

THE  
CLEVELAND - CLIFFS IRON CO.  
MINING DEPARTMENT

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ANNUAL REPORT OF GENERAL MANAGER  
FOR  
YEAR ENDING  
DECEMBER 31ST. 1918

MS 86-100  
1989

#1989

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January 1, 1919.

Mr. Wm. G. Mather, Pres.,

Cleveland, Ohio.

Dear Sir:-

I beg to submit the following report of the operations of the Mining Department of this Company for the year 1918. The inventories, maps, and statements relating to this report go forward to you under separate cover. The reports on the different mines of the Company were made by the Superintendents in charge, and the reports of the Mechanical Engineering, Geological, Safety, and Welfare Departments by the heads of these departments.

In June Mr. Lucien Eaton, Superintendent of the Ishpeming District, and Mr. W. R. Meyers, Superintendent of the Iron River District, entered the Service. Mr. Eaton returned the first of the year. Mr. Meyers is still in France. During Mr. Eaton's absence the Ishpeming District was looked after by Captain Rough, whose work was satisfactory in every particular. The Iron River District was added to Mr. C. J. Stakel's duties, and the results have amply justified this arrangement.

Messrs. Stevenson, Nicholson, and Miller are in this country and will probably return to their positions in the course of a few months. Messrs. Elliott and Hayden are in France, and the date of their discharged from the Army is indefinite.

ANNUAL REPORT  
OF THE  
MORO MINE. (1918)

Shipments.

The Moro Mine remained closed throughout the year. All the ore in stock was loaded by steam-shovel and shipped. This ore was crushed at the Lake Superior Hard Ore and at the Maas Mine.

Table I.

Shipments.

Scotch-----	13,834 Tons
Scotville-----	<u>81,772 "</u>
Total	95,606 Tons

Surface.

The old rock dump was leveled off and the rock spread out in the field between the dump and Division St. The trestle over the road leading to the coal-dock was also filled. This work was done by steam-shovel in October and November.

MORO MINE.

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1918.

GRADE	Mine IRON PHOS.	Lake Erie IRON MOIST.	
Scotch,	All Mixed	52.91 1.22	
Scotville,	52.60 1.10		

ORE STATEMENT AND SHIPMENTS FOR YEAR 1918.

	SCOTCH	SCOTVILLE	TOTAL	TOTAL LAST YEAR	
On hand January 1st, '18	9,737	86,875	96,612	109,218	
Transferred,	4,097	4,097	0	0	
Stockpile Shortage,		1,006	1,006	0	
Total,	13,834	81,772	95,606	109,218	
Shipments,	13,834	81,772	95,606	12,606	
Balance on Hand,	0	0	0	96,612	



## ANNUAL REPORT

OF THE

LAKE MINE

(1918)

Production and Shipments.

The Lake Mine worked 298 days in 1918, and produced 438,114 tons of ore, an average of 1,470 tons per day. As the stock-piles were not cleaned up, there was no overrun from them to be credited to production for the year. The mine worked on double shift throughout the year.

19,285 tons of rock were mined, an average of 65 tons per day. All rock-work except the timber-roads and the station for the diamond drill was incidental to mining.

Table I.Production by Grades.

Grade	Total for Year		Average per Day	
	1918 Tons	1917 Tons	1918 Tons	1917 Tons
Lake	223,492	224,589	750	743
Lakedale	<u>214,622</u>	<u>253,375</u>	<u>720</u>	<u>839</u>
Total Ore	438,114	477,964	1,470	1,582
Rock	<u>19,285</u>	<u>20,875</u>	<u>65</u>	<u>69</u>
Total Ore and Rock	457,399	498,839	1,535	1,651

Table II.

Shipments.

Grade	Pocket Tons	Stock-pile Tons	Total Tons
Lake	183,988	37,190	221,178
Lakedale	<u>112,704</u>	<u>66,047</u>	<u>178,751</u>
Total	296,692	103,237	399,929

All the Lake ore was crushed. Neither stock-pile was cleaned up, and there were no shipments from Presqu' Isle.

Table III.

Stock-pile Balances - December 31, 1918.

Grade	At Mine Tons	At Presqu' Isle Tons	Total Tons
Lake	21,854		21,854
Lakedale	<u>80,257</u>	<u>48,226</u>	<u>128,483</u>
Total	102,111	48,226	150,337

Table IV.

Division of Product by Levels.

Level	Ore Tons	Rock Tons	Total Tons
1010' Sub-Level	4,602		4,602
Fourth Level	22,125	120	22,245
982' Sub-Level.	127,491	5,704	133,195
960' Sub-Level	159,473	6,956	166,429
945' Sub-Level	82,365	2,507	84,872
925' Sub-Level	29,353	2,121	31,474
910' Sub-Level	12,705	1,157	13,862
Fifth Level	<u>          </u>	<u>720</u>	<u>720</u>
Total	438,114	19,285	457,399

Table V.

Production by Months.

Month	Days	Ore Per Day Tons	Lake Tons	Lakedale Tons	Total Ore Tons	Rock Tons	Total Ore and Rock Tons
January	26	1,567	22,282	18,456	40,738	1,200	41,938
February	23	1,587	20,579	15,930	36,509	1,575	38,084
March	25	1,617	21,754	18,675	40,429	2,125	42,554
April	25	1,407	16,971	18,198	35,169	2,320	37,489
May	26	1,577	18,745	22,260	41,005	2,015	43,020
June	24	1,574	19,142	18,627	37,769	1,260	39,029
July	26	1,387	16,597	19,470	36,067	1,455	37,522
August	26	1,477	19,823	18,588	38,411	890	39,301
September	23	1,466	16,275	17,454	33,729	1,245	34,974
October	27	1,463	21,427	18,066	39,493	2,065	41,558
November	23	1,311	15,265	14,896	30,161	990	31,151
December	24	1,193	14,632	14,002	28,634	2,145	30,779
Total	298	1,470	223,492	214,622	438,114	19,285	457,399

Table VI.

Delays.

Date	Hours	Tons Lost	Cause	Repair Cost
April 2	4	600	Andrew Bergman's funeral.	
May 22	4	400	Andrew Carlson's funeral.	
July 3	<u>3</u>	<u>120</u>	Skip runners spread. Skip jumped track.	<u>\$ 3.95</u>
Total	11	1120		\$ 3.95

Table VII.

Estimate of Ore Reserves.

960' Sub-Level	56,000 Tons
945' Sub-Level	104,000 "
Fifth Level	<u>446,000</u> "
Total	606,000 "
Less 10% Rock and 10% Loss in Mining	<u>121,000</u> "
Net Total	485,000 "

A factor of 11 cu. ft. per ton was used.

### Fatal Accidents.

#### Andrew Bergman.

At 1:30 P.M. on March 30th, Andrew Bergman, a Swedish miner, working in No. 40 contract on the 945 foot sub-level in South-West, was fatally injured by a fall of ground, while retimbering a drift, preparatory to starting a new cross-cut.

Bergman was a man 58 years old, and had worked for the company 29 years. He is survived by an invalid wife and three grown children.

#### Andrew Carlson.

At 4:45 P.M. on May 18th, Andrew Carlson, a Swedish miner, working in No. 50 contract on the 982 foot sub-level, was killed by a fall of ground. While he and his partner were replacing a cap, which had been slightly moved by their blast, a piece of ground gave away, knocking the cap down on him and breaking his back. He was a man 45 years old, and had worked for the company many years. He left a wife and four young children.

### Exploration.

#### Underground Diamond Drilling.

In December a place for a diamond-drill was cut in the side of the cross-cut 420 feet south of the shaft, and hole No. 502 was started in diorite. This hole was continued in hard diorite, and was down 520 feet at the end of the year. This hole is to test the soft-ore formation lying under the diorite sheet which constitutes the foot-wall of the Lake Mine ore-body.

### SURFACE.

#### New Construction.

##### E and A. No. 352 B. Coal Crusher.

The installation of the new coal-crusher was completed in February.

### Fire in Coal-Dock.

Fire broke out in the coal-dock early in the morning on January 6th, and burned part of the siding of the dock, one cord of lagging and two trestle-legs, and injured a box-car standing on the dock. When the fire was finally quenched and dug out, several more trestle-legs and sills were found to be burned. Repairs were started in March and completed in April.

### Power.

Owing to a shortage of electric power, the steam-pumps were started on February 6th and continued in use until March 4th. A new 4" steam-pipe was hung in the shaft.

## UNDERGROUND.

### Development.

The only development work necessary is the opening of new sub-levels. On account of the flatness of the foot-wall a great deal of rock drifting is necessary in the east half of the deposit, and a good deal has been necessary near the west boundary in handling the water from the Lake Superior Hematite Mine. This water level was lowered to the bottom level during the year.

The number of contracts has decreased from 46 to 40 on account of the decrease in the size of the ore-body.

### Stoping.

The same policy has been maintained in stoping as during the last three years, and the east and west ends of the ore-body have been worked down rapidly, leaving a wide pillar in the middle to protect the timber-roads and air-ways. The ends of the deposit have been worked down low enough for the most economical mining, and the ventilation pillar is being sliced off at the same rate as the rest of the mine. All the ore has been mined above the 982 foot sub-level, and the west end of the deposit has been mined down to the 910 foot sub-level.

The ore west of the ventilation pillar is all-high in phosphorus, and the low phosphorus ore on the east side is decreasing. The dikes are found to be closer together near the bottom of the deposit, and the contour of the foot-wall is not at all regular.

All of the ventilation pillar left on the 1010 foot sub-level and the fourth level has been mined, finishing all of the ore above the fourth level. There were a few pillars left on the fourth level in the middle part of the vein on the first of the year, but they were mined in the first two months.

The ore west of the ventilation pillar on the 982 foot sub-level was mined in 1917, and the east side was opened up and mining started in the same year. In 1918 the east side of the vein and the ventilation pillar were both finished.

On the 960 foot sub-level, formerly called the "Ventilation Sub-Level," the last of the ore west of the ventilation pillar was mined early in the year, and the ore on the east side has been opened and partly mined. There are now eighteen contracts working on this sub-level. The ore at the east end of the vein between this sub-level and the 982 foot sub-level lay so flat that it had to be mined on an intermediate sub-level, which had been partly worked out in 1917.

The west end of the 945 foot sub-level was opened in 1917, and mining was started. All of this ore has been mined in 1918, and the east half of the ore-body is being opened up. There are eleven contracts working on this sub-level. The 925 foot sub-level has been opened on the west end, and part of the ore west of the ventilation pillar has been mined. The ore east of the ventilation pillar has not been opened up. There are three contracts working on this sub-level.

A rock drift was driven to the west boundary to tap the water on the bottom level of the Lake Superior Hematite Mine, and the ore west of the ventilation pillar has been opened up. There are four contracts working on it. No work has been done east of the ventilation pillar.

There has been no work on the fifth level except cutting out for the diamond-drill, 420 feet south of the shaft.



LAKE MINE.

COMPARISON OF COST SHEETS.

FOR 1917 and 1918.

The Lake Mine worked on double shift during all of 1917 and 1918. There was no stock-pile overrun in either year, as the piles were not cleaned up.

Wages were increased 10% successively on April 16th, August 1st, and October 1st, the average wage for the year being 29.1% higher than the average for 1917.

Production.

	Total	Per Day
Year 1917	477,964 Tons	1,582 Tons
Year 1918	<u>438,114 "</u>	<u>1,417 "</u>
Decrease	39,850 "	112 "

Labor.

	1917	1918
Average number of men	328	304
Average rate per day	\$ 3.94	\$ 5.09

Tons per Man per Day.

	1917	1918
Surface	20.90	19.80
Underground	6.29	6.41
Total	4.83	4.84

Cost of Production.

	1917	1918
Labor	\$ .806	\$ 1.033
Supplies	<u>.271</u>	<u>.335</u>
Total	\$ 1.077	\$ 1.368

GENERAL EXPENSE.

No. 26 - Insurance.

1918	\$ 996.88	\$ .002
1917	<u>199.77</u>	<u>.000</u>
Increase	\$ 797.11	\$ .002

The increase is due to the cost of War Risk Insurance in 1918.

No. 27 - Engineering.

1918	\$ 998.79	\$ .002
1917	<u>1219.68</u>	<u>.003</u>
Decrease	\$ 220.89	\$ .001

There was less surveying in 1918 on account of less development work.

No. 28 - Analysis.

1918	\$ 9680.56	\$ .022
1917	<u>8155.02</u>	<u>.017</u>
Increase	\$ 1525.54	\$ .005

The increase is due to the increase of wages in 1918.

No. 30 - Personal Injury Expense.

1918	\$ 11619.97	\$ .027
1917	<u>5000.02</u>	<u>.010</u>
Increase	\$ 6619.95	\$ .017

The principal items were as follows:-

	1918	1917
Medical & Hospital Exp.	\$ 1436.70	\$ 1485.04
Compensation charges	8359.68	3156.05
½ Day Funeral Charges	797.82	358.93
Hospital deficit	<u>1025.77</u>	
	\$ 11619.97	\$ 5000.02

No. 30a - Mine Office.

1918	\$ 11179.35	\$ .026
1917	<u>10817.11</u>	<u>.023</u>
Increase	\$ 362.24	\$ .003

The increase is due to the increase in wages in 1918.

MAINTENANCE.

No. 125 - Tracks and Yards.

1918	\$ 1930.61	\$ .004
1917	<u>1374.18</u>	<u>.003</u>
Increase	\$ 556.43	\$ .001

The increase is due to the increase in wages in 1918.

No. 126 - Docks, Trestles and Pockets.

1918	\$ 1759.24	\$ .004
1917	<u>1558.51</u>	<u>.003</u>
Increase	\$ 200.73	\$ .001

In 1917 maintenance of the rock-dump cost \$1100, and repairs to railroad pockets cost \$330. In 1918 rock dump cost \$1242.58 and railroad pockets \$516.66.

No. 127 - Buildings.

1918	\$	3272.12	\$	.007
1917		<u>3911.07</u>		<u>.008</u>
Decrease	\$	638.95	\$	.001

The principal items were as follows:-

	1917	1918
Repairing coal-dock	\$681.95	\$1462.69
Repairing timber-tunnel	244.19	842.36
250 ft. fire-hose	312.50	
Engine & boiler-house	301.62	170.33
Office, warehouse & shops	215.21	309.00
Iron rack & storage shed	116.09	
Balance on addition to dry	148.74	
Other repairs to dry	268.04	146.79
Top-tram engine-house	192.24	14.16
Oil shed, salt shed, timber-		
mens' shanty	89.18	
Shaft-house	<u>341.31</u>	<u>326.79</u>
	\$3911.07	\$3272.12

No. 128 - Shop Machinery.

1918	\$		\$	
1917		<u>72.76</u>		<u>.000</u>
Decrease	\$	72.76	\$	.000

In 1918 charges were as follows:-

	Labor	Supplies	Total
Boilers	\$731.29	\$237.33	\$968.62
Equipment	822.63	1852.46	2675.09
Coal Crusher	<u>145.38</u>	<u>877.23</u>	<u>1022.61</u>
	\$1699.30	\$2967.02	\$4666.32

No. 129 - Boiler Plant.

1918	\$	4666.32	\$	.011
1917		<u>1374.93</u>		<u>.003</u>
Increase	\$	3291.39	\$	.008

Equipment includes Green Fuel Economizer Co.'s invoices for Economizer tubes, heaters, etc., \$661.55 and W. T. Cole invoice \$281.50, Repairs to Hot Water Heater.

In 1918 the economizer was rebuilt, new tubes were put in the hot water heater and a new bottom put in the 12 ft. cold water tank.

No. 130 - Hoisting Machinery.

1918	\$	647.88	\$	.001
1917		<u>4349.68</u>		<u>.009</u>
Decrease	\$	3701.80	\$	.008

In 1917 the principal items were as follows:-

Hoisting-ropes	\$766.20
New Drum	650.00
New Gear and Pinion	750.00
Overwinding device for cage-hoist	500.00

To which was added labor cost of installation, freight, etc.

No. 131 - Compressors and Power Drills.

