

GWINN DISTRICT MINES
ANNUAL REPORT
YEAR 1926

10. TAXES:

The following statement show taxes in detail for the two years for all property in the district except mines, where the totals only are shown, as the detail of taxes for each mine are shown in the report on the mine:

<u>DESCRIPTION:</u>	<u>1 9 2 6</u>		<u>1 9 2 5</u>	
	<u>VALUATION</u>	<u>TAXES</u>	<u>VALUATION</u>	<u>TAXES</u>
<u>MINERAL LANDS FEE GWINN:</u>				
Lots 1, 2 & 3 Sec. 36-45-25, 52 Acres - - -	80	2.30	80	2.27
" 7, 8 & 9 " " 98.92 " - - -	200	5.73	200	5.71
" 11, " " 13.3 " - - -	20	.57	20	.57
SW $\frac{1}{4}$ of SW $\frac{1}{4}$ " 26-45-25 40. " - - -	80	2.30	80	2.27
NW $\frac{1}{4}$ of SE $\frac{1}{4}$ " 27-45-25 40. " - - -	80	2.30	80	2.27
NW $\frac{1}{4}$ of " 35- " 160. " - - -	320	9.18	320	9.13
N $\frac{1}{2}$ of NE $\frac{1}{4}$ " 34- " 80. " - - -	160	4.58	160	4.56
SE $\frac{1}{4}$ of NE $\frac{1}{4}$ " 34- " 40. " - - -	80	2.30	80	2.27
NE $\frac{1}{4}$ of NW $\frac{1}{4}$ " 34- " 40. " - - -	80	2.30	80	2.27
S $\frac{1}{2}$ of SE $\frac{1}{4}$ " 27- " 80. " - - -	160	4.58	160	4.56
NE $\frac{1}{4}$ of SE $\frac{1}{4}$ " 28- " 40. " - - -	600	17.19	600	17.10
S $\frac{1}{2}$ of NE $\frac{1}{4}$ " 28- " 80. " - - -	130	3.73	130	3.71
S $\frac{1}{2}$ of N $\frac{1}{2}$ " 22- " 160. " - - -	550	15.76	550	15.67
N $\frac{1}{2}$ of NW $\frac{1}{4}$ " 2-45-26 87.08 " - - -	90	2.58	90	2.57
NE $\frac{1}{4}$ of " " " 165.61 " - - -	190	5.44	190	5.43
NE $\frac{1}{4}$ of SE $\frac{1}{4}$ " 34- " 40. " - - -	130	3.72	130	3.72
Total, - - - - -	2,950	84.56	3,155	89.93
Collection Fees - - - - -		.85		.90
Total Taxes, - - - - -		85.41		90.83
<u>GWINN TOWNSITE - SURFACE ONLY:</u>				
Lot 17, Block 5 - Nyquist Lot, - - - - -				14.03
NE $\frac{1}{4}$ of NW $\frac{1}{4}$ Sec. 21-45-25, 27.40 Acres - - -	150	4.31	150	4.27
That part of S $\frac{1}{2}$ of NW $\frac{1}{4}$, Sec. 21-45-25 -				
not included in Plat of Gwinn, 25.01 Acres -	200	5.73	200	5.71
E $\frac{1}{2}$ of SE $\frac{1}{4}$ Sec. 21-45-25, 65.84 " -	400	11.46	400	11.40
That part of W $\frac{1}{2}$ of SE $\frac{1}{4}$ of Sec. 21-45-25				
not included in Plat of Gwinn, 38.90 Acres -	300	8.59	300	8.56
Gwinn Townsite Plat,	140,670	4,031.92	145,510	4,147.39
Part of W $\frac{1}{2}$ of SE $\frac{1}{4}$ of Sec. 21-45-25				
Superintendent's Residence, 1.2 Acres -	5,000	143.28	5,000	142.54
NW $\frac{1}{4}$ of NE $\frac{1}{4}$ of Sec. 21-45-25 except				
5 acres in cemetery, 36. Acres -	100	2.87	100	2.85
Part of S $\frac{1}{2}$ of NE $\frac{1}{4}$ Sec. 21-45-25 68.69 " -	400	11.46	400	11.40
Total, - - - - -	147,220	4,219.62	152,060	4,349.15
Collection Fees, - - - - -		42.20		43.35
Total Taxes, - - - - -		4,261.82		4,392.50
<u>AUSTIN LOCATION DWELLINGS</u> - - - - -				
	24,000	687.69	25,000	712.68
Collection Fees, - - - - -		6.88		7.13
Total Taxes, - - - - -		694.57		719.81
<u>GARDNER-MACKINAW DWELLINGS:</u>				
N $\frac{1}{2}$ of NE $\frac{1}{4}$ of Sec. 35-45-25, - - - - -	10,000	286.54	10,000	285.07
Collection Fees, - - - - -		2.86		2.86
Total Taxes, - - - - -		289.40		287.92
FORWARD,	184,170	5,331.20	190,215	5,491.06

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10. TAXES:

(Continued)

	1926		1925	
	VALUATION	TAXES	VALUATION	TAXES
<u>GWINN TOWNSITE - SURFACE ONLY:</u>				
Brought forward,	184,170	5,331.20	190,215	5,491.06
<u>GWINN DISTRICT OFFICE AND CRUSHER:</u>				
Personal - - - - -	2,191	63.47	2,131	60.74
N $\frac{1}{2}$ of NW $\frac{1}{4}$ Sec. 27-45-25, Dist. Crusher - -	240	6.89	240	6.83
Total, - - - - -	2,431	70.36	2,371	67.57
Collection Fees - - - - -		.70		.68
Total Taxes - - - - -		71.06		68.15
<u>THE CLIFFS POWER & LIGHT COMPANY:</u>				
Power Line - - - - -	30,000	859.66	30,000	855.21
.0 A. in SW $\frac{1}{4}$ of SW $\frac{1}{4}$ Sec. 8-45-25 - - - - -	10	.30	10	.29
$\frac{1}{2}$ Int. Lot 4, Sec. 12-45-26 - - - - -	30	.85		
" Lots 5 and 6, " " - - - - -	65	1.86		
" " 9 " 12, " " - - - - -	60	1.72		
" SE $\frac{1}{4}$ of NW $\frac{1}{4}$ " " - - - - -	50	1.44		
Frac. S $\frac{1}{2}$ of SW $\frac{1}{4}$ of " 1-45-26 - - - - -	330	9.45		
Lot 1, " 10 " - - - - -	100	2.87		
Lot 2, " 10 " - - - - -	100	2.87		
Lots 3 and 4, " 10 " - - - - -	200	5.73		
Lots 1, 3, 7 and 8, " 11 " - - - - -	340	9.74		
" 4, 5 and 6, " 11 " - - - - -	150	4.31		
" 9, 10, 11 & 17 " 11 " - - - - -	180	5.15		
" 12, 14 & 15, " 11 " - - - - -	300	8.59		
E $\frac{1}{2}$ of NW $\frac{1}{4}$ " 11 " - - - - -	180	5.15		
SW $\frac{1}{4}$ of SE $\frac{1}{4}$ " 11 " - - - - -	80	2.30		
Lot 2 " 11 " - - - - -	50	1.44		
" 16 " 11 " - - - - -	70	2.01		
NE $\frac{1}{4}$ of SW $\frac{1}{4}$ " 11 " - - - - -	100	2.87		
Lot 13 " 11 " - - - - -	60	1.71		
Lot 7 " 12 " - - - - -	1,000	28.66		
Lot 8 " 12 " - - - - -	1,000	28.66		
" 1 " 14 " - - - - -	30	.86		
" 4 and 5 " 14 " - - - - -	170	4.88		
" 6 and 7 " 14 " - - - - -	150	4.31		
" 8 " 14 " - - - - -	100	2.87		
SE $\frac{1}{4}$ of NE $\frac{1}{4}$ " 14 " - - - - -	80	2.30		
SE $\frac{1}{4}$ of NW $\frac{1}{4}$ " 14 " - - - - -	100	2.87		
E $\frac{1}{2}$ of SE $\frac{1}{4}$ " 14 " - - - - -	200	5.73		
SW $\frac{1}{4}$ of SE $\frac{1}{4}$ " 14 " - - - - -	80	2.30		
NW $\frac{1}{4}$ of SE $\frac{1}{4}$ " 14 " - - - - -	100	2.87		
Total 1925 Cataract Lands, - - - - -			5,220	149.63
Total, - - - - -	35,465	1,016.33	35,230	1,005.13
Collection Fees - - - - -		10.16		10.05
Total C. P. & L. Co. - - - - -		1,026.49		1,015.18
Grand Total - - - - -	222,066	6,428.75	227,816	6,574.39

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10. TAXES:

(Continued)

	<u>1 9 2 6</u>		<u>1 9 2 5</u>	
	<u>VALUATION</u>	<u>TAXES</u>	<u>VALUATION</u>	<u>TAXES</u>
<u>SUMMARY:</u>				
Austin Mine, - - - - -	114,280	3,273.93	120,280	3,428.82
Stephenson Mine, - - - - -	679,260	19,465.40	715,000	20,382.50
Princeton " - - - - -	334,260	9,577.10	351,260	10,013.37
Gwinn " - - - - -	286,000	8,195.02	290,000	8,267.04
Francis " - - - - -	396,740	11,366.86	397,740	11,338.39
Gardner-Mackinaw Mine, - - - - -	70,200	2,011.43	70,200	2,001.21
Mineral Lands, - - - - -	2,950	84.56	3,155	89.93
Gwinn Townsite, - - - - -	147,220	4,219.62	152,060	4,349.15
Austin Dwellings, - - - - -	24,000	687.69	25,000	712.68
Gardner-Mackinaw Dwellings, - - - - -	10,000	286.54	10,000	285.07
Gwinn District Office and Crusher - - - - -	2,431	70.36	2,371	67.57
The Cliffs Power & Light Co., - - - - -	35,465	1,016.33	35,230	1,005.13
Total, - - - - -	2,102,806	60,254.84	2,172,296	61,940.86
Collection Fees - - - - -		602.54		619.27
Total Taxes, C.C.I.Co., Mine Dept., Porsyth Township,-		60,857.38		62,560.13
Rate per \$100.00 Valuation,		2.865		2.8507

<u>TAXES LEVIED - FORSYTH TOWNSHIP</u>	<u>1926</u>	<u>1925</u>	<u>1924</u>	<u>1923</u>
State, - - - - -	7,322.08	7,739.33	7,195.35	8,984.14
County, - - - - -	15,365.44	11,989.62	12,506.05	15,215.74
County Road, - - - - -	7,459.59	7,272.94	9,491.70	9,814.43
Contingent, - - - - -	4,500.00	4,500.00	4,000.00	4,000.00
Highway Improvement, - - - - -	4,000.00	3,000.00	1,000.00	4,000.00
Highway Repair, - - - - -	2,000.00	4,000.00	7,000.00	5,000.00
School and One Mill, - - - - -	40,948.00	42,892.65	49,276.73	55,376.59
Bridge, - - - - -		1,000.00		
Rejected, - - - - -	5.76	351.76	18.72	163.45
Fire Fund, - - - - -				2,500.00
Total - - - - -	81,600.87	82,746.30	90,488.55	105,054.35
Amount paid by C. C. I. Co., - - - - -	60,254.84	61,940.86	68,459.83	79,850.15
Percent " " " - - - - -	73.84	74.84	75.75	76.00

Valuation all Real and Personal
Property in the Township, - - - - - 2,847,996.00 2,892,647.00 3,176,732.00 3,276,596.00

This statement is interesting in showing the decrease in taxes since 1923. It shows the main decrease to have occurred in the School and One Mill Tax. The taxes paid by the Company have decreased each year, also the proportion of total tax paid by the Company.

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13. EQUIPMENT
AND
PROPOSED
EQUIPMENT:

a. Steam Shovels:

The cost of loading ore in 1926 increased .009 per ton. The following brief statement show the tons loaded by shovel each year and the cost per ton:

<u>Year</u>	<u>Tons Loaded</u>	<u>Cost</u>	<u>Cost Per Ton</u>
1926	162,843	\$8,853.30	.054
1925	134,820	6,015.67	.045
Increase, 1926	28,023	\$2,837.63	.009

There is only one steam shovel in the district so that it has to be moved every time a cargo of different grade is loaded. The car service in 1926 was not as good as in the previous year. Often the shovel would operate five, six or seven hours out of the day instead of loading the entire day. This condition could have been avoided if the railroad had more ore cars, but with the heavy shipments in 1926 from other mines in the county, there was only a limited number of cars available for the Gwinn District. Every effort was made to facilitate movement of cars after they were once loaded, and unless weather conditions were very unfavorable, they were crushed and ready to be forwarded to Marquette within 24 hours. It is undoubtedly impossible to avoid a certain amount of delays in loading, due to change in cargoes, etc., but lower costs cannot be obtained unless better car service is provided. There was also some unusual expense in 1926 on account of blasting stockpile. It is necessary to blast the high piles at the Stephenson Mine as the top one-third hangs up and is a constant menace to the shovel and the men working around it. By blasting the pile ahead of the shovel the top caves as the ore is loaded by the shovel, and accidents are avoided. The expense for this work, however, is small and only amounts to a fraction of the increased cost for the year.

b. Gwinn District Ore Crusher:

Summary of Crusher Operations for 1926 and 1925:

	<u>1926</u>		<u>1925</u>		<u>Increase</u>		<u>Decrease</u>	
	<u>Amount</u>	<u>Per Ton</u>	<u>Amount</u>	<u>Per Ton</u>	<u>Amount</u>	<u>Per Ton</u>	<u>Amount</u>	<u>Per Ton</u>
General Expense,	1,016.84	.005	1,195.84	.005			179.00	
Maintenance,	829.80	.004	1,187.69	.005			357.89	.001
Operating,	5,249.20	.022	5,009.02	.023	240.18			.001
Total Optg. Cost	7,095.84	.031	7,392.55	.033			296.71	.002
Switching,	2,394.00	.010	2,203.00	.010	191.00			
Grand Total,	9,489.84	.041	9,595.55	.043			105.71	.002
<u>Tons Crushed:</u>								
Stephenson Mine,	206,447		215,939				9,492	
Gwinn "			980				980	
Princeton "			3,240				3,240	
Austin "	26,564				26,564			
Total,	233,011		220,159		12,852			
Avg. tons crushed per day,	1,664		1,726				62	
No. Days Operated,	140		127½		12½			
" " Idle,	225		237½				12½	
Shifts and hours,	1,9-hr.		1, 9-hr.					
Rated capacity per 10 hr. shift,	1,000		1,000					

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13. EQUIPMENT:
AND
PROPOSED
EQUIPMENT:

b. Gwinn District Ore Crusher: (Continued)

There was a small decrease in the cost per ton for crushing ore in 1926. There was a small decrease in "General Expense" and in "Maintenance", while "Operating Expense" show a slight increase due to the crusher operating more days and to a larger tonnage crushed. Due to the unusual rainfall and to the shortage of cars, results were not quite as favorable from the operating standpoint as in the previous year.

During the year several mechanical devices have been perfected by the crusher foreman to aid in handling the ore. One device consists of a drill machine suspended in the bracket under the railroad pocket; valves on the air line enable the men dumping the cars to start the drill machine and loosen the ore which may be held up in the pocket over the pan conveyor. Opposite the railroad car a small air puffer has been installed which is used to aid in the opening of the doors on the railroad cars. The use of power, applied by a rope and hook does not injure the door of the car and has materially speeded up the time required for this operation. There has been practically no expense in connection with these mechanical aids, although they have reduced hand labor and speeded up operations.

Suggested Improvements at Plant:

The dumping pocket, the steel belt conveyor, grizzly and crusher should be covered so as to provide protection from rain and snow. The output of the plant is materially decreased on rainy days. In addition to the men being unable to work to advantage in wet clothing, trouble is caused by ore sticking to the wet surface of the belt conveyor, grizzlies, etc. More cleaning is now necessary than would be required if this part of the equipment was provided with a cover or roof.

16. WATER SUPPLY:

a. Pump Station:

Water for the district is supplied by a pumping station on the Escanaba River, located some distance above Princeton. Two sources of power are available for operation, viz: steam pumps and boiler plant and electric pumps. The electric pump was operated during 1926.

To operate this station it is necessary to have a man on duty every hour of the day; it is operated on three 8-hour shifts, the pumpmen, however, are only paid 8/10ths of the regular wage for this work as they are working eight hours instead of the regular 10-hour day for surface pumpmen.

b. Water Mains:

For the past several years there has been a gradual increase in the expense of repairing the water mains; it is undoubtedly due to carelessness in the original installation of the pipe. The mains consist of 8", 6" and 4" wood stave pipe, fastened together by steel bands with a heavy coat of tar on the exterior of the pipe. If the tar coat was knocked off, due to careless handling, in time the bands rust and break, permitting the pipe to open under pressure, causing leaks. During the past year it has been necessary to install new pipes in a number of places on the main lines. To install a pipe it is necessary to dig up 60 to 80 feet of the line, remove the pipe or pipes which cannot be repaired and spring new pipes into the line.

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16. WATER SUPPLY:
(Continued)

b. Water Mains: (Continued)

In Gwinn Townsite several sections of pipe, to which no service lines were connected, were cut out of the system. This saved the expense of repairs, in each case these sections did not effect circulation.

The winter of 1925-1926 was especially severe due to the fact that there was very little snow until the last of February, to act as a protection to prevent frost penetrating the ground. As a result of this condition, a number of service pipes froze and when the ground thawed in the spring they burst, making repairs necessary.

The decrease in number of occupied houses has decreased the water revenues, while the cost of operation, due to the many repairs to the mains, has been almost as high as in previous years. That portion of the expense which is not taken care of by water rentals now has to be absorbed by the mines; as a result, the cost for water at the active mines has been unusually high in 1926. This principally effects the cost of operation of heating plant and dry house at the Stephenson Mine, and makes the cost here out of line with other mines. In 1925, \$3,267.40 of the operating cost was absorbed by the Central Power Plant Boiler Room during the 6-1/2 months it operated to furnish steam for the turbine.

Statement of Cost of Operating Station for 1926 and 1925:

	<u>1926</u>	<u>1925</u>	<u>INCREASE</u>	<u>DECREASE</u>
General Expense,	83.06	93.87		10.81
Maintenance,	1,710.36	1,612.89	87.47	
Operating,	10,492.52	12,019.34		1,526.82
Total,	12,285.94	13,726.10	Net	1,440.16
Cost per 1000 Gals.	.039	.045		.006
Gals. Pumped,	313,061,745	301,892,325	11,169,420	

Maintenance expense in 1926 was high on account of repairs to mains and service lines, in 1925 they were \$309.49 less for this item but higher account of boiler and steam pump repairs. The pump station was operated by steam for several months in 1925 account of shortage of current.

Operating expense in 1926 was lower than in 1925, due to operating pump in 1926 by electric power for full year for cost of \$5,789.85, while in 1925 coal for steam power cost \$3,252.90 and electric power \$4,145.85, or a total of \$7,398.75.

17. CONDITION
OF
PREMISES:

General Office Grounds:

The lawn area at the general office was extended in 1924 and 1925 on account of relocation of State Trunk Line M-35, which rendered it advisable to include additional ground along the new road as part of the office grounds. The lawn area, part of which was seeded to grass in 1925, was kept mowed during the past summer. The increased rainfall together with application of fertilizer, resulted in the development of a good lawn. Some additional planting was also done around the Central Power Plant and coal dock, and this, with the growth of other plants, greatly improved the appearance of the grounds.

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17. CONDITION
OF
PREMISES:
(Continued)

General Office Grounds: (Continued)

From the standpoint of expense, a decrease in the lawn area would be advisable, as the grounds are now so extensive that it requires the services of a full-time caretaker during the growing season.

Gwinn Townsite:

The streets and alleys in Gwinn Townsite were cleaned by the Township during 1926; they were cleaned regularly every two weeks so that the town was kept in an attractive condition at all times. The park-way on Pine Street between the two drive-ways was given some attention by the company. Several years ago Norway and White Pines were planted on each side of the park-way and the maples which were in this area were moved to the sidewalk line. Mr. Manning was somewhat doubtful of the success of planting pines here, but it now seems that it will prove successful. Some trees of the original planting are making good growth and there were comparatively few trees to be replaced in 1926.

The heavy snow storm of October, 1925, broke branches on all the trees throughout Gwinn Townsite. In the spring, in order to improve the appearance of the town, it was necessary to remove the broken branches on the trees in the streets and the many parks throughout the town. Two men were employed several weeks trimming the trees and hundreds of truck-loads were hauled away and burned.

Very little attention had been given the Hospital grounds by the Company physician, and this year all shrubbery beds were thinned and worked over. Enough extra material was obtained for planting a screen around the service yard back of the Hospital. Due to the changes made, the appearance of the Hospital grounds has been materially improved.

Five years ago, the Township applied a Tarvia coat to most of the streets in Gwinn. In the summer of 1926 another coat of Tarvia was applied; this work was done by the County Road Commission and the expense borne by the township. This improves the appearance of the streets, prevents wear and makes them dustless.

Austin Location:

The streets and alleys in this location are cleaned by the company. This work was done monthly throughout the summer so as to keep this location in good condition.

Princeton Location:

The alleys behind the company houses at Princeton are cleaned by the company; the balance of this location is cleaned twice a year by the township. The company owns only a few houses here, a number of which are unoccupied.

Gardner-Mackinaw Location:

All houses at this location were unoccupied in 1926. Fire lines around the location are kept free of grass, and watchmen patrolled the location on both day and night shift.

Company Houses:

There has been a small decrease in the number of vacant houses in the district; last year there was a total of 111 vacant; this year there are 108.

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- 19. CLUB HOUSE:
- COUNTY PARK:
- FUTURE OF GWINN:

a. Gwinn Association:

The following report, compiled by Mr. E. L. Miller, Secretary of the Association, gives a complete record of the activities during the past year. The reading of this report shows conclusively what a vital place the Club House occupies in the community. It is the center of recreational activities and physical training, and unquestionably has a profound influence on the character of the young people of the community.

Efforts were made during the past year to effect economies, and for the first time in several years the Association completed the year without asking for a donation from the company to help in paying for fuel.

A review of the work which the Association conducted during the year shows that the activities of every department are supported and welcomed by the people of this district. Almost every event is becoming an annual affair, whether it be of the entertainment variety, athletic recreation or something of a purely social nature.

ATTENDANCE:

The same system was used in estimating the number of persons attending the different events and making use of the building. The high attendance month was January and the lowest was August.

Total estimated attendance at building,	66,240
Average monthly attendance,	5,520

Total estimated attendance for all outdoor recreations conducted by the Association, including Ice Skating, Playground and Tennis Court, Swimming Pool, Baseball and Bass Lake Camp,	12,015
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MEMBERSHIP:

The membership cards checked monthly showed the following for the year:

Number members January first, 1926.....	299
Number members January first, 1927.....	287
Low membership for year, February	245
High membership for year, September	297
Average monthly membership 1926,	274
Average monthly membership 1925,	248

The membership shows that about 80% are employed at the local mines; about 15% are employed in other activities in the Gwinn District and the remaining 5% are members residing outside the Gwinn District.

RECEIPTS AND EXPENDITURES:

<u>Total Receipts and Expenditures:</u>	
Total Receipts including 1925 balance (\$135.04).....	\$ 5,707.87
Total expenditures for year,	<u>5,478.07</u>
Balance on hand January, 1927,	\$ 229.80

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19. CLUB HOUSE:
COUNTY PARK:
FUTURE OF GWINN:

a. Gwinn Association, (Continued)

RECEIPTS AND EXPENDITURES: (Continued)

THEATRE:

Receipts for year,	\$ 3,051.15
Expenditures for year,	<u>2,352.27</u>
Profit,	\$ 698.88
Deposits and rental on future pictures,	45.00

BUFFET:

Receipts for year,	538.66
Expenditures for year,	<u>398.45</u>
Profit,	140.21
Inventory,	56.80

BOWLING AND BILLIARDS:

Receipts for year,	435.00
Expenditures for year,	<u>169.15</u>
Profit,	265.85

GENERAL ACTIVITIES AND ORGANIZATIONS
USING BUILDING.

- 45 - Meetings and rehearsals by band and orchestra.
- 37 - Meetings and rehearsals by Glee Club.
- 3 - Sales of fancy work articles by church organizations.
- 14 - Meetings by Episcopal ladies guild.
- 4 - Meetings by St. Anthony's ladies guild.
- 4 - Meetings by Methodist ladies guild.
- 3 - Meetings by Marquette County Demonstration Agent.
- 29 - Meetings by: 6 Board of Directors; 6 Masonic Club;
7 Sportsmen's Association; 3 Baseball Team and
7 by other organizations.
- 9 - Nights play in Cribbage League.
- 1 - Card party.
- 2 - Dancing classes under supervision of High School.
- 3 - Parties by school students (no dancing).
- 26 - Dances held during the year, including ordinary and
those covering some special event.
- 68 - Lunches served at different functions by various
organizations.
- 200 - Visitors shown through the building.

EVENTS OF SPECIAL INTEREST:

Annual Card Party	by	Local Council Girl Scouts.
Annual Banquet and Round-up	by	Sportsmen's Association
Annual St. Patrick's Day Dance	by	Orchestra
Banquet of Cribbage League	by	Association
Annual Easter Monday Ball	by	Basketball Team
Hard Time Party	by	Orchestra

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- 19. CLUB HOUSE:
- COUNTY PARK:
- FUTURE OF GWINN:

 a. Gwinn Association, (Continued)

EVENTS OF SPECIAL INTEREST (Continued)

Annual Masquerade Dance	by	Orchestra
Carnival and Frolic	by	Girl Scouts
Annual Chicken Supper	by	St. Anthony's Guild.
Silver Tea	by	Episcopal Guild
Annual Junior Prom.	by	High School.
Rummage Sale	by	Local Council Girl Scouts
Annual Hallow'een Party	by	Girl Scouts
Annual Masquerade Party	by	Entire High School
Annual Parent-Teachers' Reception and Dance	by	School and Association
Annual Ceremonial Awarding Merit Badges,	by	Local Scout Council
Annual Ball and Movie Show - Proceeds for Children's Christmas Treat Fund.		
Community Christmas Tree and Treat for Children	by	entire community.
Annual New Year's Ball	by	Local Fire Department.

