000 cars are to be shipped in any one year, commencing with July 1, 1902.

Ferster Bros. have been operating in cedar on the Miner's River and shipping timber to Munising by water, there to be manufactured.

In order to get rail shipments on this business, we have agreed to construct a branch to these camps, 2.8 miles long, .88 miles of this being a part of the northeast extension of the East Branch which is to be constructed in the future - 1.92 miles being for use of Ferster Bros., who agree to do clearing and grubbing for the north three quarters of a mile of the branch, also for a siding at end of track and furnish 5000 ties on right-of-way for constructing said track.

The original estimate for the 14.6 miles was \$102977.00 and the cost will about equal it. \$45866.06 has already been expended.

The Ferster Branch - 2.8 miles - will cost about \$15000.00.

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A. WARD,
SUPT. MUNISING RAILWAY.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#15.

SUGGESTIONS.

A portion at least of the main line must be fenced, the total estimate being \$14284.00.

Another leg to "Y" at East Branch must be built, the estimate being \$1500.00, but this is approximate.

One additional combination car has been authorized, which will probably cost \$2800.00.

General Repairs to two engines - \$800.00.

The main line between Munising and Merriam must be ballasted. It is now the worst part of the road; the clay cuts heaving with the frost and the light lake sand under balance of the track, not staying in place and not keeping track up to good surface. The balance of estimate unexpended is \$6826.31 and this should put track in fair condition. It will be necessary to haul material to raise track in wet places and in sags and to complete ballasting for some years to come, but from present appearances and traffic it can be done gradually.

A Station should be erected at Stillman, the junction with East Branch, probable cost \$500.00.

About 10000 ties will again be required for Renewals, costing about \$2500.00.

Lake Superior & Ishpeming Railway Co.
Munising Railway Co.
Marquette & Southeastern Railway Co.

W. G. MATHER,
President.
H. H. HARRIS,
General Manager.
H. A. ST. JOHN,
Auditor & Genl. Frt. & Pass. Agt.
A. WARD,
Supt. Munising Railway.

Office of General Manager.

MARQUETTE, MICH.

W.G.M.#16.

25000 tie plates were ordered for use on curves and to render the soft wood ties on curves safe for heavier engines. Cost delivered, \$1250.00.

SUMMARY.

Fencing	\$14,284.00
"Y" East Branch	1,500.00
Combination Car	2,800.00
Engines	800.00
Ballasting	6,826.00
Station - Stillman	500.00
Ties - Renewals	2,500.00
Tie Plates	<u>1,250.00</u>
	\$30,460.00

The above should constitute all expenses other than East Branch construction and Ordinary Operating expenses, except which may be caused by new industries.

With the locating of new Industries for use of all kinds of timber, and the taking up of lands by farmers, the Munising Ry. will have a very satisfactory business. Negotiations are already under way, as you are aware, and we look for some results before long.

yours truly,

H. H. Harris

General Manager

MINING BOARD



9

*attach to this statement
 statement of balance value for ton ^{per} ~~ton~~ ^{ton}
 also quantity on hand on each*

- THE CLEVELAND-CLIFFS IRON CO. -

ANNUAL REPORT- YEAR ENDING NOVEMBER 30TH, 1901

I n d e x.

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Cleveland-Cliffs Iron Company, General Balance Sheet- ASSETS-	- - - - -		5
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Cleveland Iron Mining Co.	" " "		7
Iron Cliffs Company	" " "		8
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Disposition of Income, C.C.I. Co. from May 14th-91 to Nov. 30th, 01-	- - - - -		10
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*WB av. value per ton of grade
 detd. at ea. point + av. all
 grades reduced to mine duty + 2¢ duty
 for ea. year annually 5 yrs.
 Same for other Commodities
 produced by us sales & deliveries*

- THE CLEVELAND - CLIFFS IRON CO. -

CONSOLIDATED STATEMENT OF UNSOLD ORE-

NOVEMBER 30TH, 1901

	C.I.M.CO.	I. C. CO.	G.C.I.CO.	TOTALS.
Unsold Ore on hand, Nov. 30/00	44,559	112,714	147,092	304,365
Production during year	544,968	477,009	206,500	1,228,477
Received from L.S.I.Co. and Regent Iron Co.	- - -	- - -	204,889	204,889
Ore purchased	134,002	129,498	- -	263,500
OVERRUNS	1,231	3,375	1,783	6,389
Transferred from other grades	- - -	- -	13,450	13,450
Cancelled orders of 1900	6,912	18	- -	6,930
	731,672	722,614	573,714	2,028,000
Sales made during year	538,143	565,637	480,300	1,584,080
Turned over to P.M. & Co.			7,509	7,509
One percent deducted from cargoes	4,467	3,502	3,214	11,183
Shortages at Mines		311		311
Shortages at Wis. Cent. Dock	- -	- -	945	945
Shortages at L. E. Ports		18	487	505
Transferred to other grades			13,450	13,450
Unsold ore on hand Nov. 30/01	189,062	153,146	67,809	410,017
	731,672	722,614	573,714	2,028,000

CANCELLED ORDERS OF 1900

Lawrence Furnace Co.	4,000-	Lake
L. & R. Wister & Co.	2,912-	Scotch
Wheeler Furnace Co.,	18-	Foster
	6,930	

§ MEMORANDUM RELATIVE TO ORE PURCHASED.

CLEVELAND IRON MINING COMPANY.	ORE PURCHASED.	SHIPPED AS.	QUANTITY.
	Sal. Bess.	Lake Bess.	98,672-1020
	Alford	"	32,202- 850
	Salisbury	Lake	3,122- 580
			134,002- 210
IRON CLIFFS COMPANY.			
	Bedford	Salisbury	64,644-1200
	Cameo	"	10,335-1040
	Bedford	"	34,520
	Beresford	Cl. Shaft	371- 560
	" "	"	19,626-2010
			129,498- 330
TOTAL ORE PURCHASED-			263,500- 540

- THE CLEVELAND - CLIFFS IRON CO. -

DISPOSITION OF INCOME FOR THE YEAR ENDING NOVEMBER 30TH, 1901.

All Companies

<u>RECEIPTS:</u>			
From the sale of Stock of The Cleveland-Cliffs Iron Company-		\$1,095,300.00	
From Sale of Real Estate and interest in tracks at Queen Mine		15,224.14	
From other sources		214,015.93	
From Operating Profits for the year		2,093,035.66	
TOTAL RECEIPTS			\$3,417,575.73
<u>DISBURSEMENTS:</u>			
For new property, as follows:			
100 shares Iron Cliffs Stock-	\$ 9,000.00		
Ashland Mine Timber Lands	2,472.00		
Steamer Falcon	22,550.00		
Mineral Lands, (Maas deal)	744,504.01		
Timber Lands	106,262.89		
Ashland Mine Lease	583,286.55		
New Furnaces; Marquette	116,606.77		
✓ M. & S. E. R'y.	507,579.29		
Total		2,192,361.51	
For Improvements, as follows:			
Pioneer Furnace Plant	8,824.18		
Webster Mine	239.98		
Carp Furnace Plant	4,119.51		
Total		13,183.67	
Increased Amount of Wood & Supplies		92,840.68	
Increase in amount of Bills and Accounts Receivable over Bills and Accounts Payable-		240,237.30	
Dividends Paid-		490,623.00	
TOTAL DISBURSEMENTS-			3,029,366.16
CASH ON HAND INCREASED			388,329.57