1918	\$	325.25	\$	.001
1917		<u>714.44</u>		<u>.002</u>
Decrease	\$	389.19	\$	.001

Repairs for 1918 to compressor cost \$325.25, and for 1917 \$211.24, an increase of \$114.01. Power Drills charged out in 1917 were \$503.20 more than in 1918, making a net decrease of \$389.19.

No. 132 - Pumping Machinery.

1918	\$	2443.23	\$	.006
1917		<u>594.31</u>		<u>.001</u>
Increase	\$	1848.92	\$	.005

In 1918 new parts for the Prescott steam-pump cost \$126, and a 4-inch steam-line cost \$648.95. A new gear and pinion for the electric-pump cost \$830. Labor costs increased \$192.59, on account of higher wages and more labor in installing the supplies listed above.

No. 133 - Top Tram Engines and Cars.

1918	\$	1123.96	\$	.003
1917		<u>1006.97</u>		<u>.002</u>
Increase	\$	116.99	\$	.001

In 1917 a new rope was bought and one car was rebuilt.

	Labor	Supplies	Total
1918	\$ 487.14	\$ 636.82	\$ 1123.96
1917	<u>606.89</u>	<u>400.08</u>	<u>1006.97</u>
	Dec.119.75	In.236.74	Inc.116.99

Increase for 1918 was for making rollers and brackets at Hard Ore Shops. (Costing \$144.24)

No. 134 - Skips and Skip-Roads.

1918	\$	1337.31	\$	.003
1917		<u>965.13</u>		<u>.002</u>
Increase	\$	372.18	\$	.001

In 1917 500 feet of guides were put in the shaft. Balance of charges is for repairs to skips and cages. Comparison of the two years as follows:-

	Labor	Supplies	Total
1918	\$ 838.88	\$ 498.43	\$ 1337.31
1917	<u>483.67</u>	<u>481.26</u>	<u>965.13</u>
	Inc. 355.01	Inc. 17.17	Inc. 372.18

Year 1918 - Labor repairing skip and cage guides	\$ 253.53
Year 1918 - Labor repairing skips and cages	<u>585.35</u>
	\$ 838.88

No. 135 - Underground Tracks and Cars.

1918	\$	1975.66	\$	.005
1917		<u>1588.62</u>		<u>.003</u>
Increase	\$	387.04	\$	.002

Labor cost \$148.03 more in 1918 than in 1917, and 12 lb. rail cost \$109.67 more. Hard Ore Shop charges for cutting plate for car-bottoms cost \$67.89 more in 1918 than in 1917.

No. 136 - Electric Tram Plant.

1918	\$	9504.53	\$	.022
1917		<u>9432.79</u>		<u>.020</u>
Increase	\$	71.74	\$	.002

No. 137 - Telephones and Safety Devices.

1918	\$	1802.30	\$	.004
1917		<u>1382.03</u>		<u>.003</u>
Increase	\$	420.27	\$	.001

The principal items were as follows:-

	1917	1918
Mine Telephones	\$ 94.90	\$ 194.49
Safety Gates and Underground Improvements	1225.74	1585.31
Sign Boards & Signals	1.00	
Appliances for Injured Persons	57.36	22.50
Miscellaneous		
Engine-House	3.03	
	<u>\$ 1382.03</u>	<u>\$ 1802.30</u>

No. 139 - Lake Angeline Drainage.

1918	\$	2321.48	\$	.005
1917		<u>2464.01</u>		<u>.005</u>
Decrease	\$	142.53	\$	.000

The charges for 1917 were higher on account of finishing the pipe line and tearing down the old launder. This was counter-balanced in 1918 by higher wages.

No. 140 - Fire Expense and Damage.

1918	\$	211.12	\$	.000
1917		<u>211.12</u>		<u>.000</u>
Increase	\$	211.12	\$	.000

Charges are on account of a fire in the coal-dock early in the year.

MINING EXPENSE.

No. 150 - Air-Pipes.

1918	\$	1830.56	\$	.004
1917		<u>1443.75</u>		<u>.003</u>
Increase	\$	386.81	\$	.001

The increase is in labor charges, due to wage increases.

No. 151 - Compressors.

1918	\$	19735.27	\$	.045
1917		<u>16805.92</u>		<u>.035</u>
Increase	\$	2929.35	\$	.010

The increase is due to the increase in wages, and to the higher price of coal.

No. 152 - Hoisting.

1918	\$	20046.85	\$	.046
1917		<u>17467.01</u>		<u>.037</u>
Increase	\$	2579.84	\$	.009

The increase is due to the increase in wages, and to the higher price of coal.

No. 153 - Pumping.

1918	\$	11127.28	\$	.025
1917		<u>6519.25</u>		<u>.014</u>
Increase	\$	4608.03	\$	.011

The increase is due to the increases in wages in 1918 and to higher power-cost. Electric power-rates were increased 50% for 1918, and pumping was done by steam in February, at higher cost.

No. 155 - Rock Drifting.

1918	\$	34859.93	\$	.079
1917		<u>29757.31</u>		<u>.062</u>
Increase	\$	5102.62	\$	.017

In 1917 5,964 feet of drifting cost \$4.99 per foot. In 1918 6,315 feet cost \$5.52 per foot. The increased cost per foot is due to higher wages and to higher cost of explosives. More drifting was done on account of the flatness of the foot-wall and dikes below the fourth level.

No. 156 - Breaking Ore.

1918	\$	262955.52	\$	.600
1917		<u>228223.90</u>		<u>.478</u>
Increase	\$	34731.62	\$	.122

The increase is due to higher wages and higher cost of explosives. Wages were 29.1% higher than in 1917 and powder cost 2.76¢ per pound more.

No. 157 - Trimming.

1918	\$	36684.59	\$	.084
1917		<u>35544.39</u>		<u>.074</u>
Increase	\$	1140.20	\$	.010

The increase is due to higher wages, and to a 50% increase in the price of power.

No. 158 - Filling.

1918	\$	1674.85	\$	.004
1917		<u>1292.27</u>		<u>.003</u>
Increase	\$	382.58	\$	.001

Higher wages account for this increase.

No. 159 - Timbering.

1918	\$	94926.01	\$	.217
1917		<u>83179.08</u>		<u>.174</u>
Increase	\$	11746.93	\$	.043

The increase is due to an average increase of 29.1% in wages in 1918 and to higher timber prices.

No. 160 - Captain and Bosses.

1918	\$	13566.63	\$	.031
1917		<u>10906.37</u>		<u>.023</u>
Increase	\$	2660.26	\$	.008

The increase is due to higher wages in 1918.

No. 161 - Dry-House.

1918	\$	8117.22	\$	.019
1917		<u>5770.22</u>		<u>.012</u>
Increase	\$	2347.00	\$	.007

The increase is due to higher wages in 1918 and to the higher cost of coal.

No. 162 - Top Landing and Trammig.

1918	\$	11733.04	\$	.027
1917		<u>9202.59</u>		<u>.019</u>
Increase	\$	2530.45	\$	.008

The increase is due to higher wages and higher cost of coal. Cost per ton also increased on account of smaller production.

No. 163 - Stocking Ore.

1918	\$	7280.38	\$	.017
1917		<u>6290.91</u>		<u>.013</u>
Increase	\$	989.47	\$	.004

The increase is due to higher wages in 1918.

No. 164 - Sorting Ore.

1918	\$	61.39	\$	.000
1917		<u>10.99</u>		<u>.000</u>
Increase	\$	50.40	\$	.000

No. 166 - Cave-In.

1918	\$	3224.82	\$	.007
1917		<u>3701.84</u>		<u>.008</u>
Decrease	\$	477.02	\$	.001

In 1917 a 3" centrifugal pump cost \$880. In 1918 the cost of electric power increased 50%.

No. 167 - Lake Angeline Drainage.

1918	\$	1480.44	\$	.003
1917		<u>1131.66</u>		<u>.003</u>
Increase	\$	348.78	\$	.000

The increase is due to higher wages and higher cost of electric power.

No. 171 - Ventilation.

1918	\$	2160.93	\$	.005
1917		<u>1609.05</u>		<u>.002</u>
Increase	\$	551.88	\$	.003

The increase is due to the increase in cost of electric-power.

RECAPITULATION.

	Year 1917		Year 1918		Increase		Decrease	
	Total	Per Ton	Total	Per Ton	Total	Per Ton	Total	Per Ton
General Expense	25391.60	.053	34475.55	.079	9083.95	.026		
Maintenance	30789.43	.064	33321.01	.076	2531.58	.012		
Mining Expense	458856.51	.960	531465.71	1.213	72609.20	.253		
Cost of Production	515037.54	1.077	599262.27	1.368	84224.73	.291		

LAKE MINE.

LAKE MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1918.

GRADE	IRON	PHOS.	SILICA
Lakedale,	58.78	.202	5.55
Lake,	60.01	.118	4.94

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1918.

GRADE	IRON	PHOS.
Lakedale,	All Mixed	
Lake,	60.10	.112-(Includes 18 straight cargoes to Michigan Ports for Charcoal Furnaces

The balance of this grade was shipped in mixed cargoes.

ORE STATEMENT - DECEMBER 31ST, 1918.

	LAKE ORE AT MINE	LAKEDALE AT MINE	LAKE ORE STOCKED AT PRESQUE ISLE	TOTAL	TOTAL LAST YEAR
On hand January 1st, '18,	19,540	44,386	48,226	112,152	111,362
Output for Year,	223,492	214,622	0	438,114	477,964
Total,	243,032	259,008	48,226	550,266	589,326
Shipments,	221,178	178,751	0	399,929	477,174
Balance on Hand,	21,854	80,257	48,226	150,337	112,152
Decrease in output- 8%				39,850	
Increase in ore on hand,				38,185	

1918 - 2-8 Hour shifts for year

1917 - 2-8 Hour shifts for year

SHIPMENTS FOR YEAR 1918.

GRADE	POCKET	STOCKPILE	P.I.ST.PILE	TOTAL	TOTAL LAST YEAR
Lake,	183,988	37,190	0	221,178	225,141
Lakedale,	112,702	66,049	0	178,751	252,033
Total,	296,690	103,239	0	399,829	477,174
Total last Year,	325,843	151,331	0	477,174	
Decrease - 16%			0	77,345	

LAKE MINE.

LAKE MINE.

COMPARATIVE MINING COST FOR YEAR.

	1 9 1 8.	1 9 1 7.	INCREASE.	DECREASE.
PRODUCT	438,114	477,964		39,850
General Expense	.079	.053	.026	
Maintenance	.076	.064	.012	
Mining Expense	1,213	.960	.253	
Cost of Production	1,368	1,077	.291	
Exploratory	.004	0	.004	
<u>DEPRECIATION.</u>				
Original Purchase	.355	.355		
Plant Account	.002	.002		
Total Depreciation	.357	.357		
Taxes	.069	.063	.006	
Central Office	.060	.049	.011	
Supply Inventory	.007	0	.017	
Sundry Expense	.030	.015	.015	
Fire Loss	.001			.001
Cost on Stockpile	1,904	1,561	.343	
Loading & Shipping	.063	.049	.014	
Total Cost on Cars	1,967	1,610	.457	
No. Days Operating	298	302		4
No. Shifts and Hours	2-8hr	2-8hr		
Avg. Daily Product	1470	1584		114
<u>COST OF PRODUCTION.</u>				
Labor	1,033	.806	.227	
Supplies	.335	.271	.064	
Total	1,368	1,077	.291	



LAKE MINE.

COMPARATIVE WAGES AND PRODUCT.

	1 9 1 8.	1 9 1 7.	INCREASE.	DECREASE.
PRODUCT	438,114	477,964		39,850
No. Shifts and Hours	2-8hr	2-8hr		
AVERAGE NO. MEN WORKING				
Surface	74	76		2
Underground	229	252		23
Total	303	328		25
AVERAGE WAGES PER DAY				
Surface	4.24	3.25	.99-30.4%	
Underground	5.36	4.15	1.21-29.1%	
Total	5.09	3.94	1.15-29.2%	
WAGES PER MONTH OF 25 DAYS				
Surface	106.00	81.25	24.75	
Underground	134.00	103.75	30.25	
Total	127.25	98.50	28.70	
PRODUCT PER MAN PER DAY				
Surface	19.80	20.90		1.10
Underground	6.41	6.29	.12	
Total	4.84	4.83	.01	
LABOR COST PER TON				
Surface	.214	.155	.059	
Underground	.836	.660	.176	
Total	1.050	.815	.235-28.1%	
AVG. PRODUCT BRK'G & TRM'G	8.67	9.79		1.12
" WAGES CONTRACT MINERS	5.58	4.32	1.26-29%	
" " " LABOR	5.58	4.32	1.26	
TOTAL NUMBER OF DAYS				
Surface	22,135 $\frac{1}{4}$	22,872 $\frac{1}{4}$		737
Underground	68,311 $\frac{3}{4}$	76,026 $\frac{1}{4}$		7,714 $\frac{1}{2}$
Total	90,447	98,898 $\frac{1}{2}$		8,451 $\frac{1}{2}$
AMOUNT FOR LABOR				
Surface	93,823.24	74,251.50	19,571.74	
Underground	366,423.27	315,341.54	51,081.73	
Total	460,246.51	389,593.04	70,653.47	

Proportion Surface to Underground Men:

1918 - 1 to 3.09  
 1917 - 1 to 3.32  
 1916 - 1 to 2.79  
 1915 - 1 to 3.26  
 1914 - 1 to 3.42  
 1913 - 1 to 4.10  
 1912 - 1 to 3.38  
 1911 - 1 to 3.17

LAKE MINE.

TIMBER STATEMENT FOR YEAR ENDING DECEMBER 31, 1918.

KIND.	LINEAL FEET.	AVG. PRICE PER FOOT.	AMOUNT	
			1 9 1 8.	1 9 1 7.
4" to 6" Timber	4,048	.02	80.96	41.52
6" to 8" "	52,046	.0233	1215.22	1657.49
8" to 10" "	143,742	.0568	8169.84	8182.89
10" to 12" "	137,835	.0754	10393.18	6792.53
12" to 14"	20,683	.1074	2220.88	3008.67
Total - 1918	358,354	.0602	22080.08	
Total - 1917	421,092	.0467		19683.10
	LINEAL FEET.	PER 100'.		
5' Lagging	1,073,125	.697	7476.60	7207.15
9' "	3,444	.55	18.94	591.99
7' "	133,000	.55	731.50	983.81
8' "	46,432	.619	287.38	174.64
Total Lagging (1)	1,256,001	.678	8514.42	8957.59
Poles	7,500	.98	73.50	112.41
Total - 1918	1,263,501	.680	8587.92	
Total - 1917	1,774,052	.511		9070.00
Product			438,113	477,964
Feet timber per ton of ore			.818	.881
Feet Lagging " (1)			2.867	3.686
Feet Lagging per foot of Timber			3.505	4.183
Cost per ton for Timber			.0504	.0412
" Lagging			.0194	.0188
" Poles			.0002	.0002
" Timber, Lagging & Poles			.0700	.0602
Equivalent of stull timber to Bd. Measure			783,600	875,112
Ft. Bd. Measure per ton of ore			1.79	1.83
Total cost for Timber, Lagging & Poles - 1918				30668.00
" 1917				28753.10
" 1916				25050.94
" 1915				21780.39
" 1914				18406.67
" 1913				24128.99
" 1912				21525.33
" 1911				19916.58
" 1910				26717.90

LAKE MINE.

STATEMENT OF EXPLOSIVES USED FOR BREAKING ORE.

KIND.	QUANTITY.	AVERAGE PRICES.	AMOUNT 1 9 1 8.	AMOUNT 1 9 1 7.
50% Powder L.F. Standard 1 $\frac{1}{4}$ "	1,400	.2162	302.72	
50% " " " 1 $\frac{1}{2}$ "	78,600	.2072	16282.72	16255.46
60% " Gelatine 1 $\frac{1}{4}$ "	400	.2140	85.60	
Total Powder	80,400	.2074	16671.04	16255.46
Fuse	222,400	7.83	1742.04	1682.49
Caps	64,900	13.36	866.77	1008.22
Cap Crimpers	13	.56	7.28	3.31
Electrical Exploders				3.57
Connecting Wire	10 $\frac{1}{2}$	.50	5.26	.45
Total Fuse, Etc.			2621.35	2698.04
Total Explosives			19292.39	18953.50
Product			438,113	477,964
Pounds Powder per ton Ore			.184	.137
Cost per ton for Powder			.0380	.0340
" Fuse, Caps, Etc.			.0060	.0056
" All Explosives			.0440	.0396
Avg. Price per Lb. for Powder			.2074	.1814

ANNUAL REPORT  
OF THE  
CLIFFS SHAFT MINE.