RADIO:

The radio set donated to the Association in March, 1923, still continues to give very good results, especially during the day.

Owing to the number of members securing their own sets it was thought not advisable to use the services of an operator every evening, so the set was only in use on special programs.

The World Baseball Series and all the important football contests were obtained play by play during the actual playing of the games; these features were well attended.

The radio dances instituted last year were discontinued.

Number hours radio was used,	157
Attendance,	760

MOVING PICTURE THEATRE:

113 - Different pictures shown	
213 - Evening shows held	
128 - Matinees held	
341 - Total number of shows held	
22848 Total paid attendance,	Adults 13,774
	Students 9,074

Special Free Shows:

1 - Show for Sportsmen's Banquet, attendance,	75
1 - Show General Electric Film "	40
1 - Show Woodmen Lodge "	100
1 - Show for Children's Christmas Fund"	160
4 - Shows for " " Treat"	548
Grand total for year,	23,771

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19. CLUB HOUSE:
COUNTY PARK:
FUTURE OF GWINN:

a. Gwinn Association, (Continued)

MOVING PICTURE THEATRE: (Continued)

Admission Prices Charged During Year:

50 Shows at 15 cents	An admission charge of 5
50 Shows at 20 cents	cents was made on all
8 Shows at 25 cents	students over 7 years old;
5 Shows held no charge	on five occasions 10 cents
113 Total.	was the charge.
423 Non-members paid an extra charge of 10 cents.	

LIBRARY AND READING ROOM:

Library:

Arrangements were made with the local High School to establish an extension of the school library at the Association building. This was started in February with 50 books for the use of adults only. This gives the people who are unable to go to the school during school hours an opportunity to secure school library books. Additional books were secured through the book of the month club and added to the list.

Number books listed in Club library,	947
Number books listed in school extension,	56
Number books donated,	11
Number books withdrawn (bad condition)	43
Number books purchased during year,	20
Number club books loaned on cards,	1,619
Number from school library loaned,	652
Total number of books loaned,	2,271
Average number books loaned per month,	189

READING ROOM:

The following number of magazines and newspapers are received and placed on the racks and tables in the reading room:

Weekly Magazines.....	7	Weekly Newspapers.....	3
Monthly Magazines	18	Daily Newspapers	2

INTER-CLUB CRIBBAGE LEAGUE:

The cribbage league was one of the feature activities of the Association. The league was made up of four teams of six men each. Nine weeks play completed the schedule and the winning team was served a banquet which was considered one of the big events of the year.

ASSOCIATION GLEE CLUB:

The Glee Club had a very active season and gave much in the way of entertainment, not only to the members themselves, but to the people of the entire district. Besides the annual concert which was held in February, the glee club put on the musical production "Pickles" in April, and a request showing of the same program in May. All those attending the concert and musical comedy were well pleased and the work of the club was very much appreciated.

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19. CLUB HOUSE:
COUNTY PARK:
FUTURE OF GWINN:

a. Gwinn Association, (Continued)

ASSOCIATION GLEE CLUB: (Continued)

The club is also responsible for the four numbers secured through the Redpath Bureau each year for the entertainment course. The lovers of good clean entertainment and high class music look forward to these programs as part of their winter entertainment. This was the third year the course was put on, and the four numbers are sold on a season ticket to adults for \$1.50 and to students for \$1.00, making the price very reasonable and within the reach of all.

Glee Club Activities for the Year:

29 - Members in club.		
37 - Meetings and rehearsals.		
4 - Numbers on entertainment course		
	Attendance,	1,275
3 - Programs by club, "	925
Total attendance,		2,200

Balance on hand in entertainment fund,	\$138.60
Balance on hand in club fund,	147.50
Total balance, January, 1927,	\$286.10

BOWLING ALLEYS:

(Men)

The eight season of the bowling league again brought out all the old timers, not one new man was needed to complete the roll. Six teams of three men each made up the league. All teams completed their schedule of 45 games. Team number four were the winners; 30 men participated in the league games. Match games were held three nights per week and the other nights were available for members not wishing to enter on a league team.

(Women)

The women also had a six team league with three members to a team. Their schedule called for 30 games and every team completed the required number. Some very good scores and averages were made. The women using the alleys are very much enthused over this form of recreation. Twenty-three took part in league games. One new ball of light weight was added to the equipment.

PHYSICAL AND ATHLETIC DEPARTMENT:

Including all work conducted in the gymnasium, swimming pool and all outdoor recreations; such as, baseball, track, tennis and playground court, ice skating rink and outdoor swimming pool.

As in other years the Association handled all the athletic work for the local high school, which includes the use of the gym, locker room and showers for boys and girls, also the supervision of all class work and the coaching of the high school basketball squad.

This work covered a period from January to June and from October to December 31st. The largest part of this work was conducted in the gymnasium as weather conditions did not permit the using of the school athletic field.

Senior members, both men and women, used the gym for basketball, handball, cageball, volleyball and regular class work. The women's class meeting on Thursday evenings was especially popular.

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19. CLUB HOUSE:
COUNTY PARK:
FUTURE OF GWINN:

a. Gwinn Association. (Continued)

Summary of Activities of the Physical Department:

	<u>Periods</u>	<u>Attendance</u>
Boys - High School supervised physical training classes,	94	2,020
Girls- High School supervised physical training classes,	107	2,370
Boys and Girls Basketball practice.....	88	764
Junior boys recreation classes,	21	535
Young ladies supervised classes,	13	318
Supervised swimming (Girls).....	12	183
Supervised swimming (Boys)	22	497
Seniors using gym for basketball, hand ball, cageball, volleyball, regular class work and other recreation,	<u>43</u>	<u>330</u>
Total attendance,	400	7,017
Use of showers (estimated)		6,000

Basketball games during the year - 12, between local teams; ten games at home with visiting teams and seven games away from home.

Attendance at all home games, 3,050

The high school team entered the Ishpeming district tournament and made a fine showing against the Michigamme team who later won the state class "D" Championship. The club team was also entered in the Independent Tournament and lost their first game to the Marquette five. The local junior teams held a tournament with eight teams entered. Twelve games were played.

The Association supported a baseball team during the summer, six games were played at home with visiting teams and six games away from home. Seven games were played between local teams. A junior league was organized and completed a schedule of twelve games.

Attendance at all home games, 2,400

The ice skating rink was in good condition 51 days. Estimated attendance,

4,474

The rink is too small, but it is hard to locate one elsewhere on account of not being able to give it the proper attention from the Association building.

TENNIS COURT:

Owing to unfavorable weather conditions, the tennis court was not available for play until June 24th, and for the same reason the court was not playable after Labor Day. Altogether, forty-one playing days were possible.

The playground in the rear of the building was used as a baseball field by junior boys.

Attendance on tennis court and playground,..... 990

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- 19. CLUB HOUSE:
- COUNTY PARK:
- FUTURE OF GWINN:

a. Gwinn Association, (Continued)

OUTDOOR SWIMMING POOL:

Swimming suffered on account of cold and rainy weather. The diving stand and rope at the tourist park pool was set in place in July. The Association had an attendant at the pool to look after the smaller children from the Gwinn District. Swimming was possible forty-six days during the season.

Estimated attendance, 2,200

SCOUT ACTIVITIES:

(Girls)

The sixth year of girl scout work in this district proves that what money has been spent and time taken by those in charge is well worth the effort. Both troops continue under the same Scout Council and local leaders.

Both troops are registered at National Headquarters and they are to be complimented on work accomplished this year.

The two troops meet weekly at the Association building and are under the supervision of one of the Association employes.

The following covers the work and play of both troops:

- Class meetings, 97 Attendance, 1,973
- 11 - Socials and parties including entertainments for mothers of scouts.
- 19 - Hikes including supper, lunch or marshmellow roasts in woods.
- 1 - Annual merit badge ceremonial and exhibit
- 1 - Play given at local high school
- 2 - Plays given at meeting place
- 1 - Fun and frolic night for camp funds
- 4 - Addresses were given by outside persons
- Annual camp was attended by 47 scouts, representing both troops.

This year at Christmas time the scouts donated and dressed 19 dolls and sent them to the children at the "Good Will Farm", at Houghton, Michigan. This act was very much appreciated by those in charge of the Home. No doubt this will be an annual gift. They also assisted at the Christmas treat for children by singing carols. Flowers were sent to the sick and five baskets of food stuff were given to the needy.

All funds for the scout work are raised by the local council and the scouts themselves. The annual card party and rummage sale usually covers the summer camp expense.

BASS LAKE CAMP:

Camp opened June First. Closed October First.

Requests for the use of the cottage located at the lake by Gwinn people was more than could be accommodated.

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19. CLUB HOUSE:
COUNTY PARK:
FUTURE OF GWINN:

a. Gwinn Association, (Continued)

BASS LAKE CAMP: (Continued)

Number of different families using cottage from two days to one full week,	25
Parties using camp overnight,	4
All day picnics, church, school and organizations,.....	10
Parties by young ladies (evening).....	3
Girl scouts had use of camp one week, attendance,.....	47
Basket picnics,	108
Receipts for boat hire,	\$109.35

The camp and grounds as a whole are in very good condition, except that a lack of a lawn or grass around the cottage makes it a trifle dusty on windy days.

One new boat was added and this brings the total of boats in good condition to five. All boats were re-painted and new oars supplied. The cottage, all outside stoves and tables were in good condition. Two large tables were erected.

A new log camp was built for the caretaker, a two-room structure. The old hut will be made over into a change room for bathers next summer.

The road into the camp was improved by the township and the repairs made were greatly appreciated by those going to the lake.

The estimated attendance was less than the year previous, but weather conditions were not on the same par.

BUILDING MAINTENANCE:

The usual supply of material and equipment necessary to have all departments in good working order were purchased. This covers bowling, pool and billiard supplies, athletic equipment for Association and high school, paints and varnishes, janitor supplies, library and reading room supplies; including new books, magazines and newspaper subscriptions, office and theatre supplies. The Association was also able to handle the years supply of coal.

CONSTRUCTION AND REPAIR WORK:

New caretaker's cottage at Bass Lake
One new boat and all old boats repainted
Tennis court put in good condition
New backstop at ball field erected
Outdoor ice skating rink constructed, flooded 22 times
Diving stand and safety rope at swimming pool installed
New electric light fixtures placed in lobby
Bowling alleys sandpapered and shellaced four times.
New coverings for both pool tables
Floors throughout building scrubbed and oiled
Community room redecorated
100 New cups added to kitchen equipment
Moving picture machines overhauled
Much attention was given to the lawn and shrubbery around the Association building.

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19. CLUB HOUSE:
COUNTY PARK:
FUTURE OF GWINN:

b. Gwinn County Park:

The Gwinn County Park, located on the East Branch of the Escanaba River adjoining Gwinn Townsite on the North-east, was further improved during the year. The expense connected with this park is taken care of by County funds, administered under the supervision of the County Road Commission. The park was used a great deal by the local people and is also gradually becoming better known to the tourists and other Marquette County residents. Due to the cool and rainy season, it was not used quite as much as in the previous year, particularly the bathing facilities. In spite of the bad weather conditions there was not a day in the week during the summer that there were not a large number of boys and girls swimming in the pool. A new Federal Highway, known as "S-41", is planned, and according to present information will be constructed within the next three years. This new National Highway will pass within one-half mile of the Park, and a request has been made by the County Road Commission Superintendent, who has charge of the County Parks, for information as to ownerships of land adjoining the Park on the North and East, as it may be desirable to increase the acreage by taking in more land along the river. It seems probable, after this highway is constructed, that the present park in time will be inadequate, as it will undoubtedly bring many thousands of tourists into the Upper Peninsula.

c. Future of Gwinn Townsite:

According to the comments of the thousands of tourists who passed through this summer from practically every state in the union, Gwinn Townsite is the most attractive mining town in the United States. It would be a great pity if it is allowed to deteriorate due to the gradual completion of mining operations. It is hoped that authority will be granted for an appropriation to defray expense of advertising the town from the standpoint of health and outdoor recreation in an endeavor to attract summer residents. There is no reason why Gwinn should not become the summer residence place for a thousand or more Mid-West people. It has houses, streets, lights, water, bank, post office and stores, lakes nearby, fishing, canoeing, swimming and a wonderful summer climate. Houses might be rented to summer residents for \$25.00 a month, bringing in an income to help defray the expense during the expected idle period, (1928-1931) and eventually lead to a solution of the problem of the future of the town.

REPUBLIC MINE

ANNUAL REPORT

YEAR 1926.

1. GENERAL:

Conditions generally, at the Republic Mine, have been very discouraging throughout the year. We carried on an extensive exploration campaign of development drifting and Diamond Drilling until the end of October. As very little ore was proved up, all drilling and dead work of every nature was stopped and our crews cut to a minimum.

Since the last of November, we have made better costs and it is now only a matter of months as to how long we can continue to operate as the available tonnage is small, it being entirely a matter of cost.

The drilling from the bottom, 2840' Level, shows that the foot and hanging walls are coming together and the ore pinching out. This has been more or less evident as the stopes have become smaller in size with depth. The only ore developed by our drilling programme was the upward and downward extensions of some of the old stopes above the 2070' or Motor Haulage Level; and a small tonnage near surface, Southeast of the collar of the Pascoe Shaft.

The stope above the 1710' Level, and its extension above the 1570' Level have been very strong stopes and gave us encouragement to drive a drift on the 1500' Level, where we have developed a nice ore body. We can truly say that this place has prolonged the life of the mine. While we have only been tramping from this level since August, we secured 15% of our total year's product in five months from here.

The stope above the 1710' Level developed from the ore in Diamond Drill Hole No. 494 is now within 35 feet of the 1570' Level. We have started to drive a drift on the 1570' Level hoping to find the ore extending to this elevation. Although we had two holes in this area and did not strike any ore, we feel that these holes were probably deflected and missed it. We have a distance of approximately 100 feet to drive through hard Jasper to reach the ore area, which we estimate will take until March 1st at least.

While the holes drilled from the exploration East of the Pascoe Shaft near surface, have shown a fair footage of ore, it is shallow and there is not sufficient tonnage to permit an extensive operation here. Further, if we did desire to increase the number of gangs and hoist a larger tonnage, it would be necessary to install more permanent equipment. We feel the expense is not warranted for the time that we can hope to continue operations.

It is true, we have 290,000 tons of ore tied up in Shaft Pillars but due to the cost of mining and conditions of both No. 9 and Pascoe Shafts, we do not consider it safe or profitable to mine any part of this ore. A committee composed of Messrs. Eaton and Stakel made an inspection of the Republic Mine workings and reported as follows:-

Pascoe Shaft Pillars

"There is a large tonnage of ore tied up in Shaft pillars below the 1640' Level. The ore above the 2070' Level could be mined by top-slicing with timber, but this would stop all work on the 1335' and 1500' Levels, and the product obtained would be too small to warrant the attempt. The ore below the 2070' Level cannot be mined."

REPUBLIC MINE
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GENERAL:

As to how long we can continue to operate the Republic Mine is entirely dependent on the costs we can obtain. November, 1926, is the first month since June, 1925, that we showed an actual profit. It is true, however, that if we eliminate such charges as Taxes, Central Office, Contingent Expense, Engineering and Plant Account, amounting to \$4,300.00, which would either continue to be charged against the Republic Mine or be absorbed by other of the Company's operating mines, we can show a small profit or break even for a time at least. It is recommended that the mine be closed in the early summer, so that the men can move their families and find employment elsewhere before winter.

2. PRODUCTION,
SHIPMENTS &
INVENTORIES:

a. Production by Grades:

Basic Run-of-Mine,	1,087	tons
Basic Lump,	31,276	"
Basic Crushed,	17,671	"
Pascoe Crushed,	4,687	"
Total Ore,	54,719	"
Rock,	23,286	"

The product for the year, 1926, was 16,614 tons less than the year 1925. This was due to the general unfavorable conditions throughout the mine. The number of working places was limited and the stopes small which restricted our output materially.

Up to November, we had four to five gangs engaged on rock drifting and one gang shaft sinking until August 1st. During the first three months of the year, we hoisted almost as large a tonnage of rock as ore. While we developed several new stopes during the year, it was necessary to do considerable rock drifting to reach the ore. Further, than this, several of the stopes on the upper levels of the Pascoe Shaft were exhausted and the stope above the 2840' Level had to be discontinued as it started to work and on account of its nearness to the Shaft, we were afraid it would cause weight on the Shaft timbering and make it expensive to keep it open. Since November, we have been pulling from this stope intermittently.

b. Shipments:

<u>Grade of Ore</u>	<u>Pocket</u> <u>Tons</u>	<u>Stockpile</u> <u>Tons</u>	<u>Total</u> <u>Tons</u>	<u>Total</u> <u>Last</u> <u>Year</u> <u>Tons</u>
Bessemer Lump,	-	-	-	210
Basic Lump,	18,096	15,148	33,244	45,197
Bessemer Crushed,	-	52	52	8,352
Basic Crushed,	11,581	74,004	85,585	19,843
Pascoe Crushed,	693	9,121	9,814	507
Total,	30,370	98,325	128,695	74,109
Total last year,			74,109	
Increase,			54,586	

The total shipments during 1926 was the largest for several years. All stockpile ore, except a small tonnage of Pascoe Run-of-Mine, was cleaned up. The greater portion of the ore shipped came from stockpile.

Small shipments of Bessemer and Basic Lump Ore were made intermittently from January to May 5th. All except one car of this ore was loaded from pocket and shipped all-rail.

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PRODUCTION,
SHIPMENTS &
INVENTORIES:

b. Shipments: (Continued)

During April we loaded one car of Lump ore from stockpile, which was shipped to the Alaska Juneau Gold Manufacturing Company, at Juneau, Alaska, via: Seattle, Washington. This shipment was made in a box car, the ore being hand sorted and put into heavy bags secured from the Furnace Department at Marquette. Each bag was weighed, holding approximately 200 pounds, so as to facilitate handling when transferring to the boat. The analysis on this car of ore was: 68.90 Iron and .051 Phosphorus.

We started shipping our entire product of Lump ore on the night shift of May 5th, and Basic Crushed on the night shift of May 12th. The entire output of both Lump and Crushed ore was shipped from pocket until November 14th, when our season's requirements were filled and stockpiling resumed.

The first loading from stockpile was done on May 9th. We loaded two days from this pile and then had to turn the shovel around and cut into the Pascoe Crushed pile, which was located at the North end of the Fine ore stocking ground. It was with some difficulty that we were able to get a track laid for loading. It was necessary to put the track across one of our location gardens and block the main road for travel. We loaded continuously for the balance of the month, completing the cut in the Basic Crushed pile, allowing the moving of the loading track and opening the road.

The Steam Shovel was operated intermittently throughout the balance of the season until November 8th, when all ore in stock, except 3371 tons of Pascoe Run-of-Mine, was cleaned up. This is the first time in a number of years that the Basic Crushed ore pile has been entirely cleaned up, showing a shortage of 28,389 tons. An Engineer's estimate made in 1923 compared with the book figures, showed that a shortage existed at that time. The car factor was reduced considerably below the actual weight and a large part of the shortage was made up.

Since this shortage was discovered, we have weighed cars coming from the different stopes and insisted on full cars. A record kept of the cars weighed and their weights, shows an average of 1.80 tons per car. In figuring the daily production, we called our cars 1.55 for several years and now use 1.6 tons, which would give us an over-run of 12%. Until October, 1926, we did not take advantage of any pocket over-run, throwing it into the Crushed pile. During the past shipping season, we have loaded both Lump and Crushed ore from pockets continuously, and our over-runs have averaged close to 19%, which is conclusive that a large portion of the existing shortage was made up during the past three years.

c. Stockpile Inventories:

The following is the tonnage of the various grades in stock on December 31, 1926:-

<u>Grade</u>	<u>Tons</u>
Basic Lump,	4,136
Basic Crushed,	3,017
Basic Run-of-Mine,	1,087
Pascoe Run-of-Mine,	3,371
Total tonnage in Stock,	11,666

REPUBLIC MINE
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PRODUCTION,
SHIPMENTS &
INVENTORIES:

c. Stockpile Inventories: (Continued)

On December 31st, 1925, there was in stock, 113,732 tons, compared with 11,666 tons on December 31st, 1926, or 102,066 tons less. This is the smallest balance carried in stock for many years.

d. Division of Product by Levels:

The tonnage trammed from the various Levels during 1926 is as follows:-

Level	Tonnage	Percent of Product
1153'	1,519	2.8%
1335'	1,189	2.0%
1500'	8,533	15.6%
1570'	119	.2%
1710'	11,296	20.7%
1850'	5,614	10.2%
1950'	7,893	14.5%
2050'	434	.8%
2770'	4,951	9.2%
2840'	5,639	10.2%
2910'	4,429	8.2%
Pascoe Exploration	3,103	5.6%
Total,	54,719	100.0%

The bottom levels only produced 27.6% of the ore during the past year, compared with 31.7% in 1925; 45% in 1924; 57% in 1923 and 68% in 1922. This explains the cause of our small output and is due to the ore lens becoming smaller with depth and a portion being tied up in Shaft pillars.

While we show a production from twelve different levels, at no time during the year were we able to tram from more than four at one time. This restricted condition was directly responsible for the small product and low tons per man per day.

e. Production by Months:

The production by months, days operated, average daily product and tons per man per day are shown in the table below:-

Month	Tons Rock	Tons Ore	Days Operated.	Average Daily Product	Tons per Man per Day
Jan.	3,729	4,470	21	213	1.15
Feb.	3,775	4,186	20	209	1.11
Mar.	3,582	3,908	23	170	.90
Apr.	1,854	3,905	22	177	.96
May,	1,836	3,394	21	162	.89
Jun.	1,924	3,213	22	146	.84
Jul.	1,576	4,418	22	201	1.16
Aug.	773	4,452	22	202	1.15
Sep.	1,186	4,470	22	203	1.15
Oct.	1,009	6,452	21	307	1.74
Nov.	1,114	6,110	21	291	1.82
Dec.	928	5,741	23	250	1.64
Total	23,286	54,719	260	210	1.18
Stockpile over-run		28,091			
Grand Total,	23,286	26,628	260	210	.575

REPUBLIC MINE
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PRODUCTION,
SHIPMENTS &
INVENTORIES:

e. Production by Months:- (Continued)

There was an over-run in the Lump Ore pile of 298 tons and a shortage of 28,389 tons in the Basic Crushed, making a total deficit of 28,091 tons, explaining the low indicated production and tons per man per day. This shortage is no doubt of years accumulation, most probably immediately after the War, and should not be charged against the 1926 production.

Our production up until October was very small as we had only a few stopes to pull from and were doing a great deal of development work. Toward the end of the year when most of the gangs were breaking ore, our production increased materially. In order to make the mine pay, it is necessary to hoist at least 6,000 tons per month.

f. Ore Statement:

	Run-of-Mine		Basic Lump	Bess. Crushed	Basic Crushed	Pascoe Crushed	Total	Total Last Year
	Basic	Pascoe						
On hand Jan. 1, 1926,	869	4,381	3,926	12,150	87,733	4,673	113,732	115,527
Output for Year,	1,087	-	31,277	-	17,671	4,685	54,720	71,334
Stockpile Over-run,	-	-	298	-	-	-	298	980
Stockpile Shortage,	-	-	-	-	28,389	-	28,389	-
Transferred,	869	1,010	1,879	12,098	11,642	456	-	-
Total,	1,087	3,371	37,380	52	88,657	9,814	140,361	187,841
Shipments,			33,244	52	88,585	9,814	128,695	74,109
Balance on hand,	1,087	3,371	4,136		3,072	-	11,666	113,732
Decrease in Output,							16,614	
Decrease in Ore on hand,							102,066	
1926 -- 2-8 hr. Shifts, 5 days per week, Jan. 1st to Dec. 31st, 1926.								
1925 -- 2-8 hr. Shifts, 6 days per week, Jan. 1st to Jan. 31st, 1925.								
2-8 hr. Shifts, 5 days per week, Jan. 31st to Dec. 31st, 1925.								

g. Delays:

Production was interrupted several times during the year, but none of the delays were of a serious nature and the loss in product was small. The following table shows the various delays:

Date	Duration	DELAYS		Tonnage Lost
		Cause		
Jan. 10	4 days	Air blast in lower portion of Pascoe Shaft,		300
Feb. 18	4 hours	Broken head sheave East skip underground hoist,		50
Mar. 8	5 hours	Rock car went over end of pile into River,		75
Jun. 18	4 hours	Fatal accident to John Eckstrom,		50
Nov. 26	3 hours	Picking Belt in Shaft House broke,		250

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PRODUCTION
SHIPMENTS &
INVENTORIES:

g. Delays: (Continued)

The first delay of the year occurred on January 10th, a Sunday. There was an air blast in the Pascoe Shaft, caused by a portion of the floor pillar of the 2570' Level dropping away. The pumpman was on the 2770' Level when it occurred, and while it knocked him over, he was not injured, and no damage was done to the shaft. The ground in the vicinity of the shaft on the 2570' Level and the levels above continued to work for several days and we did not allow the men to work in the lower part of the Pascoe Shaft for four days. We had been expecting this and were apprehensive that when it did occur, that the air blast would cause a disturbance in the shaft. Fortunately no damage was done to the shaft.

On February 18th, the four-foot head sheave for the East skip of the underground hoist had to be changed on account of broken spokes. A noise was noticed in this sheave on Monday of the same week, and at that time a crack was found in one of the spokes. The Mechanic and his crew planned to change this sheave the following Saturday. He examined it again on the morning of the 18th and found six more broken spokes. The men were sent home and the sheave changed at once.

Our rock is dumped into the river. Early in March, we had some mild weather and the ice in the river began to thaw, allowing the rock pile to settle, and as a result, on March 8th, our rock car went over the end of the pile into the river. On account of the large tonnage of rock we were handling at this time from the Picking Belt, there was a delay of five hours.

A fatal accident occurred during the morning of June 18th, in which John Eckstrom was killed. As soon as the news spread through the mine, the men refused to work and came to surface at noon, causing a delay of four hours. The night shift worked as usual.