- THE CLEVELAND - CLIFFS IRON CO. -

PROFIT AND LOSS OF ALL COMPANIES FOR THE YEAR ENDING NOVEMBER 30TH, 1901

<u>MINE DEPARTMENT:</u>			
<u>Profit:</u>	Moro Mine	\$ 14,485.05	
	Lake Mine	659,924.46	
	Cliffs Shaft Mine	318,201.12	
	Salisbury Mine	382,221.61	
	Tilden Mine	5,134.66	
	Foster Ore	14,896.80	
	Fitch Ore	1,327.21	
	Ashland Mine	126,469.58	
	Volunteer Mine	11,667.84	
	Imperial & Webster Mines	27,415.93	
	Miscellaneous items, e. g. house rents, land rents, sales of equipuent, etc.	6,917.84	
			\$1,568,662.10
<u>Loss:</u>	Hematite Mine	266.19	
	Hard Ore Location	7,240.62	
	Michigamme Mine	59,188.40	
	Titan Mine	108.66	
	Maas Exploration	48,684.32	
	Pioneer Iron Co's. Exploration	7,287.82	
			122,776.01
<u>NET PROFIT, MINE DEPARTMENT-</u>			\$1,445,886.09
<u>FURNACE DEPARTMENT</u>			
<u>Profit:</u>	Pioneer Furnace	152,097.01	
	Carp River Furnace	966.07	
<u>NET PROFIT, FURNACE DEPARTMENT-</u>			153,063.08
<u>VESSEL DEPARTMENT:</u>			
<u>Profit,</u>	Steamer PONTIAC	8,047.83	
	" FRONTENAC	8,891.34	
	" PIONEER	3,656.30	
	" CADILLAC	5,217.04	
	" ANDASTE	9,548.85	
	" CHOCTAW	11,880.90	
	" FALCON	251.37	
	Schooner CHATTANOOGA	1,136.79	
<u>NET PROFIT, VESSEL DEPARTMENT-</u>			48,630.42
<u>NET PROFIT ON LAKE SUPERIOR IRON CO'S. ORES</u>			230,949.86
<u>NET PROFIT ON REGENT IRON CO'S. ORES</u>			69,526.65
<u>DIVIDENDS ON INVESTMENTS:</u>			
	From Arctic Iron Company	19,500.00	
	" Lake Superior Iron Co.	270,887.10	
	" United Deck Company	40,225.20	
	" Fee in Queen Mine, (Royalty)	4,299.92	
	" Illinois Steel Company's Bonds	1,075.00	
<u>TOTAL DIVIDENDS RECEIVED-</u>			336,017.22
<u>TOTAL EARNINGS-</u>			\$2,284,073.32
<u>DEDUCT</u>			
	Loss on Dunbar Pig Iron	134,338.34	
	Loss, account Land Department	10,756.06	
	Miscellaneous Items, Cleveland	45,943.26	
<u>TOTAL LOSS-</u>			191,037.66
<u>NET EARNINGS-</u>			2,093,035.66
	Deduct depreciation of investments	600,300.00	
	Dividends paid by C. C. I. Co.	480,623.00	
			1,092,223.00
			\$1,000,812.66

THE CLEVELAND-CLIFFS IRON COMPANY

Detailed Statement of -
 PROFIT AND LOSS OF ALL COMPANIES FOR THE YEARS 1900 & 1901.

PROFIT	G.C.I.CO	C.I.M.CO	I.C.CO.	P.I.CO.	TOTAL 1901	TOTAL 1900
On ore,	\$406,732.80	\$666,902.70	\$721,781.40		\$1,795,416.90	\$1,379,233.84
Charcoal Pig Iron,	90,705.84			966.07	91,671.91	301,934.75
Wood Alcohol,	45,439.98				45,439.98	57,239.81
Acetate of Lime,	14,325.35				14,325.35	13,647.93
Sale of Land & Stumpage: Parsons Tract,	1,232.47				1,232.47	1,313.10
Ground Rents,	343.00	3,073.04	2,148.74		5,564.78	4,186.99
Discounts for prompt payment,	569.35	694.59	399.73		1,663.67	996.23
House Rents,	1,363.39	1,578.54	2,431.86		5,373.79	4,188.74
Collection Fees,	139.25				139.25	
Sale of Material & Equipment,	10.00	354.39	59.79		424.18	488.81
Rental of Machinery,	20.00				20.00	
Options,						1,875.00
Royalty,	4,299.93			1,437.50	5,737.43	4,304.27
Operating Vessels,	31,691.25	16,939.17			48,630.42	159,291.29
Munising Ry. & Land Co. Settlement,	46,717.67				46,717.67	
Premiums on sale of C.C.I.Co stock,	17,015.00				17,015.00	
Shop Earnings,		948.22			948.22	
Rebates on Purchases,			466.69		466.69	29.17
Unclaimed Wages,						68.66
	\$660,605.27	\$690,490.65	\$727,388.21	\$ 2,403.57	\$3,080,787.70	\$1,915,926.40
LOSS						
Gladstone City Lot Taxes,	\$ 344.11				\$ 344.11	\$ 320.76
Division of Government Lot #2						161.35
Maas Explorations,	48,684.32				48,684.32	44,974.02
Special Expenses,	894.12	226.46			1,120.58	1,701.08
General Expenses,	11,618.39	15,509.14	23,688.89	103.62	49,918.05	45,935.17
Legal Expenses,	2,534.83	161.06	153.60	7,876.47	10,725.96	9,197.33
Personal Taxes,	117.88	102.27			220.15	358.51
Maintaining Tracks at Queen Mine,	1,720.79				1,720.79	1,340.09
Expenses Account Purchase of Lands,	6,920.61				6,920.61	1,418.87
Dunbar Pig Iron,	2,359.42	67,447.10	64,531.82		134,938.34	104,796.43
Operating Land Department,		3,973.04	14,729.10	548.29	11,300.25	4,886.30
General Interest,	87,291.04	21,311.36	40,429.36	15,336.29	40,828.61	40,768.14
Repairs to dwellings not Rented,		1,334.61			1,334.61	4,339.42
Land Improvements,		1,743.15	129.15		1,872.30	8,308.97
Explorations,		722.44	273.83	7,237.82	8,233.09	5,128.91
Expenses Account Marquette Property,		72.91			72.91	53.67
Depreciation of Boarding House,			1,638.54		1,638.54	
Rent of Excelsior Furnace and Expenses,				131.12	131.12	
	\$162,422.61	\$ 62,044.64	\$ 63,655.57	\$31,285.62	\$ 319,409.24	\$ 62,996.15
Operating Profit,	\$498,121.70	\$628,446.01	\$663,632.64	\$ 28,822.05	\$1,761,312.36	\$1,851,930.25
Operating Loss,			1,075.00		1,075.00	1,075.00
Add interest on investments,						10,000.00
Dividends Received from Arctic Iron Co.	19,500.00				19,500.00	430,479.50
" " " Lake Superior Iron Co.	270,887.10				270,887.10	36,756.00
" " " United Dock Co.	40,265.20				40,265.20	
Total Operating Profit & Dividends Recd.	\$828,764.06	\$628,446.01	\$664,707.64	\$	\$2,092,035.66	\$2,330,240.75
Less Depreciation of Investments,	600,300.00				600,300.00	
Operating Profit,	\$228,464.06	\$628,446.01	\$664,707.64	\$	\$1,491,735.66	\$
Less Dividend Paid,	490,623.00				490,623.00	305,176.00
Increase in Surplus Account,		628,446.01	664,707.64		1,002,112.66	2,025,064.75
Decrease " " "	\$262,158.94	\$	\$	\$28,822.05	\$	\$

THE CLEVELAND-CLIFFS IRON COMPANY

APPROXIMATE ANALYSIS OF THE PROFITS OF ALL COMPANIES FOR THE YEAR

ENDING NOVEMBER 30TH, 1901.