(1918)

Production and Shipments.

The Cliffs Shaft Mine worked 298 days in 1918, and produced 373,734 tons of ore, an average of 1,258 tons per day. As the stock-piles were not cleaned up there was no overrun added to the production for the year. Nearly all of the ore produced was screened, during most of the year all the ore over a 2½ inch ring going into the lump grade. In the fall the screens were changed to 3 inch openings. 9,070 tons of rock were produced during the year, all of which was dumped underground.

The mine worked underground on single shift during the year, hoisting being done on both shifts. The number of contracts remains unchanged at 63.

Trammers were scarce and inefficient throughout the year. After November, however, the shortage of labor was overcome and at the end of the year the number of trammers had been materially increased.

Table I.

Production by Grades.

Grade	Year 1917		Year 1918	
	Tons	Per Cent	Tons	Per Cent
Lump	249,829	68.0	262,379	70.2
Crushed	<u>117,766</u>	<u>32.0</u>	<u>111,355</u>	<u>29.8</u>
Total	367,595	100.0	373,734	100.0

Table II.

Comparison of Product for 1917 and 1918.

	<u>1917</u>	<u>1918</u>
Days worked	301	298
Ore, Tons	367,595	373,734
Rock, Tons	9,236	9,070
Total Ore and Rock, Tons	376,831	382,804
Ore per Day, Tons	1,221	1,258
Rock per Day, Tons	31	31
Ore and Rock per Day, Tons	1,252	1,289

Table III.

Distribution of Ore and Rock by Levels.

Level	<u>"A" Shaft</u>			<u>"B" Shaft</u>			<u>Both Shafts</u>		
	Tons Ore	Tons Rock	Tons Ore and Rock	Tons Ore	Tons Rock	Tons Ore and Rock	Tons Ore	Tons Rock	Tons Ore and Rock
1				22711	464	23175	22711	464	23175
2	13795	496	14291	3245		3245	17040	496	17536
3	16238	202	16440	7942		7942	24180	202	24382
4	3430	206	3636				3430	206	3636
5	11186	224	11410	17172	898	18070	28358	1122	29480
6	35335	1651	36986	26386	536	26922	61721	2187	63908
7	28810	378	29188	24101		24101	52911	378	53289
8	38604	572	39176	8750	86	8836	47354	658	48012
9	35208	563	35771	7733	563	8296	42941	1126	44067
10	17460	74	17534	19365	151	19516	36825	225	37050
11				15228	645	15873	15228	645	15873
12				9098	701	9799	9098	701	9799
13				11150	100	11250	11150	100	11250
14					87	87		87	87
15	787	473	1260				787	473	1260
Total	200853	4839	205692	172881	4231	177112	373734	9070	382804

CLIFFS SHAFT MINE.

Table IV.

Production by Months.

Month	Days Worked	Ore Per Day Tons	Crushed Ore Tons	Lump Ore Tons	Total Ore Tons	Rock Tons	Total Ore and Rock Tons
January	26	1,240	9,660	22,584	32,244	872	33,116
February	23	1,295	8,912	20,896	29,808	930	30,738
March	25	1,275	9,801	22,079	31,880	706	32,586
April	25	1,187	8,489	21,192	29,681	858	30,539
May	26	1,163	8,814	21,414	30,228	1,064	31,292
June	24	1,269	8,261	22,195	30,456	752	31,208
July	26	1,215	8,733	22,864	31,597	786	32,383
August	26	1,310	9,760	24,289	34,049	592	34,641
September	23	1,303	8,450	21,530	29,980	346	30,326
October	27	1,290	9,713	25,118	34,831	746	35,577
November	23	1,216	10,195	17,768	27,963	494	28,457
December	24	1,292	10,567	20,450	31,017	924	31,941
Year	298	1,258	111,355	262,379	373,734	9,070	382,804

Table V.

Shipments.

	Pocket Tons	Stock-pile Tons	Total Tons
Crushed Ore	56,731	50,662	107,393
Lump Ore	<u>160,342</u>	<u>65,075</u>	<u>225,417</u>
Total	217,073	115,737	332,810

Table VI.

Ore in Stock, January 1st, 1919.

Cliffs Shaft Crushed	28,059 Tons
Cliffs Shaft Lump	<u>73,703</u> "
Total	101,762 "

Table VII.

Delays.

Date 1918	Hours	Tons Lost	Cause	Repair Cost
Jan. 12	3	400	"B" Shaft Top Tram Car broke.	\$ 42.00
Feb. 5	2	200	No current on Main Line.	
" 13	3	300	Rotor burned out on "A" Shaft Hoist Motor.	12.00
" 14	1	100	Top Tram brake frozen.	1.60
Apr. 22	4	400	Fatal Accident to George Badger.	
" 25	4	400	George Badger's funeral.	
May 15	1½	150	No railroad cars.	
" 20	1	100	No railroad cars.	
July 13	3	300	Top Tram Motor burned out.	10.00
Aug. 7	1	100	No railroad cars.	
" 12	3	300	"A" Shaft Top Tram Car broke.	11.00
" 31	1½	150	No current.	
Sept. 28	6	600	Shafting on counter-balance at "A" Shaft broke.	50.00
Oct. 15	<u>4</u>	<u>400</u>	Top Tram Rope Kinked on Drum.	<u>5.00</u>
Total	38	3900		\$ 131.60

Table VIII.

Delays Caused by Lack of Current on Main Line.

Date	Hours	Tons Lost
February 5th	2	200
August 31st	<u>1½</u>	<u>150</u>
Total	<u>3½</u>	<u>350</u>

Table IX.

Ore Mined from C. I. M. Co.'s land during year 14,589 Tons

Table X.

Estimate of Ore Reserves.

	"A" Shaft Tons	"B" Shaft Tons	Total Tons
Pillars	907,000	615,000	1,522,000
Floors	1,735,000	958,000	2,693,000
Partly Developed	<u>586,000</u>	<u>14,000</u>	<u>600,000</u>
Total	3,228,000	1,587,000	4,815,000
Less 10% Rock	<u>323,000</u>	<u>159,000</u>	<u>482,000</u>
Net Total	2,905,000	1,428,000	4,333,000
To Support Surface	<u>1,584,000</u>	<u>857,000</u>	<u>2,441,000</u>
Available Ore	1,321,000	571,000	1,892,000
Less 10% Rock and 10% Loss in Mining	<u>264,000</u>	<u>114,000</u>	<u>378,000</u>
Net Available Ore Jan. 1, 1919.	1,057,000	457,000	1,514,000



### Fatal Accident.

At 1:15 P.M. on Monday, April 22d, George Badger and Nestor Kauppinen were taking a one-ton car down "A" shaft. In putting the car on the cage they sprung the west door out, so that in passing the fifth level it caught on a piece of iron fastened to the shaft timbers. This tore the west door of the cage from its hinges and threw George Badger off the cage on the opposite side. The car then caught on the shaft timber and stopped the cage. George Badger fell to the fifteenth level and was instantly killed. Nestor Kauppinen was caught between the car and the cage, and sustained a severe fracture of the left arm, necessitating amputation.

Badger was a French-Canadian, 30 years old, and had been employed as cage-rider for several years. He leaves a wife and a ten-year old son.

### Repairs to "A" Shaft.

The timber in the shaft below the tenth level was repaired, two extra sets being put in between each two old sets. The timber had been badly cut away by falling ore. Similar repairs will be made in "B" shaft.

### Power.

From February 1st to March 4th, owing to a shortage of electric power, as much pumping as possible was done with the steam-pump on the tenth level in "A" shaft. On March 4th melting snow increased the water supply sufficiently for electric pumping to be resumed.

### New Construction.

#### Crusher Building.

A new motor for the stock-pile cars was installed in February.

#### Engine House.

The Steam-Electric Department installed a 150 H.P. steam-turbine and generator in the engine-house in February. The turbine was not in condition to operate when installed, and repair parts had not been received at the time the power shortage was relieved.

The coal-crusher and elevator were installed in January.

Repairs to Buildings.

The coal-dock was repaired in April and May.

The engine-house was painted inside, and is now in first class condition.

The shaft-houses were patched with sheet-iron on the outside in the fall. Both structures are so old that they should be replaced by steel head-frames.

Exploration.

Underground Diamond Drilling.

Eleven holes were drilled underground with very satisfactory results. Seven of the holes found ore. A description of this work will be given in the Geologist's Report. The following table sets forth the principal facts:-

Underground Diamond-Drill Holes.

Hole No	Depth Feet	Ore Feet	Shaft	Level	Location Direction	Vein
283	281		B	1204 Sub.	S 17 W.	Main Vein
284	185	55	B	1220 "	N. 32° E.	South Lens
285	90		B	1220 "	N. 20° E.	South Lens
286	65	17	A	5	S. 25 W.	North Deposit
287	190	49	A	6	S.	North Deposit
288	208	19	A	6	S. 45 E.	South Lens
289	200	29	A	4	S.	North Deposit
290	103	28	A	4	N. 15 W.	North Deposit
291	155	15	A	4	S. 24 E.	North Deposit
292	68		A	4	N.	North Deposit
293	125		A	4	S. 70 W.	South Lens Unfinished

## UNDERGROUND.

### General Development.

Developments underground have continued to be encouraging. In "A" shaft in March the three contracts advancing toward the east on the seventh, eighth and ninth levels were stopped, because of their proximity to the workings of the Incline and No. 3 Mines, which are filled with water, and work was not resumed during the year. All three places looked very promising, but the one farthest advanced is 400 feet west of the old workings and 100 feet below them, which is near enough for safety. The ore in the South-East Deposit has shown up well, and one contract has raised on it from the eighth level to the elevation of the sixth level, and has not reached the top yet. Small amounts of new ore have also been found in the North Deposit and in the South Lens. The ore below the tenth level is being opened up on the eleventh and twelfth levels.

In "B" shaft the ore in the Main Vein on the lower levels continues to show up well, and contracts are now working in it on the ninth, tenth, eleventh, twelfth and thirteenth levels. On the eleventh level the ore on the north side is 200 feet long and 100 feet wide at the widest point developed. The same ore is being opened on the twelfth level. On the thirteenth level the ore has been opened to a maximum length of 300 feet east and west and 200 feet north and south. The fourteenth level is being opened under this ore. A little new ore has been developed in the North Deposit on the fifth level, but it does not amount to much. The rest of the work in this shaft has been stoping of known ore.

### General Mining.

The average number of contracts worked during the year was 62. Of these 35 were in "A" shaft and 27 in "B" shaft. 33 were engaged in mining known ore-reserves, 25 were developing new ore, and 4 were in rock. There is a large tonnage of ore broken in the stopes, but probably not as much as at the beginning of the year.

CLIFFS SHAFT MINE.

Description of Work Done.

"A" Shaft.

On the first level one contract mined floors west of "A" shaft during most of the year. At the east end of the Main Vein two contracts are now mining on the second level, one gang having cut out in a raise from the third level, and the other having followed the ore up from the east end of the third level. Another gang has been scrambling in the old workings of the North Deposit north of the shaft on the second and third levels.

On the third level one gang was mining until near the end of the year in the South Lens, and one followed the ore up to the first level at the east end of the Main Vein.

On the fourth level one contract followed a narrow vein of ore west in the North Vein, until it pinched out, and are now cross-cutting south in rock to reach some ore found by drill hole No. 289.

On the fifth level there are six gangs. One is raising and another stoping west in the North Deposit 500 feet north-west of the shaft, and two are mining floors to the east, one in the North Deposit, and the other in the Main Vein. In the South Lens one contract has stoped to the south-west during the year, and another is drifting south-east to reach the South-East Deposit.

On the sixth level in the North Deposit two gangs have mined floors throughout the year, and another is cross-cutting south to reach the ore found in drill-hole No. 287. Two gangs have been mining the ore in two small veins in the South Lens, but one of these is now drifting south-east on drill-hole No. 288.

On the seventh level two gangs have been mining floors and backs throughout the year in the South Lens, and another gang is mining backs in the Main Vein.

On the eighth level three gangs are stoping on the main level and one on a sub-level in the North Deposit, one gang is mining backs in the Main Vein, and one is mining floors in the South Lens. In the South-East Deposit one gang has raised in the ore up to the sixth level.

CLIFFS SHAFT MINE.

On the ninth level one gang is mining in the back on the north side of the Main Vein, one is stoping near the east end of the level, and one is cross-cutting north in rock. This last gang has mined most of the year in the floor of the South-East Deposit. One contract is stoping in the South-East Deposit.

On the tenth level two gangs mined in the back of the north stope of the Main Vein during the first half year, and then moved to the South-East Deposit, where there are now three gangs working.

One gang opened the eleventh level between raises from the fifteenth level, and are now opening the twelfth between the same two raises.

"B" Shaft.

On the 1204 foot sub-level there are four gangs. One gang mined in the back of the Main Vein south of the chute, one has been mining floors further east and another has been mining floors in the South Lens, throughout the year. The other gang mined the floor of the 1220 foot sub-level, and is now drifting east to reach the ore found in drill-hole No. 285. During the first part of the year the next raise west of the big chute was holed through to the level, and a new ladder-road and a skip-road for handling supplies was put in.

On the first level one gang has been mining floors at the east end of the Main Vein throughout the year.

On the third level one gang worked in the North Deposit, during the first half year, and then moved to the Main Vein, where they mined floors between the shafts for the rest of the year.

On the fifth level one gang has mined floors in the Fault Vein and the western part of the Main Vein throughout the year. Two gangs have worked in the North Deposit throughout the year, one mining floors, and the other stoping in some new ore developed at the west end of the vein.

On the sixth level three gangs have mined floors and backs in the North Deposit throughout the year.

CLIFFS SHAFT MINE.

On the seventh level there are three gangs mining the floors between the seventh and eighth levels in the North Deposit, Main Vein and Fault Vein. This ore all went out through the eighth level.

On the ninth level one gang cross-cut north to the Main Vein from the west end of the Fault Vein, and has stoped east and west during the second half of the year. Another gang has been mining backs at the east end of the Main Vein during the greater part of the year.

On the tenth level one gang mined in the back of the Main Vein throughout the year, and another was stoping at the east end of the Fault Vein most of the year, and then raised to the ninth level. Another gang worked throughout the year in the west part of the Main Vein 1200 to 1400 feet west of the shaft. This is the ore opened on the eleventh, twelfth and thirteenth levels.

On the eleventh level one gang has developed the north limb of the Main Vein by stoping, and another is following the ore in the south limb to the south-west.

On the twelfth level one gang cross-cut north on drill-hole No. 264, and has opened a stope. Another gang has been following the ore in the south limb to the south-west.

On the thirteenth level one gang has continued developing the Main Vein by stoping, and another is raising to make connection with the 12th level.

The fourteenth level is being developed by one contract working in the last raise from the fifteenth level.

There was no work on the fifteenth level.

CLIFFS SHAFT MINE.  
COMPARISON OF COST SHEETS.  
FOR 1917 and 1918.

The Cliffs Shaft Mine worked on single shift in 1917 and 1918, but hoisting was done on both shifts. There was a loss of product of 7,000 tons due to changing the hoist in 1917. In the second half of 1918 hoisting was carried on in both shafts at night, previous to that time only one shaft at a time being operated at night.

Wages were advanced 10% on April 16, Aug. 1st, and Oct. 1st, the average for the year amounting to 29.1% over average 1917 rates.

Production.

	Total	Per Day
Year 1917	367,595 Tons	1,221 Tons
Year 1918	<u>373,734 "</u>	<u>1,254 "</u>
Increase	6,139 "	33 "

Labor.

	Year 1917	Year 1918
Average number of men	344	336
Average rate per day	\$ 3.70	\$ 4.88

Tons per Man per Day.

	Year 1917	Year 1918
Surface	15.09	15.54
Underground	4.65	4.93
Total	3.55	3.74

Cost of Production.