On November 26th, night shift, there was a delay of several hours, when the Picking Belt in the Shaft House broke. It was our intention to work Saturday, November 27th, to make up for Thanksgiving Day, but it was necessary to completely rebuild the Picking Belt, which took until Monday morning, November 29th. There was a loss in product of 250 tons. We knew the Belt was in poor shape but were in hopes it would hold out for several more months and thus eliminate this expense.

h. Delays from lack of Current:

There were no delays during the year from lack of power. On several occasions, it was necessary to start up our own generator at our Water Power Plant, when the Ishpeming line was out. It only takes a short time to change over, and as our hoist has been small throughout the year, we were always able to make it up and reported no delay.

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3. ANALYSIS:a. Average Mine Analysis on Output:

<u>Grade</u>	<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>
Bessemer Lump,	66.43	.049	
Bessemer Crushed,	64.00	.035	
Basic, Run-of-Mine,	60.52	.025	3.71
Basic Lump,	64.92	.057	5.95
Basic Crushed,	62.48	.057	8.20
Pascoe Crushed,	58.03	.047	15.08

b. Average Analysis on Straight Cargoes:

<u>Grade</u>	<u>Mine</u>			<u>Lake Erie</u>	
	<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>	<u>Iron</u>	<u>Moist.</u>
Bessemer Lump,	(No Shipments)				
Bessemer Crushed,	(No Shipments)				
Basic, Run-of-Mine,	(No Shipments)				
Basic Lump,	65.02	.057	5.78	64.31	.26
Basic Crushed,	62.56	.038	7.69	62.75	1.99
Pascoe Crushed,	58.63	.045	11.99	58.89	1.77

d. Complete Analysis of Season's Shipments:

	<u>Basic Lump</u>	<u>Basic Crushed</u>	<u>Pascoe Crushed</u>
Iron,	65.00	62.90	58.20
Phosphorus,	.057	.043	.046
Silica,	6.15	8.20	12.65
Manganese,	.08	.10	.09
Alumina,	.53	.90	1.59
Lime,	.40	.35	.36
Magnesia,	.112	.167	.239
Sulphur,	.016	.008	.003
Loss by Ignition,	None	None	.10

4. ESTIMATE OF ORE RESERVES:a. Developed Ore:

Assumption: 7 cu. ft. equals one ton.
10% deduction for rock.
10% deduction for loss in mining.

Estimate of Ore in Sight, December 31st, 1926.

No. 9 Shaft.

<u>Level</u>	<u>Developed Ore</u>		<u>Total Ore</u>
	<u>Available Ore</u>	<u>Shaft Pillars</u>	
911'		2,520	2,520
1000'		3,000	3,000
1050'		6,000	6,000
1153'		3,200	3,200
Total,		14,720	14,720

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4. ESTIMATE OF
ORE RESERVES:

a. Developed Ore: (Continued)

Estimate of Ore in Sight, December 31st, 1926.

Pascoe Shaft.

<u>Level</u>	<u>Available Ore</u>	<u>Shaft Pillars</u>	<u>Total Ore</u>
1335'	1,015		1,015
1500'	30,881		30,881
1640'		2,700	2,700
1710'	8,910	31,700	40,610
1780'		42,940	42,940
1850'	1,736	13,200	14,936
1950'		58,570	58,570
2050'	7,900	18,960	26,860
2570'		9,750	9,750
2670'		47,250	47,250
2770'		51,257	51,257
2840'			
2910'	11,456		11,456
Near Surface +1550'	5,271		5,271
<hr/>			
Total,	67,169	276,327	343,496
Grand Total,	67,169	291,047	358,216

b. Prospective Ore:

None.

c. Estimated Analysis:

	<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>	<u>Alum.</u>	<u>Mang.</u>	<u>Lime</u>	<u>Mag.</u>	<u>Sul.</u>	<u>Igni.</u>	<u>Moist.</u>
Bess. Nat'l	64.50	.040	6.50	1.15	.065	.249	.333	.010	.10	1.00
Non-Bess."	62.85	.060	8.19	.79	.050	.140	.090	.008	.10	1.50

d. Ore Reserves divided into Grades:

<u>Grade</u>	<u>Available</u>	<u>Non-Available</u>	<u>Total</u>
Bessemer,	21,092	122,977	144,069
Non-Bessemer,	46,077	168,070	214,147
Total,	67,169	291,047	358,216

e. Comparison of Developed Ore:

The following table shows the ore in sight, product and ore developed during the past four years:-

	<u>1923</u>	<u>1924</u>	<u>1925</u>	<u>1926</u>
Ore in Sight January 1st,	391,073	485,650	395,380	390,852
Prospective Ore,	106,776	67,800	77,700	
Total,	497,849	553,450	473,080	390,852
Product,	105,864	75,511	72,314	55,017
Balance,	391,985	477,939	400,766	335,835

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4. ESTIMATE OF ORE RESERVES:

e. Comparison of Developed Ore: (Continued)

	<u>1923</u>	<u>1924</u>	<u>1925</u>	<u>1926</u>
Ore in Sight December 31st,	485,650	395,380	390,852	358,216
Prospective Ore,	67,800	77,700		
Total,	553,450	473,080	390,852	358,216
Developed during Year,	161,465	4,859	9,914	22,381

The table above shows that we developed a small tonnage in excess of our production which was exceedingly low. This is the first year since 1923 that we show any ore developed in excess of our production, and is due to the opening up of the stope on the 1500' Level.

f. Estimate of Production 1927:

It is impossible to estimate what we will be able to produce during 1927 on account of the small available tonnage, namely: 67,169 tons. Our present operation, however, is based on a monthly production of 6,000 tons. Just how many months we can operate, will depend on the costs realized.

Although we show 291,000 tons of ore tied up in shaft pillars, we have explained elsewhere in this report the impossibility of mining any part of this tonnage.

5. LABOR AND WAGES:

a. Comments:

(1) Labor:

The labor conditions at the Mine throughout the year were satisfactory. At no time was there a shortage of men; in fact, we have had more men looking for work than we could use. Our forces have been held to a minimum. In October, ten men were transferred to the Cliffs-Shaft Mine, and all through the year men have been sent to the Spies-Virgil Mine at Iron River.

b. Comparative Statement of Wages & Product:

	<u>1926</u>	<u>1925</u>	<u>INCREASE</u>	<u>DECREASE</u>
PRODUCT	54,719	72,314		17,595
No. Shifts & Hours,	2 - 8	2 - 8		
<u>AVG. NO. MEN WORKING:</u>				
Surface	48	51		3
Underground	112	126		14
Total	160	177		17
<u>AVG. WAGES PER DAY:</u>				
Surface	4.59	4.64		.05
Underground	4.74	4.83		.09
Total	4.70	4.77		.07
<u>WAGES PER MO. OF 25 DAYS:</u>				
Surface	114.75	116.00		1.25
Underground	118.50	120.75		2.25
Total	117.50	119.25		1.75

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5. LABOR AND WAGES:b. Comparative Statement of Wages & Product: (Continued)

	<u>1926</u>	<u>1925</u>	<u>INCREASE</u>	<u>DECREASE</u>
<u>PRODUCT PER MAN PER DAY:</u>				
Surface	3.64	5.07		1.43
Underground	1.75	2.20		.45
Total	1.18	1.53		.35
<u>LABOR COST PER TON:</u>				
Surface	1.261	.914	.347	
Underground	2.714	2.201	.513	
Total	3.975	3.115	.860	
AVG. PRODUCT BR'K & TRM'G	4.24	5.40		1.16
" WAGES CONTRACT MINERS	4.90	4.96		.06
" " " TRAMMERS	6.09	6.62		.53
" " " LABOR	5.14	5.35		.21
<u>TOTAL NO. OF DAYS:</u>				
Surface	15,015	14,251 $\frac{3}{4}$	763 $\frac{1}{4}$	
Underground	31,272	32,928		1,656
Total	46,287	47,179 $\frac{3}{4}$		892 $\frac{3}{4}$
<u>AMOUNT FOR LABOR:</u>				
Surface	69,023.88	66,109.76	2,914.12	
Underground	148,535.26	159,128.90		10,593.64
Total	217,559.14	225,238.66		7,679.52

Proportion Surface to Underground Men:

1926 - 1 to 2.34
1925 - 1 to 2.47
1924 - 1 to 2.8
1923 - 1 to 2.48
1922 - 1 to 2.30
1921 - 1 to 2.51
1920 - 1 to 2.67
1919 - 1 to 2.81

6. SURFACE:a. Buildings, Repairs:(1) Mine Buildings:

In June a bridge was built across the cave at the collar of the Pascoe Shaft. This bridge allows the taking of timber down this shaft instead of No. 9 Shaft and transferring underground, saving considerable time.

The roofs of our Mine Buildings are covered with asbestos paper. During the past summer the roofs of No. 9 Power House, Barn, Shops Building and Water Power Plant were given a coating of roofing tar, as they were in poor condition and we did not wish to go to the expense of putting on a new roof.

The Picking Belt in the Shaft House broke on the night shift of November 26th and had to be completely rebuilt, using a number of new repair parts. Considering the service this belt gets, it gives very little trouble.

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6. SURFACE:

a. Buildings, Repairs: (Continued)

(2) Location Houses:

There was some Spring painting and kalsomining done by the tenants of our houses, but on account of conditions at the mine, we cut it down to a minimum. It was necessary to renew the plank walks at several of the houses, as they were in very bad shape and were dangerous. Practically no repairs were made to the houses.

On the morning of March 5th, at 7:35 o'clock, a very bad chimney fire occurred in House No. 53, occupied by Arieel Urimari and Clayton Monette, and the timely aid of the firemen kept same from spreading. The chimney was of concrete and was badly cracked, allowing the sparks to set fire to the walls and ceilings of the structure. The cost of building a new brick chimney and other repairs amounted to \$168.32.

Another fire occurred in No. 17 house occupied by Capt. P.W. Pascoe, Sr., at 11:45 A.M. on April 5th. The fire started under the roof at the rear of the house near a chimney. It was discovered later that there was a crack in the chimney where it passes through the roof and no doubt sparks got under the shingles and set the roof afire.

On account of several heavy snows previous to April 5th, it took some time for the fire truck to arrive, but a bucket brigade had the fire under control and kept it from spreading. The fire did not spread beyond the roof but damage to the inside was done by water. The cost of repairs, including repapering of several rooms, amounted to \$121.47.

A chimney fire occurred in house No. 45, occupied by Leonard Perry at 11:00 P.M., December 27th. The fire did not amount to much but developed heat sufficient to crack the chimney which is built of concrete. Temporary repairs were made but a new brick chimney will be built as soon as weather conditions permit. We estimate the cost of this work at \$85.00.

b. Stockpiles:

The rock trestle leading from No. 9 Shaft to the West out over the Bay in the River has been a continual source of trouble, especially in the Spring of the year after dumping on the ice and it begins to settle. We maintain two tracks so that we can work on one while the other is being used. Due to the large amount of rock, we were hoisting last winter, the rock pile was extended some distance onto the ice. Early in March when the ice began to melt, the end of the pile settled for some distance and we lost both tracks. Since that time, we have been side dumping from the South side of the pile, and as we are dumping closer to shore, we have had no trouble from settlement.

The Lump ore trestle was dismantled in May when stockpile shipments were started. A trestle of nine bents was erected after cleaning up the pile and was completed early in November.

During the past shipping season we cleaned up all Crushed ore on hand and this season built the trestle for stocking our Basic Crushed ore just South of the old Crushing and Screening Plant. This is the ground where the Run-of-Mine ore and re-stocked Bessemer Crushed was stored. While this is not a large area, it will no doubt take care of our output for this year. Eight bents were erected.

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6. SURFACE:

b. Stockpiles: (Continued)

We also built a low trestle at the Pascoe Shaft of six bents to take care of the product mined from the exploration near surface, just Southeast of the collar of the Pascoe Shaft. This ore is being stocked as: Basic Run-of-Mine.

d. Farm:

The Company's farm near the Water Power Plant produced 15 tons of hay. On account of the early snow in the fall of 1925, we were not able to do any plowing and for this reason did not plant any oats last Spring.

7. UNDERGROUND:

a. Shaft Sinking:

The Pascoe Shaft was down 40 feet (incline distance) below the 2840' Level on January 1st, 1926. While we were anxious to rush the sinking of the shaft so as to be able to open up a new stope, the operation was very slow and treacherous. This portion of the shaft was in Sheared Quartzite or Soaprock. The rock broke off in large slabs, six or eight feet back of the hanging of the shaft, and it was necessary to put in timber sets very close together to hold it. As the timber was kept close to the breast, we had to exercise care in blasting, drilling short cuts and blasting light.

When starting to sink from the 2840' Level, a rock pentice was left, but as the Soaprock began to slab off, it was decided that it would be safer to remove this ground and build a timber bulkhead. During February, this bulkhead began to show weight and was re-inforced with a lattice work of steel rails.

By the middle of May, the shaft was down 114 feet below the 2840' Level and the plat was started for the 2910' Level, 100 feet (incline distance) below the level above. The plat was completed by June 15th, when sinking to the final depth was resumed. The required depth was reached the latter part of July. The runners and rail were in place and the shaft connected up ready for hoisting on August 20th.

As the drill holes put down from the 2840' Level proved that the foot and hanging walls were coming together and the ore pinching out, further sinking of the shaft was abandoned.

b. Development:

We did a large amount of development drifting in rock during the past year. The total footage was 1320 feet and compares with 610 feet for 1925. Most of the drifts were in very hard Jasper which made progress slow and the cost high. In line with Mr. Smyth's report on the Republic Mine, made in November, 1925, an extensive programme of development drifting was carried on.

1335' Level:

An exploration drift was started on the 1335' Level 667 feet West of the Pascoe Shaft and was driven Northwest 242 feet through very hard Jasper. This drift was to have been pushed ahead 400 feet for a Diamond Drill station to test the territory in the vicinity of the West Republic property. On account of the slow progress and to general conditions throughout the mine and the fact that there was only a slight chance of developing ore in sufficient quantity in the West Republic territory to warrant the necessary long rock drifts to mine it, this drift was stopped July 22nd.

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7. UNDERGROUND:

b. Development: (Continued)

1335' Level:

On July 21st a Diamond Drill was started on this level to test the ground above the stope on the 1500' Level. Three holes were drilled from a station 235 feet Southwest of the shaft. The first hole drilled Southeast cut 12 feet of ore, the second more to the South did not strike any ore and the third about East had 5 feet. In September, Contract No. 11 began drifting from the breast of an old stope on the South side of the main drift 170 feet from the Shaft. This drift was advanced Southerly 55 feet to the ore and then followed the ore South. The ore is about six feet wide with mixed material on either side. This no doubt is the extension of the ore from the 1500' Level.

1500' Level:

The stope above the 1570' Level was extended some distance above the level and had ore in the back when it was stopped. There was every reason to believe that the ore extended to the 1500' elevation. On April 1st, Contract No. 8 began to drift to the South from a point 150 feet Southwest of the Shaft. After extending their drift 90 feet they struck the ore, which has opened up into a sizable stope.

Contract No. 8 began a raise at the Shaft end of the stope in August and put it up 45 feet when it was decided to carry up mills and abandon the raise, so this crew could break ore in the stope and increase the production.

1570' Level:

The small stope from the 1710' Level increased somewhat in size as it approached the 1570' Level. In July a Diamond Drill was moved to this Level and a hole planned to strike the extension of this lens. Diamond Drill Hole No. 576 had previously been drilled in this same territory but had proved only a small seam of ore at the extreme South end. Hole No. 611 was drilled about South from a point 145 feet West of the Shaft. This hole cut 14 feet of ore within 19 feet of the main drift and was extended to a depth of 306 feet without passing through any more ore.

On August 30th, Contract No. 3 started to drift in on Diamond Drill Hole No. 611 to develop the 14 feet of ore located 19 feet from the main drift. This ore proved to be only a small seam a few feet wide and work was stopped. However, as the stope above the 1710' Level continued to be pushed up, we feel it is a good gamble to drift out into this vicinity. On December 24th, a crew was started again to drift South following close to drill hole No. 611. We estimate this drift will have to be advanced between 100 feet and 125 feet before striking the ore.

1850' Level:

Contract No. 5 started the middle of June to drift Southwesterly from a point 50 feet West of the Shaft. They followed Diamond Drill Hole No. 539 and had 48 feet to the leader of ore which we figured would connect with the ore in the bottom of a stope on the 1780' level above. When we reached this point, the ground was banded Jasper and ore and the drift had followed parallel to the strike of the formation.

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7. UNDERGROUND:

b. Development: (Continued)

1850' Level:

No doubt this is another case of the hole following a narrow seam of ore. As the tonnage shown up from the drill holes put down from the level only amounted to a few thousand tons, it would not pay to raise any great distance in rock for it and this place was abandoned.

1950' Level:

Contract No. 6 moved to this level the latter part of April and drove a rock drift around the foot side of the most Southwesterly stope. The original filling place had filled with rock and there was considerable ore left in the stope to be recovered. This drift holed to the stope early in June and then this same gang started drifting from the breast of an old stope just off the main drift, approximately 260 feet South of the Shaft. This drift was planned to develop the ore shown up in Diamond drill Hole No. 592 put down from the 1850' Level. This hole had ore to within 30 feet of the 1950' Level. We hoped to find the ore reaching this level. The drift was pushed ahead in hard Jasper 90 feet to a point opposite the bottom of the hole, but no ore was found. They then drifted South 30 feet parallel to the course of the hole but the formation was very lean. A raise was then put up about 35 feet in lean material. As the stope above the 1850' Level had been badly mixed and this was the downward extension of that stope, it was felt that we could not expect to find a clean ore and no further work was done here.

Contract No. 5 drove a rock drift along the South or foot side of No. 1 Stope to make new filling places, as the stull was in an unsafe condition and almost impossible to repair, as large slabs had dropped from the back of the stope above and crushed it. They drifted 65 feet to the first filling place and then came back to the turn and drifted Northwesterly 50 feet holing to the West end of the stope.

2070' Level:

About the middle of May, Contract No. 4 started to drift Southwest from a point approximately 300 feet South of the Pascoe Shaft, following Hole No. 435. This hole had two feet of ore at a depth of 102' - 104'.

A section drawn through Diamond Drill Holes Nos.: 588 and 590 drilled from the 1950' Level showed a connection with this leader of ore in Hole No. 435. Upon reaching this small seam of ore in the drift, they started to raise. It widened out somewhat at they raised and they holed through to the 1950' Level the last of December, the raise being all in ore.

2570' Level:

We only worked on this level a short time early in the year. Contract No. 8 advanced their drift North toward No. 9 Winze. They had drifted 12 feet when on January 11th, it was necessary to discontinue operations on this level on account of the floor pillar of the stope in the vicinity of the shaft starting to work. Part of the pillar actually dropped away on Sunday, January 10th.

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An exploratory drift was started in January for the purpose of putting down a number of Diamond Drill holes to prove up the downward extension of the main lens. This drift was driven Northwest 200 feet through Quartzite, a drill station cut and drilling started the latter part of April.

2910' Level:

Development drifting was started on this level on August 20th. They only had to drift 35 feet before striking the ore. After the stope was entirely out-lined, a raise was started along the foot at the shaft end of the stope. This raise will be pushed up to the level above as a means of entering the stope from above. This raise has been all in ore and was up 83 feet, incline distance, on December 31st.

Exploration Near SurfaceEast of Pascoe Shaft:

During the Fall of 1925, we started work just East of the Pascoe Shaft, upon some information given us by Trammer Boss, Arthur Bice. He called our attention to a leader of ore dipping to South, which years ago was too small to be mined. At that time we took a number of sinking cuts to prove up the quality of the ore and then with the cold weather, discontinued further work until June 21st, when we resumed operations. An incline was sunk 50 feet and then a drift driven to the Southeast - all in ore.

Eleven Diamond Drill holes were drilled from this level which disclosed a dyke dipping to the North and cutting off the ore about 25 feet below the level opened up. This ore is nothing more than a finger extending back into the foot and was part of the main stope worked from the Pascoe Shaft. The grade of ore secured from here has averaged better than 64.00% Iron.

c. Stopping:(1) General:

The ore hoisted the past year was secured from twelve different levels, the 1500', 1710' and 1950' Levels producing 51% of the total. While we show a large number of producing levels during 1926 than for many years, our tonnage was smaller. It was on account of the limited tonnage available that compelled us to tram from many of the old abandoned places, picking up a few hundred tons where ever possible. Further, in an effort to increase our production, we developed a number of small pockets hoping they might open up into something big. At no time during the year were we filling from more than four stopes at a time, and there were periods when we were down as low as two. On account of the limited number of places to fill from, there was a tendency to pull too much from the larger stopes and then we had to stop and allow them to pile up again.

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7. UNDERGROUND:

c. Stoping:

(1) General:

The main stope above the 1710' Level which has furnished one-third of our product for the past few years, was exhausted in June. While we are opening another stope from this level, it is small compared with the old one. Of the levels from which we secured ore during 1926, the following were exhausted: 1153' Level, No. 9 Shaft; 1570', 1850', 1950' and 2770' Levels, Pascoe Shaft. There is only a small amount left in the stope above the 2840' Level, leaving only six places from which to secure our 1927 product.

(2) Detail of Stopping Operations:

1153' Level, No. 9 Shaft:

This is the Pump Level and is spoken of as: "The Cross Over Level", driven from No. 1 Shaft. This drift was driven partly in Soaprock and ore. There was a seam of ore along the rib of the drift, 4' to 5' thick, which Contract No. 1 started to mine in July. They took a slice along the East side of the drift for a distance of about 350 feet. They continued here until September 18th when work was stopped. After completing the slice from the side of the drift, they tried to break the ore in the back, but on account of the seam being so narrow, it was impossible to break the ore without too much of the rock. This place produced 1519 tons during August and September, amounting to 2.8% of our year's tonnage.

±1550' Level:

This is the operation East of the Pascoe Shaft near surface. Stopping was started here the first of November and thus far have realized very good results. The crew consists of two miners, one filler and two laborers per shift, and average between 15 tons and 20 tons per shift. This crew handles the ore from underground until it is either dumped into the railroad cars or on stockpile, so that we are getting better than 3 tons per man from this operation. We secured 3103 tons or 5.6% of the total year's product from this place.

1335' Level, Pascoe Shaft:

Contract No. 2 opened up a stope here during December and unless the ore proves too lean, we will secure a fair product from this level. There is every reason to believe that the stope from the 1500' Level will connect with this place.

1500' Level:

Contracts Nos. 8 and 12 developed the stope on this level during the months of July, August and September. There seems to be two separate lens with a Jasper pillar between. The hanging stope was 80 feet long by 30 feet wide on the sill floor. After taking a cut over the back, the hanging flattened out and there is only a small seam of about 10 feet wide along the Jasper pillar. The foot stope is long and narrow but the ore is rather free of Jasper seams. This stope is 110 feet long by 16 feet wide. A large portion of our present product is being secured from this level. Since August, we have hoisted 8533 tons or 15.6% of the year's tonnage. This stope will be the main stay of the mine.

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7. UNDERGROUND:

c. Stoping: (Continued)

(2) Detail of Stoping Operations:

1570' Level:

Contract No. 1 reached the North limit of the stope below the level early in January and then moved to this elevation and started to stope down the floor pillar. They were engaged on this operation until the 28th of June when it was entirely exhausted. This stope which came up from the 1710' Level has been a good producer for several years. One-third of our output was trammed from this place. The tonnage for 1926 amounted to about 10,000 tons or 19% of the total.

1710' Level:

Contract No. 7 has been breaking ore all year in the stope developed from the ore shown up in Diamond Drill Hole No. 494. The size on the sill floor was 14' x 50'. They are now up 110 feet and they are unable to break the ore off either the foot or hanging walls. The other dimension is 25 feet. A drift is now being driven on the 1570' Level to strike this ore and a raise will be put through to this level, so the miners can enter the stope from above, allowing it to fill completely and then they can mine the ore off of both the hanging and foot walls. We have only been able to pull a small amount of ore from this place from time to time, but as soon as a hole is made to the level above, we will secure a good production from this stope.

Contract No. 11 holed their winze from this level to the stope from the 1850' Level early in the year. The thickness of this floor pillar averaged better than 50 feet, which was too much to be mined from the level. A stope, 22' by 50', was opened up 30 feet below the level, leaving a 20 foot pillar. After reaching the North limit of their stope, they put up a raise at this end to the level above and then started to stope down the bench, working from the winze back toward the raise. They were employed here until the 28th of June, when the last of the bench was blasted down. This ore was filled from the 1850' Level and amounted to 5614 tons or 10.2% of the total year's output.

1850' Level:

Contract No. 11 was transferred to this level after exhausting the ore below the 1710' Level, Main Stope, in June. They resumed the mining of the floor pillar above No. 1 Stope, 1950' Level. Work was stopped here in 1925, due to the hanging and part of the floor pillar dropping away between shifts. It was decided to allow this place to remain idle for a time before completing the removal of this pillar. This contract was only engaged on this operation during July and August when mining of all the ore was finished.

1950' Level:

Contract No. 3 extended their raise 6 feet, striking ore, 66 feet above the level. This is the ore located by Diamond Drill Hole No. 536, which was drilled from the stope about 30 feet below the 1850' Level. The hole showed 41 feet of ore. Upon starting mining about their raise, they found the lens to be very narrow. They then pushed up a raise to the 1850' Level and holed on the edge of an old stope. The Timbermen built a bridge from the main drift to where the raise holed so they could enter from this level instead of climbing their raise from the 1950' Level.

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7. UNDERGROUND:

c. Stoping: (Continued)

(2) Detail of Stoping Operations:

1950' Level: (Continued)

They were employed here until August. It is very questionable whether the ore secured from this operation paid for the rock and other dead work done to recover it.

2770' Level:

Mining was completed in this stope during 1925. The remaining tonnage, 4951 tons, was hoisted during the first three months of 1926.