PROFITS FROM:			
Mines,	\$1,580,271.70		
Furnace Department,	157,000.00		
Vessels,	50,750.04		
TOTAL,	1,788,021.70		
Less loss Land Department,	1,354.03		
	1,786,667.67		
Less Taxes,	85,173.97		
Profit, after deducting Taxes,		\$1,681,593.80	
MISCELLANEOUS PROFITS:			
On ore from L.S.I.Co's. Mines	230,949.00		
" " " Regent Co's. "	69,526.85		
Royalty Received,	5,737.43		
Premiums on new issue of stock,	17,013.00		
		333,226.28	
ADD INTEREST ON INVESTMENTS:	1,075.00		
Dividend from Arctic Iron Co.	19,800.00		
" " Lake Superior Iron Co.	270,287.10		
" " United Book Co.	40,255.20		
TOTAL FROM OUTSIDE INVESTMENTS,		331,717.30	
TOTAL PROFITS,			\$2,336,547.38
LESS: Loss on Dunbar Pig Iron,	134,338.34		
Cost of Explorations,	56,635.53		
General Interest,	40,343.55		
General Expenses & Miscel Items,	11,637.08		
Depreciation of Investments,	600,330.00		
			843,810.43
TOTAL NET PROFITS (including Dividends paid,			\$1,492,736.95

Note: Profit from Mines includes profit made on ore on hand at end of last year, amounting to \$847,523.71, and at Furnace, on Pig Iron on hand amounting to \$37,899.63

The "Depreciation" charged off this year by the different Departments and considered in arriving at above profits, is as follows:

Mines,	\$118,335.49
Furnace Dept.	1,198.83
Vessels,	37,550.00
Land Dept.	1,523.35
On Investments,	600,330.00
TOTAL,	\$780,459.07

- THE CLEVELAND CLIFFS IRON CO. -

GENERAL BALANCE SHEET -

NOVEMBER 30TH, 1901.

	NOV. 30/00	NOV. 30/01	INCREASE	DECREASE
<u>ASSETS</u>				
C. C. I. Co. Stock on hand, 1900, 11,852 shares, 1901 900 shares	1,125,300.00	\$ 90,000.00		1,035,300.00
G. I. M. Co. Stock on hand 100,000 shares	1,997,245.00	1,997,245.00		
I. C. Co. Stock on hand 1900, 19,900 shares 1901 20,000 "	2,248,325.00	2,257,325.00	\$ 2,000.00	
Arctic Iron Co. Stock on hand 10,000 shares	115,000.00	98,200.00		16,800.00
Lake Superior Iron Co. Stock on hand, 20,999 shares	959,539.13	609,539.13		350,000.00
Regent Iron Co. Stock on hand 1,125 shares	112,500.00	10,000.00		102,500.00
L.S. & I.R'y. Co. Stock on hand 75 shares	1,000.00	1,000.00		
Munising Ry. Co. Stock on hand <i>Cash</i> 8,106 shares	45,870.00	45,870.00		
Munising Ry. Co. Bonds on hand <i>Cash</i> 62 Bonds	55,300.00			55,300.00
Munising Co. Stock on hand <i>Cash</i> 4,159 shares	203,955.13	203,955.12		
Bills Receivable, Munising Ry. Co.	283,547.70	376,728.35	93,180.65	
Cost of M. & S. E. R'y.		507,579.29	507,579.29	
Fee in Queen, Prince of Wales and Blue Mines-	32,875.00	26,875.00		6,000.00
Fee in Webster Mine	19,495.57	19,735.55	239.98	
Tracks to Queen Mine	28,509.17	24,254.56		4,254.59
Mine Timber Purchase	18,855.11	19,858.11	3.00	
Furnace Timber Purchase	45,074.13	45,074.13		
Ashland Mine Wood Purchase		2,469.00	2,469.00	
Cost of New Furnace at Marquette		115,106.77	115,106.77	
Steamer Pioneer	85,000.00	80,000.00		5,000.00
" Cadillac	80,000.00	75,000.00		5,000.00
" Andaste	100,000.00	95,000.00		5,000.00
" Ghoctaw	100,000.00	95,000.00		5,000.00
" Falcon		20,000.00	20,000.00	
Schooner Chattanooga	60,000.00	55,000.00		5,000.00
Stock of Dunbar Pig Iron on hand		28,481.00	28,481.00	
" " Pioneer Pig Iron " "	110,033.20	116,963.09	6,929.80	
" " Wood Alcohol " "	2,145.53	6,188.02	4,042.49	
" " Anatsate of Lime " "	18.97	1,353.85	1,364.89	
" " Wood on Ashland Pioneer Fur.	75,543.47	108,438.39	32,894.92	
" " Supplies on hand " "	41,589.72	56,360.74	14,771.02	
" " Ore " " " "	39,733.65	37,211.04		2,522.61
" " Limestone " " " "	1,394.30	1,121.53		272.77
" " Charcoal " " " "	2,284.80	2,734.35	449.55	
" " Lake Superior Iron Co. Ore on hand	47,667.13	57,604.80	9,937.67	
" " Michigan Ore " " "		65,545.35	65,545.35	
" " Volunteer " " "		106,157.80	106,157.80	
" " Imperial " " "		19,639.35	19,639.35	
" " Ashland Mine " " "		100,267.80	100,267.80	
" " Florence " " "		23,043.61	23,043.61	
Pioneer Furnace Construction A/c	257,383.52	266,715.90	9,332.38	
Quebec Co. Bonds (22 Bonds)	13,200.00	13,200.00		
Land; Matthews Tract	15,524.19	14,954.19		570.00
Real Estate at Gladstone, Mineral Lands (See Detailed Statement)	31,787.75	31,851.55	63.80	
Real Estate " " "	170,803.62	704,604.01	704,604.01	
Cost of Ashland Mine Lease		277,066.51	277,066.51	
Construction A/c at Mines		558,286.55	558,286.55	
Inventory, Michigan Mines		11,517.12	11,517.12	
" " Imperial " "		16,279.23	16,279.23	
" " Mass " "		2,571.25	2,571.25	
" " Ashland " "		3,215.40	3,215.40	
Bills Receivable	34,480.04	26,963.79		7,516.25
Accounts Receivable	292,872.70	630,846.59	337,973.89	
" " (Constituent Cos.)	73,913.12	79,896.18	5,978.06	
Casting Machine at Dunbar	773.50			773.50
Cash on hand at Cleveland	21,713.30	172,703.89	150,990.59	
" " " Mines Dept.		754.07	754.07	
" " " Pioneer Furnace	93.76	696.96	603.20	
" " " Land Dept.		1,782.06	1,782.06	
Telephone Coupons on hand	63.58	81.39	17.71	
	\$9,010,417.88	10,452,162.69	1,441,744.81	

- THE CLEVELAND-CLIFFS IRON CO. -

GENERAL BALANCE SHEET-

NOVEMBER 30TH, 1901.

	NOV. 30/00	NOV. 30/01	INCREASE	DECREASE
<u>LIABILITIES</u>				
Capital Stock,	\$5,000,000.00	\$5,000,000.00		
Fund for extending Docks at Gladstone-	4,051.23	4,051.23		
Insurance Fund, Chemical Plant	4,968.62	7,146.02	2,177.40	
Relinings & Renewals a/c	998.02	4,879.82	3,881.80	
Unclaimed Wages, Pioneer Furnace	127.15	158.50	31.35	
Pay Rolls Unpaid " "	14,590.75	18,000.65	3,409.90	
" " Mines		28,545.09	28,545.09	
Brass Checks outstanding, Mines Suspense		630.50	630.50	
Benefit & XXXXXX Funds, Imperial		1,433.57	1,433.57	
" " " "Michigamme		1,219.05	1,219.05	
" " " "Maas		290.32	290.32	
" " " "Volunteer		1,246.77	1,246.77	
Accrued Taxes, Unpaid,		24,449.93	24,449.93	
Accounts Payable	576,206.39	331,790.97		\$244,415.42
" "(Constituent Cos.)	309,210.67	1,820,092.30	1,430,881.63	
Advance Payments on undelivered ore	26,184.32	114,199.61	88,015.29	
Bills Payable	252,143.43	614,250.00	362,106.57	
Surplus Account,	2,741,937.30	2,479,778.36		262,158.94
	9,010,417.88	10,452,152.69	1,441,734.81	

CLEVELAND IRON MINING CO.

GENERAL BALANCE SHEET -

NOVEMBER 30TH, 1901.