	Year 1917	Year 1918
Labor	\$ 1.035	\$ 1.291
Supplies	<u>.459</u>	<u>.561</u>
Total	\$ 1.494	\$ 1.852

GENERAL EXPENSE.

No. 26 - Insurance.

1918	\$ 1163.62	\$ .003
1917	<u>158.50</u>	<u>.000</u>
Increase	\$ 1005.12	\$ .003

The increase in Insurance is due to a policy of War Risk Insurance taken out during the year.

No. 27 - Engineering.

1918	\$ 1908.37	\$ .005
1917	<u>2363.91</u>	<u>.006</u>
Decrease	\$ 455.54	\$ .001

In 1917 the engineer doing the work at the Cliffs Shaft had a higher salary than his successor in 1918, and a portion of the cost of vault fixtures was charged to this account.

No. 28 - Analysis.

1918	\$ 2387.27	\$ .006
1917	<u>2220.33</u>	<u>.006</u>
Increase	\$ 166.94	.000

The increase is due to higher wages.

No. 30 - Personal Injury Expense.

1918	\$ 10378.08	\$ .028
1917	<u>6923.89</u>	<u>.019</u>
Increase	\$ 3454.19	\$ .009

There was one fatal accident in each year. The increases are in compensation charges, settlement of one claim, and the hospital deficit in 1918. Charges for 1918 are as follows;

Medical & Hospital Exp.	\$ 1696.29
Mutual Settlement	100.00
Compensation Charges	6822.42
½ Day Funeral Expense	575.91
Hospital Deficit	<u>1183.46</u>
	\$ 10378.08

No. 30a - Mine Office.

1918	\$ 11833.36	\$ .032
1917	<u>10859.34</u>	<u>.030</u>
Increase	\$ 974.02	\$ .002

The increase is in wages of policemen and clerks.

MAINTENANCE.

No. 125 - Tracks and Yards.

1918	\$ 2743.19	\$ .007
1917	<u>7568.56</u>	<u>.021</u>
Decrease	\$ 4825.37	\$ .014

The cost of grading and planting cost \$7000 in 1917, and maintenance in 1918 cost \$2027.97.



No. 126 - Docks, Trestles, and Pockets.

1918	\$	1345.72	\$	.004
1917		<u>419.41</u>		<u>.001</u>
Increase	\$	926.31	\$	.003

No. 127 - Buildings.

1918	\$	4124.69	\$	.011
1917		<u>5061.48</u>		<u>.014</u>
Decrease	\$	936.79	\$	.003

No. 128 - Shop Machinery.

1918	\$	2865.01	\$	.008
1917		<u>603.52</u>		<u>.002</u>
Increase	\$	2261.49	\$	.006

No. 129 - Boiler Plant.

1918	\$	5936.46	\$	.016
1917		<u>2292.69</u>		<u>.006</u>
Increase	\$	3643.77	\$	.010

No. 130 - Hoisting Machinery.

1918	\$	14142.55	\$	.038
1917		<u>8556.20</u>		<u>.023</u>
Increase	\$	5586.35	\$	.015

No. 131 - Compressors and Power  
Drills.

1918	\$	1008.92	\$	.003
1917		<u>4296.33</u>		<u>.012</u>
Decrease	\$	3287.41	\$	.009

No. 132 - Pumping Machinery.

1918	\$	1612.39	\$	.004
1917		<u>669.95</u>		<u>.002</u>
Increase	\$	942.44	\$	.002

No. 133 - Top Tram Engines and Cars.

1918	\$	2992.52	\$	.008
1917		<u>1643.44</u>		<u>.004</u>
Increase	\$	1349.08	\$	.004

In 1917 new plates for pockets cost \$100 and repairs to "B" Shaft trestle cost \$100. In 1918 the principal items were \$783.93 supplies for pockets, and balance labor charges for repairing.

	1917	1918
Repairs to shaft-houses	\$ 518.23	\$ 877.29
Engine and Boiler-Houses	322.20	841.01
Shops	524.81	381.03
Dry-buildings	1572.62	227.71
Miscellaneous Buildings	1960.23	1427.08
Office Building		237.29
Warehouse		34.00
Coal-Dock		99.28

In 1917 the principal charges were \$157.54 for belting and balance labor charges repairing machinery. In 1918 the principal items were One #5 Drill Sharpner and Fittings \$1389.83, One Pedestal Grinder \$150.00, and \$825.85 transferred from E and A. 318, charged to this account.

In 1918 the principal item was the Coal Crusher, covered by E and A. 352, which cost \$3565.78.

In 1918 the principal items were 12" counter-weight pipe \$8003.16 and counter-balance \$1050.82. Interior braces were also put in both drums. In 1917 charges were high on account of gears and motor and changes covered by E and A. 316.

In 1917 the principal items were \$2820 for drills and tripods and \$600 for a new air-line in "A" Shaft. In 1918 no drills or tripods were bought.

Due to labor charges for maintenance. Pumping in February was by steam, and maintenance charges were high in March and April.

Hard Ore Shops charges were \$600.00 for a new car. The balance is labor charges for repairs.

No. 134 - Skips and Skip-Roads.

1918	\$	2915.78	\$	.008
1917		<u>2152.38</u>		<u>.006</u>
Increase	\$	763.40	\$	.002

No. 135 - Underground Tracks and Cars.

1918	\$	11061.96	\$	.030
1917		<u>8984.01</u>		<u>.025</u>
Increase	\$	2077.95	\$	.005

No. 136 - Electric Tram Plant.

1918	\$	6868.42	\$	.018
1917		<u>3759.37</u>		<u>.010</u>
Increase	\$	3109.05	\$	.008

No. 137 - Telephones and Safety Devices.

1918	\$	2315.56	\$	.006
1917		<u>2106.95</u>		<u>.006</u>
Increase	\$	208.61	\$	.000

No. 138 - Crushing and Screening.

1918	\$	4575.32	\$	.012
1917		<u>4923.61</u>		<u>.013</u>
Decrease	\$	348.29	\$	.001

No. 139 - Underground Shovel and Gas Car.

1918	\$	497.98	\$	.001
1917		<u>137.50</u>		<u>.000</u>
Increase	\$	360.48	\$	.001

MINING EXPENSE.

No. 150 - Air-Pipes.

1918	\$	5789.63	\$	.015
1917		<u>5813.91</u>		<u>.016</u>
Decrease	\$	24.28	\$	.001

No. 151 - Compressors.

1918	\$	33945.78	\$	.091
1917		<u>22927.63</u>		<u>.062</u>
Increase	\$	11018.15	\$	.029

The increase is in labor charges for repairs to skip-roads.

In 1917 51,314 lbs. of rail were used at \$49 a ton, and 6 gravel-cars were purchased for \$300. In 1918 the principal items were \$795.00 for car wheels and parts, and 35,000 lbs. rail at \$63 a ton. The balance is on account of the increase in wages for maintenance on tracks.

In 1918 repairs to Locomotives cost \$700.00, and Cable \$1545.08. The balance is labor charges for maintenance.

The increase is due to underground safety-work.

In 1917 the principal items were as follows;- 3 Screen Sections \$465; 3 tons Cast Iron \$150; Rotary Grizzly \$830; Grid Plates and Rollers \$221.02; Bevel Gear and Cast Iron Rings, \$98.71. In 1918 sectional plates cost \$580, and chute plates \$200. The decrease in supplies was counteracted by higher cost of labor.

Underground shovel and gas car started operating full time in August 1917, i.e., 5 months in 1917 and 12 months in 1918.

The increase is due to higher cost for coal, higher cost of electric power, and to increased wages. Coal cost \$4.68 a ton in 1917 and \$5.75 in 1918. Electric power cost 1¢ per KWH in 1917 and 1½¢ in 1918.

No. 152 - Hoisting.

1918	\$	19491.47	\$	.052
1917		<u>12698.76</u>		<u>.034</u>
Increase	\$	6792.71	\$	.018

No. 153 - Pumping.

1918	\$	22399.12	\$	.060
1917		<u>17413.91</u>		<u>.047</u>
Increase	\$	4985.21	\$	.013

No. 154 - Sinking and Shaft Repairs.

1918	\$	4411.66	\$	.012
1917		<u>3520.54</u>		<u>.010</u>
Increase	\$	891.12	\$	.002

No. 155 - Rock Drifting.

1918	\$	41147.91	\$	.110
1917		<u>29726.08</u>		<u>.081</u>
Increase	\$	11421.83	\$	.029

No. 156 - Breaking Ore.

1918	\$	234384.40	\$	.627
1917		<u>196987.02</u>		<u>.536</u>
Increase	\$	37397.38	\$	.091

No. 157 - Tramming.

1918	\$	172715.04	\$	.462
1917		<u>133769.31</u>		<u>.364</u>
Increase	\$	38945.73	\$	.098

No. 158 - Filling.

1918	\$	5704.27	\$	.015
1917		<u>3849.24</u>		<u>.011</u>
Increase	\$	1855.03	\$	.004

No. 159 - Timbering.

1918	\$	4663.46	\$	.012
1917		<u>4297.05</u>		<u>.012</u>
Increase	\$	366.41	\$	.000

No. 160 - Captain and Bosses.

1918	\$	14097.77	\$	.038
1917		<u>10740.81</u>		<u>.029</u>
Increase	\$	3356.96	\$	.009

No. 161 - Dry-House.

1918	\$	4030.20	\$	.011
1917		<u>3103.77</u>		<u>.008</u>
Increase	\$	926.43	\$	.003

The increase is due to the increase in power-rates from 1¢ per KWH to 1½¢ per KWH in 1918, and to wage increases.

The rate for power increased from 1¢ per KWH to 1½¢ in 1918, and wages increased 29%. Pumping cost increased 30%. The flow of water has not increased.

In 1917 "A" Shaft was retimbered for 14 sets above the ledge from Oct. 6 to Oct. 22. In 1918 "A" Shaft was retimbered below the tenth level.

In 1917 1774 feet of rock-drifting and raising cost \$16.75 per foot. In 1918 2217 feet cost \$18.56 per foot. The higher cost is due to higher wages.

Average wages were 29% higher in 1918 than in 1917, and there was an increase of .0276¢ per pound in the price of powder. Tons per man per day breaking ore increased from 11.80 in 1917 to 12.60 in 1918.

The increase is due to 29% increase in wages, and to greater tonnage handled. Efficiency was slightly increased.

The increase is due to the increase in wages.

The increase is due to higher wages in 1918.

The increase is due to wage-increases in 1918.

The increase is due to higher wages and to higher cost of coal.

No. 162 - Top Landing and Trimming.

1918	\$	9034.49	\$	.024
1917		<u>6380.80</u>		<u>.017</u>
Increase	\$	2653.69	\$	.007

The increase is due to higher wages and to higher cost of electric power. During the second half of 1918 hoisting was done from both shafts on both shifts, requiring one more lander.

No. 163 - Stocking Ore.

1918	\$	9260.98	\$	.025
1917		<u>6881.34</u>		<u>.019</u>
Increase	\$	2379.64	\$	.006

The increase is due to the increase in wages in 1918.

No. 164 - Sorting Ore.

1918	\$	8915.14	\$	.024
1917		<u>7001.89</u>		<u>.019</u>
Increase	\$	1913.25	\$	.005

The increase is due to the increase in wages in 1918.

No. 168 - Crushing and Screening.

1918	\$	9696.92	\$	.026
1917		<u>8477.36</u>		<u>.023</u>
Increase	\$	1219.56	\$	.003

The increase is due to the increase in wages and in price of electric power in 1918.

No. 166 - Cave-In.

1918				
1917	\$	3.99	\$	.000
Decrease	\$	<u>3.99</u>	\$	<u>.000</u>

RECAPITULATION.

	Year 1918		Year 1917		Increase		Decrease	
	Total	Per Ton	Total	Per Ton	Total	Per Ton	Total	Per Ton
General Expense	27670.70	.074	22525.97	.061	5144.73	.013		
Maintenance	65006.47	.174	53175.40	.145	11831.07	.029		
Mining Expense	599688.24	1.604	473592.69	1.288	126095.55	.316		
Cost of Production	692365.41	1.852	549294.06	1.494	143071.35	.358		

CLIFFS SHAFT MINE.

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR - 1918.

GRADE	IRON	PHOS.	SILICA
Cliffs Shaft Lump,	58.12	.103	5.87
Cliffs Shaft Crushed	57.81	.106	6.62

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR - 1918.

GRADE	Mine		Lake Erie	
	IRON	PHOS.	IRON	MOIST.
Cliffs Shaft Lump,	58.13	.102	58.65	.65
Cliffs Shaft Crushed	57.60	.102	57.98	2.20

ORE STATEMENT - DECEMBER 31ST, 1918.

	CL.SHAFT LUMP	C.SHAFT CRUSHED	TOTAL	TOTAL LAST YEAR
On hand Jan. 1st, '18,	36,741	24,097	60,838	42,133
Output for Year,	262,379	111,355	373,734	367,595
Total,	299,120	135,452	434,572	409,728
Shipments,	225,417	107,393	332,810	348,890
Balance on Hand,	73,703	28,059	101,762	60,838
Increase in Output-2%			6,139	
Increase in ore on hand			40,924	

1-8 Hr. Shift - 1917 & 1918.

SHIPMENTS FOR YEAR - 1918.

GRADE	POCKET	STOCKPILE	TOTAL	TOTAL LAST YEAR
Lump Cliffs Shaft,	160,342	65,075	225,417	226,933
Crushed Cliffs Shaft,	56,731	50,662	107,393	121,957
Total,	217,073	115,737	332,810	348,890
Total last Year,	186,054	162,836	348,890	451,870
Decrease - 5%			16,080	102,980

Tonnage mined from the former Cleveland Iron Mining Company's property through the Cliffs Shaft Mine during 1918, ..... 14,589.

CLIFFS SHAFT MINE.

CLIFFS SHAFT MINE.

COMPARATIVE MINING COST FOR YEAR.

	1 9 1 8.	1 9 1 7.	INCREASE.	DECREASE.
PRODUCT	373,734	367,595	6,139	
General Expense	.074	.061	.013	
Maintenance	.174	.145	.029	
Mining Expense	1,604	1,288	.316	
Cost of Production	1,852	1,494	.358	
Exploratory	.013	.015		.002
<u>DEPRECIATION.</u>				
Original Purchase	.249	.249		
Plant Account	.012	.020		.008
Equipment	.004	.001	.003	
Construction	.010	.005	.005	
Total Depreciation	.275	.275		
Taxes	.175	.157	.018	
Central Office	.074	.063	.011	
Supply Inventory	.017		.017	
Miscellaneous	.003	.001	.002	
Sundry Expense	.036	.015	.016	
Cost on Stockpile	2,445	2,020	.425	
Loading & Shipping	.047	.031	.016	
Total Cost on Cars	2,492	2,051	.441	
No. Days Operating	298	302		4
No. Shifts and Hours	1-8hr	1-8hr		
Avg. Daily Product	1254	1217	37	
<u>COST OF PRODUCTION.</u>				
Labor	1,291	1,035	.256	
Supplies	.561	.459	.102	
Total	1,852	1,494	.358	

CLIFFS SHAFT MINE.

COMPARATIVE WAGES AND PRODUCT.