2840' Level:

Contract No. 12 opened up the stope on this level early in the year. The size on the sill floor was 55 feet long by 30 feet wide. We felt that there was a possibility of another lens to the Northwest and hole No. 581 was drilled to a depth of 132 feet, but proved up nothing. While the drill was operating they started a raise from the Southwest corner of the stope to the level above for a traveling way; this raise was holed to the 2770' level in March. The ore in this stope was Magnetite in the back against the Quartzite hanging and "Slate" or Specular ore on the Soaprock foot. This proved a very treacherous stope, as the ore broke away from the hanging and it was only necessary to blast off the foot. They worked here until August 24th. The Northwest corner had been dropping away until the floor pillar of the 2770' Level was getting very thin and the plat showed signs of working. It was thought best to discontinue operations here until ready to abandon this portion of the shaft. The broken ore in this stope has practically been cleaned out.

2910' Level:

A crew started drifting on this level in August and during September opened up a stope on the sill floor 48 feet long by 25 feet wide. The hanging and foot of this stope are both very flat and we anticipate the same trouble in mining this ore, as we had above the 2840' Level, that is, the ore and hanging will keep dropping away. We at first hoped we could put this place through by using mills to enter the stope, but on account of the treacherous nature of the ground, it was thought best to put a raise through to the 2840' level and enter from above. This raise is now up 83 feet and only have a short distance to hole through. As soon as this raise is completed, we can then start breaking ore again and secure a fair product from this place. We have hoisted 4429 tons thus far from here.

d. Timbering:

We are put to considerable expense repairing both No. 9 and the Pascoe Shafts. Usually there are crews working both Saturday and Sunday of each week. The wide portion of No. 9 Shaft keeps settling and must be reinforced and braced continually with heavy timbers. The Pascoe Shaft has taken weight in the vicinity of the 2770' Level and a number of lining sets had to be put in. The repairs to shafts will average about \$500.00 a month.

Besides the usual repair work, stalls were built on the 1500' and 2910' Levels.

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7. UNDERGROUND

OPERATIONS: e. Drifting and Raising:

We did more rock drifting and raising in 1926 than for several years, in connection with the development of new stopes. Also two drifts were driven for exploration work with the Diamond Drills. Several raises were started so as to connect the stopes from one level to another.

<u>YEAR</u>	<u>DRIFTING</u>		<u>RAISING</u>	
	<u>ORE</u>	<u>ROCK</u>	<u>ORE</u>	<u>ROCK</u>
1925	484	610	261	53
1926	510	1320	416	64

f. Explosives, Drilling and Blasting:

Due to the large amount of rock work during the year and its very hard character, against our small production, explosive costs were about double what they were in 1925.

Statement of Explosives Used:

	<u>Quantity</u>	<u>Average Price</u>	<u>Amount 1926</u>	<u>Amount 1925</u>
50% L.F. Gelatin	116,806	.1465	17116.27	11461.45
Total Powder	116,806	.1465	17116.27	11461.45
Fuse	174,700	6.3220	1104.53	608.96
Caps	37,025	1.0961	405.85	260.85
Tamping Bags	22,830	.0017	37.96	25.33
Cap Crimpers	17	.7058	12.00	2.00
Ignitors	1,200	8.3620	100.35	
Electric Exploders	50	5.5600	2.78	
Connecting Wire	26	.3834	9.97	
Leading Wire	500	.0128	6.41	
Total Fuse, etc.,			1679.85	879.14
TOTAL ALL EXPLOSIVES			18796.12	12358.59
Product,			54,719	72,314
Pounds Powder per ton of ore,			2.13	1.04
Cost per ton for powder,			.3128	.1585
" " " " Fuse, Caps, etc.,			.0307	.0124
" " " " All Explosives,			.3435	.1709
Average price per pound for powder			.1465	.1520

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8. COST OF OPERATING:

a. Comparative Mining Costs:

	<u>1926</u>	<u>1925</u>	<u>INCREASE</u>	<u>DECREASE</u>
PRODUCT	26,629	72,314		45,685
Underground Costs	8.109	2.966	5.143	
Surface Costs	2.721	1.041	1.680	
General Mine Accounts	.920	.324	.596	
Cost of Production	11.750	4.331	7.419	
Plant Account	.064	.032	.032	
Construction	.000	.010		.010
Taxes	.904	.308	.596	
Central Office	.644	.242	.402	
Contingent Expense	.439	.164	.275	
Cost Adjustment	.048	.029	.019	
Cost on Stockpile	13.850	5.116	8.734	
Loading & Shipping	.269	.070	.199	
Total Cost on Cars	14.120	5.186	8.934	
No. Days Operating	260	247	13	
No. Shifts & Hours	2 - 8	2 - 8		
Aveg. Daily Product	102	293		191
<u>COST OF PRODUCTION:</u>				
Labor	8.324	3.168	5.156	
Supplies	3.425	1.163	2.262	
Total	11.749	4.331	7.418	

b. Detailed Cost Comparison:

(1) Days and Shifts:

The men operated two eight-hour shifts per day schedule five days per week, both in 1925 and 1926. We worked thirteen days more, however, in 1926 than 1925. We were compelled to shut down for a time during the fall of 1925 due to the cave of the collar of the Pascoe Shaft.

(2) Production:

The decrease in production as shown on the Cost Sheet was 45,685 tons. This large decrease is due to our cleaning up all of our stockpiles except for a few thousand tons of Pascoe Run-of-Mine ore and finding a shortage of 28,389 tons. Although this shortage was and accumulation of several years prior to 1923, the piles have never been cleaned up and the 1926 production has been charged with the entire amount. The actual production was 55,018 tons or 17,296 tons decrease over 1925.

Conditions at the Republic Mine have been very bad during the entire year. We had only a very small available tonnage to work on and were only able to pull from a few stopes at a time. Due to the shortage, our indicated production is unusually small and therefore the costs are extra-ordinarily high. Even taking our actual output for the year, the costs are high and show a heavy loss for the year.

(3) Cost of Production:

The large increase in the cost of production and cost on cars is due to a shortage in stockpiles which represents the accumulation for a number of years past which has all been taken up in 1926, as this is the first year that these stockpiles have been cleaned up.

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8. COST OF OPERATING:

b. Detailed Cost Comparison: (Continued)

(3) Cost of Production:

Using our actual hoist for 1926, the cost of production was \$5.686, and the cost on cars \$6.833, which are considerably higher than the 1925 costs. On account of the unfavorable conditions underground and the small tonnage of ore available, we undertook an extra-ordinary programme of development which included rock and ore drifting and Diamond Drilling, which added materially to our cost, especially when only being able to secure a small production.

(4) Underground Costs:

Exploring in Mine:

	Year 1925	\$11,218.35
	" 1926	<u>20,360.79</u>
	Increase for 1926	9,142.44

During 1926, two drills were operated on a double shift until September 17th, then one drill on a double shift up to October 28th, compared with a single drill on one shift up to September when it was operated two for the balance of the year and a second drill started December 1st, 1925.

The cost per foot for 1926 was slightly lower than for 1925, as we cut a greater total percentage of ore and the drilling was softer, reducing the carbon loss. The cost per foot for 1926 was \$3.040 compared with \$3.103 for 1925.

Sinking in Shaft:

	Year 1925	\$21,374.10
	" 1926	<u>13,798.58</u>
	Decrease for 1926	7,575.52

This decrease is explained by less footage sank. The shaft was sunk 94½ feet during 1926 compared with 133 feet in 1925; however, the unit cost was also lower for 1926, being \$146.00 per foot against \$160.70. The decrease in cost was due to Shaft being below the pentice on January 1st and the cost of sinking below this point being less. No sinking was done below the 2910' eliminating the cost of starting a new lift and pentice.

Rock Drifting:

	Year 1925	\$14,480.10
	" 1926	<u>27,092.99</u>
	Increase for 1926	12,612.89

The footage of rock drifting in 1926 was 1320 feet compared with 610 feet in 1925, explaining the increase. The cost per foot was less in 1926, being \$20.53 against \$23.76 for 1925.

Development in Ore:

	Year 1925	\$13,032.49
	" 1926	<u>22,902.25</u>
	Increase for 1926	9,869.76

This account shows an increase for the past year due to the number of new stopes developed compared with 1925. The 2770' was the only new place developed in 1925, while during 1926, we opened up a number of small lenses, namely, the 1335', 1500', 1710' 2840' and 2910'. The total footage driven in ore in 1925 amounted to 338 feet of drifts and 331 feet of raises, whereas in 1926, we drifted 510 feet and raised 416 feet.

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8. COST OF OPERATING:

b. Detailed Cost Comparison: (Continued)
(4) Underground Costs:

<u>Stoping:</u>		
	Year 1925	\$70,264.68
	" 1926	<u>56,119.88</u>
	Decrease for 1926	14,144.80

The average number of miners employed on Stoping was considerably less in 1926, reducing both the labor and supply charges. General conditions in the stopes were not as favorable during the past year and the cost per ton was slightly higher, being \$1.02 per ton compared with \$0.972 for 1925. The 1926 unit cost is figured on the actual production of 55,018 tons.

<u>Timbering:</u>		
	Year 1925	\$11,597.61
	" 1926	<u>9,792.05</u>
	Decrease in 1926	1,805.56

Stalls were built on the 1500' and 2910' Levels the past year against only one new stall on the 2770' Level during 1925. Still extensive repairs were made to old stalls on the 1850' and 1950' Levels in 1925, explaining the decreased charge against timbering.

<u>Tramming:</u>		
	Year 1925	\$40,799.17
	" 1926	<u>37,021.33</u>
	Decrease for 1926	3,777.84

While there is a decrease in total money on account of a smaller tonnage handled, the unit cost for 1926 was actually \$0.109 per ton higher than 1925 and is explained by the fact that conditions for filling a large number of cars per shift were not as favorable and cost of laborers and blockholers was increased.

<u>Pumping:</u>		
	Year 1925	\$6,263.32
	" 1926	<u>6,336.18</u>
	Increase for 1926	72.86

The increased consumption of electric power in 1926 due to larger amount of water pumped was partly off-set in 1925 by the additional labor helping Pumpmen during the eight weeks shut-down account of surface cave at Pascoe Shaft. The total difference is small.

<u>Compressor & Air Pipes:</u>		
	Year 1925	\$12,946.11
	" 1926	<u>8,592.06</u>
	Decrease for 1926	4,154.05

This decrease is entirely in fuel consumed for operating the steam compressor. During 1925 we had a shortage of water and were compelled to run our steam plant eight months compared with two and one-half months in 1926.

<u>Underground Superintendence:</u>		
	Year 1925	\$5,873.17
	" 1926	<u>5,916.05</u>
	Increase for 1926	42.88

Increase due to more shifts operated in 1926 than 1925.

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YEAR 1926.

8. COST OF OPERATING:

b. Detailed Cost Comparison: (Continued)

(4) Underground Costs:

Maintenance Accounts:

Compressors & Power Drills:

	Year 1925	\$1,018.41
	" 1926	<u>596.14</u>
	Decrease for 1926	422.27

Due to the short period that the Steam Compressor was operated the past year, very few repairs were necessary, explaining the decrease.

Hand Trammig Equipment:

	Year 1925	\$2,724.71
	" 1926	<u>4,987.08</u>
	Increase for 1926	2,262.37

On account of the extensive development work during the past year, a large amount of new track was laid; further, heavy repairs were made to the cars, making the cost high for 1926.

Electric Tram Equipment:

	Year 1925	\$2,081.50
	" 1926	<u>946.50</u>
	Decrease for 1926	1,135.00

The expense against this caption was high in 1925, due the purchase of a new storage battery for one of the underground haulage locomotives, explaining the decrease in 1926.

Pumping Machinery:

	Year 1925	\$1,441.75
	" 1926	<u>1,048.39</u>
	Decrease for 1926	393.36

Only minor repairs were made to pumps the past year, while in 1925, a new gear was installed on the pump at the bottom of No. 9 Shaft, showing a decreased cost for 1926.

(5) Surface Costs:

Hoisting:

	Year 1925	\$29,615.71
	" 1926	<u>32,712.38</u>
	Increase for 1926	3,096.67

There was an increase against hoisting for 1926 in spite of the small production. This was due to our generating current in 1925 at our own Water Power Plant during the period of low water at the McClure Plants, which reduced our power charge to a large extent. Further, during the past year, our boiler plant was operated almost entirely for the steam hoist at the Central Plant, while in the previous year, we were compelled to run the steam compressor and the boiler house expense was divided between these two items.

Stocking Ore:

	Year 1925	\$ 8,286.60
	" 1926	<u>10,618.75</u>
	Increase for 1926	2,332.15

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YEAR 1926.

8. COST OF OPERATING:

b. Detailed Cost Comparison: (Continued)

(5) Surface Costs:
Stocking Ore: (Continued)

This large increase is entirely in the expense of erecting stocking trestles. In 1925, the Crushed ore pile was not loaded out and it was only necessary to add a few bents, while the past year we cleaned up this entire pile and had to erect a new trestle. Also on account of operating the Scram on surface during this winter a long trestle had to be erected.

Screening and Crushing at Mine:

Year 1925	\$2,414.83
" 1926	<u>1,613.66</u>
Decrease for 1926	801.17

The Screening and Crushing Plant was operated the past year when the Basic Run-of-Mine pile was loaded out. This expense was more than off-set by the heavy repairs made to the Revolving Screen during 1925, explaining the decrease this year.

Dry House:

Year 1925	\$1,754.04
" 1926	<u>1,769.96</u>
Increase for 1926	15.92

Very little difference between the two years.

General Surface:

Year 1925	\$5,555.01
" 1926	<u>5,549.68</u>
Decrease for 1926	5.33

Nominal decrease, as our operations were practically the same for each year.

Maintenance Accounts:

Hoisting Equipment:

Year 1925	\$9,408.23
" 1926	<u>7,111.26</u>
Decrease for 1926	2,296.97

This large decrease for the past year is explained by our having to make fewer repairs to the skip-roads and also less new rope was charged out.

Shaft:

Year 1925	\$14,196.09
" 1926	<u>9,703.94</u>
Decrease for 1926	4,492.15

Approximately \$8,300.00 of the 1925 charges was due to the repairs to the Pascoe Shaft on account of the upper portion near surface caving in. It has been necessary during the past year to make extensive repairs in the wide portion of the No. 9 Shaft and the lower part of the Pascoe Shaft. The Shaft in the vicinity of the 2770' Level has taken considerable weight and additional timber was required here. Although we show a decrease for 1926, the charges against this caption were extraordinarily high.

Top Tram Equipment:

Year 1925	\$1,584.07
" 1926	<u>1,394.49</u>
Decrease for 1926	189.58

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8. COST OF OPERATING:

b. Detailed Cost Comparison: (Continued)

(5) Surface Costs:

Top Tram Equipment: (Continued)

While the repairs to top tram cars were very heavy during the past year due to a car going over the rock dump, we did not use as much rope on the tram as we were shipping from pocket the entire season and our trestles for this winter are shorter.

Docks, Trestles and Pockets:

Year 1925	\$1,183.02
" 1926	765.42
Decrease for 1926	417.60

In previous years, we extended our rock pile by adding bents at the end of the pile as we extended it into the Bay, but during 1926, we came back to a point near the bridge over the main road and have been side-dumping, which reduced this expense materially.

Mine Buildings:

Year 1925	\$1,262.40
" 1926	1,210.58
Decrease for 1926	51.82

This account shows but little change for the two years.

(6) General Mine Accounts:

Insurance:

Year 1925	\$1,001.52
" 1926	1,031.76
Increase for 1926	30.24

Increased due to larger premiums charged against Republic Mine.

Engineering:

Year 1925	\$1,483.80
" 1926	1,821.13
Increase for 1926	337.33

Due to extensive development drifting and Diamond Drilling programme, more time was spent by the Engineers at the Republic Mine.

Analysis:

Year 1925	\$2,375.91
" 1926	2,470.53
Increase for 1926	94.62

On account of increased shipments, more determinations were made and a greater portion of the sampler's time was charged to this account.

Personal Injury Expense:

Year 1925	\$3,787.90
" 1926	7,433.83
Increase for 1926	3,645.93

This large increase is due to fatal accident to John Eckstrom. The compensation paid for other injuries was less in 1926 than in 1925.

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8. COST OF
OPERATING:

b. Detailed Cost Comparison: (Continued)

(6) General Mine Accounts:
Safety Department Expense:

Year 1925	\$158.27
" 1926	<u>212.21</u>
Increase for 1926	53.94

This increase for 1926 is explained by more First Aid training periods being held.

Telephones and Safety Devices:

Year 1925	\$880.90
" 1926	<u>752.94</u>
Decrease for 1926	127.96

Less repairs to telephones and safety devices during 1926.

Mine Office:

Year 1925	\$13,773.49
" 1926	<u>10,769.02</u>
Decrease for 1926	3,004.47

This large decrease is explained by one less man employed since April 1st and a decrease in supplies charged to this account.

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9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

An extensive campaign was carried on throughout the year until October 27th when all work was stopped. Two drills operated both shifts until September 17th when one was shut down, the other continuing to work until October 27th. The Diamond Drills were kept busy the entire time testing the foot and hanging walls for new ore bodies and trying to locate the downward extension of known ones.

Six holes were drilled from the hanging wall drift on the 2840' Level, which proved the coming together of the foot and hanging walls and pinching out of the ore. No new ore was located except on the 1335' Level which is probably the same lens as that developed from the 1500' Level.

The holes drilled from the exploration on surface East of the Pascoe Shaft were all shallow holes. Three holes were nearly all started in ore and drilled to outline the rock walls. For this reason, the eleven holes drilled here show a good footage of ore.

The holes drilled for the year follow:-

<u>No. of Hole</u>	<u>Location</u>	<u>Dip</u>	<u>Depth</u>	<u>Footage of Ore</u>
576	1570'	0	255-420	4-3 and 6 ft.
578	1780'	0	31-62	7 ft.
579	1570'	0	301	No Ore
580	1850'	0	264	4' Ore
581	2840'	0	132	No Ore
582	2840'	0	123	" "
583	1570'	0	161	4'-7 and 2 feet
584	1950'	90°	39	16 feet
585	1950'	-15°	128	24-14-14 feet
586	1780'	0	320	9-4 feet
587	2070'	0	146	5 feet
588	1950'	-45°	83	5-23 feet
589	2840'	0	150	No Ore
590	1950'	-45°	52	8-15 feet
591	1710'	-35	124	No Ore
592	1850'	-54	94	6-6-56 feet
593	2840'	-65	324	No Ore
594	1570'	0	275	No Ore
595	2840'	-62	282	20 feet
596	1950'	0	92	No Ore
597	1780'	-55	51	29 feet
598	2840'	-61	215	6 feet
599	1780'	-90	24	12 feet
600	1780'	-55	38	31 feet
601	1780'	0	44	No Ore
602	2170'	0	281	No Ore
603	2840'	-65	442	No Ore
604	1335'	-45	161	27 feet
605	1335'	-60	176	No Ore
606	2840'	0	272	No Ore
607	1335'	0	110	12 feet
608	2840'	0	247	No Ore
609	1335'	0	150	No Ore
610	1950'	+40	29	No Ore
611	1570'	0	306	14 feet
612	1335'	0	119	5-2 feet
613	1850'	0	78	No Ore
614	Near Surface	-45	101	3-31 feet
615	" "	-90	80	21-30 feet
616	" "	0	44	5 feet
617	" "	-45	37	25 feet
618	" "	-90	34	12 feet
619	" "	0	44	7 feet
620	" "	-45	48	13-4 feet
621	" "	0	59	12 feet
622	" "	-60	41	12 feet
623	" "	0	82	No Ore
624	" "	0	115	50 feet

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9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

Forty-eight holes were drilled during the year having a total footage of 6,714 feet, at a total cost of \$20,410.79 or \$3.040 per foot. While quite a few holes showed a fair footage of ore, they were incline holes and drilled from the bottom of old stopes. Of the total 6,714 feet, 6,029 was drilled from the lower levels of the Pascoe Shaft, and the balance, 685 from the exploration near surface. Only 400 feet of the 6,029 feet was ore or 6.6%, while of the 685 feet, 227 feet or 33% was ore. Of the 400 feet of ore 312 feet or 5.1% of the total, namely 6029, was cut in incline holes and 1.5% in horizontal holes. The ore cut in the incline holes being the extensions of known ore and that in the horizontal ones new ore.

The following table shows a comparison of Diamond Drill costs since 1920:-

<u>Year</u>	<u>Feet Drilled</u>	<u>Cost Per foot</u>
1920	3,621	4.963
1921	2,531	4.110
1922	2,367	3,570
1923	4,325	3,196
1924	2,414	3,066
1925	3,215	3,103
1926	6,714	3,040

The cost per foot was slightly less in 1926 than 1925 and due to a greater per centage of ore footage, resulting in a smaller carbon loss.

10. TAXES:

<u>DESCRIPTION</u>	<u>1 9 2 6</u>	<u>1 9 2 5</u>	<u>VALUATION</u>	<u>TAXES</u>	<u>VALUATION</u>	<u>TAXES</u>
Realty as described on Tax Receipt	-100,000	5,225.74				
Personal Property -----	360,500	18,836.50				
Lots 71, 72, 86, 108 & 126-----	190	9.94				
Total Opt. Republic Mine -----	460,690	24,072.18	491,855	22,280.38		
Power Line & Michigamme Dam Site---	1,600	83.61	1,500	67.94		
Republic Mine Dwellings-----	41,500	2,168.47	41,500	1,879.88		
Dr. H. H. Loveland - Hospital -----	3,500	182.87	3,500	158.54		
Total Republic Township (Inc. Fees)	507,290	26,507.13	538,355	24,386.74		
Rate-----		5.174		4.485		

The reason for the high rate for 1926 is that the Township had been forced to borrow money during the past number of years, the accumulation of which amounted to several thousands of dollars, and in addition to this, a Rural Free Delivery was established and the future outlook of the Township being such that it was deemed advisable to raise sufficient funds at this time in addition to the regular or usual levy in order that all this indebtedness could be wiped out.

11. ACCIDENTS
AND
PERSONAL
INJURY:

- a. We had a total of thirty-four accidents during 1926 compared with thirty-one in 1925. These thirty-four accidents can be classified as thirty-two minor injuries, one serious and one fatal.

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11. ACCIDENTS
AND
PERSONAL
INJURY;

b. Serious Accidents:

On the evening of March 11th, at about 8:30 o'clock, Andrew Augustson, miner, and three others, were about to be lowered in the skip to their usual working place below to 2050' Level, Pascoe Shaft. The brakeman, Jules Beauchamp, who operates the underground hoist located on the 2050' Level, misunderstood the signal and hoisted the skip into the dump. Augustson was dumped into the chute of the underground pocket, falling head first. He struck his head against the door of the pocket and suffered with concussion of the brain, and sustained several other injuries, viz: five broken ribs and a fracture of the end of the vertebra. While Augustson is getting along nicely and able to be around, he suffers from dizzy spells and his heart action is not good.

The accident was due to carelessness on the part of the hoisting engineer and he was taken off of this job and a new man put in his place.

c. Fatal Accidents:

A fatal accident occurred at the Republic Mine Friday morning, June 18th, at 10:30 A.M., in which John Eckstrom, miner, was killed when he slipped from a ladder and dropped approximately 100 feet down an open stope. There were no actual eye witnesses to the accident.

John Eckstrom and his partner, Henry Maki, were employed in Contract No. 11, below the 1710' Level. A year or more ago, the ore in this stope had been mined out from the 1850' Level, leaving a floor pillar below the 1710' Level. Several months ago, this contract sunk a winze through the floor pillar with the intention of mining same, but the winze disclosed a greater thickness of ore than we felt should be taken in this manner, there being a sufficient thickness to leave a 20 foot floor pillar and mine out a bench below from 10 to 25 feet thick. After out-lining the stope at an elevation 30 feet below the 1710' Level, a raise was put up at the opposite end from where the winze was sunk; mining of the bench was started, retreating towards the raise. Captain Pascoe and myself visited this place just fifteen minutes before the accident happened. The bench had been mined back to within 15 feet of the rock to the North and Eckstrom and Maki were drilling a second row of holes across the width of the stope, which was approximately 22 feet wide.

Maki, Eckstrom's partner, stated that after the Captain and I had left the place and they finished the hole they were drilling, that Eckstrom took the 8-foot dull drill just taken out of the hole and said that he would go up to the level and bring down a sharp drill of the same length. Maki stated that he heard noises from above that sounded like Eckstrom was going over the pile of drill steel to pick out a drill of the desired length. Maki was engaged in setting the drill machine for drilling another hole and that while so employed, he heard a sound of a drill falling from the ladder and then noticed Eckstrom's miner's hat, lamp and skull-cap at the foot of the ladder near the edge of the bench, when he immediately called to the fillers on the 1850' Level that his partner had fallen down the stope.

The ladder-way in this raise was about 25 feet long, the top ladder being almost vertical and the bottom one inclined towards the edge of the bench. At the time I climbed down this raise in the morning, it was in good condition, and the only thing I called the Captain's attention to was that a rope should be stretched across the stope, so that one climbing down the ladder would not be apt to step off into the stope.

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11. ACCIDENTS
AND
PERSONAL
INJURY:

c. Fatal Accidents: (Continued)

The toe of the ladder was within 4 feet of the edge of the bench. When I inspected the place again in the afternoon after the accident had happened, a 2" x 4" which was nailed to the ladder and wedged against the hanging side of the raise, was knocked loose, and there were marks on the outer edge of the left hand side of the upper portion of the bottom ladder, as though it had been cut with the bit end of the drill that Eckstrom evidently was carrying.

Both Eckstrom and Maki were old miners and familiar with conditions as they existed in this particular place. They were men that complied with our Safety Regulations, for in the morning when I visited their place, both men had on our safety belts, which we require them to wear when working on a bench like this. There was a coil of rope at the top of the ladder, which I assumed they were using to hoist and lower drills, but Maki stated that on account of the few pieces of steel they required in this place, they were in the habit of carrying the drills up one at a time, and had done it hundreds of times and the rope had been used to hoist the lower ladder when blasting.

It is my opinion that Eckstrom was returning to his working place carrying a drill in one hand and climbing the ladder with the other and that while he was up on the upper portion or vertical part, he lost his balance and fell into the stope below. I don't believe that there was anything that we could have done to have made this place more safe, but I believe that this accident would never have occurred if it had not been that Eckstrom had been carrying something in one of his hands. We are insisting that the men use a rope to hoist and lower material through raises, especially where they are vertical.