	NOV. 30./00	NOV. 30./01	INCREASE	DECREASE
<u>ASSETS.</u>				
Real Estate	\$2,500,000.00	\$2,500,000.00		
Personal Property	1,000.00	1,000.00		
Cash on hand at Cleveland	89,951.79	148,669.59	58,717.80	
" " " " Dept. M. & M.	1,267.59	1,406.05	138.46	
" " " " Land Dept.	1,070.40	676.70		393.70
Bills Receivable	11,666.66	19,092.23	7,425.57	
Accounts Receivable	354,499.82	376,464.56	21,964.74	
" " "(from Constituent Cos.)	37,183.42	1,216,780.67	1,179,597.25	
Steamer "PONTIAC"	125,000.00	120,000.00		5,000.00
Steamer "FRONTENAC"	105,000.00	100,000.00		5,000.00
Mine Inventory; Hard Ore	33,812.48	35,905.03	2,092.55	
" " Lake	38,916.77	45,452.79	6,536.02	
" " Michigan	15,136.44			15,136.44
" " Imperial	3,820.96			3,820.96
Value of Ore on hand; Hard Ore	170,132.25	147,934.40		22,197.85
" " " " " Lake	392,323.00	398,255.00	5,932.00	
" " " " " Volunteer	153,811.25			153,811.25
" " " " " Michigan	59,070.75			59,070.75
" " " " " Imperial	108,721.73			108,721.73
Hospital at Ishpeming	652.82	784.00	131.18	
Interest in Mass Lands		40,000.00	40,000.00	
Construction Account	90,842.63	39,471.39		51,371.24
	\$4,293,880.76	\$5,191,892.41	\$898,011.65	
<u>LIABILITIES</u>				
Capital Stock	\$2,500,000.00	\$2,500,000.00		
Bills Payable	60,000.00	60,000.00		
Accounts Payable	137,930.23	131,908.77		6,021.46
" " "(To Constituent Cos.)	91,682.52	342,935.20	251,252.68	
Advance Payments on undelivered Ore	128,143.34	164,405.00	36,261.66	
Benefit Fund; Hard Ore Mine	6,845.60	7,072.10	226.50	
" " Lake	8,077.08	8,614.52	537.44	
" " Hemattis	1,781.74	1,781.74		
" " Volunteer	1,246.77			1,246.77
" " Imperial	1,389.97			1,389.97
" " Michigan	972.12			972.12
Brass Checks outstanding	1,005.00	793.25		211.75
Pay Rolls unpaid	43,647.16	34,776.59		8,870.57
Surplus Account	1,311,159.23	1,939,605.24	628,446.01	
	4,293,880.76	5,191,892.41	898,011.65	

[IRON CLIFFS COMPANY]

GENERAL BALANCE SHEET

NOVEMBER 30TH, 1901.

	NOV. 30/00	NOV. 30/01	INCREASE	DECREASE
<u>A S S E T S</u>				
Cash on hand at Cleveland	63,097.24	198,970.85	125,873.61	
" " " " Dept. W. & M.	987.88	923.69		64.19
" " " " Land Dept.	94.12	672.50	578.38	
Illinois Steel Co. Bonds	21,500.00	21,500.00		
Pioneer Iron Co's. Stock, 3930 shares	93,250.00	93,250.00		
Real Estate	504,265.27	493,295.72		10,969.55
Bills Receivable	15,375.00			15,375.00
Accounts Receivable	282,731.12	439,534.46	156,803.34	
" "(from Constituent Cos.)	538,195.74	1,089,708.22	551,512.48	
Ore on hand; Cliffs Shaft	280,204.10	350,964.40	70,760.30	
" " " Salisbury	212,855.05	71,387.00		141,468.05
" " " Foster	6,851.00	1,200.00		5,651.00
" " " Fitch	7,352.00	5,640.00		1,712.00
" " " Tilden	27,119.20	20,117.19		7,002.01
" " " Old Mine Hematite	17,281.50	17,281.50		
Mine Inventory; Cliffs Shaft	44,566.86	41,296.06		3,270.80
" " Salisbury	12,697.25	9,404.50		3,292.75
Land Department Inventory	9,192.78	9,951.01	758.23	
Kilns	5,267.69	5,119.70		147.99
Hospital at Ishpeming	602.89	734.07	131.18	
Construction Acct., Cliffs Shaft Mine	1,638.54			1,638.54
" " Land Department	3,149.71	4,570.98	1,421.27	
	2,148,274.94	2,865,521.85	717,246.91	
<u>L I A B I L I T I E S</u>				
Capital Stock	1,000,000.00	1,000,000.00		
Benefit Fund	5,754.44	8,018.50	2,264.06	
Brass Checks outstanding	623.25	627.75	4.50	
Pay Rolls unpaid	27,745.38	30,162.73	2,417.35	
Bills Payable	60,000.00	60,000.00		
Accounts Payable	91,549.29	73,451.46		18,097.83
Advance payments on undelivered Ore	123,047.68	189,669.63	66,621.95	
New Building Fund	843.19	177.43		670.76
Surplus Account	838,706.71	1,503,414.35	664,707.64	
	2,148,274.94	2,865,521.85	717,246.91	

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- PIONEER IRON COMPANY -

GENERAL BALANCE SHEET

NOVEMBER 30TH, 1901.

	NOV. 30/00	NOV. 30/01	INCREASE	DECREASE
A S S E T S				
Real Estate	\$125,000.00	\$125,000.00		
Cost of Exclusive Furnace	10,000.00	10,000.00		
Cost of Carp River Furnace	30,000.00	30,000.00		
Cash at Cleveland	2,839.14	52,470.00	\$ 49,630.86	
Cash at Marquette	1,019.87	956.46		\$ 63.41
Cash at Ishpeming	222.85	4.70		218.15
Stock of Ore at Furnace	1,419.63	986.07		433.56
Stock of Charcoal at Furnace	175.00			175.00
Stock of Limestone at Furnace	1,364.75	1,835.56	470.81	
Stock of Fuel at Furnace	9.00			9.00
Inventory at Furnace	540.42	673.82	133.40	
Inventory at Mine Department	269.78			269.78
Stock of Pig Iron on hand	107,273.45	33,704.50		73,568.95
Accounts Receivable	87,374.27	28,092.88		59,281.39
Accounts *(from Constituent Cos.)		89,180.99	89,180.99	
Bills Receivable		720.65	720.65	
New Furnace		1,500.00	1,500.00	
Improvement a/c Carp Furnace		4,119.51	4,119.51	
	\$367,508.17	\$379,345.14	\$ 11,736.97	
L I A B I L I T I E S				
Capital Stock	\$125,000.00	\$125,000.00		
Bills Payable	50,000.00	50,000.00		
Accounts Payable	49,658.10	7,487.39		42,170.71
Accounts *(To Constituent Cos.)	154,526.92	244,236.02	89,709.10	
Pay Rolls unpaid	2,734.90	873.67		1,861.23
Resigning & Renewals	1,520.40	3,579.21		5,099.61
Benefit Fund	277.97	319.44	41.47	
Surplus Account	26,210.12	55,092.17		28,882.05
	\$367,508.17	\$379,345.14	\$ 11,736.97	

- THE CLEVELAND - CLIFFS IRON CO. -

DISPOSITION OF INCOME FROM MAY 14TH, 1891 TO NOVEMBER 30TH, 1901.