	1918.	1917.	INCREASE.	DECREASE.
PRODUCT	373,734	367,595	6,139	
No.Shifts and Hours	1-8hr	1-8hr		
AVERAGE NUMBER MEN WORKING				
Surface	81	81	-	
Underground	254	263	-	9
Total	335	344	-	9
AVERAGE WAGES PER DAY				
Surface	4.21	3.31	.90-27.2%	
Underground	5.10	3.81	1.29-33.9%	
Total	4.88	3.70	1.18-32%	
WAGES PER MONTH OF 25 DAYS				
Surface	105.25	82.75	22.55	
Underground	127.50	95.25	32.25	
Total	122.00	92.50	29.50	
PRODUCT PER MAN PER DAY				
Surface	15.54	15.09	.45	
Underground	4.93	4.65	.28	
Total	3.74	3.55	.19	
LABOR COST PER TON				
Surface	.271	.219	.052	
Underground	1.034	.821	.213	
Total	1.305	1.040	.265-25%	
AVG. PRODUCT BRK'G & TRM'G	6.27	5.94	.33	
" WAGES CONTRACT MINERS	5.75	4.05	1.70-41%	
" " " TRAMMERS	4.90	3.96	.94-23%	
" " " LABOR	5.26	4.01	1.25-31%	
TOTAL NUMBER OF DAYS				
Surface	24,049 $\frac{3}{4}$	24,366		316 $\frac{1}{4}$
Underground	75,795 $\frac{1}{4}$	79,081 $\frac{1}{4}$		3,285 $\frac{3}{4}$
Total	99,845 $\frac{1}{4}$	103,447 $\frac{1}{4}$		3,601 $\frac{1}{2}$
AMOUNT FOR LABOR				
Surface	101,375.03	80,611.81	20,773.22	
Underground	386,253.55	301,590.09	84,663.46	
Total	487,628.58	382,201.90	105,426.68	

Proportion Surface to Underground Men:

1918 - 1 to 3.14  
 1917 - 1 to 3.25  
 1916 - 1 to 3.87  
 1915 - 1 to 3.76  
 1914 - 1 to 3.59  
 1913 - 1 to 3.40  
 1912 - 1 to 4.20  
 1911 - 1 to 3.35

CLIFFS SHAFT MINE.

STATEMENT OF EXPLOSIVES USED FOR BREAKING ORE.

KIND.	QUANTITY.	AVERAGE PRICES.	AMOUNT 1918.	AMOUNT 1917.
50% Powder	267,350	.2080	55681.27	51427.87
Total Powder	267,350	.2080	55681.27	51427.87
Fuse	393,400	7.13	2804.97	2318.15
Caps	84,800	15.04	1275.54	1198.79
Cap Crimpers	10	.38	3.80	10.45
Tamping Bags				3.50
Total Fuse, Etc.			4084.31	3530.89
Total All Explosives			59765.58	54958.76
Product			373,734	367,595
Pounds Powder per ton of Ore			.715	.776
Cost per ton for Powder			.1490	.1399
" " Fuse, Caps, Etc.			.0109	.0096
" " All Explosives			.1599	.1495
Avg. Price per Pound for Powder			.2080	.1804



ANNUAL REPORT  
OF THE  
SALISBURY MINE.

(1918)

Production and Shipments.

The Salisbury Mine worked 298 days in the year 1918, and produced 114,339 tons of ore of all grades, an average of 383 tons per day. Little new ore was found during the year, and operations were confined almost entirely to stoping.

Table I.

Production by Grades.

Grade	Total for Year		Average per Day	
	1918 Tons	1917 Tons	1918 Tons	1917 Tons
Bessemer	3,167	14,949	11	50
Clinton	68,588	45,567	230	151
Clinton Silica	42,584	38,483	142	127
<b>Total Ore</b>	<b>114,339</b>	<b>98,999</b>	<b>383</b>	<b>328</b>
Rock	2,358	5,406	8	18
<b>Total Ore and Rock</b>	<b>116,697</b>	<b>104,405</b>	<b>391</b>	<b>346</b>

Table II.

Shipments.

Grade	Pocket Tons	Stockpile Tons	Total Tons
Bessemer	861	2,874	3,735
Clinton	26,911	56,020	82,931
Clinton Silica	<u>19,591</u>	<u>115,546</u>	<u>135,137</u>
<b>Total</b>	<b>47,363</b>	<b>174,440</b>	<b>221,803</b>

Table III.

Stock-pile Balances, December 31st, 1918.

Grade	1918 Tons	1917 Tons
Bessemer	598	1,116
Clinton	7,250	21,593
Clinton Silica	<u>40,641</u>	<u>133,194</u>
Total	48,489	155,953

Table IV.

Division of Product by Levels.

Level	Bessemer Tons	Clinton Tons	Clinton Silica Tons	Total Ore Tons	Rock Tons	Total Ore and Rock Tons
5		1,352	4,444	5,796	260	6,056
8	2,105	19,290	31,498	52,893	756	53,649
10	90	8,584	2,064	10,738	2	10,740
11	860	37,468	4,538	42,866	360	43,226
12	112	1,894	40	2,046	20	2,066
14					960	960
Total	3,167	68,588	42,584	114,339	2,358	116,697

Table V.

Production by Months.

Month	Days	Ore per Day Tons	Bessemer Tons	Clinton Tons	Clinton Silica Tons	Total Ore Tons	Rock Tons	Total Ore and Rock Tons
January	26	362	270	7,062	2,086	9,418	106	9,524
February	23	319	324	4,438	3,588	8,350	92	8,442
March	25	356	306	5,444	3,144	8,894	158	9,052
April	25	350	232	5,810	2,707	8,749	134	8,883
May	26	405	696	6,616	3,218	10,530	64	10,594
June	24	382	92	4,966	4,103	9,161	58	9,219
July	26	376		5,884	3,886	9,770	198	9,968
August	26	370	507	5,572	3,540	9,619	228	9,847
September	23	395	512	5,485	3,085	9,082	112	9,194
October	27	386		5,964	4,460	10,424	164	10,588
November	23	358	206	4,053	3,980	8,239	406	8,645
December	24	353	116	3,938	4,425	8,479	638	9,117
Year	298	371	3,261	65,232	42,222	110,715	2,358	113,073
St. Pile Overrun		12	739	2,885		3,624		3,624
Total	298	383	4,000	68,117	42,222	114,339	2,358	116,697
Transfers Net			-823	+471	+362			
Total	298	383	3,167	68,588	42,584	114,339	2,358	116,697

Table VI.

Delays.

Date	Hours	Tons Lost	Cause	Repair Cost
Jan. 28	5	100	Skipwheel broken off by ice in shaft.	\$ 61.00
" 29	3	50	Skip thrown off the track by ice in the shaft.	20.00
" 30	7	100	Skip-axle broken by ice in the shaft.	17.00
Feb. 21	3	50	Skip off the track at the knuckle.	38.77
Mch. 27	2	50	Chute pulled out on the 14th level.	15.00
Apr. 11	5	100	Broken rail in skip-road.	31.30
" 16	4	80	Broken rail in skip-road.	30.14
Nov. 6	2	50	Broken rail in skip-road at eighth level.	6.25
Year	31	580		\$ 219.46

Table VII.

Estimate of Ore Reserves.

Level	Bessemer		Clinton		Clinton Silica		Total	
	Dev.	Pros.	Dev.	Pros.	Dev.	Pros.	Dev.	Pros.
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
3					2,000		2,000	
4					5,000		5,000	
5					17,000		17,000	
8			4,000		29,000		33,000	
9			6,000		2,000		8,000	
10			5,000		14,000		19,000	
11			7,000		18,000		25,000	
12	5,000		61,000		6,000		72,000	
13	6,000		42,000				48,000	
14	5,000		28,000				33,000	
16	3,000		1,000	11,000	9,000		13,000	11,000
Total	19,000		154,000	11,000	102,000		275,000	11,000
Less 20% Rk. & Loss	4,000		31,000	2,000	20,000		55,000	2,000
Net Total	15,000		123,000	9,000	82,000		220,000	9,000

Factors used:

Bessemer - - - - - 10 Cu. Ft.  
 Clinton - - - - - 10 " "  
 Clinton Silica - - - - - 13 " "

On account of the sporadic occurrence of the Bessemer ore in the South-East Deposit, it was thought advisable to transfer some of the ore of this grade to Clinton, and this was accordingly done on the twelfth, thirteenth and fourteenth levels, reducing the estimate of Bessemer ore 16,000 tons.

### Fatal Accident.

On December 18th a fall of ground occurred in the big room at the east end of the South Vein, and two miners, Fred Coole, a Manxman, and Antonio Bertucci, an Italian, who were working on the 1109 foot sub-level, just under the eighth level, were caught by falling timbers and instantly killed. There was a good mat of timbers and rock above their working place, but the mass that fell was large and crushed everything beneath it.

### Surface.

There was no new construction carried on during the year, and all work on surface was in the regular routine.

The Bessemer stock-pile was cleaned up, the Clinton pile was cleaned up, except a small amount which is entirely overrun, and a big hole was made in the Silica pile.

The coal-dock is in poor condition and will need some repairs next summer.

## UNDERGROUND.

### General.

There were seventeen contracts working throughout the year, nine in the Old Mine, and eight in the South-East Deposit. Practically all the work done was stoping, the only development-work being a winze, which was started in rock in December near the south end of the big cross-cut to the South-East Deposit. The downward extension of the South-East Deposit will be developed from this winze. Indications are that the ore-body will not be large.

### North Vein.

One contract worked throughout the year in the shaft-pillar south of old No. 2 shaft above the fifth level, and opened and finished the 1240 and 1250 foot sub-levels.

500 feet further east another gang worked all the year, and a third gang worked the second half of the year, mining the ore on the foot-wall below the fifth level. They opened two sub-levels in this ore, and nearly finished them both. Both in this place and in No. 2 shaft pillar it was necessary to mine a good deal of Silica ore in order to get out all the Clinton ore.

The Bessemer deposit at the east end of the North Vein yielded mostly ore of Clinton grade, as the workings got lower in the trough, and all the ore above the eighth level was extracted. This is practically the end of this deposit, as the ore lower down was mined years ago by Capt. Buzzo. There were three contracts working in this vein most of the year.

#### South Vein.

The ore in the floor of the eighth level at the east end of the trough was mined down to the 1110 foot sub-level, one contract working here nearly all the year. The ore was Clinton and Silica.

In the old caved room south of the main drift and west of the big, south cross-cut two contracts worked a large part of the year. They mined a good tonnage of Clinton and Silica ore from the old cave, and finished the 1154 and 1165 foot sub-levels.

Some stoping was done on the ninth level along the edge of the old stopes, but the tonnage mined was not large.

#### South-East Deposit.

The tenth level was finished early in the year, and nearly all the ore down to the eleventh level has been mined. The 1031 foot sub-level was partly opened at the beginning of the year. This sub-level was finished, and the 1020, 1013 and 1007 foot sub-levels were opened and finished during the year. The ore east of the last raise was mined down to the 967 foot sub-level, which is 30 feet below the eleventh level. At the end of the year there were six gangs working on the eleventh level, one on the 967 foot sub-level, and one sinking a winze in rock on the fourteenth level. With the exception of this winze, all the work done has been stoping.

SALISBURY MINE.

COMPARISON OF COST SHEETS.

FOR 1917 and 1918.

The Salisbury Mine worked on double shift throughout both 1917 and 1918, and there was little change in the method of mining.

Wages were increased successively 10% on April 16th, Aug. 1st, and Oct. 1st, 1918., the average rate for 1918 being 29.1% higher than the average for 1917.

Production.

	Total	Per Day
Year 1917	98,999 Tons	328 Tons
Year 1918	<u>114,339 "</u>	<u>383 "</u>
Increase	15,340 "	55 "

Labor.

	Year 1917	Year 1918
Average number of men	124	124
Average rate per day	\$ 3.73	\$ 4.82

Tons per Man per Day.

	Year 1917	Year 1918
Surface	9.50	12.19
Underground	3.67	3.95
Total	2.65	2.98

Cost of Production.

	Year 1917	Year 1918
Labor	\$ 1.368	\$ 1.560
Supplies	<u>.489</u>	<u>.574</u>
Total	\$ 1.857	\$ 2.134

GENERAL EXPENSE.

No. 26 - Insurance.

1918	\$ 419.12	\$ .003
1917	<u>219.57</u>	<u>.002</u>
Increase	\$ 199.55	\$ .001

War Risk Insurance was taken out in 1918 for the first time.

No. 27 - Engineering.

1918	\$ 796.94	\$ .007
1917	<u>734.80</u>	<u>.007</u>
Increase	\$ 62.14	\$ .000

No. 28 - Analysis.

1918	\$ 4328.25	\$ .038
1917	<u>3387.33</u>	<u>.034</u>
Increase	\$ 940.92	\$ .004

The increase is due to an average increase of 29.1% in wages in 1918 over the average for 1917.

No. 30 - Personal Injury Expense.

1918	\$ 7288.82	\$ .064
1917	<u>845.86</u>	<u>.009</u>
Increase	\$ 6442.96	\$ .055

In 1918 there were two fatalities, and none in 1917. Items of expense in 1918 were as follows:-

Medical and Hospital Expense	\$ 607.41
Compensation charges	6233.34
Hospital deficit	<u>448.07</u>
	\$ 7288.82

No. 30a - Mine Office.

1918	\$ 6631.02	\$ .058
1917	<u>6337.20</u>	<u>.064</u>
Increase	\$ 293.82	
Decrease		\$ .006

The increase is due to the increase in wages.

MAINTENANCE.

No. 125 - Tracks and Yards.

1918	\$ 926.23	\$ .008
1917	<u>1542.12</u>	<u>.016</u>
Decrease	\$ 615.89	\$ .008

The 1917 charges included the cost of laying a pipe in the ditch carrying the overflow from Lake Sally. There was no extraordinary expense in 1918.

No. 126 - Docks, Trestles and Pockets.

1918	\$ 426.93	\$ .004
1917	<u>331.78</u>	<u>.003</u>
Increase	\$ 95.15	\$ .001



No. 127 - Buildings.

1918	\$	898.11	\$ .008
1917		<u>2961.39</u>	<u>.030</u>
Decrease	\$	2063.28	\$ .022

In 1917 the cage-shaft-house was rebuilt, the big shaft-house was repaired and one turn-sheave stand rebuilt. The dry also had to be raised and new posts and sills put under it. A toilet and shower-baths and a hospital-room were added. Repairs were also made to the engine-house.

No. 128 - Shop Machinery.

1918	\$	98.69	\$ .001
1917			
Increase	\$	<u>98.69</u>	<u>\$ .001</u>

No. 129 - Boiler Plant.

1918	\$	122.27	\$ .001
1917		<u>36.99</u>	<u>.000</u>
Increase	\$	85.28	\$ .001

No. 130 - Hoisting Machinery.

1918	\$	4516.46	\$ .039
1917		<u>3674.64</u>	<u>.037</u>
Increase	\$	841.82	\$ .002

Depreciation charges were higher in 1918 on account of greater production, and two hoisting-ropes were used. Only one rope was used in 1917.

No. 131 - Compressors and Power Drills.

1918	\$	1338.12	\$ .012
1917		<u>1376.45</u>	<u>.014</u>
Decrease	\$	38.33	\$ .002

No. 132 - Pumping Machinery.

1918	\$	3441.18	\$ .030
1917		<u>3932.52</u>	<u>.040</u>
Decrease	\$	491.34	\$ .010

Surface ditches and pipe cost \$1457.87 in 1917. Wages were higher in 1918 and depreciation charges were \$812 higher, on account of greater production in 1918.

No. 133 - Top Tram Engines and Cars.

1918	\$	306.86	\$ .003
1917		<u>170.14</u>	<u>.002</u>
Increase	\$	136.72	\$ .001

Rope-cost increased \$39 in 1918, shop-labor on rollers \$40, and repairs on top-tram-cars \$60.

No. 134 - Skips and Skip-Roads.

1918	\$	2265.27	\$ .020
1917		<u>1037.56</u>	<u>.010</u>
Increase	\$	1227.71	\$ .010

In 1918 wheels and axles cost \$523, rails and straps \$130, and repairs to cage \$180. There was a charge of \$80 to \$90 per month for repairs to the skip-road.

No. 135 - Underground Tracks and Cars.

1918	\$	3106.85	\$ .027
1917		<u>2831.18</u>	<u>.029</u>
Increase	\$	275.67	
Decrease			\$ .002

The increase is due to higher wages in 1918. The decrease in cost per ton is due to larger production.

No. 137 - Telephones and Safety Devices.

1918	\$	337.99	\$ .003
1917		<u>282.02</u>	<u>.003</u>
Increase	\$	55.97	\$ .000

MINING EXPENSE.

No. 150 - Air-Pipes.

1918	\$	906.08	\$ .008
1917		<u>730.79</u>	<u>.007</u>
Increase	\$	175.29	\$ .001

The increase is due to higher wages in 1918.

No. 151 - Compressors.

1918	\$	6724.64	\$ .059
1917		<u>5057.95</u>	<u>.051</u>
Increase	\$	1666.69	\$ .008

The increase is due to higher wages and to a raise of 50% in power-rates. The number of cu. ft. of air per minute increased from 486 in 1917 to 629 in 1918.