John Eckstrom was married and fifty-four years of age, and is survived by his widow and six children, two of whom are under sixteen years of age, a boy fifteen and a girl twelve.

15. POWER:

We operated the water driven Compressors part time up to the first week in March when with an early break-up, we were able to operate continuously throughout the balance of the year. We had such a large amount of rain during the past summer that it has been necessary to keep the gates of our dam open most of the time. It now looks as though we would be able to run right through the winter without operating the steam Compressor. During 1925, the water dropped to such a point in May that we had to start our Booster Compressor which we use in connection with one water Compressor when the water is low. By July we had to run the steam plant one shift in every twenty-four hours and beginning with August were compelled to operate our Steam Compressor continuously. The operation of our Water Power Plant for making air has been a great saving in fuel.

During the year we generated 94,000 K.W. hours of current and compressed 996,950 thousand cubic feet of air, compared with 139,000 K. W. hours of current and 597,851 thousand cubic feet of air in 1925. The reason we generated more current in 1925 than 1926 is explained by the shortage of water at the McClure Plants and our generating current in preference to air.

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17. CONDITION
OF
PREMISES:

We cleaned up around the surface and mine buildings and repaired fences about the pits and old shafts during April and May, and then kept the property in a neat condition the entire summer. During July, two men were employed cutting thistles from the Republic Mine property, which covers an area about one mile square.

18. NATIONALITY
OF
EMPLOYEES:

	1926		1925	
	NO. MEN	%	NO. MEN	%
Finnish,	76	47.8	85	50.0
Scandinavians,	27	16.9	26	15.0
English,	18	11.4	22	13.0
French,	19	11.9	21	12.2
Irish,	12	7.6	9	5.3
Belgian,	4	2.6	5	3.0
German,	1	.6	1	.6
Italian,	1	.6	1	.6
Welsh,	1	.6		
Total,	159	100.0	170	100.0

SPIES-VIRGIL MINEANNUAL REPORTYEAR 1926.1. GENERAL:

We did not reach a normal basis of operation at the Spies-Virgil Mine during the year 1926. Our development work was not far enough advanced to allow us to mine a uniform monthly production of 10,000 tons with only a limited amount of development work in progress.

On the Spies property, we only had a small tonnage available and this ore was mined and left to accumulate in the stopes during the first three months of the year. When shipping started this tonnage was all hoisted in the months of June and July. As soon as the Fourth Level drift reached the ore area in the vicinity of Diamond Drill Holes, Nos.: 1 and 6, one gang was kept busy exploring this lens which was found to carry high Sulphur and therefore could not be mined. We estimated the prospective tonnage above the Fourth Level between 50,000 and 75,000 tons, which, if merchantable, would have allowed us to secure a substantial product from this area.

In the course of the development on the Virgil, we found the ore body very irregular and in many places after striking the rock and drifting into it a short distance, we would pass into ore again. On account of this condition, we did not feel that we could start any actual mining until we had the ore body definitely outlined. Finally, late in the Spring we rushed development on the Sixth Level at the Southwest end under the hanging and opened up a stope so that we showed an increased production after July for the balance of the year, and realized a part of our estimated production. However, in October, on account of some of our development drifts and raises not being far enough advanced, we had to slack off with mining in this stope for a short time, and again our output fell off. We hope to push our development work during the winter ahead to a point where we will have more than one stope to pull from and thus maintain a more uniform output in 1927.

2. PRODUCTION
SHIPMENTS &
INVENTORIES:a. Production by Grades:

Spies Crushed,	8,637 tons
Virgil Crushed,	68,038 " ✓
Total Ore	76,675 "
Rock,	17,362 "

The product for the year 1926 was 14,577 tons more than the year 1925. This was due principally to the development on the Virgil being far enough advanced to permit stoping operations and increasing the production after July. The Virgil tonnage secured in 1925 was only that from development drifting and raising. The Spies output dropped off materially the past year as the ore above the Third Level was practically exhausted in 1925 and the development above the Fourth Level proved the ore to be high Sulphur, and not merchantable.

b. Shipments:

<u>Grade of Ore</u>	<u>Pocket</u> <u>Tons</u>	<u>Stockpile</u> <u>Tons</u>	<u>Total</u> <u>Tons</u>	<u>Total</u>
				<u>Last Year</u> <u>Tons</u>
Spies Crushed,	6,640	1,805	8,445	54,698
Virgil Crushed,	35,817	19,378	55,195	9,596
Total	42,457	21,185	63,640	64,294
Total Last Year	29,270	35,024	64,294	
Decrease			654	

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2. PRODUCTION
SHIPMENTS &
INVENTORIES:

b. Shipments: (Continued)

The total shipments were 13,035 tons less than the tonnage mined, but only 654 tons under the tonnage forwarded in 1925. All ore from the Spies-Virgil Mine was shipped to the Escanaba Dock via: The Chicago & Northwestern Railroad. Pocket shipments were started on April 29th, but we were unable to hoist any Spies grade until May 3rd, as the pocket through which the Spies ore is handled was blocked with frozen dirt. On account of the tonnage of Spies-Virgil ore in dock and no boats being named for this grade, we were forced to stock the ore hoisted from June 17th to July 1st and again from July 15th to July 23rd, after the latter date, pocket shipments were continuous to October 19th, when our season's requirements were filled.

As the Spies trestle was dismantled early in June when it became necessary to discontinue pocket shipment and resume stocking, we stopped hoisting Spies ore for the time holding it in the stopes.

A Steam Shovel was rented from the Zimmerman Mine of the M. A. Hanna Company for stockpile loading during 1925. We tried to rent their Shovel again for use during the 1926 season but their programme would not allow it. We therefore had the No. 4 Shovel shipped from Ishpeming. The first stockpile loading was from the Virgil pile on May 4th. The first cut was completed on May 13th when the Shovel was moved back and cut into the Spies pile. The Republic Mine Shovel crew was sent to Iron River whenever necessary to operate the Steam Shovel.

During the balance of the season the Shovel was only operated eight days, two days in the Spies pile and six in the Virgil. No stockpile loading was done after August 24th.

c. Stockpile Inventories:

<u>Grade</u>	<u>Tons</u> <u>in Stock</u>
Spies Crushed	339
Virgil Crushed (Low Sulphur)	19,684
Virgil Crushed (High Sulphur)	1,445
Total	21,468

On December 31st, 1925, the ore in stock amounted to 8,433 tons, showing an increase of 13,035 tons the same date this year. While we only show a very small amount of Spies ore on hand December 31st, 1926, being that hoisted from development work above the Fourth Level, we have about 3500 tons additional on hand, an over-run from an old pile. An Engineer's estimate shows an over-run in our Virgil pile of 3000 tons, of which 1445 tons is high Sulphur ore.

d. Division of Product by Levels:

The ore hoisted from the various Levels was as follows:-

<u>Level</u>	<u>Property</u>	<u>Tons</u>	<u>Percent of</u> <u>Product</u>
Third Level	Spies	6,048	8.0%
Fourth Level	Spies	959	1.3%
Sixth Level	Virgil	68,038	90.7%
Total		75,045	100.0%

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2. PRODUCTION
SHIPMENTS &
INVENTORIES:

e. Production by Months:

The product by months, days operated, average daily product and tons per man per day, are shown in the table below:-

<u>MONTH</u>	<u>Rock</u>	<u>Spies</u>	<u>Virgil</u>	<u>Total</u>	<u>No. days Operated</u>	<u>Ave. Daily Product</u>	<u>Tons per Man per Day</u>
Jan.	930		3,106	3,106	25	125	1.19
Feb.	984		2,938	2,938	24	122	1.13
Mar.	2478		2,888	2,888	27	108	.94
Apr.	2682		2,844	2,844	25	114	1.00
May,	1332	3,897	3,879	7,776	25	311	2.60
Jun.	1642	1,698	3,912	5,610	26	216	1.83
Jul.	1420	453	5,021	5,474	26	211	2.07
Aug.	142	257	9,404	9,672	26	371	3.53
Sep.	746	363	10,399	10,762	25	430	4.06
Oct.	1160	68	9,582	9,650	27	357	3.29
Nov.	1744	197	6,041	6,238	25	249	2.17
Dec.	2102	74	8,024	8,098	26	312	2.58
Total	17362	7,007	68,038	75,045	307	244	2.20
Over-run		1,630		1,630			
Grand Total	17362	8,637	68,038	76,675	307	250	2.25

On January 1st, 1926, we only showed 12,830 tons of Spies ore, developed for mining. Of this tonnage, 5,000 tons is the Third Level Main Stope Back Pillar, which we could not mine until the ore below was developed, leaving as available 7,830 tons. We mined practically all of this ore that the grade would carry.

The production from the Virgil was small for the first six months of the year, as during that period our operations were confined to development drifting and raising. On July 19th, we started stoping above the Sixth Level and increased our production materially. We hope to push our development work ahead to such a point that we can maintain a uniform production throughout 1927.

f. Ore Statement:

	<u>Spies</u>	<u>Virgil</u>	<u>Total</u>	<u>Total Last Year</u>
On hand January 1, 1926	147	8,286	8,433	10,629
Output for Year,	7,007	68,038	75,045	61,461
Stockpile Overrun,	1,630		1,630	637
Total	8,784	76,324	85,108	72,727
Shipments	8,445	55,195	63,640	64,294
Balance on Hand,	339	21,129	21,468	8,433
Increase in Output			14,577	
Increase in Ore on hand,			13,035	

1926 - 20- 8 Hour Shifts, 6 days per week, Jan. 1st to Dec.31, 1926.

1925 - 2 - 8 Hour Shifts, 6 days per week, Jan. 1st to Dec.31, 1925.

g. Delays:

There were no serious non-electrical delays during the past year. There were a number of delays of a short duration, while due to our small production, we were able to make up without any loss of product.

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2. PRODUCTION
SHIPMENTS &
INVENTORIES:

h. Delays from lack of Current:

There were no serious electrical delays during the past year.

3. ANALYSIS:

a. Average Mine Analysis on Output:

<u>Grade</u>	<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>	<u>Sulphur</u>
Spies,	52.80	.525	10.51	.158
Virgil,	58.86	.359	6.81	.105

b. Average Analysis on Straight Cargoes:

<u>Grade</u>	<u>Tons</u>	<u>Iron</u>	<u>Mine</u>		<u>Lake Erie</u>	
			<u>Phos.</u>	<u>Sulph.</u>	<u>Iron</u>	<u>Moist.</u>
Spies-Virgil	18,087	58.22	.641	.090	57.43	8.19

Of the total 63,640 tons of Spies-Virgil ore forwarded only 18,087 tons was shipped as straight Spies grade. The balance was used in a mixture with Stephenson and Berkshire ores. The Berkshire ore shipped from the Berkshire Mine of the Oglebay-Norton Company at Stambaugh ran very uniform in analysis and very much like our standard Spies grade.

c. High Sulphur Ore:

The Virgil drifts on the 245' Sub-Level (Fifth Level Elevations), 330' Sub-Levels and raise to the Fourth Level elevation struck some high Sulphur ore which would average over .200%. It did not occur in great quantities, however. The Deep Hole drilling from the Fourth Level elevation showed up a large area along the Northeast or footwall side of high Sulphur ore averaging between .200% and .350%. This high Sulphur ore also extends upward some distance. On account of this high Sulphur area which is not merchantable, our estimate of ore above the Fourth Level is cut considerably.

The development raising and drifting done on the Spies property above the Fourth Level to prove up the ore struck in Diamond Drill Holes Nos. 1 and 6, showed high Sulphur ore also. The drifts on the 445' Sub-Level averaged close to .200% Sulphur, those on the 470' Sub. .330% and the raise above this last Sub. the same. Finding this ore high in Sulphur, eliminates the prospective Spies tonnage below the Third Level figured in our 1925 estimate of Ore Reserves.

d. Average Analysis on Total Shipments:

<u>Grade</u>	<u>Tons</u>	<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>	<u>MN.</u>	<u>Alum.</u>	<u>Lime</u>	<u>Mag.</u>	<u>Sulph.</u>	<u>Igni.</u>	<u>Moist.</u>
Spies,	8,366	53.20	.520	10.30	.23	4.12	.27	.81	.151	8.50	5.50
Virgil	53,973	58.30	.375	6.80	.29	2.18	.35	.45	.080	5.60	10.39

4. ESTIMATE OF
ORE RESERVES:

a. Developed Ore:

Assumption: 12 cu. ft. equals one ton.
10% deduction for rock.
10% deduction for loss in mining.

Percentage of Bessemer equals 0.

Fifth Level and above	348,730 tons
Sixth Level and above	815,940 "
Total	1,164,670 "

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ORE RESERVES:b. Prospective Ore:

Fourth Level and above	88,265	tons
Below Sixth Level	920,868	"
Total	1,009,133	"
Total all ore	2,173,803	"

c. Estimated Analysis:

	<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>	<u>Alum</u>	<u>Mang.</u>	<u>Lime</u>	<u>Mag.</u>	<u>Sul.</u>	<u>Igni.</u>	<u>Moist.</u>
Dried 212°	58.00	.490	5.50	2.48	.300	.570	.150	.090	7.50	
Natural	51.04	.431	4.84	2.17	.264	.502	.132	.079	6.60	12.00

The above reserve ore estimate covers the Virgil property only. All developed available Spies ore was mined during 1926. The prospective Spies ore estimated as of December 31st, 1925, was found to carry high Sulphur and is not merchantable.

The total ore in the Virgil Mine as of December 31st, 1926, is 2,173,803 tons, as compared with 1,512,186 tons for December 31st, 1925, or an increase of 661,617 tons. In order to show the ore developed during the year, to this difference should be added the tonnage mined of 68,038 tons, making a total new ore developed of 729,655 tons. This increase is due to additional development drifting, enlarging the ore areas on the Fourth, Fifth and Sixth Levels. About two-thirds of the additional ore developed is above the Sixth Level and the other one-third below.

d. Estimate of Production:

The following is the estimated tonnage and expected analysis of the 1927 production from the Spies-Virgil Mine:-

<u>Grade</u>	<u>Tons</u>	<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>	<u>Sulph.</u>	<u>Moist.</u>	<u>Iron Nat'l.</u>
Spies, None							
Virgil,	120,000	58.00	.400	5.50	.090	10.50	51.91

5. LABOR AND WAGES:a. Comments:(1) Labor:

The labor situation at the Spies-Virgil Mine has been very unsatisfactory throughout most of the year. In January we lost a number of our best miners due to the Rogers Mine of The M. A. Hanna Company resuming operations. These men were living at the Rogers Location and were therefore compelled to return to work there. During the early Spring, we built up our organization to almost a full crew, then in July the Davidson Mine started another one of their shafts and we lost more men who were living in that Location. We sent a number of miners from the Republic Mine during the Summer and have a rather steady crew at present. We can usually count on plenty of labor in the winter as many of the mines curtail operations after shipping season. The trouble, however, the labor you secure from a curtailment at another property, is you do not get the best and it is not a steady class. The labor in the Iron River District, at the best, is not as high class as on the Marquette Range. We have proven the necessity of additional houses in our location to provide a nucleus for a steady crew of underground labor. A building programme calling for twenty more cottages has been approved.

(2) New Construction:

There was no new construction work undertaken during 1926.

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5. LABOR AND WAGES:

b. Comparative Statement of Wages & Product:

	<u>1926</u>	<u>1925</u>	<u>INCREASE</u>	<u>DECREASE</u>
PRODUCT	76,675	62,098	14,577	
No. Shifts & Hours,	2 - 8	2 - 8		
<u>AVG. NO. MEN WORKING:</u>				
Surface	28	23	5	
Underground	84	53	31	
Total	112	76	36	
<u>AVG. WAGES PER DAY:</u>				
Surface	4.18	4.19		.01
Underground	4.91	4.89	.02	
Total	4.72	4.67	.05	
<u>WAGES PER MO. OF 25 DAYS:</u>				
Surface	104.50	104.75		.25
Underground	122.75	122.25	.50	
Total	118.00	116.75	1.25	
<u>PRODUCT PER MAN PER DAY:</u>				
Surface	8.48	8.54		.06
Underground	2.98	3.76		.78
Total	2.20	2.61		.41
<u>LABOR COST PER TON:</u>				
Surface	.493	.490	.003	
Underground	1.653	1.299	.354	
Total	2.146	1.789	.357	
AVG. PRODUCT BR'K & TRM'G	13.69	10.86	2.83	
" WAGES CONTRACT MINERS	5.54			
" " " TRAMMERS	4.91	5.62		.71
<u>TOTAL NO. OF DAYS:</u>				
Surface	9,040 $\frac{3}{4}$	7,267 $\frac{3}{4}$	1,773	
Underground	25,738	16,498 $\frac{1}{4}$	9,239 $\frac{1}{4}$	
Total	34,778 $\frac{3}{4}$	23,766 $\frac{1}{2}$	11,012 $\frac{1}{2}$	
<u>AMOUNT FOR LABOR:</u>				
Surface	37,790.76	30,431.97	7,358.79	
Underground	126,479.57	80,653.44	45,826.13	
Total	164,270.33	111,085.41	53,184.92	

Proportion Surface to Underground Men:

- 1926 - 1 to 3
- 1925 - 1 to 2.3
- 1924 - 1 to 1.82
- 1923 - 1 to 3
- 1922 - 1 to 2.8
- 1921 - -
- 1920 - 1 to 3.1
- 1919 - 1 to 2.91
- 1918 - 1 to 2.86

6. SURFACE:

a. Buildings, Repairs:

The covering of the Shaft House was finished early in January and two stoves were installed, one in the Crusher room and the other above the

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6. SURFACE:

a. Buildings, Repairs: (Continued)

Crusher near the skip dump. We had some very cold weather during January and February but no ice was found in the shaft and it has been less trouble to keep the Crusher and lip of the dump clean. In previous winters, it was necessary to chop ice in the Shaft every day. The window frames and doors of the Shaft House enclosure were painted during the Spring.

A concrete floor was laid in the Shops Building in July by Contractor Proksch. This building was the old Hoist and Compressor House and the floor was exceedingly rough after the foundations were chopped out, which made it difficult to keep clean.

An old lathe from the General Shops at Ishpeming was sent to the Spies-Virgil and a power hack saw was purchased from the Crosby Mine, Mesaba Range, and installed in our Shop. With this additional equipment we are able to do more of our repairs and are not dependent on our neighbors for any lathe work, as in past years.

b. Stockpiles:

A very small tonnage of Spies ore was stocked during 1926, as we were able to allow it to accumulate in the stope until shipping season and hoist and load it from pocket. As the low Sulphur Virgil ore stocked East of the pocket tracks was cleaned up this year, we put up six bents here to stock what Spies grade is hoisted during 1927.

The Virgil ore stocked on the old Spies ground was not entirely cleaned up. Early in October several bents were put up so as to be ready on short notice to start stocking. Two carpenters were sent down from Republic to finish the work as we do not maintain a carpenter crew at the Spies-Virgil. A double trestle of twelve bents was erected. Stocking is done by the car running out by gravity and being pulled back by an electric hoist. This arrangement is slow and for this reason we built a double trestle rather than a long single one. If we should desire to increase our production it would be advisable to change our method of stocking to an endless rope system.

The rock pile started to burn again early in the year and as soon as the snow was gone, we made preparations for spreading it. The Lidgerwood hoist used to pull the scraper was overhauled and the transmission line repaired. Work of spreading the pile was begun in May and continued for several months. It was a very slow operation as the fire had burnt in the pile for some time and the heat being very intense, the pile was like one mass of concrete. It was necessary to blast constantly in order to loosen up the dirt for the scraper. The hoist used for this work was shipped to the Barnes-Hecker Mine in November.

The new rock pile ground Northeast of the shaft is filling up rapidly as we hoist a substantial tonnage from our new development drifts on the Fourth, Fifth and Sixth Levels.

c. Tracks, Roads, Transmission Lines:

A timber dock was built on the hill side South of the shaft for storing framed timber. The ground below the dock was filled with rock, which was dumped from the trestle and then spread with team and slusher. A track was constructed from the shaft collar to the South along this dock to the lagging pile. As we only have a seven foot cage, lagging and cribbing timber is all that can be taken down the shaft on timber trucks.

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6. SURFACE:

c. Tracks, Roads, Transmission Lines: (Continued)

Road:

The Township repaired the road through our location during the Fall. They graded and widened it, with good ditches on both sides and a turn around at the end of the street. They had a mechanical loader stationed in our rock pile and hauled the rock in trucks. They did a very good job. While this work was in progress, we had our team haul rock along the road West of the Power House through the swamp. In this way, our wagon was loaded by the Township equipment and men. The Township also had their trucks haul some rock on this road. If we can get a solid bottom to this road, it will eliminate the steep Virgil hill when hauling freight from the depots.

Last winter we had a great deal of trouble keeping the location road open in front of the Boarding House and Captain's residence on account of the snow drifts. During the summer we took off the boards from the fence and replaced them with barbed wire and cut all brush on the South side of the road, which allows the snow to blow across the field on the other side. A snow fence was also built some distance back in the yards. The Township is keeping the road open for wheel traffic as far as the location.

d. Drainage Ditches:

The drainage ditch carrying the surface and mine water crossed the mined area above the First Level. The Subs in this area were carried to within 35 feet of the surface. In February we had several heavy falls of ground from the hanging of the North Stope above the First Level. A new ditch was dug around this mined area so that if the cave came through to surface, our drainage ditch would be safe. A new ditch 436 feet long was completed the middle of April. As yet, there is no signs of any movement in the surface.

A drainage ditch was dug back of the Power House and tile pipe laid to carry away ground water from the intake of the Air Compressor. This ditch connected with the mine water ditch.

7. UNDERGROUND:

a. Shaft Sinking:

There has been no shaft sinking during the past year.

b. Development:

1. Spies:

The only development on the Spies property was above the Fourth Level by raising and drifting. Diamond Drill holes Nos.: 1 and 6 were drilled in 1920 to determine the extent of the ore below the Third Level, Main Stope. The average Iron content of the samples from these two holes was slightly higher than 55%. No Sulphur determinations were made. The analysis of the raises and Sub-Level drifts above the Fourth Level check the Iron and show a Sulphur varying from .200 to .350, which is too high for merchantable ore.

2. Virgil:

The major portion of the Virgil development was concentrated on the Sixth Level and Sub-Levels above. The Fourth Level was driven from the shaft to a point 250 feet across the Spies-Virgil Line. The Fifth Level Plat off the shaft was cut but no drifting done. The Fifth Level was partly developed from the 245' Sub-Level from No. 604 Raise.

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7. UNDERGROUND:

b. Development: (Continued)

2. Virgil:

On the Sixth Level five cross-cuts were driven to the Southwest in connection with the stoping of the ore above this area. Raises were put up at 25 foot intervals and staggered on both sides of the drift, making a raise every twelve and a half feet. This work had advanced far enough to allow mining to start on July 19th. This is the area from which we secured the largest portion of our year's tonnage. As gangs were available, development of the Northwest area was begun so as to have it opened up by next shipping season.

Raise No. 604 was pushed up to the 330' Sub. or 85 feet above the Fifth Level Elevation. From here a raise was put up to the elevation of the Fourth Level. A station was cut out from the top of the raise and exploring done with the Deep Hole Machine. Four horizontal holes and three incline up-holes were drilled. These holes proved up an ore body at the Fourth Level Elevation of approximately 250' by 125' and an upward extension of about 165'. However, a part of this contains high Sulphur and it is problematical how much can be mined. There is a sufficient tonnage to warrant the driving the Fourth Level drift to this point.

The development work on the Virgil during 1926 has increased the tonnage in the mine by more than 700,000 tons. This is exclusive of any high Sulphur ore.

c. Stoping:

The ore hoisted the past year has practically all been secured from the Spies Third Level and Virgil Sixth Level. The Spies ore came from two stopes and the Virgil from one. Stopping operations on the Spies property were completed early in April. The stope above the Third Level was exhausted of the shipping grade ore and the small tonnage broken in the stope was all hoisted during June and July.

Stoping on the Virgil was confined to the small area at the Southwest and above the Sixth Level. We were not in shape to break ore here until July 19th, but from this time on we secured a substantial product. The method of mining on the Virgil was different than that used on the Spies. The Spies ore was of such a character that it could be mined from benches, while due to the soft nature of the Virgil ore, the ore had to be blocked out in pillars and the miners work from the drifts drilling to both sides and up and down. The ground also broke in large slabs making it difficult to load it from the chutes, requiring a great deal of blasting. The product from the stope above the Sixth Level was limited on account of only being able to pull from two or three chutes at a time. The stope being developed above the Northwest part of the Sixth Level covers a larger area and will permit of an increased output.

d. Timbering:

We felt that the Virgil ore body would require a great deal of timber but thus far, it has only been necessary to timber the main cross-cuts on the Sixth Level and part of the Fourth Level rock drift. In the course of our development work above the Sixth Level, a number of cribbed raises have been put up. The largest part of the timber being used at the present time is that used in the construction of chutes.

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7. UNDERGROUND:

d. Timbering: (Continued)

Statement of Timber Used:

	<u>LINEAL FEET</u>	<u>AVG. PRICE PER FOOT</u>	<u>AMOUNT 1926</u>	<u>AMOUNT 1925</u>
6" to 8" Timber	48,668	.04127	1,761.283	1,238.96
8" to 10" "	6,525	.06817	445.04	189.68
10" to 12" "	4,458	.0978	435.93	186.70
12" to 14" "	1,535	.1418	217.63	130.75
14" to 16" "				16.72
Total Timber - 1926	55,186	.0518	2,859.88	
" " - 1925	35,341	.0499		1,762.81
		<u>PER 100'</u>		
5' Lagging	101,000	.943	952.93	22.50
8' "	18,000	.630	113.40	403.30
Total Lagging	119,000	.896	1,066.33	425.80
3" Poles	53,483	.109	581.97	303.80
Total Lagging & Poles-1926	172,483	.956	1,648.30	
" " " -1925	91,100	.800		729.40
5/8" Covering Boards, Bd.Ft.	None			
Product			76,675	62,098
Ft. Timber per ton of ore			.719	.569
" Lagging " "			.155	.808
" " per ft. of timber			2.156	1.16
Cost per ton for timber			.0372	.0283
" covering Boards,			None	None
" lagging			.0139	.0069
" poles			.0076	.0049
" all timber, etc.,			.0587	.0401
Equivalent Stull Timber to Board Measure			80,983	56,532
Feet of Board Measure per ton of ore			1.055	.91
Cost of timber, lagging, poles, etc., - 1926,			4,508.18	
" " " " " " - 1925				2,492.41

e. Drifting and Raising:

The major portion of our 1926 operation was confined to drifting and raising for the development of the Sixth Level Virgil and Sub-Levels above. Besides this the Main Fourth Level was driven 1,000 feet from the shaft through rock and lean formation.