Capital Stock- 50,000 shares	\$5,000,000.00	Capital Stock in Treasury, 90 shares-	90,000.00
Profit, year 1891	31,022.90	Dividend paid in 1892, 1-1/2%	57,213.00
" " 1892	204,416.47	" " " 1893, 3%	114,424.00
" " 1893	252,742.07	Dividend Paid in 1898, 4%	152,586.00
" " 1894	123,353.33	" " " 1899, 5%	228,832.00
" " 1895	147,853.19	" " " 1900, 8%	305,176.00
" " 1896	137,590.96	" " " 1901, 12%	490,623.00
" " 1897	158,847.53	G.I.M.Co. Stock on hand, 100,000 shares	1,997,245.00
" " 1898	412,122.15	I.S. Co. Stock on hand 20,000 shares	2,257,325.00
" " 1899	836,786.37	Arctic Iron Co. Stock on hand 10,000 shares	98,200.00
" " 1900	1,295,487.33	Lake Superior Iron Co. Stock on hand 20,999 shares	609,539.13
" " 1901	228,464.06	Regent Iron Co. Stock on hand 1,125 shares	10,000.00
		L.S.M.R'y. Co. Stock on hand 75 shares	1,000.00
		Munising Ry. Co. Stock on hand 8,106 shares	45,870.00
		Munising Co. Stock on hand 4,159 shares	203,953.12
		Fee in Queen, P. of W. and Blue Minas	26,875.00
		Fee in Webster Mine	19,735.55
		Tracks at Queen Mine	24,254.58
		Mine Timber Stumpage	21,327.11
		Furnace Timber Stumpage	45,074.13
		Vessels, (5 Steamers and 1 Schooner)-	420,000.00
		Pig Iron on hand	145,444.00
		Wood Alcohol on hand	6,188.02
		Acetate of Lime on hand	1,383.85
		Supplies at Furnace	205,866.05
		Ore on hand	372,258.71
		Pioneer Furnace Plant	266,715.90
		Gladstone Co's. Bonds	13,200.00
		Land; Matthews Tract	14,954.19
		Gladstone Real Estate	31,851.58
		Mineral Lands	704,604.01
		Real Estate ✓	277,066.51
		Ashland Mine Lease	558,286.55
		Construction Acct. Dept. M. & M.	11,517.12
		Supplies, Dept. M. & M.	59,286.27
		Telephone Coupons on hand	81.39
		Bills and Accounts Receivable	1,727,110.97
		Cash on hand	175,936.98
			11,601,070.69
		Less Bills & Accounts Payable	2,972,244.23
			8,628,826.46

- IRON CLIFFS COMPANY -

DISPOSITION OF INCOME FROM NOV. 30TH, 1899 TO NOV. 30TH, 1901

Capital Stock		1,000,000.00		
Balance of Surplus Account as received from former management		812,984.24		
Profit year	1890	351,069.75	Dividend paid, 1890	50,000.00
" "	1891	400,698.73	" " 1891	160,000.00
" "	1892	172,944.88	" " 1892	200,000.00
Loss "	1893	31,103.75	" " 1893	300,000.00
" "	1894	49,964.96	" " 1894	100,000.00
" "	1895	11,905.30	" " 1895	100,000.00
" "	1896	52,637.80	" " 1896	100,000.00
" "	1897	59,120.29	" " 1897	100,000.00
" "	1898	37,594.31	" " 1898	100,000.00
Profit "	1899	126,390.99	" " 1899	50,000.00
" "	1900	467,144.53	" " 1900	
" "	1901	564,707.64	" " 1901	
			Cash on hand	190,567.03
			Ill. Steel Co. Bonds on hand	21,500.00
			Pioneer Iron Co. Stock "	93,250.00
			Real Estate	403,295.72
			Bills & Accounts Receivable	1,529,242.68
			One on hand	466,590.00
			Supplies on hand	60,651.57
			Kilns	5,119.70
			Hospital at Ishpeming	734.07
			Bellevue Farm, Bldgs. & Eqpt.	4,570.91
				4,125,591.85
			Less Bills & Acct. payable	362,107.50
		\$3,763,414.35		\$3,763,414.35

- THE CLEVELAND - CLIFFS IRON CO. -

COMPARISON FOR FIVE YEARS, OF PRODUCT FROM THE MINES CONTROLLED BY US.

GRADE	1897		1898		1899		1900		1901	
	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%
C. C. I. Co.										
Hard Ore									34,867	17.
Soft Ore									171,633	83.
Bessemer									171,633	83.
Non-Bessemer									34,867	17.
Total of all kinds									206,500	
I. C. Co.										
Hard Ore			181,844	47.8	252,392	61.	264,330	60.	273,268	57.
Soft Ore	205,009	100.	198,825	52.2	163,864	39.	175,960	40	203,430	43.
Bessemer	23,235	11.3	17,780	4.6	22,154	5.3	51,209	12.	85,033	18.
Non-Bessemer	181,774	88.7	362,889	95.4	394,102	94.7	389,081	88.	391,665	82.
Total of all kinds	205,009		380,669		416,256		440,290		476,598	
C. I. M. Co.										
Hard Ore	12,428	3.2	10,651	2.4	41,235	7.7	181,671	24.	76,085	14.
Soft Ore	382,644	96.8	440,090	97.6	496,086	92.3	585,491	78.5	468,883	86.
Bessemer	144,291	36.5	220,757	49.	173,254	32.	221,793	29.	186,203	34.
Non-Bessemer	250,781	63.5	229,984	51.	364,067	68.	545,369	71.	358,765	66.
Total of all kinds	395,072		450,741		537,321		767,162		544,968	
All Companies										
Hard Ore	12,428	2.	192,495	23.	293,627	31.	446,001	37.	384,220	31.
Soft Ore	587,653	98.	638,915	77.	659,950	69.	761,451	63.	843,946	69.
Bessemer	167,526	28.	238,537	28.7	195,408	21.	273,002	23.	442,869	36.
Non-Bessemer	432,555	72.	592,873	71.3	758,169	79.	934,450	77.	785,297	64.
Total of all kinds	600,081		831,410		953,577		1,207,452		1,228,166	

PRODUCT AND COST OF ORE AT MINES FOR FIVE YEARS.

GRADE	1897		1898		1899		1900		1901	
	PRODUCT	COST	PRODUCT	COST	PRODUCT	COST	PRODUCT	COST	PRODUCT	COST
Cleveland Hard	12,428	2.03	10,651	1.88	8,992	2.586	74,459	1.846	76,085	1.331
Cleveland Lake	382,644	.79	440,090	.812	465,452	.899	497,204	.987	468,883	1.023
Cleveland Hematite					5,059				34,867	4.572
Michiganus							19,842	3.052		
Volunteer					32,243	1.264	87,370	1.320		
Imperial					25,575	.872	67,490	1.153		
Webster							20,797	1.402		
Ashland									171,633	1.545
Cliffs Shaft			181,844	.965	252,392	1.075	264,330	1.149	273,268	1.093
Salisbury	133,835	1.18	111,601	1.442	136,519	1.096	160,635	1.052	180,918	.991
Foster	39,575	1.05	36,391	.979					11,870	
Tilden	31,599	.28	50,833	.304	27,345	.387	15,325	.565	10,642	.373
TOTAL-	600,081	.95	831,410	.923	953,577	.982	1,207,452	1.153	1,228,166	1.200



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THE CLEVELAND-CLIFFS IRON CO.

Mr. M. M. Duncan, Agent,

Ishpeming, Mich.,

Dear Sir:--

Following is the annual report of your Master Mechanic on the mechanical equipment, work done, repairs and general condition for the year 1901, embracing months from December 1st 1900 to November 30th 1901. I submit herewith monthly summaries of our Engineer's logs, showing the work done by the various plants, fuel and oils used. I will say in this connection that I find the Engineer's logs a very great convenience in accounting for the fuel used.

During the months that show an increase or decrease in fuel, our logs show with almost mathematical accuracy to what cause to ascribe the increase or decrease and the amount.

CLIFF SHAFT MINE.

There has been no change in the equipment at this mine during the past year. The repairs required have not been as heavy on some of the machinery, while on others it has greatly exceeded that of the year previous. Considering the age and condition of the machinery, I think we have been very fortunate at this mine in having had but one shut down of importance, due to failure of machinery.

HOISTING ENGINE.