No. 152 - Hoisting.

1918	\$	11100.25	\$ .097
1917		<u>7438.94</u>	<u>.075</u>
Increase	\$	3661.31	\$ .022

The increase is due to higher wages in 1918 and higher power cost. More power was used, on account of greater depth and larger production.

No. 153 - Pumping.

1918	\$	6709.24	\$ .059
1917		<u>4693.45</u>	<u>.047</u>
Increase	\$	2015.79	\$ .012

Wages were increased 29.1% and power-rates 50%, and gallons of water pumped per minute increased from 112 in 1917 to 169 in 1918.

No. 154 - Sinking and Shaft Repairs.

1918	\$	2462.87	\$ .021
1917		<u>128.79</u>	<u>.001</u>
Increase	\$	2334.08	\$ .020

In 1918 the increase is due to sinking a winze from the 14th level on the south-side.

No. 155 - Rock Drifting.

1918	\$	1768.78	\$ .015
1917		<u>4528.06</u>	<u>.046</u>
Decrease	\$	2759.28	\$ .031

In 1917 697 feet of rock-drifting cost \$6.50 per foot. In 1918 214 feet cost \$8.26 per foot. The cost per foot in 1918 was higher on account of higher wages and higher price of powder.

No. 156 - Breaking Ore.

1918	\$	97289.87	\$ .851
1917		<u>71962.90</u>	<u>.727</u>
Increase	\$	25326.97	\$ .124

Cost per ton is higher on account of an increase 29.1% in wages and an increase of 2.76¢ per lb. in powder. The natural increase is partly offset by larger production.

No. 157 - Trimming.

1918	\$	27729.90	\$ .242
1917		<u>20087.55</u>	<u>.203</u>
Increase	\$	7642.35	\$ .039

The increase is due to higher wages in 1918.

No. 158 - Filling.

1918			
1917	\$	429.08	\$ .004
Decrease	\$	429.08	\$ .004

There was no filling in 1918.

No. 159 - Timbering.

1918	\$	28780.24	\$ .252
1917		23291.55	.235
Increase	\$	5488.69	\$ .017

The increase is due partly to higher wages, partly to higher prices for timber, and partly to more timber used, on account of greater production. The increase in cost per ton is not proportionately as great as the gross increase.

No. 160 - Captain and Bosses.

1918	\$	9235.91	\$ .081
1917		5096.54	.052
Increase	\$	4139.37	\$ .029

The increase is due to higher wages in 1918 and to the appointment of two more bosses on April 1st, 1918.

No. 161 - Dry-House.

1918	\$	3628.54	\$ .032
1917		2721.05	.028
Increase	\$	907.49	\$ .004

The increase is due to higher wages and to the higher cost of coal.

No. 162 - Top Landing and Trammig.

1918	\$	7938.25	\$ .070
1917		6280.35	.064
Increase	\$	1657.90	\$ .006

The increase is due to higher wages in 1918.

No. 163 - Stocking Ore.

1918	\$	1161.01	\$ .010
1917		1010.66	.010
Increase	\$	150.35	\$ .000

The increase is due to higher wages.

No. 166 - Cave-In.

1918	\$	216.13	\$ .002
1917		134.29	.001
Increase	\$	81.84	\$ .001

No. 171 - Ventilation.

1918	\$	1022.67	\$ .009
1917		574.32	.006
Increase	\$	448.35	\$ .003

The increase is due to a 50% increase in the rate for electric power for 1918.

RECAPITULATION.

	Year 1918		Year 1917		Increase		Decrease	
	Total	Per Ton	Total	Per Ton	Total	Per Ton	Total	Per Ton
General Expense	19464.15	.170	11524.76	.116	7939.39	.054		
Maintenance	17784.96	.156	18176.79	.184			391.83	.028
Mining Expense	206674.38	1.808	154166.27	1.557	52508.11	.251		
Cost of Production	243923.49	2.134	183867.82	1.857	60055.67	.277		

SALISBURY MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1918.

GRADE	IRON	PHOS.	SILICA
Salisbury Bessemer,	60.65	.049	7.77
Clinton,	59.44	.076	7.89
Clinton Silica,	51.86	.073	19.39

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1918.

GRADE	Mine		Lake Erie	
	IRON	PHOS.	IRON	MOIST.
Salisbury Bessemer,	All Mixed			
Clinton,	60.03	.081	59.55	13.76
Clinton Silica,	51.47	.074	50.50	12.52

ORE STATEMENT DECEMBER 31ST, 1918.

	SALISBURY BESSEMER	CLINTON	CLINTON SILICA	TOTAL	TOTAL LAST YEAR
On hand Jan. 1st, 1918,	1,166	21,593	133,194	155,953	164,693
Output for Year,	2,428	65,703	42,584	110,715	98,607
Stockpile Overrun,	739	2,885		3,624	392
Total,	4,333	90,181	175,778	270,292	263,692
Shipments,	3,735	82,931	135,137	221,803	107,739
Balance on Hand,	598	7,250	40,641	48,489	155,953
Increase in Output-12%				12,108	
Decrease in Ore on Hand,				107,464	

1918 - 2-8 Hour Shifts during year

1917 - 2-8 Hour Shifts during year

SALISBURY MINE

SHIPMENTS FOR YEAR - 1918.

GRADE	POCKET	STOCKPILE	TOTAL	TOTAL LAST YEAR
Salisbury Bessemer,	861	2,874	3,735	18,807
Clinton,	26,911	56,020	82,931	51,221
Clinton Silica,	19,591	115,546	135,137	37,711
Total,	47,363	174,340	221,803	107,739
Total last Year,	27,703	80,036	107,739	
Increase - 106%			114,064	

SALISBURY MINE.

SALISBURY MINE.

COMPARATIVE MINING COST FOR YEAR.

	1 9 1 8.	1 9 1 7.	INCREASE.	DECREASE.
PRODUCT	114,339	98,999	15,340	
General Expense	.170	.116	.054	
Maintenance	.156	.184		.028
Mining Expense	1.808	1.557	.251	
Cost of Production	2.134	1.857	.277	
Exploratory	.004	.230		.226
<u>DEPRECIATION.</u>				
Original Purchase	.073	.073		
Equipment	.012	.002	.010	
Construction		.003		.003
Total Depreciation	.085	.078	.007	
Taxes	.077	.086		.009
Central Office	.089	.084	.005	
Supply Inventory	.026		.026	
Miscellaneous	.002		.002	
Sundry Expense	.033	.016	.017	
Cost on Stockpile	2.450	2.351	.099	
Loading & Shipping	.161	.068	.093	
Total Cost on Cars	2.611	2.419	.192	
No. Days Operating	384	302		8
No. Shifts and Hours	2-8hr	2-8hr		
Avg. Daily Product	384	328	56	
<u>COST OF PRODUCTION.</u>				
Labor	1.560	1.368	.192	
Supplies	.574	.489	.085	
Total	2.134	1.857	.277	

SALISBURY MINE.

COMPARATIVE WAGES AND PRODUCT.

	1 9 1 8.	1 9 1 7.	INCREASE.	DECREASE.
PRODUCT	114,339	98,999	15,340	
No.Shifts and Hours	2-8hr	2-8hr		
AVERAGE NO. MEN WORKING				
Surface	30	34		4
Underground	94	90	4	
Total	124	124		
AVERAGE WAGES PER DAY				
Surface	4.26	3.39	.87-25.6%	
Underground	5.00	3.86	1.14-29.5%	
Total	4.82	3.73	1.09-29.2%	
WAGES PER MONTH OF 25 DAYS				
Surface	106.50	84.75	21.75	
Underground	125.00	96.50	28.50	
Total	120.50	93.25	27.25	
PRODUCT PER MAN PER DAY				
Surface	12.59	9.50	3.09	
Underground	4.08	3.67	.41	
Total	3.08	2.65	.43	
LABOR COST PER TON				
Surface	.339	.357		.018
Underground	1.225	1.051	.174	
Total	1.564	1.408	.156	
AVG. PRODUCT BRK'G & TRAM'G	5.88	4.84	1.04	
" WAGES CONTRACT MINERS	5.17	4.30	.87-20%	
" " " TRAMMERS	4.32	3.86	.46-12%	
" " " LABOR	4.97	4.21	.76-18%	
TOTAL NO.OF DAYS				
Surface	9,079 $\frac{1}{2}$	10,422 $\frac{1}{4}$		1,342 $\frac{3}{4}$
Underground	28,008 $\frac{1}{2}$	26,956	1,052 $\frac{1}{2}$	
Total	37,088	37,378 $\frac{1}{4}$		290 $\frac{1}{4}$
AMOUNT FOR LABOR				
Surface	38,710.61	35,367.78	3,342.83	
Underground	140,085.06	104,015.30	36,069.76	
Total	178,795.67	139,383.08	39,412.59	

Proportion Surface to Underground Men:

1918 - 1 to 3.13  
 1917 - 1 to 2.68  
 1916 - 1 to 2.42  
 1915 - 1 to 2.  
 1914 - 1 to 3.12  
 1913 - 1 to 3.49  
 1912 - 1 to 3.51  
 1911 - 1 to 3.21

SALISBURY MINE.

TIMBER STATEMENT FOR YEAR ENDING DECEMBER 31, 1918.

KIND.	LINEAL FEET.	AVG. PRICE PER FOOT.	AMOUNT 1 9 1 8.	AMOUNT 1 9 1 7.
4" to 6" Timber	7,028	.02063	145.03	1205.00
6" to 8" "	16,086	.02814	452.76	1306.00
8" to 10" "	44,531	.04796	2036.79	1653.17
10" to 12" "	22,206	.06528	1449.28	1405.04
12" to 14" "	3,854	.07985	307.77	469.22
Total - 1918	93,705	.047	4391.63	4391.63
Total - 1917	129,648	.0373		4833.43
	LINEAL FEET.	PER 100'.		
5' Lagging	306,213	.68½	2101.30	1526.63
7' "	108,289	.56	607.45	429.31
Total Lagging (1)	414,502	.65	2708.75	1955.94
Poles	155,997	.97	151,555	1424.47
Total - 1918	570,499	.74	4224.30	
Total - 1917	533,526	.63		3380.41
Product			111,282	98,999
Feet Timber per ton of Ore			.842	1.309
Feet Lagging " (1)			3.724	5.390
Feet Lagging per foot of Timber			4.423	4.115
Cost per ton for Timber			.0394	.0488
" Lagging			.0243	.0342
" Poles			.0136	.0144
" Timber, Lagging & Poles			.0774	.0974
Equivalent of stull timber to Board Measure			175,041	232,043
Ft. Bd. Measure per ton of Ore			1.57	2.34
Total Cost for Timber, Lagging & Poles - 1918				8615.93
" 1917				8213.84
" 1916				6932.98
" 1915				2099.17
" 1914				8127.18
" 1913				7058.47
" 1912				6787.05
" 1911				7228.05



SALISBURY MINE.

STATEMENT OF EXPLOSIVES USED FOR BREAKING ORE.

KIND.	QUANTITY.	AVERAGE PRICES.	AMOUNT 1 9 1 8.	AMOUNT 1 9 1 7.
40% Powder	5,600	.1839	1030.21	
50% "	29,600	.2068	6121.70	6,045.72
Total Powder	35,200	.2032	7151.91	6,045.72
Fuse	123,650	7.072	874.57	614.19
Caps	31,600	13.11	414.39	386.47
Cap Crimpers	1		.32	.50
Total Fuse, Etc.			1289.28	1,004.16
Total All Explosives			8441.19	7,049.88
Product			111,282	98,999
Pounds Powder per ton Ore			.316	.337
Cost per ton for Powder			.064	.059
" " Fuse, caps, etc.			.011	.010
" " All Explosives			.075	.071
Avg. Price per Lb. for Powder			.2032	.1812

ANNUAL REPORT .  
OF THE  
ANGELINE MINE. (1918)

Production and Shipments.

Shipments were made from the East End Pit, the Happy Hollow Pit, and from "D" Shaft during the year. The ore shipped from the East End Pit was mined by steam-shovel, that from Happy Hollow was mined by slicing and was hoisted in the skip operated at the edge of the big cave. The ore from "D" Shaft was obtained from drifts and raises driven in reopening the mine. First shipments were made from the East End and Happy Hollow in June, and from "D" Shaft in August.

Stripping was continued at the East End until June, when mining started. At the end of the shipping season the trestle was raised and ore was stocked on the north side of the railroad track. There was about a month's work cleaning up the Happy Hollow Pit and the drift and raises, before mining could start. The ore from Happy Hollow is being stocked in railroad cars.

Capt. Harry H. Marks was appointed Mining Captain on April 15. The mine was under the supervision of Capt. J. H. Rough as superintendent from June 1 to December 29th.

Table I.

Production by Grades.

Grades	East End Tons	Happy Hollow Tons	"D" Shaft Tons	Total 1918 Tons	Total 1917 Tons
Angeline Bessemer		5,616	1,888	7,504	35,493
East End Bessemer	49,799			49,799	16,462
Angeline	136			136	453
Hematite					205
<b>Total</b>	<b>49,935</b>	<b>5,616</b>	<b>1,888</b>	<b>57,439</b>	<b>52,613</b>

Table II.

Production by Months.

Month	East End	Happy Hollow	"D" Shaft	Total
	Tons	Tons	Tons	Tons
June	3,219	439		3,658
July	10,183	992		11,175
August	11,570	1,065	118	12,753
Sept.	9,562	729	277	10,568
Oct.	9,835	1,097	438	11,370
Nov.	1,846	794	254	2,894
Dec.	3,720	500	801	5,021
Total	49,935	5,616	1,888	57,439

Table III.

East End Stripping.

Month	Yards Moved
January	2,207
February	1,390
March	1,448
April	3,168
May	2,321
June	802
Total	11,336

Table IV.

Shipments.

Grade	East End	Happy Hollow	"D" Shaft	Total
	Tons	Tons	Tons	Tons
East End Bessemer	45,346			45,346
Angeline Bessemer		4,566	899	5,465
Angeline	136			136
Total	45,482	4,566	899	50,947

Table V.

Stock-pile Balances Dec.31, 1918.

	East End Bessemer	Angeline Bessemer	Total
	Tons	Tons	Tons
East End	4,453		4,453
Happy Hollow (In cars)		1,050	1,050
"D" Shaft		989	989
Total	4,453	2,039	6,492

Table VI.

Estimate of Ore Reserves.

Developed Ore.

East End Pit.

East End Bessemer 20,000 Tons

Happy Hollow.

Angeline Bessemer 1,000 "

Angeline 2,000 "

"D" Shaft.(No.56) ( Probable Ore )

Angeline Bessemer 15,000 "

Angeline 15,000 "

Total 53,000 Tons

Less 10% Rock and 10% Loss in Mining 11,000 "

Net Total 42,000 Tons

New Construction.

E. and A. 351 Hoisting Machinery.

The end of the pinion shaft on the old hoist was cut off and a coupling put on to connect with the new motor. The switch-board was installed and the hoist started in August. The pulley-stands were also rebuilt.

The boilers in the boiler-house were moved out and a small locomotive-boiler for heating was moved in. The boiler-house was divided into two shop-rooms, the west half of the old engine-room was made into a dry, and three rooms were partitioned off in the old engine-room on the north side of the engine-house. The shaft-house was repaired, and leveled up, the office repaired, and the ore and rock trestles rebuilt.

The old air-pipe in the shaft was found to be in pretty good condition, and was connected up with the surface line.

The pump for the seventh level was received in August and sent down in November.

The electric locomotive has been received, and is in use, and a rotary transformer has been installed in the engine-house.

Work has been started cleaning up and repairing the old drifts underground.

Exploration.

Surface Diamond Drilling.

Hole No. 68 was put down east of the East End Pit, but found no ore.

Surface.

Old Mine.

The old pockets near "D" Shaft were torn down and the crusher building was nearly all torn down. The old scrap iron from these buildings and from other places around the mine was collected and all that could not be used was sold.

Grading for the pocket-tracks was completed and the tracks laid in July.

Happy Hollow.

The pit was cleaned out in the spring and mining was started in June. The engine-house was moved back into place, and <sup>the</sup> electric hoist which had been rented to the Negaunee Mine, was installed in the latter part of May.