The following is a comparison of drifting and raising done in the years 1925 and 1926:-

<u>Year</u>	<u>Drifting</u>		<u>Raising</u>	
	<u>Ore</u>	<u>Rock</u>	<u>Ore</u>	<u>Rock</u>
1925	1699	1487	710	297
1926	7696	2150	2982	219

You will note that in each case the totals for the past year are in excess of the previous year. During 1925, we were only driving the Sixth and Eighth Levels, Virgil, ahead, while the past year we did extensive development drifting and raising outlining this ore body. A small footage of ore drifting & raising was done in the stope above the Third Level, Spies, West drift.

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7. UNDERGROUND:

e. Drifting and Raising: (Continued)

SPIES MINE:-
Second Level:-

Contract No. 1 was employed from January to the latter part of March mining the back and floor pillar of the Second Level, North Stope. The broken ore was allowed to accumulate in the stope above the Third Level until pocket shipments were made and then hoisted. The ore in these pillars was mixed with lean seams and only averaged about 54.00% Iron. The width of the ore along this drift varied from 10 to 30 feet.

In February we had a fall from the hanging of the stope above the First Level which covered some of the ore in the stope with lean material. Another fall occurred early in March but there are no indications of a cave to surface.

Third Level & Subs-Above:-

One to two gangs were engaged in driving development drifts and raises above the Third Level West drift just East of the Spies-Virgil line and breaking ore until the middles of June, when the stope was exhausted of the broken dirt. While there is a small tonnage left in this section, it is of questionable grade.

Fourth Level:-

The cutting of the plat for this level was started the middle of December, 1925, 180 feet below the Third Level. Work was slow around the shaft, as great care had to be exercised in blasting not to injure the shaft timbering or piping. Contract No. 14 drove this drift through black slate and Iron formation, extending it just 1,000 feet Southwest from the shaft. The breast of the drift was 225 feet across on the Virgil property on December 31st, 1926. This drift will have to be advanced 650 feet further to strike the ore developed through raises and drill holes above the Sixth Level. A lean ore seam was cut 420 feet from the shaft in the vicinity of Diamond Drill Holes Nos.: 1 and 6.

Contract No. 18 discontinued work on the Fifth Level plat early in May and drove a drift back of the shaft from the tail drift to the ladder and pipe-way. When this was completed, they widened out the end of the tail drift so that a switch could be put in for a siding for repairing cars and motors.

During June the electric cable for motor haulage and lights was installed on this and the Fifth Levels. The Motor and six Rocker Dump cars were brought down from surface on Sundays early in June and the haulage system was put into operation June 15th.

A steel scraper slide mounted on car trucks was built at the Republic Mine shops. A Sullivan electric scraper hoist is faatened to a platform on the front end of the slide. The slide moves ahead on the track as the drift advances. We can load a car in $2\frac{1}{2}$ to 3 minutes with this equipment.. The disadvantage of this loading devise over a Mechanical loader is that it is difficult to do any drilling while the scraping operation is going on, which is quite a factor when time is an important item.

Contract No. 1 put up two raises from the main Fourth Level drift in July. The first raise was located on the South side of the drift 440' from the shaft, and the second 25' ahead of the first on the North side.

445' Sub-Level:-

The Main Fourth Level was temporarily stopped until some development could be done on the Sub. above to determine if it would be advisable to change the course of this heading.

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7. UNDERGROUND:

e. Drifting and Raising: (Continued)

SPIES MINE:-

445' Sub-Level- Continued:-

Contract No. 14 started drifting on this elevation on July 23rd and connected up the two raises from the level below and then drifted Southerly from No. 1 raise and to the East and Southwest. This is the ore located in Diamond Drill Hole No. 6. An area 80' x 110' was developed with an average analysis of 55.00% Iron and .200 Sulphur.

Contract No. 9 was transferred to this elevation in October and put up two raises to the Sub-above and then drifted both North and South from the ore raise. The North drift was advanced 40 feet in ore with an average Sulphur of .387 and the South drift 50 feet with .270 Sulphur. Further drifting was stopped and a raise pushed through to the Third Level. The raise struck rock about 100 feet above the Main Level. This raise holed on December 24th. A ladder-way has been installed for an exit to the Third Level.

Fifth Level:-

Work of cutting the plat on this level 185' above the Sixth was started on Saturday nights and Sundays during March. In April Contract No. 18 drifted Southwest a distance of 22 feet, thence Southeast around to the cage-way. On account of the large amount of rock being hoisted from the Fourth and Sixth Levels in order not to delay operations, this level was stopped except for that work being done from the 245' Sub-level-Virgil.

VIRGIL:-

Third Level and Sub-Levels Above:-

One crew of miners was employed here doing development drifting and raising until the latter part of June. Contract No. 3 put up a Raise 25 feet West of the Spies line from the 642' to 662' Sub-Levels and drifted Westward following a seam of ore. The formation flattened out at this elevation and we drifted South thinking it would turn down again and give us a new lead. After advancing 30 feet without change in formation and leaner material, all work was stopped here. They also drifted on the main level and followed the ore encountered in Deep Hole No. 41, which was found to be only a small pocket. During May they cut a Diamond Drill station at the end of the drift to the North along the Spies-Virgil line.

Contract No. 1 started in December to raise from the West end of the Third Level drift. This Raise is double cribbed and will be pushed through to the old Virgil workings above as a second out-let after the Old Shaft is repaired and drained. This raise was up 20 feet on December 31st. Measurements of the water level taken from the collar of the old shaft show it to be lower than 161 feet. An obstruction in a pipe through which we measure prevents getting lower. The water level has dropped from 136 feet on April 24th, 1925, to below 161 feet on June 11th, 1926.

The expense for repairing the shaft and pumping it out should not be excessive.

Fourth Level:-

Contract No. 13 raised to this elevation from the 330' Sub-Level during July and August and drifted East 15 feet to make room for drilling with the Deep Hole Machine.

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7. UNDERGROUND:e. Drifting and Raising: (Continued)VIRGIL:Fourth Level: Continued.

The drilling proved up an ore body 145' by 245' but only 105' by 180' is low enough in Sulphur to be merchantable. This ore was followed up 165 feet above the Fourth Level elevation.

Fifth Level: (245' Sub-Level)

Contract No. 13 developed the Fifth Level from the top of No. 604 Raise Northeast toward the shaft for a distance of 320 feet. In this distance, they cut three separate lens of ore. They drifted from their raise 75 feet in ore, then through 26 feet of rock, into ore again for 70 feet, chert and Jasper the next 70 feet and finally 79 feet of ore to a rock breast. They came back to a point 200 feet from 604 Raise and intended to raise to the Fourth Level but had rock for 22 feet above the back of the level and operations were suspended here and Raise No. 604 was extended 104 feet incline distance above the 245' Sub-Level and the 330' Sub-Level opened up. This work was completed in April.

In April contract No. 11 put up No. 620 Raise to this elevation and drifted Southeast holing to No. 604 raise. This drift was in rock to within 17 feet of No. 604 Raise.

No. 10 Contract put in a track from No. 604 Raise to the breast of the drift Southeast from the raise and then drifted Southwest until the hanging and foot rock came together. Eighteen holes were drilled from this level and outlined the ore area very definitely.

Sixth Level:-

Contract No. 10 developed cross-cuts Nos. 1 and 2 Northwest of the main drift and parallel to it. These drifts had reached the rock to the West by the end of March and Raise No. 626 was started. This Raise was put up 89 feet above the rail of the level, the last 16 feet being in rock.

Contract No. 11 put up No. 620 Raise from No. 1 cross-cut just opposite No. 604 Raise. This was extended to the Fifth Level elevation. An offset was made at the 155' Sub-Level. These two raises were connected on both sub-levels for ventilation. Upon completion of No. 620 Raise in May, they extended the Fourth cross-cut on the South side of the main drift Westerly 75 feet, following the rock on their left and thence South 50 feet to the rock. They then put up a number of raises up to the 90' elevation.

Contract No. 12 put up No. 622 Raise to the 155' Sub-Level; No. 630 - 90 feet above the rail, the last 6 feet in rock; No. 634 - 65 feet all in ore and No. 638 - 75 feet in ore to the rock.

Five cross-cuts were driven Southerly from the main drift for the development and mining of the ore under the hanging in this section. No. 4 was started first by No. 16 contract in February, then No. 3 and No. 2 at 30 foot intervals. In June No. 1 cross-cut was started and in August No. 5. No. 4 was planned so that the raise put up from the West side of the drift would be in the hanging above the 90' Sub-Level. This proved to be the case but the hanging flattened out so that future development showed up a small amount of ore above the 5th cross-cut which was driven by No. 13 contract from August to November.

Contract No. 18 started No. 1 cross-cut in June and reached the Southerly limit in October.

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7. UNDERGROUND:e. Drifting and Raising: (Continued)VIRGIL:-Sixth Level:- Continued.

Contract No. 17 began the middle of February to extend the drift Northwest from the main heading for the third cross-cut to the Southwest. They drifted until the middle of April when on account of the hardness of the rock and slow progress, this drift was temporarily stopped and they moved to the Southwest area and put up raises to the 90' Sub-Level. Raises were put up every 25 feet and were staggered on both sides of the drift making a raise every $12\frac{1}{2}$ feet.

No. 15 contract during the first three months of the year put up Raises Nos. 624 and 626 to the 155' Sub-Level.

In December contracts Nos. 7 and 8 began development work on the Northwest side preparatory to stoping this section. No. 7 put up a number of single compartment naked raises from the Second cross-cut and No. 8 started two drifts for the development of this Northwest stope. One drift was started Southwest of No. 626 Raise and will follow close to the Virgil-Sherwood Line; the other will be driven parallel to No. 2 cross-cut at 33 foot centers.

330' Sub-Level:-

This Sub-Level is half way between the Fifth and Fourth Levels and was developed from No. 604 Raise by No. 13 contract. A drift was driven Southeast 175 feet, and 140 feet from the raise one Southwest 100 feet. Sixty feet from the top of No. 604, they raised to the Fourth Level Elevation. The ore developed on this Sub. will average 59.00 Iron and .080 Sulphur. As soon as we finish with the Deep Hole Machine on the Fourth Level, several holes will be drilled from this elevation.

155' Sub-Level:-

Contracts Nos. 11 and 12 did some development drifting on this Sub-Level early in the year. They drove connecting drifts between No. 620 and No. 604 Raises, No. 620 and No. 622 and No. 624 raises. Drifts were started from the tops of these raises to the Northwest but were in lean formation and stopped.

90'-120'-145' and 165' Sub-Levels - Southwest:-

A Sub-Level stope was developed in this territory by blocking out the ore in small pillars about 20 feet square. This work was done by five contracts, beginning in June and continuing through the balance of the year. Four gangs were engaged in raising from one Sub. to the other and connecting the raises with drifts on the various elevations. Contract No. 17 consisting of four miners on each shift, broke all the ore in the stope. Stopping was started July 19th and almost our entire output was trammed from this stope after that date for the balance of 1926.

90'-120'-145' Sub-Levels: - Northwest:-

As we advanced with the development work in the Southwest area, contracts were transferred to this section of the Sixth Level. Work was started here in September by No. 15 contract. They drifted Northwest from the top of No. 638 Raise, 120' Sub-Level, 125 feet. As they were within a short distance of the Virgil-Sherwood line, a raise was started to determine the height of the ore at this point. This raise was put up 70 feet and was still in ore but had to be abandoned due to poor ventilation. By the end of the year four gangs were engaged in development drifting on these Sub-Levels. We are finding the ore body in territory cut by rock seams which will no doubt have to be mined in the stoping operation and will bring down our average analysis.

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7. UNDERGROUND:f. Explosives, Drilling and Blasting:

The Virgil ground varies considerable in hardness. There are areas that are soft and can be drilled with an auger machine, then we strike a hard black ore similar to the Spies ore, which requires a water drill machine. The ground is very tough and takes a large amount of powder to break it. During the past year our explosive costs have been very high due to the comparatively small tonnage broken in stoping operations compared with drifting. All of our Sub-Level development drifts are driven very small, averaging about 5 feet wide by 6 feet high, with an arched back. We speak of these as dog drifts. By driving them small, we are able to hold them without timber, which would be a heavy expense, if used and more than offsets the extra powder cost.

Statement of Explosives Used:

	<u>Quantity</u>	<u>Average Price</u>	<u>Amount 1926</u>	<u>Amount 1925</u>
40% Powder	22,215	.134	2,975.83	5,449.95
60% "				33.50
Total Powder	22,215	.134	2,975.83	5,483.45
Fuse	45,500	6.49	295.30	581.25
Caps	7,400	10.65	78.72	133.71
Cap Crimpers	5	.50	2.50	-
Tamping Bags	800	.26¢	2.08	2.96
Total Fuse, etc.			378.60	717.92
Total Explosives			3,354.43	6,201.37
Product			76,675	62,098
Pounds Powder per ton of Ore			1.44	1.14
Cost per ton for Powder			.0931	.1351
" Fuse, etc.			.0118	.0177
" All Explosives			.1049	.1528
Avg. Price per pound for powder			.134	.1352

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8. COST OF OPERATING:

a. Comparative Mining Costs:

	<u>1926</u>	<u>1925</u>	<u>INCREASE</u>	<u>DECREASE</u>
PRODUCT	76,675	62,098	14,577	
Underground Costs	2.891	2.234	.657	
Surface Costs	.416	.437		.021
General Mine Accounts	.242	.190	.052	
Cost of Production	3.549	2.861	.688	
Plant Account				
Development		.088		.088
Construction	.178	.048	.130	
Taxes	.252	.091	.161	
Central Office	.194	.160	.034	
Contingent Expense	.031	.032		.001
Cost Adjustment	.033	.026	.007	
Cost on Stockpile	4.237	3.306	.931	
Loading & Shipping	.038	.049		.011
Total Cost on Cars,	4.275	3.355	.920	
No. Days Operating	306	302	4	
No. Shifts & Hours	2 - 8	2 - 8		
Aveg. Daily Product	251	206	45	
<u>COST OF PRODUCTION:</u>				
Labor	2.190	1.818	.372	
Supplies	1.359	1.043	.316	
Total	3.549	2.861	.688	

b. Detailed Cost Comparison:

(1) Days and Shifts:

The Mine operated on a two - eight-hour per day schedule six days per week throughout the year, and due to fewer mechanical delays, operated four days more in 1926 than 1925.

(2) Production:

Approximately 72% of our 1925 production was secured from the Spies stopes and the balance from development drifting and raising on the Virgil, while in 1926, we only secured 10% of our production from the Spies and 90% from the Virgil. The bulk of the Virgil production was obtained from development drifting and raising and that from stoping operations. More men were employed on ore during 1926 than 1925, explaining the increased production.

(3) Cost of Production:

The cost of production for 1926 shows a large increase due the fact that a large part of our 1925 production was secured from old development stopes on the Spies, while conditions were reversed in 1926, in that almost the entire production came from the Virgil, which required extensive drifting and raising besides the opening up of a new stope.

(4) Underground Costs:

Exploring in Mine:

Year	1925	\$3,258.40
"	1926	7,146.36
Increase for 1926		3,887.96

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8. COST OF
OPERATING:-

b. Detailed Cost Comparison: (Continued)

(4) Underground Costs:

Exploring in Mine: (Continued)

This large increase is explained by a Diamond Drill Hole drilled on the Third Level by Ira Odgers, contractor, amounting to \$2197.50 which was charged to this account, and the ground drilled by the Deep Hole Machine being harder than that encountered heretofore.

Development in Rock:

Year 1925	\$18,233.80
" 1926	<u>39,588.07</u>
Increase for 1926	21,354.27

This large increase is due to almost double footage drifted in rock in 1926; further, all this development drifting was on the Virgil property and in 1925, the Virgil was not included in the Cost Sheet until after April 1st, it being carried on an E. & A. up to that date.

Development in Ore:

Year 1925	\$28,316.31
" 1926	<u>61,300.21</u>
Increase for 1926	32,983.90

The increase for 1926 is more than the 1925 charges and is explained by employing more gangs on ore development during 1926. During 1925, there were only two drifts being driven, that on the main Sixth and Eighth Levels.

Stoping:

Year 1925	\$26,388.08
" 1926	<u>16,314.14</u>
Decrease for 1926	10,073.94

Conditions on the Spies property during 1925 allowed us to employ a number of gangs in the stopes above the Second and Third Levels, but the ore on this property was exhausted early in 1926. Development work on the Virgil property had not advanced to a point where stoping operations could be started until the middle of July, and then we were limited to two gangs breaking ore, explaining the large decrease against this account for 1926.

Timbering:

Year 1925	\$11,430.06
" 1926	<u>19,990.33</u>
Increase for 1926	8,560.27

Due to the greater amount of drifting on the main Sixth Level during 1926, more timber was used; also, more raises were put up and chutes built, explaining the high cost against this caption.

Tramming:

Year 1925	\$11,572.15
" 1926	<u>18,651.99</u>
Increase for 1926	7,079.84

This increase is due to an increased production and more muckers employed to shovel the dirt from the main level drifts.

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8. COST OF OPERATING:

b. Detailed Cost Comparison: (Continued)
(4) Underground Costs:

Pumping:

Year 1925		\$11,310.64
" 1926		<u>11,461.65</u>
Increase for 1926		151.01

This small increase is entirely in current consumed and due to a slight increase in water encountered in the course of our development work.

Compressors & Air Pipes:

Year 1925		\$14,513.41
" 1926		<u>22,911.42</u>
Increase for 1926		8,398.01

More drilling machines were operated during the past year and on account of our development work, a large amount of piping was necessary, explaining this increase.

Underground Superintendence:

Year 1925		\$5,365.04
" 1926		<u>6,532.63</u>
Increase for 1926		1,167.59

This increase is explained by a proportion of the bosses' and Captain's time being charged to E. & A. No. 429, Opening & Equipping the Virgil for the months of January, February and March.

Cave in:

Year 1925		\$
" 1926		<u>365.44</u>
Increase for 1926		365.44

The drainage ditch carrying the surface and mine water across the mined area above the North Stope of the First Level, the course of which was changed onto solid ground because during March of the past year, the hanging in this stope started to drop away.

Maintenance Accounts:

Compressors & Power Drills:

Year 1925		\$1,503.58
" 1926		<u>467.61</u>
Decrease for 1926		1,035.97

Fewer drilling machines were purchased during the past year than in 1925, explaining the decrease against this item.

Hand Trammig Equipment:

Year 1925		\$441.65
" 1926		<u>66.14</u>
Decrease for 1926		375.51

The 1925 charges represent repairs to cars on the Third Level, Spies; as very little ore was trammed from this level in 1926, the repairs were very small.

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8. COST OF
OPERATING:

b. Detailed Cost Comparison: (Continued)

(4) Underground Costs:

Electric Tram Equipment:

YEAR 1925	\$3,329.49
" 1926	<u>12,702.06</u>
Increase for 1926	9,372.57

This large increase is explained by our installing electric haulage on the Fourth Level and carrying the cable as far as the Fifth Level. Further, due to the increased drifting on the Sixth Level, the extensions to tracks and trolley lines were quite an item; in addition, a new locomotive and twelve motor cars were purchased during 1926.

Pumping Machinery:

Year 1925	\$2,934.27
" 1926	<u>4,215.13</u>
Increase for 1926	1,280.86

We had continual trouble with the Prescott Pumps located in the Eighth Level Pump House. While the Prescott Company replaced defective parts, we had to stand the expense of dismantling and replacing same. Further, it was necessary to dismantle the Deane Pump on the Third Level and re-set it in a new concrete foundation.

(5) Surface Costs:

Hoisting:

Year 1925	\$5,041.96
" 1926	<u>6,586.69</u>
Increase for 1926	1,544.73

A portion of this increase is due to our increased production for 1926. In addition the charges for hoisting during the first three months of 1925 were proportioned between Operating and Opening & Equipping the Virgil Mine.

Stocking Ore:

Year 1925	\$4,038.43
" 1926	<u>4,903.12</u>
Increase for 1926	864.69

This increase is partly due to our larger production stocked in 1926 and to erecting longer portable trestles to take care of our increased production in 1927.

Crushing & Screening at Mine:

Year 1925	\$2,934.27
" 1926	<u>3,086.84</u>
Increased for 1926	152.57

This increase is due to the larger production handled.

Dry House:

Year 1925	\$2,840.79
" 1926	<u>3,611.29</u>
Increase for 1926	770.50

A new hot water tank, feed water pump and faucets and shower heads were installed in the Dry during 1926.

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YEAR 1926.

8. COST OF
OPERATING:

b. Detailed Cost Comparison: (Continued)

(5) Surface Costs:

General Surface:

Year 1925	\$2,769.62
" 1926	<u>4,765.38</u>
Increase for 1926	1,995.76

The larger portion of this increase is the cost for spreading the burning rock pile. Besides this, some planting and general improvements were made about the mine buildings and some work done on the road to the West of the Power House through the swamp.

Maintenance Accounts:

Hoisting Equipment:

Year 1925	\$1,997.31
" 1926	<u>2,623.58</u>
Increase for 1926	626.27

A new eight-foot sheave was installed on the skip side of the Shaft House and a new rope was put on the skip in the month of August, explaining this increase.

Shaft:

Year 1925	\$259.02
" 1926	<u>474.51</u>
Increase for 1926	215.49

A door operated by an air lift was installed in the Sixth Level pocket during 1926.

Top Tram Equipment:

Year 1925	\$249.38
" 1926	<u>335.30</u>
Increase for 1926	85.92

More repairs made to Top Tram cars during 1926 than 1925.

Docks, Trestles & Pockets:

Year 1925	\$2,172.61
" 1926	<u>3,422.26</u>
Increase for 1926	1,249.65

During the past season, we erected additional portable trestles for stocking the Spies and Virgil ore, the original cost being charged to this caption and explaining the increase against this account.

Mine Buildings:

Year 1925	\$4,879.97
" 1926	<u>2,073.80</u>
Decrease for 1926	2,806.17

In 1925, it was necessary to erect an entire new coal dock; also, the Shaft House was enclosed with corrugated sheet iron, explaining the decrease for 1926.

SPIES-VIRGIL MINE
ANNUAL REPORT
YEAR 1926.

8. COST OF
OPERATING:

b. Detailed Cost Comparison: (Continued)

(6) General Mine Accounts:

Insurance:

Year 1925	\$158.40
" 1926	<u>152.04</u>
Decrease for 1926	6.36

Less premiums paid 1926 than 1925.

Engineering:

Year 1925	\$1,627.20
" 1926	<u>2,117.94</u>
Increase for 1926	490.74

More Engineering work required due to additional development drifting and raising in 1926.

Analysis:

Year 1925	\$2,288.05
" 1926	<u>2,324.51</u>
Increase for 1926	36.46

Small increase as there were only a few more determinations made in 1926 than in 1925.

Personal Injury:

Year 1925	\$1,396.63
" 1926	<u>6,680.22</u>
Increase for 1926	5,283.59

While we only had two more accidents in 1926 than in 1925, one was fatal and a number of the others were serious enough to require the payment of more compensation.

Safety Department Expense:

Year 1925	\$ 113.93
" 1926	<u>18.54</u>
Decrease for 1926	95.39

During 1925, a First Aid Team was trained and only one practice was held in 1926, explaining the decrease.

Telephones & Safety Devices:

Year 1925	\$1,401.09
" 1926	<u>804.36</u>
Decrease for 1926	506.73

With the opening up of two new levels from the shaft during 1925, telephones, bell signals and safety devices were installed, while in 1926, only one level was opened up, requiring less installation of this nature.

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YEAR 1926.

8. COST OF OPERATING:

b. Detailed Cost Comparison: (Continued)

(6) General Mine Accounts:

General Welfare:

Year 1925	\$168.61
" 1926	<u>291.91</u>
Increase for 1926	123.30

This increase is for our proportion of a Visiting Nurse under Dr. Libby's charge, which is pro-rated on a Pay-Roll basis of the mines he serves; as we employed more labor during 1926, our proportion increased accordingly.

Mine Office:

Year 1925	\$4,533.75
" 1926	<u>6,136.85</u>
Increase for 1926	1,603.10

This increase is explained by an extra man being employed in the Office and a Burrow's Adding Machine being purchased during the year.

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9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

a. Surface Exploration:

Upon information of ore being found in the well on the Carlson farm, adjoining the present Spies Lease on the South, an option was secured on this and several adjacent forties from the Spies Mineral Land Company. The analysis of the sample of ore found in the bottom of the Carlson well was as follows:-

<u>Iron</u>	<u>Phos.</u>	<u>Silica</u>	<u>Mn.</u>	<u>Sulphur</u>
55.20	.052	16.39	.050	.119

An option was taken from the Spies Mineral Land Company on four forties, adjoining the present Spies Lease. The land under option includes the Northwest Quarter (NW $\frac{1}{4}$) of the Southeast Quarter (SE $\frac{1}{4}$), the Northeast Quarter (NE $\frac{1}{4}$) of the Southwest Quarter (SW $\frac{1}{4}$), the Southwest Quarter (SW $\frac{1}{4}$) of the Southeast Quarter (SE $\frac{1}{4}$) and the Southwest Quarter (SW $\frac{1}{4}$) of the Northeast Quarter (NE $\frac{1}{4}$), all in Section 24, Township 43 North, Range 35 West, Iron County, Michigan.

Explorations were started according to the terms of the option on February 22nd, on the forty immediately South of our Spies Location, known as the "Carlson Farm", the Northeast Quarter (NE $\frac{1}{4}$) of the Southwest Quarter (SW $\frac{1}{4}$) of Section 24-43-35.