The hoisting engine is running without any changes as it has been for a number of years past. The gears with cracked hubs are still in service, but the pinion, driving "A" shaft drum, will very shortly have to be replaced as the teeth are beginning to crumble away, due I presume to crystallization from the heavy loads handled on them. The gearing on this hoist has been in use about fourteen years and has handled very heavy loads, so that taken altogether, we should not complain of its giving out now. We had one delay from break down of the hoisting engine, caused by the crank pin breaking at 5:20 P. M. on Wednesday April 3rd, but the pin in giving way, attracted attention in time for the Engineer to shut the engine down without any further damage. This caused the mine to lose five shifts, the engine being started again at 7:00 A. M. April 6th. We have had several crank pins break in various machines during the year, causing great delay and inconvenience, the principal trouble being caused by a piece of poor steel, used in making crank pins but we did not discover the poor quality of this steel until a number of pins had been put in. When this was discovered, we at once ordered some special steel for this purpose since which time we have had no trouble from the pins breaking. I may add that the breaking of the crank pin in the hoisting engine did not entirely stop the mine, though it did stop hoisting, a number of the miners being kept at work.

We have had three cases of delay of from one to four hours due to trouble with the hoisting ropes two of which occurred in "B" shaft and one in "A" shaft, no damage, however, resulting in either case as the safety stopes used on both these cages are very effective. We are still handling the same loads as formerly viz,

#13000 on "A" Shaft and about
#12,300 on "B" Shaft,

these loads being very heavy. This mine gets very good service from the hoisting ropes in use, the present rope being an inch and one-half rope. These ropes have been in service since the mine was reopened and are still good for considerable service.

PUMPING ENGINE.

The pumping engine and Cornish pumps have given us very little trouble this year, the only repairs to the engine being a half new gear wheel. The pumps in connection have had but very slight repairs for the year. However, this pump is very badly out of balance as the original design intended the weight of rods in "B" shaft to counterbalance these in "A" shaft but the "B" shaft rods were never run lower than one lift, while the "A" shaft rods have been run to the bottom of the mine thus leaving a load very much heavier in "A" shaft which increased. weight has not been counterbalanced. We have, however, ordered the material for the construction of the hydraulic balance, similar to the ones installed at the Moro and Salisbury mines which have proven very satisfactory. The amount of water handled by this pump amounts to almost one million gallons per day, the quantity showing but little variation during the various seas of the quantity also showing about the same as during 1900. Below is a table showing the precipitation by months from Dec. 1900 to Nov. 1901, both inclusive.

TABLE I.

Dec.	-----1900	-----	.50
Jan.	-----1901	-----	.88
Feb.	-----"	-----	.10
Mar.	-----"	-----	2.40
Apr.	-----"	-----	1.20
May	-----"	-----	3.14
June	-----"	-----	2.56
July	-----"	-----	5.11
Aug.	-----"	-----	2.46
Sept.	-----"	-----	2.92
Oct.	-----"	-----	3.92
Nov.	-----"	-----	2.65
Total		-----	<u>27.84"</u>

It is noticed the rain fall for the year just past is only about three-fourths the amount for 1900. The past has been a very dry year in this vicinity. We have also been free from heavy rains.

The main gear of the pumping engine is still running with one tooth broken out and replaced with pins. The old cross head is still in service. We are also still using the same metallic piston rod packing, installed on this engine when it was first started.

COMPRESSORS.

The compressors have given us quite a little trouble during the last year, the principal cause of which, however, has been the breaking of crank pins, partly due to the design of the machine, and partly to the use of poor steel for renewing the pins.

As noted in the annual report for 1900, the air pressure was raised to seventy-five pounds until the 1st of July, when we reduced the pressure to seventy pounds. It was thought by the Captain that we were using more air at the higher pressure than we were at a somewhat lower pressure. Our logs have not proven this, as there has been a pump, worked by air in the bottom of "A" shaft, taking the air from the winze, and there has also been considerable hoisting from the winze, necessitating the operation of the small puffer with air.

We have had several accidents with the compressors, the first being a broken crank pin on No. 1 compressor, the pin breaking March 5th ^{was} and replaced and the compressor put in operation again March 6th. On July 25 th the crank pin broke on the right hand side of the No. 1 compressor, causing a general smash up, as the crank on its next revolution, caught on the end of the connecting rod, bending the rod and key, breaking the strap gib and brasses and driving the air piston down against the cylinder head with such force as to break one of the foundation feet from the cylinder and also the lug on top of cylinder which held the tie rod between the steam and air cylinders. Both pistons were also driven on to their rods and the piston rod was also driven into the cross head. These called for such extensive repairs that they were not completed for six days, the compressor being able to run again at noon on July 31st. On October 4th the piston rod broke on the right hand side of the No. 2 machine, necessitating the making of a complete new rod, and owing to the very poor lathe for doing this very long work, this was not repaired until October 14th, a stop of ten days. I may add that these accidents to one side of one of these compressors does not disable the entire machine as we simply disconnect the disabled side and run the side which is all right so that we have three-fourths the capacity that we ordinarily have. I do not anticipate as much trouble the coming year from broken crank pins as we have had in the past, owing to the use of better steel and to the

fact that the pins put in from poor steel have about all been replaced.

The total amount of air made at this mine runs approximately 37,250,000 cu. ft. of air per month. This amount of air, however, is not all used for drilling as it is customary at this mine to run one compressor from six to seven in the evening and from six to seven in the morning at about its maximum speed, maintaining about twenty pounds air pressure for blowing out smoke from some close stopes.

These compressors are uneconomical in steam as ever but we are still hoping to some day be able to replace them with a more economical type of machine.

CLIFF SHAFT CRUSHER PLANT.

The crusher plant is running about as it was last year with the exception of new shafts. We have returned to the use of Manganese steel jaw and face plates and are now getting Manganese plates that give us excellent service; the first set installed have not worn out. The Manganese side liners run about two years without renewal. In March the Hodge crusher broke a shaft, necessitating the making of a complete new shaft. At that time, however, we had orders in the mill for two rough forgings for crank shafts, one for either crusher which arrived later and were finished in our own shops. The eccentricity of the shaft in the Holly crusher was changed to five-eighths of an inch instead of three-fourths, there-by reducing the throw to one and one-fourth where it had been previous-ly one and one-half. Since this shaft was installed we have had almost no trouble at all with this crusher blocking with fine ore or dirt, or wearing out of the babbitt, so that now we have almost no trouble at all with this machine. One of the greatest troubles with these crushers is from the chunks of ore so large that they do not drop into the jaws far enough for the crusher to get hold of them, so that it is often necessary to lift these chunks out again and sledge them up.

It would certainly save a great deal of sledging and probably a considerable expense at this mine if there was a larger crusher installed so that a great deal of the sledging and block holding could be dispensed with. At noon Wednesday, July 31st, fire started on the crusher floor and was soon burning fiercely. All the siding on the crusher house above this floor, as well as the roof burned almost entirely off so that it all had to be replaced, while the frame of the building was also considerably charred and damaged. Our belts were all destroyed and the babbitt melted out of some of the bearings on the shaft, but the crushers were but little injured. If it had not been for the fire pump and hose at this mine which is always ready for immediate service, this building would undoubtedly have burned to the ground, completely destroying the plant as there is considerable oil about the timbers below the crushers and the pressure from the city mains was not sufficient to throw water up to the floor on which the fire started. Notwithstanding the damage done to belts and buildings, by the energetic action on the part of our carpenters and the fortunate securing of new belts, we were able to start this plant almost as good as new on Monday morning, August 5th, thus losing but six and one-half shifts. We think it is a matter of congratulation that we came out so fortunate as we did. The cause of this fire could not be definitely determined but it is presumed it was from spontaneous combustion in the cupboard where the boiler kept his supplies. The operating cost of this plant usually runs from four to four and one-half cents while the maintenance cost is from one to two cents per ton and this, in view of the fact that we are ordinarily crushing from 17,000 to 20,000 tons per month. In view of the performance of the Michigamme crusher plant and to the small tonnage handled there it would appear that reorganization of this plant with the view of saving in labor would be profitable.

CLIFF SHAFT AUXILIARIES.