### East End.

In June an Erie shovel was exchanged for the Marion shovel, which had been working in the pit previously, and better progress was made. A trestle was built on the dump in November and extended across the track to the north, so that ore could be stocked after shipments had ceased. A concrete foundation was also built under the hoist.

### Mining Operation.

#### Underground at "D" Shaft.

The fourth level was cleaned out and a raise started to the south in diorite near the east end of the drift. This raise went up 137 feet in rock and 34 feet in ore. It encountered loose ground, and it was necessary to turn off a sub-level. The 1318 foot sub-level in No. 56 raise was partly repaired and a drift put in to the west 92 feet in ore. Two gangs are now working in this territory.

The seventh level was cleaned and some repairing done.

#### Happy Hollow.

The tunnel and raises to the pit were cleaned out, the pit cleaned and 5616 tons of ore mined. There is some ore left to mine, and, if possible it will be all taken out before the spring thaws fill the pit with mud and sand again.

Some rock-drifting was done to determine if the bottom of the ore had been reached.

### East End.

The ore has been mined apparently to the bottom at the east end of the pit. A little ore remains along the north and north-east sides of the pit, which will be mined this winter. Work on this ore will start as soon as the shovel has moved a little further ahead. If possible all the ore will be taken out before the spring thaws wash the sand and mud down on the ore.

Mining has been hindered by a paint-rock dike which cut across the ore in the bottom of the pit.

ANGELINE MINE.  
COMPARISON OF COST SHEETS.  
FOR 1917 and 1918.

No real comparison of costs is possible for 1917 and 1918, because in 1917 the bulk of the ore was produced on contract by steam-shovel mining from the Happy Hollow Pit. Conditions of operating were very different in the two years. In 1918 the Happy Hollow ore was mined by hand and hoisted from the tunnel level, and work was started in "D" Shaft.

Wages were advanced 10% successively on April 16th, August 1st, and October 1st, 1918., the average for the year being 29.1% higher than the 1917 average.

	<u>Production.</u>	
	Total	Per Day
Year 1917	52,613 Tons	369 Tons
Year 1918	57,439 "	357 "
Increase	4,826 "	
Decrease		12 "

GENERAL EXPENSE.

No. 26 - Insurance.

1918	\$	357.07	\$	.006
1917		72.18		.001
Increase	\$	284.89	\$	.005

The increase is due to War Risk Insurance taken out in 1918.

No. 27 - Engineering.

1918	\$	21.89	\$	.000
1917		413.38		.008
Decrease	\$	391.49	\$	.008

In 1917 most of the surveying was estimating stripping at the Happy Hollow and East End pits. This work was not necessary in 1918, as the work was in ore. Construction accounts absorbed much of the other engineering expense.

No. 28 - Analysis.

1918	\$	516.61	\$ .009
1917		<u>405.25</u>	<u>.008</u>
Increase	\$	111.36	\$ .001

No. 30 - Personal Injury Expense.

1918	\$	451.19	\$ .008
1917		<u>111.03</u>	<u>.002</u>
Increase	\$	340.16	\$ .006

No. 30a - Mine Office.

1918	\$	1825.25	\$ .032
1917		<u>404.25</u>	<u>.008</u>
Increase	\$	1421.00	\$ .024

MAINTENANCE.

No. 125 - Tracks and Yards.

1918	\$	1710.50	\$ .030
1917		<u>1710.50</u>	<u>.030</u>
Increase	\$		\$ .030

No. 126 - Docks, Trestles and Pockets.

1918	\$	99.86	\$ .002
1917		<u>99.86</u>	<u>.002</u>
Increase	\$		\$ .002

No. 127 - Buildings.

1918	\$	131.39	\$ .002
1917		<u>75.91</u>	<u>.003</u>
Increase	\$	55.48	
Decrease			\$ .001

No. 128 - Shop Machinery.

1918	\$	172.67	\$ .003
1917		<u>172.67</u>	<u>.003</u>
Increase	\$		\$ .003

No. 129 - Boiler Plant.

1918	\$	1.46	\$ .000
1917		<u>1.46</u>	<u>.000</u>
Increase	\$		\$ .000

No. 130 - Hoisting Machinery.

1918	\$	874.13	\$ .015
1917		<u>874.13</u>	<u>.015</u>
Increase	\$		\$ .015

The increase is due to a larger number of samples taken, and to higher wages.

This is a Central Office charge. The principal items for 1918 were;-

Medical and Hospital Expense	\$ 234.14
Compensation Charges	72.47
Hospital Deficit	<u>144.58</u>
Total	\$ 451.19

A mine office was not operated until April 1918.

Costs in 1918 are for cleaning up on surface and building roads, and \$610 from L.S. & I. Ry. for track maintenance.

1918 charges cover the installation of a hammer and drill-sharpener in the blacksmith-shop.

Due to repairs to Happy Hollow and East End hoists and to 1950 feet of rope.



No. 131 - Compressors and Power Drills.

1918	\$	48.03	\$ .001
1917			
Increase	\$	48.03	\$ .001

No. 132 - Pumping Machinery.

1918	\$	446.72	\$ .008
1917		13.55	.000
Increase	\$	433.17	\$ .008

Due to pump-house and discharge lines at East End.

No. 133 - Top Tram Engines and Cars.

1918	\$	857.73	\$ .015
1917		15.52	.000
Increase	\$	842.21	\$ .015

Due to three dump-cars, sheaves, and car-wheels, and also to repairs to dump-cars at East End.

No. 134 - Skips and Skip-Roads.

1918	\$	50.03	\$ .000
1917			
Increase	\$	50.03	\$ .000

No. 135 - Underground Tracks and Cars.

1918	\$	422.38	\$ .007
1917			
Increase	\$	422.38	\$ .007

1918 charges cover tracks and cars on sub-levels in No. 56 pillar.

No. 137 - Telephones and Safety Devices.

1918	\$	149.90	\$ .003
1917			
Increase	\$	149.90	\$ .003

Due to first aid equipment, overwind on hoist, and lights on levels.

MINING EXPENSE.

No. 150 - Air-Pipes.

1918	\$	618.68	\$ .011
1917		40.78	.001
Increase	\$	577.90	\$ .010

1918 charges cover pipes on sub-levels and elsewhere not covered by E and A. No. 351. 250 feet air-hose - East End and Happy Hollow.

No. 151 - Compressors.

1918	\$		\$
1917		33.75	.001
Decrease	\$	33.75	\$ .001

No. 152 - Hoisting.

1918	\$	1551.86	\$ .027
1917			
Increase	\$	1551.86	\$ .027

Hoisting from "D" Shaft and Happy Hollow were started in 1918.

No. 153 - Pumping.

1918	\$	1135.85	\$	.020
1917		<u>216.21</u>		<u>.004</u>
Increase	\$	919.64	\$	.016

No. 155 - Rock Drifting.

1918	\$	4176.82	\$	.073
1917				
Increase	\$	<u>4176.82</u>	\$	<u>.073</u>

No. 156 - Breaking Ore.

1918	\$	34585.03	\$	.602
1917		<u>6588.55</u>		<u>.125</u>
Increase	\$	27996.48	\$	.477

No. 157 - Trammig.

1918	\$	5321.06	\$	.093
1917				
Increase	\$	<u>5321.06</u>	\$	<u>.093</u>

No. 159 - Timbering.

1918	\$	1308.33	\$	.023
1917				
Increase	\$	<u>1308.33</u>	\$	<u>.023</u>

No. 160 - Captain and Bosses.

1918	\$	2120.96	\$	.037
1917		<u>183.32</u>		<u>.003</u>
Increase	\$	1937.64	\$	.034

No. 161 - Dry-House.

1918	\$	373.86	\$	.007
1917				
Increase	\$	<u>373.86</u>	\$	<u>.007</u>

No. 162 - Top Landing and Trammig.

1918	\$	1508.12	\$	.026
1917		<u>439.14</u>		<u>.008</u>
Increase	\$	1068.98	\$	.018

No. 163 - Stocking Ore.

1918	\$	873.40	\$	.015
1917				
Increase	\$	<u>873.40</u>	\$	<u>.015</u>

No. 164 - Sorting Ore.

1918				
1917	\$	<u>106.16</u>	\$	<u>.002</u>
Decrease	\$	106.16	\$	.002

Pumping from "D" Shaft was started in 1918.

1917 costs did not include Hoose & Person's contract in this account. 1918 charges included underground as well as open pit costs.

Underground mining started in 1918.

Underground mining started in 1918.

Capt. Marks started work on April 15th. One shift-boss was put on later.

Dry-house was operated for the first time in 1918.

The increase is on account of operating Happy Hollow and "D" Shaft in 1918.

No ore was stocked in 1917. In 1918 it was stocked at the East End and at "D" Shaft.

A rock-picker was employed at Happy Hollow part of the time in 1917.

No. 165 - Stripping.

1918	\$	25938.72	\$	.451
1917		54306.90		1.030
Decrease	\$	<u>28368.18</u>	\$	<u>.579</u>

No. 171 - Ventilation.

1918	\$	371.49	\$	.006
1917				
Increase	\$	<u>371.49</u>	\$	<u>.006</u>

This account includes the cost of installing and operating a fan in No. 56 workings for two months in 1918.

RECAPITULATION.

	Year 1918		Year 1917		Increase		Decrease	
	Total	Per Ton	Total	Per Ton	Total	Per Ton	Total	Per Ton
General Expense	3172.01	.055	1406.09	.027	1765.92	.028		
Maintenance	4964.80	.086	104.98	.002	4859.82	.084		
Mining Expense	<u>79884.18</u>	<u>1.391</u>	<u>61914.81</u>	<u>1.174</u>	<u>17969.37</u>	<u>.217</u>		
Cost of Production	88020.99	1.532	63425.88	1.203	24595.11	.329		

ANGELINE MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR - 1918.

GRADE	IRON	PHOS.
East End Bessemer,	67.91	.028
Angeline Ore,	65.48	.079
Happy Hollow Bessemer,	66.13	.036
"D" Shaft "	61.35	.038

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR - 1918.

GRADE	Mine		Lake Erie	
	IRON	PHOS.	IRON	PHOS.
Angeline Bessemer	68.00	.029	67.24	.027
East End Bessemer( Happy Hollow " ) All Mixed "D" Shaft " (				

ORE STATEMENT AND SHIPMENTS FOR YEAR-1918.

	EAST END BESSEMER	EAST END ANGELINE	HAPPY HOLLOW BESSEMER	"D" SHAFT BESSEMER	TOTAL	TOTAL YEAR YEAR
On hand Jan. 1st, 1918,	0	0	0	0	0	2,060
Output for Year,	49,799	136	5,616	1,888	57,439	52,613
Total,	49,799	136	5,616	1,888	57,439	54,673
Shipments,	45,346	136	4,566	899	50,947	54,673
Balance on Hand,	4,453	0	1,050	989	6,492	0
Increase in Output, 9%					4,826	
Increase in ore on hand,					6,492	

1918 - East End - Jan. 1st, to Nov. 1st - 1-10 hr. Shift

Mar. 1st, to Nov. 1st - 2-10 " "

Nov. 1st, to Dec. 31st - 1-10 " "

Happy Hollow - June 7th to Nov. 1st - 2-10 " "

Nov. 1st to Dec. 31st - 1-8 " "

"D" Shaft June 7th to Nov. 1st - 1-8 " "

Nov. 1st to Dec. 31st - 2-8 " "

1917 - Hoose & Pearson at Happy Hollow - May 1st to Nov. 27th

East End operated Aug. 13th to Nov. 29th.

ANGELINE MINE.

COMPARATIVE MINING COST FOR YEAR.

	1 9 1 8.	1 9 1 7.	INCREASE.	DECREASE.
PRODUCT	57,439	52,714	4,725	
General Expense	.055	.027	.028	
Maintenance	.026	.002	.084	
Mining Expense	1.391	1.174	.217	
Cost of Production	1.532	1.203	.329	
Exploratory	.020	.208		.188
<u>DEPRECIATION.</u>				
Original Purchase	.132	.158		.290
Plant Account	.029	.090		.061
Equipment	.003	.030		.027
Construction	.452	.007	.445	
Total Depreciation	.352	.285	.067	
Taxes	.040	.025	.015	
Central Office	.046	.009	.037	
Supply Inventory	.030		.030	
Idle Expense	.029	.032		.003
Sundry Expense	.038	.005	.033	
Cost on Stockpile	2.095	1.587	.508	
Loading & Shipping		.249		.249
Cost on Cars	2.095	1.836	.259	
No. Days Operating	161	143	18	
No. Shifts & Hours	1-10h	1-8hr		
Avg. Daily Product	357	369		12
<u>Detail of Production</u>				
From Mine	1888	101	1787	
Happy Hollow	5616	35946		30330
East End Deposit	49935	16667	33268	
Total	57439	52714	4725	

ANGELINE MINE.

COMPARATIVE WAGES AND PRODUCT.

	1918.	1917.	INCREASE.	DECREASE.
PRODUCT	57,439	52,714	4,725	
No.Shifts and Hours	1-10hr	1-8hr		
AVERAGE NUMBER MEN WORKING				
Surface	17	5	12	
Underground	15	2	13	
Total	32	7	25	
AVERAGE WAGES PER DAY				
Surface	4.62	3.64	.98	
Underground	4.99	5.36		.37
Total	4.79	3.68	1.11-30%	
WAGES PER MONTH OF 25 DAYS				
Surface	115.50	91.00	24.50	
Underground	124.75	134.00		9.25
Total	119.75	92.00	27.75	
PRODUCT PER MAN PER DAY				
Surface	10.78	-		
Underground	13.10	-		
Total	5.91			
LABOR COST PER TON				
Surface	.429	-		
Underground	.381	-		
Total	.810	-		
AVG. PRODUCT BRK'G & TRM'G	-	-		
" WAGES CONTRACT MINERS	-	-		
" " " TRAMMERS	-	-		
" " " LABOR	-	-		
TOTAL NUMBER OF DAYS				
Surface	5,328 $\frac{1}{2}$	1,683	3,645 $\frac{1}{2}$	
Underground	4,385 $\frac{3}{4}$	370 $\frac{3}{4}$	4,015	
Total	9,714 $\frac{1}{4}$	2,053 $\frac{1}{4}$	7,660 $\frac{1}{2}$	
AMOUNT FOR LABOR				
Surface	24,615.89	6,118.16	18,497.73	
Underground	21,872.65	1,454.58	20,418.07	
Total	46,488.54	7,572.74	38,915.80	

Proportion Surface to Underground Men:  
1918 - 1 to .88

	DIVISION OF PRODUCT.	
	1918.	1917.
Shaft	1,888	101
Hoose & Persons		35,946
Happy Hollow	5,616	
East End	49,935	16,667
Total	57,439	52,714

The above increases and decreases do not represent the same conditions as at other mines on account of the tonnage extracted by contractors in 1917 as shown by product table.

ANGELINE MINE.

TIMBER STATEMENT FOR YEAR ENDING DECEMBER 31, 1918.

KIND.	LINEAL FEET.	AVG. PRICE PER FOOT.	AMOUNT 1 9 1 8.	AMOUNT 1 9 1 7.
6" to 8" Timber	12,546	.0209	262.21	
8" to 10" "	3,930	.0442	173.69	
10" to 12" "	1,458	.075	109.35	
Total, 1918	17,934	.0306	545.25	
	LINEAL FEET.	PER 100'.		
Lagging	0	0		
Poles	1,078	.010	10.78	
Total, 1918	1,078	.010	10.78	
Product -				
Happy Hollow	5,616	Ø		
D Shaft	1,888	)	57,439	
East End	49,935	)		
Feet Timber per ton of ore			.031	
Cost per ton for Timber			.009	
"        "        Timber, Lagging & Poles			.009	
Total cost for Timber, Lagging & Poles 1918			556.03	

NOTE: The above timber used both for reopening and mining.

ANGELINE MINE.

STATEMENT OF EXPLOSIVES USED FOR BREAKING ORE.