Permission was obtained from Mr. Emil Carlson to go into his well and deepen it. Before starting any actual digging, it was necessary to re-inforce the cribbing with planks in the corners and sprags every six feet and put in a ladder road to the bottom. After cleaning out the bottom of the well, ledge was struck at a depth of 128 feet. The sample of the exposed ledge shows it to be a rich formation which ran 49.50 Iron. Several cuts were taken in the bottom of the well to get an idea of the material and dip and strike of the formation.

A contract for this surface drilling was awarded S. E. Atkins Company of Duluth. Six holes were drilled all on the Northeast Quarter of the Southwest Quarter of Section 24-43-35, the Carlson Farm. While all six holes went through rich Iron formation, only one cut any appreciable footage of ore. Diamond Drill Hole No. 56 had ore from 335' to 375' or 40 feet which averaged 55.82 Iron, .474 Phosphorus and .331 Sulphur.

The first hole drilled No. 55 was located 150' North and 290' East of the Southwest corner of the forty and drilled to the North on a 65° angle. This was at the extreme South of a ravine running Northeast-Southwest through this and the forty to the East.

Hole No. 55 was started in March and struck ledge at 130 feet and then passed into Iron formation to 135 feet, when 5 feet of ore was cut, averaging 55.10 Iron. Had rich formation from 135 feet to 249 feet and then black slate to 290 feet when the hole was stopped.

Hole No. 56 was located 470' East of No. 55 and also drilled to the North on a 65° angle. Struck ledge at 110 feet compared with 130 feet in hole No. 55. Had Iron formation to 335 feet and then cut 40 feet of ore and into Iron formation to 450 feet when the slate was encountered. This hole was stopped at a depth of 512 feet.

Hole No. 57 was drilled vertical from the same set-up as No. 56. Struck ledge at 105 feet, Iron formation to 227 feet, and then black slates to 272 feet the bottom of the hole.

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9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

a. Surface Explorations: (Continued)

Hole No. 58 was located 300 feet North and 400 feet East of No. 57, and drilled vertical. This hole encountered ledge at 106 feet, Iron formation to 138 feet and then grey slate and black slate to 173 feet when it was stopped.

Diamond Drill Hole No. 59, located 100 feet North of Nos.: 56 and 57, was drilled vertical. Ledge was struck at 98 feet, Iron formation to 199 feet and then black slate to 267 feet, when it passed into Iron formation to 535 feet when it struck the black slate. The hole was bottomed at 583 feet. The formation was very rich looking in places, in fact, had four runs of five feet that averaged better than 55% Iron, the Sulphur, however, was between .300 and .400.

Hole No. 60 was located 200 feet North of No. 59 and drilled vertical. Ledge was struck at 87 feet. Slaty Iron formation was encountered up to 205 feet, then black slate to 225 feet, Iron formation to 250 feet, black slate again to 332 feet, Iron formation to 418 feet, black slate to 465 feet, Iron formation to 650 feet and then a mixed material of Ferruginous slate and black slate to the bottom 720 feet. The passing from Iron formation into black slate and then back into Iron formation several times shows tight folding of the foot on interbedding of slate seams in the Iron formation. This hole was stopped on September 18th and the Contractor ordered to move his equipment.

b. Underground Explorations:

From a section through the Sixth Level drift and raises, there was every reason to believe that this ore reaches the elevation of the Third Level. Two holes, Nos. 41 and 42, were drilled with the Deep Hole Machine, N. 30° W. from the end of the main Third Level drift on the Virgil property. No. 41 was drilled 60 feet Northeast of the end of the drift and No. 42 parallel to No. 41 from the end. These holes were drilled to a depth of 112 feet and 120 feet respectively, and except for 10 feet of ore in hole No. 41, had Iron formation and chert.

As it is difficult to reach any great depth with our Deep Hole Machine when drilling in hard material, it was decided to do this exploration with a Diamond Drill. A contract was made with Ir & Odgers of Crystal Falls, Michigan, for Diamond Drilling several underground holes from the Third Level, Spies, to explore Virgil territory, at this elevation.

Diamond Drill Hole No. 44 was drilled due West from the end of the drift to the North along the Spies-Virgil line. This hole was started on February 18th and drilled to a depth of 614 feet by March 30th, when it was stopped. No ore was located by this hole. This was the only hole drilled. The following material was encountered in this drill hole:-

Iron Formation	0 - 25'
Ferruginous Slate	25'- 44'
Iron Formation	44'- 98'
Black Slate	98'-101'
Iron Formation	101'-129'
Ferruginous Grey & Black Slate	129'-192'
Iron Formation	192'-265'
Cherty Iron Carbonate	265'-424'
Grey Slate	424'-457'
Cherty Iron Carbonate	457'-487'
Ore	487'-488'
Cherty Iron Carbonate	488'-577'
Black Slate	577'-614'

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9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

b. Underground Explorations: (Continued)

The Deep Hole Machine, Model 34 Waugh Turbo Drifter, manufactured by the Denver Rock Drill Company, was operated continuously from January 23rd until December 15th, when it was necessary to take it to the shop to be over-hauled and repaired.

The following table shows the location and depth of holes drilled:-

<u>Hole No.</u>	<u>Location</u>	<u>Depth of Hole</u>	<u>Footage of Ore</u>
41	Third Level	112	10
42	" "	120	None
43	" "	90	"
45	Sixth Level	82	15
46	Fifth Level	100	None
47	" "	79	35
48	165' Sub-Level	31	10
49	" "	1	None
50	Fifth Level	87	5
51	" "	22	22
52	" "	27	10
53	" "	80	25
54	" "	13	5
55	" "	75	20
56	" "	82	20
57	" "	146	146
58	" "	96	75
59	" "	90	60
60	" "	44	30
61	" "	42	20
62	" "	70	35
63	" "	78	55
64	" "	107	65
65	" "	75	65
66	Fourth Level	116	116
67	" "	124	124
68	" "	100	90
69	" "	113	105
70	" "	137	25
71	" "	181	181
72	" "	143	120
Total	31 Holes	2663	1489

We drilled 31 holes having a total depth of 2,663 feet. The ore footage amounted to 1,489 feet. The reason for this unusually large percentage of ore drilled is due to nearly all holes were started in ore and drilled to the hanging or foot rock.

The total cost of drilling these 31 holes was \$4905.53 or a cost per foot of \$1.83.

Of the 31 holes drilled, 18 were on the Fifth Level and 7 on the Fourth Level Elevation.

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9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

b. Underground Explorations: (Continued)

The ones on the Fourth Level were expensive to drill on account of the height the men had to climb to their working place and the conditions under which they worked. Holes Nos.: 69, 71 and 72 were inclined up at steep angles. Hole No. 69 was drilled up at 67° and 71 and 72 at 55°. These holes proved the extension of this ore lens to within a short distance of the Third Level.

We will continue to do considerable of our development work with this Deep Hole Machine.

10. TAXES:

The following tabulation is a comparative statement of taxes paid in Iron County for the years 1926 and 1925:-

Description Iron County	1 9 2 6		1 9 2 5	
	Valuation	Taxes	Valuation	Taxes
<u>Iron River Township</u>				
NE $\frac{1}{4}$ of NW $\frac{1}{4}$ Sec. 24-43-35, 40 Acres - -)				
SE $\frac{1}{4}$ of NW $\frac{1}{4}$ " " " " 40 " - -)	83,200	2,070.25	60,000	1,669.80
Personal - Stock Pile - - - - -	42,000	1,045.20	31,000	862.73
" Supplies & Equipment - - - - -	23,000	572.30	- - -	- - -
Spies Mine (Adjustment 1924) - - - - -	- - -	- - -	- - -	59.11
Total - - - - -	148,200	3,687.75	91,000	2,473.42
Collection Fees - - - - -	- - -	36.88	- - -	25.35
Total Spies Mine - - - - -	- - -	3,724.63	- - -	2,498.77
Spies Dwellings - - - - -	5,000	124.50	5,000	139.15
Dwellings (Adjustment 1924) - - - - -	- - -	- - -	- - -	39.20
Collection Fees - - - - -	- - -	1.24	- - -	1.40
Total Dwellings - - - - -	- - -	125.74	- - -	101.35
<u>Virgil Lease</u>				
Taxes estimated in 1924 - \$8,897.60				
Actual taxes paid - 7,408.51				
Adjustment 1925 - - - - -				
SW $\frac{1}{4}$ of NW $\frac{1}{4}$ Sec. 24-43-35 - - - - -	570,000	14,184.03	220,000	1,489.09
Total - - - - -	- - -	14,184.03	- - -	6,122.60
Collection Fees - - - - -	- - -	141.84	- - -	4,633.51
Total Virgil Lease - - - - -	- - -	14,325.87	- - -	61.24
(a) Total Iron River Township - - - - -	725,200	17,176.24	316,000	4,694.75
Rate - - - - -	- - -	2.488	- - -	7,294.87
<u>Bates Township</u>				
40-C Ericson Lease SW $\frac{1}{4}$ of Sec. 21-43-34 - - -	225,000	7,650.00	225,000	2,783
Collection Fees - - - - -	- - -	76.50	- - -	6,390.00
Total Bates Township - - - - -	- - -	7,726.50	- - -	63.90
Rate - - - - -	- - -	3.40	- - -	6,453.90
<u>Mastodon Township</u>				
<u>Neely Lease</u>				
NW $\frac{1}{4}$ of NE $\frac{1}{4}$ Sec. 12-42-33, 40 Acres - -)				
NE $\frac{1}{4}$ of NE $\frac{1}{4}$ " " " " 40 " - -)	137,000	4,579.91	137,000	4,573.51
NE $\frac{1}{4}$ of NW $\frac{1}{4}$ " " " " 40 " - -	1,400	50.26	1,400	50.14
Total - - - - -	138,400	4,630.17	138,400	4,623.65
Collection Fees - - - - -	- - -	46.30	- - -	46.24
Total Mastodon Township - - - - -	- - -	4,676.47	- - -	4,669.89
Rate - - - - -	- - -	3.545	- - -	3.338

NOTE: (a) Taxes in Iron River Township were estimated in 1924, subject to correction in 1925 accounts. The above figures marked "Adjustment" is the difference taken up in 1925 accounts.

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10. TAXES:

Description <u>Iron County</u>	1 9 2 6		1 9 2 5	
	Valuation	Taxes	Valuation	Taxes
<u>Village of Alpha</u>				
NE $\frac{1}{4}$ of NE $\frac{1}{4}$ of Sec. 12-42-33 -	137,000	2,829.74	137,000	1,801.55
Collection Fees -		28.30		18.02
Total Village of Alpha -		2,858.04		1,819.57
Rate -		2.086		1.315
<u>Village of Mineral Hills</u>				
<u>Spies Lease</u>				
SE $\frac{1}{4}$ of NW $\frac{1}{4}$ Sec. 24-43-35 - -)	83,200	147.42	60,000	111.79
NE $\frac{1}{4}$ of NW $\frac{1}{4}$ " " " " - -)				
Personal - Stock Pile - - -	42,000	74.40	31,000	57.76
Supplies & Equipment - - - -	23,000	40.76	-----	-----
Operating Spies Mine -	148,200	262.58	91,000	169.55
Dwellings - - - - - - - - -	5,000	8.86	5,000	9.32
<u>Virgil Mine Lease</u>				
SW $\frac{1}{4}$ of NW $\frac{1}{4}$ of Sec. 24-43-35-	570,000	1,009.94	220,000	409.91
Total Mineral Hills -	723,200	1,281.38	316,000	588.78
Rate		.1772		.186
Total 2 Villages - -	860,200	4,139.42	473,000	2,408.35

NOTES:-

The Village of Alpha is situated in Mastodon Township. Mineral Hills is in Iron River Township. The valuations as shown here are the same valuations (either all or in part) as the valuations of the respective townships.

Above taxes paid in August, 1926.

In 1924 the Treasurer made an error and included the dwellings in with the mine. Dwellings were already assessed separately. The dwelling group was raised from \$7,000 to \$12,000. Error was corrected in 1925 by deducting a like amount from the valuation. For 1926, the assessor evidently failed to put the valuation back to \$12,000, as intended. Hence the \$5,000.00 for 1926, which also explains the large credit adjustment to Operating Spies Rented Buildings in December.

11. ACCIDENTS
AND
PERSONAL
INJURY:

There were sixteen accidents at the Spies-Virgil Mine during the past year compared with fourteen in 1925. All, but the fatal accident, in which Thomas Mitchell lost his life, were of a minor nature.

A fatal accident occurred on Saturday afternoon, December 18th, at 2:30 P.M., in which Thomas Mitchell, miner, was killed by a fall of ground. Will Dawson, partner of Mitchell, was standing within a few feet of him, when a wedge shaped chunk weighing about a ton and a half, dropped from the back of the main Fourth Level drift, striking Mitchell on the back, and causing almost instant death.

Mitchell, Dawson and De Cloux, three miners, were driving the main Fourth Level drift ahead. The breast of this drift was 980 feet from the shaft. We were able to drive this drift about 700 feet without timber when the ground became soft and slabby. From this point we timbered as we advanced, using forepoles in places where the back was bad.

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11. ACCIDENTS
AND
PERSONAL
INJURY:

On December 9th, the ground changed again, a black slate having a decided dip to the Southwest at a steep angle, and we felt it was safe to drive ahead without timber. The drift was then advanced approximately 55 feet without timber. On December 15th, the sides of the drift some distance back of the breast began to slab off and the Captain stopped drilling ahead and brought the miners back and started to put in timber. By noon of December 18th, the day of the accident, five sets of timber had been put up, having just completed the lagging and blocking the last set.

Mitchell, Dawson and De Cloux upon leaving their place at noon on December 18th, blasted nine pops to make room in the back for the next set of timber. When they returned to work after dinner, Mitchell was engaged in making some repairs to the Electric Tugger Hoist used for mucking the dirt broken by the blast. Dawson and De Cloux trimmed the back. Both Dawson and De Cloux claimed that they spend one hour and twenty minutes trimming down the back and felt it was perfectly safe,-that at no time while they had advanced without timber or after they started to timber, had anything dropped from the back, that it was the sides that slabbed off.

After the back was trimmed, they began to scrape the dirt, Mitchell operating the hoist and Dawson picking it loose, so that the scraper would load easily. Three cars were loaded and as there were no more empties, De Cloux went to the shaft with the Motorman to help dump. Dawson continued to loosen up the rock and Mitchell walked in to look at the bottom of the dirt pile, as the last few scrapers loaded seemed to be catching on something.

Dawson stated that Mitchell had no more than stepped from under the timbered portion of the drift than a large chunk fell from the back and struck Mitchell on the back just above the hips and knocked him down. Mitchell called to Dawson to help him and immediately after, life seemed to be extinct. On account of the size of the piece of rock, Dawson was unable to move it without help and had to run to the shaft to get De Cloux and the Motorman.

Dawson, who had been working inside the timber since returning to work after dinner, said there was no warning by any small pieces dropping first. Only one piece dropped and then broke upon striking the floor of the drift. The chunk was wedge shaped, about six or seven feet long by two feet high by two and a half feet wide, and weighing about one and one-half tons. On account of the size of the piece, it probably did not sound loose when struck with the bar while trimming the back. The fact that Captain Rogers had stopped this drift and come back to timber is evidence that we were trying to take all necessary precaution.

Both Mitchell and Dawson were experienced miners. De Cloux had only been employed a few months as a miner, his former occupation was pipeman, but we considered him a very careful, dependable man.

The Coroner made an examintaion of the place of the accident and felt that it was an unavoidable accident with no one to blame and did not hold an inquest.

Thomas Mitchell was single, thirty-one years of age and was supporting his widowed mother and a mentally deficient brother.

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12. NEW CON.
AND
PROPOSED
NEW CON.:

b. Proposed New Construction:

We have been handicapped to a great extent at the Spies-Virgil Mine during the past season due to a shortage of miners. This condition will prevail whenever the other mines in the district are working to capacity, as they all have locations and can provide houses for their men. Rents in Iron River are very high, the men are glad to get a Company house.

Our present location consists of Captain's residence, Boarding House and ten cottages. As a general rule, the Boarding House only has from six to eight men staying there. The ten cottages are occupied by our Shift Bosses, Mechanic, Electrician, Blacksmith, Surface Foreman and such labor as is essential to have near the mine in case of a break-down.

At the time the Spies Location was built in 1916, we had less than 400,000 tons of ore in sight and all construction work was in line with the life of the property. Twenty additional houses will allow us to have a nucleus of miners that we can always count on. The total cost of the proposed programme will be \$75,600.00. While we only estimate 2,173,803 tons in sight as of December 31st, 1926, we have every reason to believe the total tonnage when fully developed will be at least 3,000,000 tons. This expenditure spread over this tonnage would mean a cost of \$0.025 per ton. We believe by maintaining a more efficient crew, this can more than be made up. E. and A. No. 502, for the construction of twenty additional dwellings has been approved by The President, to be built next spring.

1. Description of work to be done:-

The construction of four $1\frac{1}{2}$ story and sixteen one-story houses, twenty (20) Garages for new houses and twelve (12) for old location.

2. Expected Results:-

To enable us to keep a better class of miners at the property, thus increasing the efficiency. Under present conditions, the class of labor is unsatisfactory, due to the lack of housing facilities.

3. Estimated Time Required to complete Work:-

Four months.

4. Estimated Cost:-

4 - $1\frac{1}{2}$ Story Cottages with Bath and Furnace @ \$3500.00,	\$14,000.00
16- 1 " " foundation & toilet " 1800.00,	28,800.00
20 Garages,	5,000.00
Fencing,	1,500.00
Walks,	2,200.00
Grading,	2,500.00
Water and Sewage Disposal,	<u>12,000.00</u>
Total,	66,000.00
Contingencies 10%,	<u>6,600.00</u>
	72,600.00
Addition - 12 Garages for present Location,	<u>3,000.00</u>
	<u>\$75,600.00</u>

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13. EQUIPMENT
AND
PORPOSED
EQUIPMENT:

f. Shop Equipment:-

A power hack saw was purchased from The Crosby Mine, Mesaba Range, and a Lathe from the General Shops at Ishpeming. Both machines were second hand and had been in use for many years. These machines were installed in our Shop and have aided materially in getting out our repair work, more promptly.

g. Auto Truck:

A Ford Truck equipped with stake body, closed cab, starter and Ruckstell axle was purchased the last of November. The cost amounting to \$664.80 was covered by E. and A. No. 501.

Besides our team, we had a driving horse, which was used until last summer to carry samples to the James Mine Laboratory. As the buggy used for this work went to pieces, we made arrangements with our teamster to use his car. The team is used to haul freight from the Depots and timber and other supplies around the mine. The mine is more than two miles from both the St. Paul and Northwestern Railway stations, and as a general rule, it takes close to a half day to make the trip to town and return.

As the Township is keeping the road to the mine open for wheel traffic all winter, a truck can be used all year. The driving horse was disposed of immediately and in time we may learn to use the truck about the mine for general use and sell the team also.

h. Motor Haulage Equipment:

A contract was let with the General Electric Company for a six-ton underground locomotive early in the year, but as they could not make a very good delivery date, arrangements were made to have one sent from the Gwinn District to be replaced by the new one. This was received in May.

Two lots of Rocker Dump Cars of six each, were purchased from the Lake Shore Engine Works. Six of these were received in April and six in September.

The locomotive and six cars were put in service on the Fourth Level which was developed this year, and the other six cars on the Sixth Level as additional cars. The original order of Rocker Dump Cars was not built strong enough and have gone to pieces, needing extensive repairs.

The cost of this equipment was as follows:-

1 - Six-tons General Electric Locomotive,	\$3,979.00
12 - 36 cu.ft. Rocker Dump Cars @ \$320.00,	3,840.00

14. MAINTENANCE
& REPAIRS:

b. Hoisting Equipment:

The end of the skip rope which broke on December 29th, 1925, showed the effect of the action of the water on it and as the skip rope was only on two months longer than the cage rope, it was deemed advisable to change the cage rope end for end. This was done early in January. There is more water draining down the skip-raod than the cage-way, therefore the effect on the cage rope is not so great. A new skip rope was installed on August 29th.

New doors were put on the cage in September and the rivets tightened, which put it into good condition again. New wearing plates were installed early in the year.

The eight-foot skip sheave at the top of the Shaft House was badly worn and was replaced with a new one in December.

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14. MAINTENANCE
& REPAIRS:

d. Pumps:

Early in January, a sand hole was discovered between two of the suction pots of the Prescott Pump No. 209 on the bottom level. This part of the pump was taken out and sent to the General Shops at Ishpeming for repairs. It was returned the First of February and put into operation immediately.

On February 19th, the water body on Pump No. 208 broke. The Prescott Company felt that it was due to some carelessness on the part of our pumpman and asked us to ship this part to their factory at Menominee. A new water body was not returned until April 28th. During the period from February 19th to May 1st, on account of only having one pump with a capacity of 300 gallons per minute, several drifts had to be temporarily stopped to avoid holing into Diamond Drill Holes and increase the flow of water.

A concrete pillar was built under the over hanging bracket of the two Prescott Pumps in the Eighth Level Pump House, which has practically eliminated all movement.

On June 16th, the water body on the other Pump, No. 209, broke in the same way that the other did, which proved to the Prescott Company that it was no fault of ours. These parts were replaced without charge. Last year the crank shafts on both pumps broke and had to be built over. These pumps have given us no end of trouble and been a considerable source of expense even though we were not charged for the new parts. A loss we cannot estimate is the delay to our development work.

The Deane Pump in the Third Level Pump House had worked loose from the foundation, due to the action of the oil and grease on the concrete. The Aldrich Pump from the Sixth Level was moved and installed in this Pump House so that the Deane Pump could be dismantled and re-set. It was found that the bed plate of the pump was cracked in several places, which explains the action of the pump. The bed plate was taken into the shop and re-inforced with two channels. When re-set care was taken to make sure the concrete grout was run around all parts and entirely filled the space under the bed plate. This pump was in operation early in July. The new water body for the second pump was received and installed by July 28th. Since that time, we have had no further pump trouble.

16. WATER SUPPLY:

The fresh water supply for the Mine and Location has been secured from a Diamond Drill Hole on the Third Level. For more than a year now, the flow has decreased and at times we hardly have sufficient quantity to supply the location. A small dam was built underground on the Third Level to insure water for the Location. On account of the small flow from this hole, the pump would become starved and stop and then a certain amount of water would go to waste. This dam held the water in storage and the pump was run intermittently.

We have been apprehensive about our water supply for some time and during the summer of 1925, we tried to make arrangements with the City of Iron River to supply us, as their mains were within a few hundred feet of our Virgil property. On account of the Spies-Virgil Mine being in the Village of Mineral Hills, we could not come to any terms. Early in 1926 the James Mine, operated by the Pickands, Mather Company, lost their supply of fresh water entirely and they needed immediate relief.

Another effort was made by the Pickands, Mather Company and ourselves to get our water supply from the City of Iron River but they refused our request although it was a financial benefit to the City.

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16. WATER SUPPLY:

We then brought our situation before the Council of the Village of Mineral Hills. A meeting of the representatives of the Mining Companies operating in the Village was held to discuss the matter. It was agreed to go ahead with a water system for the Village. At an election a \$20,000 bond issue was voted for this work.

The water supply is secured from the Homer Mine of The M. A. Hanna Company, and is pumped through a six-inch main to a 50,000 gallon steel tank located on the Spies Location Hill. This installation was not quite completed to the Spies-Virgil location by January 1st. As soon as a connection is made to the tank, we will tap in our lines and discontinue pumping from underground. This new supply will be more satisfactory and give us more water for use at the Mine Dry.

17. CONDITION
OF
PREMISES:

The Mine and Location premises were cleaned up of the winter's accumulation of dirt and rubbish in April and kept in a neat condition the balance of the summer. We had our mine team clean up the alley behind the Location houses several times during the summer.

The usual spring painting and kalsomining was done by the people living in the location. At the Captain's house, we installed a bath room and increased his rent from \$10.00 to \$12.00 per month.

18. NATIONALITY
OF
EMPLOYES:

	1926		1925	
	NO. MEN	%	NO. MEN	%
Americans,	6	5.2	6	6.8
English,	26	22.3	24	27.3
Croatian,	1	.9	1	1.1
Dane,	1	.9	1	1.1
French,	9	7.8	8	9.1
Swede,	9	7.6	9	10.2
German,	3	2.6	2	2.3
Finn,	32	27.5	12	13.6
Polish,	19	16.4	18	20.5
Italian,	7	6.0	5	5.7
Irish,	3	2.6	2	2.3
Total,	116	100.0	88	100.0

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1. GENERAL:

No operations were undertaken at the Wade Mine during the year 1926, in fact, other than repair work, no underground or open pit activities were engaged in since the mine was closed May 28th, 1921.

Regular inspections were made of the underground workings. The timber deteriorated considerably during the year and caves occurred at a number of places on the sub-levels and under the raises on the main level. All of the timber is now in a weakened condition and it will require a large amount of retrimbering before mining operations can be resumed underground. There are so many places caved in the subs now that it is impossible to make an inspection of the workings. During the year a considerable quantity of surface material was washed onto the first level through the old caves to the southwest of the shaft.

2. PRODUCTION,
SHIPMENTS &
INVENTORIES:

a. Production by Grades:

No production.

b. Shipments:

Wade Stockpile----- 24,986 Tons.

c. Stockpile Inventories:

Wade Ore----- 219 Tons.

The small amount of ore in stock at the Wade Mine would have been cleaned up, had it not been for the fact that it was rather difficult to handle and we were anxious to get the last boat out without too much delay.

f. Ore Statement:

	1926	1925
On Hand January 1st., 1926-----	25,205	30,214
Output for Year-----	---	---
Total-----	25,205	30,214
Shipments-----	24,986	5,009
Balance on Hand-----	219	25,205
Decrease in Ore on Hand-----	24,986	----

1926 -- Mine Idle During Year.

1925 -- Mine Idle During Year.

g. Delays:

The only delays at the Wade Mine during 1926 were caused by breakdowns to the stockpile shovel in its loading operations. These delays amounted to 19 $\frac{1}{4}$ hours.

h. Delays from Lack of Current:

As no mining operations were undertaken during 1926, there were no delays affecting the production. Several times during the year the current was shut off by the power company for short periods in order that work could be done on their transmission lines. We were always notified beforehand and our pumping schedule arranged accordingly.