There has been no change in the auxiliary service in this mine during the past year with the exception of the installation of the

of steam

Webster Vacuum System Heating. This was started in February, since which time we have used only exhaust steam from the No. 1 compressor for all our heating, except during noon hour and from Saturday evening until Monday morning when the mine is idle. This has undoubtedly saved us considerable fuel and we think will continue to do so as long as we work this mine, as the system works very satisfactory aside from some poor pipe which we got hold of, has given us little trouble.

We are still using the same old engine in the shop and the same pair of double 8 x 10 engines for pulling the cars back to the shaft houses. During February of last year, the small double engine in "A" shaft house was not looked after by the watchman one Sunday night when the weather was very cold with the result that the engine filled with water froze and bursted both steam chests. As the steam chest, cylinder and frame of this engine is in one piece, we did not care to go to the expense of replacing it, but by means of very heavy bolts and chunks, were able to pull the cracks together so that the engine is still in service. We were not able to entirely stop the leaks.

The 8 x 10 Russell automatic engine, driving the arc light dynamo runs with very little trouble but the dynamo gives us some trouble occasionally from the burning of the armature connections, owing to the peculiar manner in which the commutator is on these machines. ^{but} This machine received one complete armature during the past year.

BOILER PLANT.

The boilers are still in service as they have been for the last number of years and we fortunately have had little repairs on them, during the year, excepting on boilers six and seven. In this connection I wish to submit the reports and some correspondence from the Hartford Steam Boiler Inspection and Insurance Company in relation to these boilers. In the report of 1899 as well as that 1900 your Master Mechanic took occasion to call attention to the age and condition of these boilers,

and from the Hartford reports it is evident that we may not be able much longer to carry our present pressures on these boilers, I may add that it is under protest of the Hartford people that they permit us to carry the pressure which we now carry and from conversation with their chief Inspector, I would not be surprised if they refused to give us insurance on them much longer.

EXTRACT FROM REPORT BY INSPECTOR W. T. GODFREY, HARTFORD COMPANY, GIVING INSPECTION 28th of APRIL TO 27th OF MAY, 1901.

Eight Boilers. Cliff Shaft Mine.

#1, 2, 4, 5, 7, 8, Internally;-- There is no excessive incrustation of scale and the care and management of these boilers is excellent, but all in this battery are now getting very old and are structurally weak for the pressure now carried, considering work, required and the manner in which they are forced, and we think it advisable to make preparations to install new boilers of higher efficiency, as it is only a matter of a short time until we will be compelled to reduce the pressure. The braces are sound and taut. Openings to outside attachments are clear.

Externally;-- Patch on fire sheet of #7 is ^{fire} cracked and leaking some; this requires attention. Heads and flangs show no serious defects. Although some of the tubes are getting very thin, there is no leakage noted. Furnace wall of #1 and 4 are in bad repair. Rear tube arch of #1 requires attention. Attachments in good order.

#3 and 6, Externally;-- Boilers are in good condition as far as seen and all attachments in good working order. Safety valve free and loaded to 80 pounds; steam gauge correct, pressure observed 80 pounds.

Yours truly,

HARTFORD STEAM BOILER INSP & INS CO.

Signed H. M. Lemon, Manager.

EXTRACT FROM REPORT BY INSPECTOR W. T. GODFREY, HARTFORD
COMPANY, GIVING INSPECTION 2nd OF OCT. TO 2nd. OF NOV. 1901.

Eight H. T. Boilers. Cliff Shaft Mine.

Internally;-- The flat surfaces of these hog-nose, tubular boilers in this house are becoming warped; this is being caused by an excessive hard scale which has been there for years and which it is almost impossible to remove. Therefore, the plates do not get proper protection from heat and are getting thin. These boilers are getting very old and are structurally weak for any pressure exceeding 80 pounds. The safety valves are now blowing at 85 pounds which is five pounds in excess of stipulated pressure and must be set back without delay. Boilers at this age should have pressure reduced and it is very dangerous to increase any amount. We have no doubt that three 18' x 72" boilers, H. T. type, constructed for 125 pounds pressure, will give far better results than the present battery and the saving in fuel alone would pay for the change in a few years. Steps should be taken for the improvement of this plant in the near future. Otherwise the pressure on the present boilers will have to be greatly reduced.

The attachments of these boilers are all in good working order.

Yours truly,

Hartford Steam Boiler Insp & Ins Co.

Signed H. M. Lemon, Manager.

From the above reports it is evident that the Hartford people will not much longer give us insurance on these boilers. I may add in this connection, that to reduce the pressure at this mine, will not only greatly reduce the economy of the engine, but it will also make it almost impossible for the machines to do their work.

The steam pipe at this plant is in very poor condition, a great many of the joints leaking badly but we cannot repair a part of this without danger of destroying the adjoining parts. This piping

This piping should all be renewed but as it will cost from \$1600 to \$1800 your Master Mechanic does not wish to advise the expenditure, if there is any prospect of changing our power or installing new boilers; until some decision is reached in relation to the above, we will try to make the old steam piping hold together.

SALISBURY MINE.

This plant is running without any change from the condition in which it was left when erected at its present location in 1899.

HOISTING ENGINE.

The engine handling the skip is in the same condition as last year. The present 18" x 48" cylinder is too small to handle the loaded skip in the present shaft, owing to the numerous turns and angles in the rope. When this engine was located at the old shaft, it would handle the present skips, loaded, at 80 pounds steam pressure very easily, the engine having comparatively early cut off; on the present incline shaft with the many angle shives, this engine will not cut off to exceed one-half the time with 90 pounds steam pressure though the shaft is on an incline of 52 degrees.

This shaft is also very expensive in the wear of ropes as the best record we have had in it was from a Lang lay, six strand, nineteen wire Roebling rope which ran two hundred eighty-three days. We have had ropes give out in this shaft in six weeks' time. This may not be altogether the fault of the shaft, but a very great proportion of it, probably, is chargeable to the many small angle shives necessary. If this shaft was vertical from the shaft house down, until it intersects the incline part of the shaft, I believe we could hoist more economically and I do not believe we would have as much difficulty with our ropes. If there

are to be no changes in our power, I would at least advise the changing of the present cylinder for a larger one.

The engine, running the cage gives very satisfactory service as the load is light and we would not suggest any changes in this machine at present.

CORNISH PUMP.

This is an 18" x 60" Allis Corliss engine which has been in service at this mine for a number of years. The pump is 14" diameter by 8 ft. stroke. The concrete foundation, placed under this pump when it was erected in its present location was unfortunately divided into five parts where it should have been two. The main part of the foundation should have been one monolith but was unfortunately divided by tar paper into three large, concrete blocks. This gave us considerable trouble during the early part of the year as the foundation sat on clay and as the mine had been increased in depth, longer rods were added to the bottom and as it had not been properly balanced, the pull on the crank when these rods were coming in was very heavy, probably near seventy-five tons. This excessive strain caused these blocks to tilt and work from the ground up, throwing considerable strain on the connections and excessive strain on the bed plate of the engine. During July we started work on the foundation with the view to repairing same if possible but while this work was in progress, one Sunday morning the frame of the pump cracked from the bottom almost to the top. We could not stop this pump to make repairs, so removed a brace from the Moro engine which is a duplicate and put it on with a heavy band with two inch bolts with railroad iron across the ends and pulled these up as tight as we could possibly get them. In addition to this original plan of repairs, carried out which consisted of cutting notches three feet long into the foundation

across the vertical cracks or parting planes into which we set a three foot section of sixty pound rail, wedging it tightly with steel wedges, filling the surrounding space with cement mortar and allowing it to set about twelve hours. Two rails were inserted across each crack in such a way that it would be necessary for the foundation to crumble away or shear the rails in two before the separate parts could move. These repairs have left this foundation apparently as rigid as it would ever have been, had it been in one piece and we do not anticipate any further trouble.