KIND.	QUANTITY.	AVERAGE PRICES.	AMOUNT 1918.	AMOUNT 1917.
50% Powder	18,155	.2081	3778.05	
Total Powder	18,155	.2081	3778.05	
Fuse	9,200	7.28	66.98	
Caps	800	12.90	10.32	
Cap Crimpers	12	6.75	6.75	
Electric Exploders	1,400	8.38	117.32	
Connecting Wire	21	.51	10.70	
Total Fuse, Etc.			212.07	
Total Explosives			3990.12	
Product			57,439	
Pounds Powder per Ton Ore			.316	
Cost per ton for Powder			.066	
"    "    Fuse, Caps, Etc.			.004	
"    "    All Explosives			.070	
Avg. Price per lb. for Powder			.208	



ANNUAL REPORT

OF THE

HOLMES MINE

(1918)

Production and Shipments

The Holmes Mine worked 298 days in 1918 and produced 121336 tons of ore, an average of 407 tons per day.

The production was not as large as expected, because the ore-body was found to be very narrow and cut up on top and to extend further above the first level than expected, and because of a shortage of miners during most of the year.

Hoisting on day-shift only was started on July 1st., and continued during the rest of the year.

There was a marked decrease in production in November and December due to the cessation of shipments, and to starting of preparations for sinking and pumping, which took men off the ore.

The mine was under Capt. J.H. Rough as superintendent from June 1st to December 29th.

Table I.

Production by Grades.

Grades	Tons 1917	Tons 1918
Holmes Bessemer Lump	11,923	27,045
Holmes Bessemer Crushed	32,936	53,407
Holmes Crushed	673	17,989
Junction Bessemer	3,576	1,878
Junction	19,665	21,017
Total	68,773	121,336
Rock	25,283	11,040
Total Ore and Rock	94,056	132,376

Table II

Comparison of Product for 1917 and 1918.

	1917	1918
Days Worked	236	298
Ore, Tons	68,773	121,336
Rock, Tons	<u>25,283</u>	<u>11,040</u>
Ore and Rock, Tons	94,056	132,376
Ore per day, Tons	291	407
Rock per day, Tons	<u>107</u>	<u>37</u>
Ore and Rock per day, Tons	398	444

Table III.

Distribution of Product by Levels.

Level	Holmes Bessemer Tons	Holmes Tons	Junction Bessemer Tons	Junction Tons	Total Ore Tons
First	79,468	17,989		18,155	115,612
Second	984		1,878	2,862	<u>5,724</u>
Total	80,452	17,989	1,878	21,017	121,336

Hard Ore hoisted from the O.I.M.Co's old stope during the year amounted to 984 tons, all of the Holmes Bessemer Grade.

Table IV.

Production by Months.

Month	Days	Ore per day, Tons	Holmes Bessemer Lump Tons	Holmes Bessemer Crushed Tons	Holmes Crushed Tons	Junction Bessemer Tons	Junction Tons	Total Ore Tons	Rock Tons	Total Ore and Rock Tons
Jan.	26	305	2,612	3,784			1,544	7,940	3,584	11,524
Feb.	23	294	2,028	3,120		20	1,604	6,772	1,600	8,372
Mar.	25	337	2,988	4,004		160	1,284	8,436	1,772	10,208
April	25	396	3,931	4,308		36	1,637	9,912	1,296	11,208
May	26	468	4,163	5,302	1,157		1,546	12,168	464	12,632
June	24	476	3,093	3,956	2,854	155	1,374	11,432	452	11,884

Table IV. (Continued)

Month	Days	Ore per day, Tons	Holmes Bessemer Lump Tons	Holmes Bessemer Crushed Tons	Holmes Crushed Tons	Junction Bessemer Tons	Junction Tons	Total Ore Tons	Rock Tons	Total Ore and Rock Tons
July	26	479	3,598	4, 4,814	2,118	577	1,334	12,441	320	12,761
Aug.	26	425	2,544	3,700	2,712	714	1,382	11,052	132	11,184
Sept.	23	451	2,311	3,383	2,804	405	1,476	10,379	104	10,483
Oct.	27	437	3,169	4,554	1,817		2,261	11,801	356	12,157
Nov.	23	378	437	3,282	2,024		2,942	8,685	360	9,045
Dec.	24	343	217	3,248	2,328		2,444	8,237	600	8,837
Total	298	400	31,091	47,455	17,814	2,067	20,828	119,255	11,040	130,295
Transfers			-4,046	-3,871	- 175	- 189	- 189			
Net Total		400	27,045	51,326	17,989	1,878	21,017	119,255	11,040	130,295
Stock Pile Overrun				2,081				2,081		
Total Ore	--298	407	27,045	53,407	17,989	1,878	21,017	121,336	11,040	130,295

Table V.

Shipments 1918.

Grade	Pocket Tons	Stock Pile Tons	Total Tons
Holmes Bessemer Lump	19,716	9,007	28,723
Holmes Bessemer	26,853	24,538	51,391
Holmes	13,497		13,497
Junction Bessemer	1,662		1,662
Junction	10,418	12,266	22,684
Total	72,146	45,811	117,957

Table VI.

Ore in Stock Jan.1,1919.

Holmes Bessemer Lump	1,288	Tons
Holmes Bessemer	6,092	"
Holmes	4,492	"
Junction Bessemer	849	"
Junction	5,661	"
Total	18,427	Tons

Delays.

Date	Hours	Tons Lost	Cause	Cost
1918				
Feb. 1	7	100	Air-line to shaft frozen	\$ 28.57
" 5	3	25	No current. Main line trouble	
Aug. 2	2	25	No current. Main line trouble	

Delays Due to Mine Line Troubles

Date	Hours	Tons Lost	Cause
Feb. 5	3	25	No current
Aug. 2	2	25	No current

Estimate of Ore Reserves.

Level	Holmes Bessemer Tons	Holmes Tons	Junction Bessemer Tons	Junction Tons	Total
<u>Developed Ore</u>					
1	55,000	23,000	8,000	82,000	168,000
2	65,000	25,000	30,000	200,000	320,000
Total above Second Level	120,000	48,000	38,000	282,000	488,000
Less 20% Rock and Loss mining	24,000	10,000	8,000	56,000	98,000
Net Ore Developed	96,000	38,000	30,000	226,000	390,000
<u>Probable Ore Partly Developed</u>					
3	181,000	60,000	30,000	246,000	517,000
4	181,000	60,000	20,000	303,000	564,000
Total Partly Developed	362,000	120,000	50,000	549,000	1,081,000
Less 20% Rock and Loss Mining	72,000	24,000	10,000	110,000	216,000
Net Total Partly Developed	290,000	96,000	40,000	439,000	865,000
Total Ore Reserves	386,000	134,000	70,000	665,000	1,255,000

Factors Used:-

Hard Ore	-	Above Second Level	-	8 cu.ft.
		Below Second Level	-	9 cu.ft.
Soft Ore	-		-	11 cu.ft.

GENERAL.

Fatal Accident.

At 3:25 A.M. on April 10, Dan Paddock, a timber-handler on the second level was fatally injured by a falling piece of lagging, and died at the Ishpeming Hospital at 5:15 without regaining consciousness. Just before the accident he had sent up a load of lagging to the first level through a raise, and two pieces of lagging slipped from the sling and fell to the bottom of the raise on the second level. He was standing nearby, and stepped under the raise to pick up these two pieces. A third piece of lagging then fell, striking him on the head and fracturing his skull.

Paddock was 53 years old, and was a native of Newfoundland. He had been married twice, and is survived by six children by his first marriage, the youngest of whom is 14 years old, and by his second wife and a boy of 3 years.

Labor.

Wages were increased 10% on April 15, and again on October 1st. On the latter date the basis of payments was changed from days to hours.

There was a general scarcity of labor during the year, but during November and December this shortage was relieved.

Sinking Shaft.

Preparations for sinking the shaft two more lifts were made in November, and sinking was started on December 1st, working two shifts

at night only. The shaft was sunk 41 feet in December and was down 1159 feet at the end of the year. The shaft is all in diorite. Sinking was not continuous during the month.

#### Pumping.

The water in the Section 16 Mine increased so much that it was feared the pumps would be drowned out. In order to help them out, in December a 1000 gallon centrifugal pump was set up on the plat of the second level, a sump was cut, and a 6" pipe was laid from the shaft to the Lake Superior Iron Company boundary. A dam was built at the boundary, and a pump installed to throw the water back to the shaft from this part of the mine. Practically all the water in the mine comes from the O.I.M.Co's old stopes on the east boundary line.

#### Power.

Owing to a severe shortage in water and coal, the compressor was shut down on one shift for the month of February and air was purchased from the Section 16 Mine. A 4-inch pipe-line was laid on surface between the two mines.

#### Exploration.

##### Underground Diamond Drilling.

Six diamond-drill holes were drilled during the year, discovering some new ore and eliminating considerable barren ground.

Drilling was started in March, and Hole No.6 was drilled to the southwest from the west end of the second level drift. No new ore was found. Hole No. 7 was drilled north from the hard ore drift on the second level at an angle of 30 degrees below the horizontal to test the size of the foot-wall deposit

in the soft-ore vein 600 feet west of the east boundary. A small amount of commercial ore was found. Hole No. 8 was drilled north from the same place, but at an angle of 60 degrees below the horizontal. 105 feet of good ore was cut above the elevation of the fourth level.

Two holes were drilled north from the 570 foot sub-level, but no commercial ore of importance was found. Diamond drilling was discontinued in November.

#### Surface.

Little construction was done during the year. A shed was built over the Cage-road, at the collar of the shaft to prevent freezing, and some improvements were made in the shaft-house and other buildings. A little work was done on the office grounds to preserve the work already done there. The area of the stock-pile floors and of the timber yard was increased during the summer.

#### Underground.

Most of the work done underground was done above the first level. The first level plat was completed, the track laid, and tramming was started in April. During the rest of the year most of the ore was hoisted from this level.

In the Soft-Ore vein the ore was followed up nearly 230 feet above the first level, the top sub-level being at a sea-level elevation of 705 feet. This ore, which lies close to the east boundary line has been mined down to the 635 foot sub-level, where two contracts are now stopping. The 705, 690, 670, 660, and 650 foot sub-levels were opened and mined out during the year. The 445 and 470 foot sub-levels between the first and second

levels were opened during the year in the ore near the south-east corner of the property. The 470 foot sub-level was only a short cross-cut to determine the limits of the O.I.M.Co.trespass. The 445 foot sub-level is about 500 feet long. The lateral limits of the ore were not extended during the year.

In the Hard Ore vein the ore west of a point 300 feet west of the east boundary line was mined in a shrinkage stope, and after the ore had been removed the hanging-wall was broken down so that most of the stope is now filled. The hard-ore further east was followed upwards to an elevation of 690 feet, 200 feet above the first level. The top sub-level was opened at an elevation of 684 feet . The ore in the middle of this deposit has been mined down to the 635 foot sub-level, and at the east end down to the 510 foot sub-level. Most of this ore is Bessemer grade. The only work done in the hard ore below the first level was some raising from the back of the old stope opened by the O.I.M.Co.close to the south-east corner of the property, and a short cross-cut driven on the diamond drill Hole No.6 at the west end of the second level.

During most of the year there were 19 contracts working, and part of the time there were 20 contracts. Most of the work has been in the hard ore vein. The ore is being mined by slicing and caving.



HOLMES MINE.  
COMPARISON OF COST SHEETS.  
FOR 1917 and 1918.

The Holmes Mine worked on double shift in both 1917 and 1918. During a portion of both years hoisting was done on day-shift only. In the latter part of 1918 sinking was resumed and the cost of it was charged against the ore.

Wages were increased successively 10% on April 16th, August 1st, and October 1st.

Production.

	Total	Per Day
Year 1917	68,773 Tons	291 Tons
Year 1918	<u>121,336 "</u>	<u>407 "</u>
Increase	52,563 "	116 "

Labor.

	Year 1917	Year 1918
Average number of men	130	164
Average rate per day	\$ 3.81	\$ 4.85

Tons per Man per Day.

	Year 1917	Year 1918
Surface	8.72	8.75
Underground	3.80	3.60
Total	2.65	2.55

Cost of Production.

	Year 1917	Year 1918
Labor	\$ 1.398	\$ 1.826
Supplies	<u>.671</u>	<u>.884</u>
Total	\$ 2.069	\$ 2.710

GENERAL EXPENSE.

No. 26 - Insurance.

1918	\$	346.74	\$ .003
1917			
Increase	\$	<u>346.74</u>	\$ .003

The increase is on account of War Risk Insurance taken out in 1918.

No. 27 - Engineering.

1918	\$	1504.49	\$ .012
1917		<u>988.66</u>	.015
Increase	\$	515.83	
Decrease			\$ .003

There was more surveying done in 1918 in opening new sub-levels.

No. 28 - Analysis.

1918	\$	4086.92	\$ .034
1917		<u>1861.81</u>	.027
Increase	\$	2225.11	\$ .007

The increase is on account of more samples taken and higher wages paid.

No. 30 - Personal Injury Expense.

1918	\$	5321.10	\$ .044
1917		<u>464.41</u>	.007
Increase	\$	4856.69	\$ .037

Charges for 1918 were as follows:-  
Medical and Hospital Expense \$ 768.98  
Compensation charges 3733.70  
 $\frac{1}{2}$  Day Funeral Expense 206.68  
Miscellaneous expense on account  
First Aid Room 8.29  
Hospital Deficit 603.45  
\$ 5321.10

No. 30a - Mine Office.

1918	\$	7304.62	\$ .060
1917		<u>3798.01</u>	.055
Increase	\$	3506.61	\$ .005

In 1917 E and A. 299 absorbed part of the mine-office expense. The increase is also due to higher wages.

MAINTENANCE.

No. 125 - Tracks and Yards.

1918	\$	2994.46	\$ .025
1917		<u>4071.71</u>	.059
Decrease	\$	1077.25	\$ .034

1917 charges included cost of grading and planting of office-grounds. 1918 charges included cost of maintenance of tracks.

No. 126 - Docks, Trestles and Pockets.

1918	\$	1296.53	\$ .011
1917		<u>91.09</u>	.001
Increase	\$	1205.44	\$ .010

The increase is on account of changes in shaft-house loading pockets and plates for lining.

No. 127 - Buildings.

1918	\$	1121.33	\$ .009
1917		825.60	.012
Increase	\$	295.73	
Decrease			\$ .003

No. 128 - Shop Machinery.

1918	\$	398.98	\$ .003
1917		96.12	.001
Increase	\$	302.86	\$ .002

No. 129 - Boiler Plant.

1918	\$	56.18	\$ .000
1917		163.38	.002
Decrease	\$	107.20	\$ .002

No. 130 - Hoisting Machinery.

1918	\$	1612.92	\$ .013
1917		453.72	.007
Increase	\$	1159.20	\$ .006

No. 131 - Compressors and Power Drills.

1918	\$	712.15	\$ .006
1917		350.05	.005
Increase	\$	362.10	\$ .001

No. 132 - Pumping Machinery.

1918	\$	3254.62	\$ .027
1917		12.30	.000
Increase	\$	3242.32	\$ .027

No. 133 - Top Tram Engines and Cars.

1918	\$	1471.11	\$ .012
1917		273.21	.004
Increase	\$	1197.90	\$ .008

No. 134 - Skips and Skip-Roads.

1918	\$	2964.12	\$ .025
1917		4025.12	.059
Decrease	\$	1061.00	\$ .034

No. 135 - Underground Tracks and Cars.

1918	\$	3396.97	\$ .028
1917		1510.82	.022
Increase	\$	1886.15	\$ .006

The increase is due to covering the coal-dock and building an addition to the horse-shed.

The increase is on account of belts and pulleys and repairs to drill-sharpener.

Charges in 1917 were for repairs to the boiler.

The increase is due to installation of new repeating bell-signals, costing \$123.64, 3000 ft. of wire-rope, costing \$904.02, and cutting rope and putting it on drums, \$229. Balance is labor and repairs.

The increase is in labor charges for changing air-receiver.

A 1000 gal. centrifugal pump was installed in December, and two sumps were cut, an air-driven pump was set up inside, and a 6" discharge line laid to it.

The increase is due to Hard Ore shop-bills for making butterfly-gate and to labor repairing and changing stocking-car.

1917 charges included cost of repairs, when skip fell to the bottom of the shaft.

The increase is on account of sub-level cars built and 12 lb. rail used on sub-levels.