A great deal of the strain was taken off the connections and the pump put in very fair balance by the installation of the hydraulic balance which consists simply of an ordinary pole without valves with a long run of pipe, extended up the shaft to give a sufficient head of water on the pole to secure the desired balance. This construction runs with practically no attention and is a great deal cheaper to install than it would be to install a balance bob with the necessary blasting in the shaft and delay ^{to} the hoisting. This hydraulic balance has proven very satisfactory both here and at the Moro and as stated before we will shortly install one on the Cliff shaft pump.

The auxiliary pumping plant has proven very satisfactory in taking care of any surplus water, thus keeping it out of the mine. For this reason, we have seldom run this pump at any considerable speed during the entire year.

AIR COMPRESSOR.

The air compressor at this mine has had some repairs during the year, consisting principally of two new crank pins, a new cross head pin, new crank and cross head brasses, new strap gib and key and new brass shoe on the cross head. This machine has worked very hard it having but 16" x 30" air cylinder. It makes an average of about 15,000,000 cu. ft. of free air per month which is considerable less than it was required to do last year, which we suppose is due to the use

of air for ventilation, being more carefully looked after. This is a matter which has tended to regulate itself as they have been sinking a new shaft and drifting in rock most of the year, necessitating the use of rock drills which would not have been possible with the low air pressure, carried last year. The average air pressure is now about fifty-four pounds which will do fairly good work with the rock drill but not as efficient work as the machines could do. In addition to the use of air for ventilation and the small amount of drilling, we have been operating a No. 5 Cameron pump, together with small hoist for sinking the shaft and also run a small puffer in the shaft house for pulling in the tram car from the stock piles.

The reduction in the amount of air used at the Salisbury Mine is an indication of what may be accomplished by the shift bosses and mining captain in cutting down the amount of air blown away when it is absolutely necessary that it be done. We had informed the mining captain that if they wish to keep the pressure up, they must not blow the air away; and when the amount used for ventilation became so great that we could not maintain the pressure, the Engineers were instructed to slow the compressor down, thus allowing the pressure to fall until nothing could be done with air when the shift bosses would immediately find the place that was blowing air too freely and close it off and the pressure could then be maintained fairly slow for a considerable time.

BOILER PLANT.

There has been no changes in the boiler plant or steam pipe and we are still using the 84" x 18 ft. Reynold hydraulic boilers together with the 16' x 60" horizontal tubular boiler, removed from the old engine house three years ago. We carry 90 pounds on these boilers and should have at least 110 if we are to continue the use of our

The Hartford Insurance Co. Inspector does not report anything unusual on these boilers but nevertheless your Master Mechanic regards the horizontal tubular boiler with some suspicion, owing to the manner in which it is constructed, and from the fact that a great many boilers, constructed in this manner have exploded.

AUXILIARY SERVICE.

There is little use for steam outside of the main boiler house at this mine, the only use being for running a No. 8 pump to take water from the city mains part way down the hill and force it into the tank from which the boiler feed is drawn. The mine office is also heated with live steam. Aside from this, there is no steam taken from the main engine house except for the engine used for pulling the coal on to the coal docks. This has run but half days during the year.

I consider the equipment at the Salisbury mine fairly economical in its general characteristics, the uneconomical engine, hoisting the skip and the very uneconomical air compressor excepted. However, we have been able during the year to do the work with this plant rather more satisfactorily than during 1900.

CLEVELAND LAKE MINE.

There has been no important changes at the Lake Mine during the year, with the exception of the installation of a straight line compressor.

HOISTING ENGINE.

The hoisting engine continues to give most excellent satisfaction the only difficulty being in the leaking of the reversing valve, which we had been unable, thus far, to entirely dispense with. It seems to be inherent

in this type of reversing engine. During the month of June we installed cylinder oil pumps on this engine which has shown us a very satisfactory economy in the use of cylinder oil. These oil pumps replaced two Detroit lubricators one on either cylinder. However, there are still Detroit lubricators on the condenser and brake pump, the oil for which is charged to the hoisting engine.

Since the new tram cars were installed in the third level, carrying about three and one-half or four tons of Bessmer ore, we find we have all the load this engine can start. If the high pressure cylinder happens to stop on or near center, we find it very difficult to start the engine as there is so little room below the dump that we cannot drop the skip down enough to bring the engine off center. If we continue the use of this shaft any length of time, it will be necessary to sink this shaft some fifteen or twenty feet further in order to enable us to readily start the heavy load, handled from the third level. Our hoist is undoubtedly using considerably more fuel now than formerly, owing to the heavier loads handled and also to the fact that something like half the ore now comes from the third level, while last year it was all coming from the second.

AIR COMPRESSOR.

The 18" & 16 1/2" x 30" Rand Duplex Compressor is still in service and supplied all the air used until Sept. 13th. The amount of air made by this one machine up to Sept. 1st varied from 25,500,000 in Feb. to 30,800,000 in Aug., the average pressure during that time being from 44 to 52 pounds. As there has been considerable drifting in the rock at the mine throughout the year it is apparent at once that this pressure was not at all suitable for economical drilling. The compressor, however, was run as fast as we considered safe in an effort to maintain higher pressure.

During the latter part of July we secured permission to remove a 20" & 20 1/4" x 24" Ingersoll Sargent straight line compressor from the Ashland mine. This was erected and started Sept. 13th after which time we maintained an average pressure of about 68 pounds. The total amount of air made runs in October 45,850,000 and 41,400,000 in November. The fuel consumption increased very greatly at this time which was accounted for by the amount of power required to make the increased amount of air at the higher pressure. This increase amounted to about 105% and, since, these compressors require about five pounds of coal per H. P. per hour, this increased amount of power, accounted for one hundred forty-two tons additional coal to run the compressors alone. On investigation, it was decided to reduce the size of the opening in the pipes, going to the stopes where the air was used for ventilation by which the amount of air used was greatly reduced, the amount for December being at the rate of $44\frac{1}{2}$ million. This instance shows the great difficulty of preventing the men from blowing air away in the stopes and it is only by persistent vigilance that the amount of air is kept within the reasonable bounds in soft ore mines.

There was comparatively little repairs on the old compressor during the year. It was fitted with one new crank pin and two sets of brasses. The amount of air required at this mine is quite large and we should provide a more economical compressor as soon as possible. The plant will soon have to be moved to the location of the new shaft and I believe it would be wise to install a new compressor at once at the new location in order that we may reduce the fuel consumption at the earliest date possible.

ELECTRIC TRAM PLANT.

The power for Electric Tram Plant is still furnished by the 16" x 42" Allis Corliss engine and the engine generator has had little repairs and almost no delays during the year. The generator has had no repairs at all.

but the engine has had new piston springs, cross head and crank pin brasse s.

There has been no addition to the number of mining locomotives or timber hoist during the year. We are running the No. 2 large, general electric motor, the No. 3 or first Jeffery motor and the Westinghouse motor all on the second level. The No. 1 small, general electric motor and the No. 4 Jeffery have been transferred to the third level. All three of the motors on the second level are kept in continuous operation while we are running but one on the third level. The old tram cars on the second level have mostly been repaired during the year and their maintenance cost is very great and the power required to move them very high. The tracks on the second level are also getting bad and are always very dirty, owing to the construction of the old cars used here as they are continually spilling the dirt along the tracks. These cars have made it excessively hard on the motors in use on the second level, so that the repairs on motors has been excessive.

The tracks on the third level are of course almost new while we have installed saddle back spring truck motor cars on this level which have proven very satisfactory. They hold about one-half ton more ore than the old cars, while they do not spill any ore along the tracks. In addition, they run very easily and when loaded, coming down a one and one-half per cent. grade, it is necessary to keep the brake on the motor or they will run away. This is in striking contrast to the old cars on the third level as it is hardly possible to get men behind one of them to move it on a 1 1/3% grade. Your Master Mechanic believes the equipment on third level will show great economy over the old equipment on the second level and that our motor repairs, even in spite of the fact that the motors are older, will be reduced. The reason for believing the motor repairs with the new type of cars will be greatly reduced is in compaing the maintenance cost of the various motors for the years 1900 & 1901, as shown by the following table, taken from your Auditor's report.

TABLE II.