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3. ANALYSIS:

b. Average Analysis on Straight Cargoes:

No straight cargoes of Wade ore were shipped during the season. The average analysis of the Wade ore mixed with Boeing to form the Boeing Special was as follows:

<u>Tons</u>	<u>Iron</u>	<u>Phos</u>	<u>Sil.</u>	<u>Mn.</u>	<u>Mois.</u>
24,986	56.75	.064	7.35	1.45	12.00

e. Analysis of Ore in Stockpile January 1st., 1927:

<u>Tons</u>	<u>Iron</u>	<u>Phos</u>	<u>Sil.</u>	<u>Mn.</u>	<u>Mois.</u>
219	57.22	.064	7.50	1.27	---

4. ESTIMATE OF ORE RESERVES:

a. Developed Ore:

Assumption: 13 cu. ft. equals one ton.
10% deduction for rock.
10% deduction for loss in underground mining.

Open Pit Ore-----	561,000 Tons.	✓
West Deposit - Underground Ore-----	804,000 Tons.	✓
Total Developed Ore-----	1,365,000 Tons.	✓

b. Undeveloped Ore:

East Deposit - Underground Ore-----	1,515,000 Tons.
Deacon Bessemer - Underground Ore-----	80,000 Tons.
Deacon Non-Bess.- Underground Ore-----	95,000 Tons.
Total Undeveloped Ore-----	1,690,000 Tons.

GRAND TOTAL ALL ORE-----3,055,000 Tons.

The east and Deacon deposits are not alone undeveloped, but we figure that it would be unprofitable to open and mine them under present market conditions, even though the Wade underground royalty were materially reduced. The Wade underground west deposit could not be mined profitably under present market conditions with a royalty of 70¢ per ton placed on the ore.

c. Estimated Analysis:

<u>Dried - 212°:</u>	<u>Tons</u>	<u>Iron</u>	<u>Phos</u>	<u>Mn.</u>	<u>Sil.</u>	<u>Mois.</u>
Open Pit Ore-----	561,000	58.50	.063	.70	7.90	12.35
Underground West Deposit-----	804,000	57.50	.074	1.45	7.49	12.50
" East Deposit-----	1,515,000	56.91	.075	1.83	7.44	13.50
" Deacon Bessemer--	80,000	56.65	.045	1.16	8.04	12.50
" Deacon Non-Bess.--	95,000	55.77	.053	.42	8.43	12.50
Total-----	3,055,000	57.32	.071	1.46	7.58	12.97
Natural-----	3,055,000	49.88	.062	1.27	6.60	---

No mining operations have been conducted since 1921 and the ore estimates have not been changed since January 1st., 1922.

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5. LABOR & WAGES:

b. Comparative Statement of Wages & Product:

	<u>1926</u>	<u>1925</u>	<u>Increase</u>	<u>Decrease</u>
PRODUCT-----	0	0		
No. of Shifts & Hours----	0	0		
<u>AVG. NO. MEN WORKING:</u>				
Surface-----	4	2	2	
Underground-----	5	4	1	
Total-----	9	6	3	
<u>AVG. WAGES PER DAY:</u>				
Surface-----	5.64	6.06		.42
Underground-----	5.14	5.14	-	-
Total-----	5.37	5.46		.09
<u>WAGES PER MO. OF 25 DAYS:</u>				
Surface-----	141.00	151.50		10.50
Underground-----	128.50	128.50	-	-
Total-----	134.25	136.50	-	2.25
<u>TOTAL NO. OF DAYS:</u>				
Surface-----	1428 $\frac{3}{4}$	764 $\frac{3}{4}$	664	
Underground-----	1780 $\frac{1}{2}$	1441	339 $\frac{1}{2}$	
Total-----	3209 $\frac{1}{4}$	2205 $\frac{1}{4}$	1003 $\frac{1}{2}$	
<u>AMOUNT FOR LABOR:</u>				
Surface-----	8054.91	4636.52	3418.39	
Underground-----	9150.11	7402.26	1747.85	
Total-----	17205.02	12038.78	5166.24	

PROPORTION SURFACE TO UNDERGROUND MEN:

1926 - 1 to 1.25
 1925 - 1 to 2.00
 1924 - 1 to .88
 1923 - 1 to 1.00
 1922 - 1 to 2.50
 1921 - 1 to 3.92
 1920 - 1 to 2.84
 1919 - 1 to 3.14

1924 - Pit operations during months of Sept. and Oct.
 1925 - Mine Idle.
 1926 - Mine Idle.

6. SURFACE:

a. Buildings, Repairs:

Only a few minor repairs were made to the two cottages and one of the boarding houses during October and November of the past year. It is anticipated that the A. Guthrie Company employes will occupy these houses when they start stripping operations at the Wade Mine in the spring.

The location houses and mine buildings have not been painted since 1918 and in order to preserve the buildings, they should be painted during the coming year.

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7. UNDERGROUND:
(OR OPEN PIT) a. Stripping:

The stripping of the remainder of the overburden has been decided upon in connection with the loading out of the 561,000 tons of open pit ore remaining in the property. Under the terms of an optional contract, the A. Guthrie Company will do this stripping work and if we should elect, will load out around 250,000 tons of ore during 1927 and the balance of the open pit tonnage during 1928. The contractor has moved the 300-ton shovel onto the Wade premises with the intention of starting stripping operations as soon as weather conditions will permit in the spring.

d. Timbering:

The only timbering undertaken at the Wade Mine during the past year was the replacing of a few broken sets on the main level and blocking used to catch up the back where it had slabbed. Some props were put under the switch timber at the opening sets in the beginning of the crosscuts on the main level.

9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

No exploratory work of any nature was undertaken at the Wade Mine during 1926, nor is any contemplated for the future.

10. TAXES:

<u>Tax Statement:</u>	<u>1926</u>	<u>1925</u>	<u>INCREASE</u>	<u>DECREASE</u>
Wade Stripping Lands---	\$ 83.23	\$ 80.75	2.48	
Wade Mine-----	51,077.78	56,723.62		5,645.84
Total Wade Mine-----	\$51,161.01	\$56,804.37	--	\$5,643.36
 Average Rate-----	 11.12	 10.81	 .31	

As a result of our appearing before the State Tax Commission, the rate on the underground ore at the Wade Mine was reduced somewhat, but not as much as we had asked for. We have now presented a petition to the County Board of St. Louis County, asking that the valuation on the East and Deacon deposits be reduced to a mere nominal sum and we are in hopes that the State Tax Commission will act favorably on our petition.

14. MAINTENANCE
& REPAIRS:

The pump sump was thoroughly cleaned during the forepart of May, in August and in December and the first level main drift was cleared of material which had washed onto it from the caves to the southwest of the shaft.

On August 2nd some lath in the east skipway, 80' below surface, gave way, due to dry rot, and allowed several tons of surface material to slide into the shaft. Upon investigation it was found that the lath in about 100' of the shaft was in very poor condition and the necessary repairs were made to make it safe, new 3" lath being put in. New ladders and sollars were also placed in the shaft and it will be necessary to do further repair work in the shaft during 1927.

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16. WATER SUPPLY:

The 4" water line extending from the collar of the shaft to the tank, sprung a leak in several places during the year. It was necessary to dig up portions of the pipe during April and May and replace the broken wooden sections with iron pipe. It will be necessary to install an entire new line before underground mining is resumed and the location houses filled. The clean water secured from the mine is now barely sufficient to supply the few people living in the location and this matter will have to be remedied before operations are resumed. Several breaks developed along the 2" line leading from the main down into the location. These repairs were made during the year. The old clean water supply pipe was badly corroded and it was necessary to replace it. This 2" line leads from the clear water reservoir to the pumps on the 1st level.

17. CONDITION OF PREMISES:

The houses in the location were inspected during the fall and a few repairs, such as leaky roofs and broken window panes, were repaired. The exterior of the buildings are badly in need of paint and the clapboarding is becoming quite badly warped. The roofs should all be gone over and shingles replaced where necessary. A number of the chimneys should be repaired.

18. NATIONALITY OF EMPLOYEES:

<u>NATIONALITY:</u>	<u>NO. OF MEN</u> <u>1926</u>	<u>NO. OF MEN</u> <u>1925</u>
Americans-----	3	2
Austrians-----	3	1
English-----	1	1
Polish-----	1	1
Finnish-----	1	-
Italian-----	-	1
TOTAL-----	9	6

HILL-TRUMBULL MINEANNUAL REPORTYEAR 19261. GENERAL:

The Hill-Trumbull open pit and washing plant was operated from May 7th to October 9th, when the requirements for the season were secured. On the whole weather conditions were favorable and while labor was not plentiful, we were not seriously handicapped.

2. PRODUCTION,
SHIPMENTS &
INVENTORIES:a. Production by Grades:

Hill Crude Ore-----	57,585 Tons.
Trumbull Crude Ore-----	520,242 Tons.
Total Crude Ore-----	577,827 Tons.

Hill Direct Shipping Ore-----	108,861 Tons.
Trumbull Direct Shipping Ore-	15,098 Tons.
Hill Non-Bess. Concentrates--	38,670 Tons.
Trumbull Non-Bess. " --	339,735 Tons.
TOTAL SHIPPING GRADE-----	502,364 Tons.

The total output for the year was 2,623 tons lower than in 1925, due to the fact that the lower lake weights were higher. The amount of direct ore shipped during 1926 was considerably larger than in 1925, with the result that there was a decrease of 70,443 tons of crude ore treated.

b. Shipments:

The shipments were the same as the production figures, as all ore mined during the past year was forwarded.

c. Stockpile Inventories:

No merchantable ore, either concentrates or direct, has ever been stocked at the Hill-Trumbull property, but the following lean material is in stock:

Concentrating Material Above 25%:

	<u>Tons</u>	<u>Fe.</u>	<u>Phos</u>	<u>Sil.</u>
Trumbull--	79,599	27.46	.036	53.95
Hill-----	10,088	27.18	.035	50.48

Non-Concentrating Material Between 30% and 40%:

	<u>Tons</u>	<u>Fe.</u>	<u>Phos</u>	<u>Sil.</u>
Hill-----	7,245	32.90	.028	42.65

The lean ore material has been stockpiled in accordance with the terms of the lease and it is very questionable whether any of the material can be treated to advantage during the life of the lease.

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2. PRODUCTION,
SHIPMENTS &
INVENTORIES:
(Continued)

e. Production by Months:
(1) Crude ore:

<u>MONTH:</u>	<u>HILL</u>	<u>TRUMBULL</u>	<u>TOTAL</u>
May-----	1,020	90,460	91,480
June-----	1,170	126,565	127,735
July-----	955	109,015	109,970
August-----	7,730	125,592	133,322
September-----	33,980	67,870	101,850
October-----	12,730	740	13,470
TOTAL - 1926-----	57,585	520,242	577,827
TOTAL - 1925-----	124,845	523,425	648,270

(2) Concentrates & Direct Ore:

<u>MONTH:</u>	<u>HILL</u>	<u>TRUMBULL</u>	<u>HILL</u>	<u>TRUMBULL</u>	<u>GRAND</u>
	<u>DIRECT</u>	<u>DIRECT</u>	<u>CONCTS.</u>	<u>CONCTS.</u>	<u>TOTAL</u>
May-----	12,745	918	685	62,404	76,752
June-----	22,066	752	839	81,060	104,717
July-----	19,872	13,428	607	70,503	104,410
August-----	29,560	--	5,238	82,061	116,859
September-----	11,115	--	22,622	43,355	77,092
October-----	13,503	--	8,679	352	22,534
TOTAL - 1926-----	108,861	15,098	38,670	339,735	502,364
TOTAL - 1925-----	98,893	--	79,377	326,717	504,987

f. Ore Statement:

All mined ore was shipped during 1926.

g. Delays:

There were no serious delays to pit operations or at the washing plant during the year, such interruptions as did occur not affecting the output seriously in any case. We always have at least two shovels working in wash ore and usually when one machine breaks down, ore to give the mill a capacity operation can be secured from the other shovel.

Pit Delays:

<u>DATE</u>	<u>HOURS LOST</u>	<u>CAUSE</u>
May 31st,	1:30	Broken valve stem, boom engine Shovel 27.
August 10th,	:45	Broken piston, shovel 27.
August 10th,	:45	Broken Hoisting Chain, Shovel 26.

Washing Plant Delays:

<u>DATE</u>	<u>HOURS LOST</u>	<u>CAUSE</u>
May 7th,	6:15	Broken 12" Water Valve at Pumphouse.
May 15th,	:30	Picking Belt Chute Plugged.
May 25th,	2:00	Repairing Screen Motor Bearing.
May 31st.,	2:30	No water supply from pumphouse.
August 25th,	4:00	Burned out bearing on log.
August 30th,	:45	Repairing receiving Bin.
August 31st.,	2:30	Pan conveyor broken down.

Delays Account No Cars:

Direct Pit Shipping Ore ----- A total of 51 Hours for Season.
Concentrates (Washing Plant)----- A total of 74 Hours for Season.

h. Delays from Lack of Current:

We were unusually fortunate during 1926 in only having 3 $\frac{1}{4}$ hours delay at the washing plant on account of power trouble. Usually there are a number of bad electric storms and power interruptions is a considerable item.

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3. ANALYSIS:

a. Mine Analysis of Production & Shipments:

Grade	Tons	Iron	Phos	Sil.	Mois.	Fe.Nat.
Hill Non-Bess. Direct-----	108,861	60.39	.051	9.67	7.47	55.88
Hill Non-Bess. Concts.-----	38,670	61.92	.050	8.13	8.00	56.96
Trumbull Non-Bess. Direct--	15,098	55.74	.068	13.42	7.49	51.56
Trumbull Non-Bess. Concts.-	339,735	58.85	.074	8.50	8.38	53.92
TOTAL - 1926-----	502,364	59.32	.067	8.87	8.12	54.50
TOTAL - 1925-----	504,987	58.65	.060	8.64	7.54	54.22

The iron content of the ore showed a decided improvement over that shipped in 1925 and was above our expectations. The lean material which we anticipated would carry off our grade somewhat, was absorbed without material effect.

b. Average Analysis on Straight Cargoes:

---Mine Analysis---				---Lake Erie Analysis---			
Grade:	Iron	Mois.	Fe.Nat.	Grade:	Iron	Mois.	Fe.Nat.
McCook-----	59.23	8.12	54.42	McCook-----	59.29	6.82	55.25

d. Average Analysis of Crude Ore Production:

	Tons	Iron	Phos	Sil.
Hill Crude-----	57,585	48.26	.042	27.26
Trumbull Crude-----	520,242	42.93	.063	32.80
TOTAL-----	577,827	43.46	.061	32.25
YEAR - 1925-----	648,270	41.59	.048	33.90

e. Composite Analysis by Lerch Bros. of Season's Shipments:

GRADE:	Iron	Phos	Sil.	Mn.	Alu.	Lime	Mag.	Sul.	Loss
Hill Direct-----	60.16	.060	9.70	.14	.98	.15	.12	.012	2.89
Hill Concentrates-	61.83	.048	8.02	.11	.42	.17	.13	.013	3.10
Trumbull " -	58.89	.073	8.42	.12	.38	.16	.13	.014	6.50
Trumbull Direct---	55.53	.068	13.64	.10	.89	.14	.11	.013	5.50

4. ESTIMATE OF ORE RESERVES:

a. Developed Ore:

Assumption: 14 cu. ft. per ton for Direct Ore.
18 cu. ft. per ton for Wash Ore.

On account of the high factors used, no rock deductions are made at these properties.

Hill Bessemer Direct Shipping Ore-----	642,000 Tons.
Hill Non-Bessemer Direct Shipping Ore-----	1,212,000 Tons.
Hill Bessemer Concentrates-----	1,408,000 Tons.
Hill Non-Bessemer Concentrates-----	626,000 Tons.
TOTAL HILL ORE-----	3,888,000 Tons.
Trumbull Bessemer Direct Shipping Ore-----	85,000 Tons.
Trumbull Non-Bessemer Direct Shipping Ore-----	295,000 Tons.
Trumbull Bessemer Concentrates-----	2,396,000 Tons.
Trumbull Non-Bessemer Concentrates-----	680,000 Tons.
TOTAL TRUMBULL ORE-----	3,456,000 Tons.
GRAND TOTAL HILL AND TRUMBULL ORE-----	7,344,000 Tons.

No exploratory work was undertaken at the Hill and Trumbull Mines, other than shallow test-pitting to determine the grade of the material to be mined during 1927, and in consequence no new estimate of the ore reserves was made, the production for 1926 being deducted from the ore estimate of January 1st. of that year.

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4. ESTIMATE OF ORE RESERVES:
(Continued)

b. Prospective Ore:

There is a possibility of developing additional Hill and Trumbull ore along the north side of the pits, to the west of the rock island. Test-pits put down during 1925 indicated that the ore makes back under the stripping bank and a few scattered drill holes bear this out. It is not advisable to do any exploratory work in this vicinity for the present, as any additional tonnage developed would increase our taxes and it will be several years before any ore that might be developed would be required.

The factors, on which our estimates are based, are conservative and it is probable that the tonnages will be greater than now figured, as a result thereof.

c. Estimated Analysis:

<u>Hill Mine:</u>	<u>Tons.</u>	<u>Iron</u>	<u>Phos</u>	<u>Sil.</u>	<u>Fe.Nat.</u>
Bessemer Direct Shipping-----	642,000	58.00	.045	13.00	53.36
Non-Bessemer Direct Shipping--	1,212,000	58.00	.055	13.00	53.36
Bessemer Concentrates-----	1,408,000	59.50	.045	8.50	55.04
Non-Bessemer Concentrates-----	626,000	60.00	.059	7.50	55.50
TOTAL HILL ORE-----	3,888,000	58.86	.050	10.48	54.31
 <u>Trumbull Mine:</u>					
Bessemer Direct Shipping-----	85,000	56.40	.040	12.79	51.32
Non-Bessemer Direct Shipping--	295,000	58.04	.060	9.85	52.82
Bessemer Concentrates-----	2,396,000	59.00	.043	9.00	54.57
Non-Bessemer Concentrates-----	680,000	59.00	.080	9.00	54.57
TOTAL TRUMBULL ORE-----	3,456,000	58.85	.052	9.16	54.34
 GRAND TOTAL HILL-TRUMBULL-----	 7,344,000	 58.86	 .051	 9.86	 54.32

5. LABOR & WAGES:

a. Comments:

(1) Labor:

While labor was not plentiful at any time during the operating season, there was no shortage until the latter part of August, when it was necessary to have some men sent up from Duluth. A number of the employees left for the harvest fields of western Minnesota and the Dakotas during the fall and several went to Flint, Michigan.

(2) New Construction:

No new construction was undertaken during 1926 with the exception of the erection of 300' of rock trestle to take care of the rejects at the washing plant.

b. Comparative Statement of Wages & Product:

	<u>1926</u>	<u>1925</u>	<u>Increase</u>	<u>Decrease</u>
PRODUCT-----	502,364	504,987		2,623
No. Shifts & Hours-----	1-10	1-10		
Avg. No. of Men Working-----	107	103	4	
Avg. Wages Per Day-----	5.25	5.08	.17	
Product Per Man Per Day-----	29.78	27.18	2.60	
Labor Cost Per Ton-----	.176	.187		.011
Total No. of Days-----	16872	18578 $\frac{1}{2}$		1706 $\frac{1}{2}$
Amount Paid for Labor-----	88601.46	94311.82		5710.36

In 1923 Production from May 5th to Oct. 3rd.
 1924 " " Apr. 26th to Sept. 13th.
 1925 " " Apr. 25th to Oct. 6th.
 1926 " " May 7th to Oct. 9th.

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5. LABOR & WAGES:
(Continued:

b. Comparative Statement of Wages & Product: - Continued:

No change in the wages were made during the two years 1925 and 1926.

In order to get the tonnage out on time for boats, the pit was operated 137 hours overtime and the washing plant 182 hours.

The most important factors in the increase in the product per man per day and the decrease in the labor cost per ton in 1926, as compared with 1925, are the facts that a larger tonnage of concentrates was obtained per hour of work in 1926 and the proportion of direct ore shipped from the pit was much greater in 1926 than it was in 1925.

6. SURFACE:

a. Buildings, Repairs:

No extensive repairs were made to the Company buildings during 1926. Some painting and reroofing will be required during 1927.

c. Tracks, Roads, Transmission Lines:

Twelve men were put to work on April 6th and laid a loading track across the Trumbull pit for an initial opening cut. This work was finished by the end of April and the crew of men was gradually increased until on April 19th, twenty-five men were employed. New ties were put in where necessary in the yard tracks and on the main line between the yards and washing plant. The crew was reduced when operations were started loading ore, an average of ten men being carried on the track crew during the balance of the season.

Practically all of the track work in the pit during 1926 was in connection with ore loading operations.

Upon the conclusion of ore loading, the track crew was engaged in placing new ties between the washing plant and the pit. It will be necessary to retie a considerable amount of track between the yards and the pit before mining operations are resumed in the spring of 1927.

Generally speaking, our tracks are in very good shape and it is expected that the replacement work next year will be lighter than in 1926.

7. OPEN PIT:

a. Stripping:

No stripping operations were undertaken in either the Hill or Trumbull pits during 1926. There was some clean-up work done where the rains had washed surface material onto the ore, but the yardage involved was not large.

d. Timbering:

Statement of R.R. Ties Used:

<u>1925</u>	<u>1926</u>	<u>Increase</u>
4,568	5,736	1,168

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7. OPEN PIT:
(Continued)

f. Explosives, Drilling & Blasting:

The Keystone drill was taken into the pit the latter part of March and started operating in the Trumbull pit. The machine was kept busy throughout the season and was able to prepare all banks for blasting where it was necessary.

Statement of Explosives Used:

	QUANTITY	AVERAGE PRICE	AMOUNT 1926	AMOUNT 1925
60% Powder-----	3,040	.1500	456.00	480.50
40% Powder-----	3,220	.1300	418.60	845.50
Hercules Special #1-----	5,200	.1400	728.00	1,558.75
Hercules Special #2-----	50	.1350	6.75	4,171.50
DuPont Blasting Powder #2---	1,500	.1130	169.50	----
DuPont 40%-----	200	.1300	26.00	----
Trojan CC-----	600	.1115	66.90	1,893.13
Trojan 40%-----	2,850	.1300	370.50	533.25
Trojan 60%-----	--	--	---	15.50
Trojan 20%-----	--	--	---	90.00
Trojan 40C-----	46,850	.1300	6,090.50	---
Hercules Pluto-----	15,900	.1130	1,796.70	---
Total Powder-----	79,410	.1275	10,129.45	9,588.13
Fuse-----	700	.0070	4.96	7.17
Caps-----	800	.0106	8.79	17.02
Electric Exploders-----	1,925	.0861	165.84	297.95
Connecting Wire-----	13	.4307	5.60	12.53
Crimpers-----	1	.5000	.50	2.29
Total Caps, Etc.-----			185.69	336.96
TOTAL EXPLOSIVES-----			10,315.14	9,925.09
	1926	1926	1925	1925
	CRUDE	CONCTS	CRUDE	CONCTS
	&	&	&	&
	DIRECT	DIRECT	DIRECT	DIRECT
Product-----	701,786	502,364	747,163	504,987
Lbs. Powder per ton of Ore---	.1131	.1580	.0964	.1427
Cost per ton for Powder-----	.0144	.0201	.0128	.0190
" " " " Caps, Etc.--	.0002	.0003	.0005	.0007
" " " all Explosives-	.0146	.0205	.0133	.0197
Average cost per lb. Powder-	.1275	.1275	.1331	.1331

Commenced operations May 5th, 1926, suspended operations October 13th, 1926.

g. Open Pit Mining & Loading:

Wash Ore:

Crude ore operations were started in the Trumbull pit on May 7th. Shovel No. 27 made a thorough cut across that part of the Trumbull pit, which was stripped during 1925. The machine took three cuts before it reached the depth of the so-called first bench, which is approximately 25' below the top of the ore. The standard shovels, like the No. 27, can only load cars on a track 8' above the point of digging. A small amount of direct ore was encountered in these three cuts.

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7. OPEN PIT:
(Continued)

g. Open Pit Mining & Loading - Continued:

The ore on the north side of the Trumbull pit was of very good grade, but toward the south boundary and at the west end, the material was quite lean and could only be absorbed gradually and maintain the grade.

Shovel No. 26 started along the south side of the thorough cut on May 10th and operated here until August 11th. The No. 26 machine mined out the bulk of the first bench ore between the thorough cut and the south boundary. It was necessary to do some sorting in these operations, the top part of several cuts being of unwashable character, while the bottom part of the cut would be of satisfactory concentrating material.

The No. 26 shovel was taken to the west end of the Hill pit on August 12th and the No. 27 machine mined out the balance of the ore between the thorough cut and the south boundary and extended the digging to the northerly limits designated for 1926 operations. Practically all the top bench ore in the Trumbull pit has been loaded out, with the exception of the berms along the stripping banks and an area along the north-central part of the pit.

It is the intention to operate on the second bench in the Trumbull pit during 1927, after exhausting the remaining ore from the first bench.

The No. 26 shovel spent the balance of the season in digging along the north side of the Hill pit, just west of the direct ore area. Progress here was very slow, on account of the rocky seams in the ore. All the rock possible was sorted with the shovel, but a considerable quantity of small seams were sent to the mill.

The No. 27 shovel completed operations in the Trumbull pit on October 2nd and was moved to the direct ore area to complete the season's requirements of this grade. All wash ore operations in the pit were finished on October 9th.

Direct Ore:

During the first week in May, the Model "36" revolving shovel was used in preparing a track grade in the direct ore area at the extreme east end of the Hill pit. Ore loading started May 10th and was continued intermittently throughout the season. The direct ore loading was regulated to a large extent on our dock balance and the Great Northern Railway Company's car service. More rock developed in the direct ore area than had been anticipated. The deposit to be mined in 1926 was carefully test-pitted, but in several instances, rock intrusions occurred between the test-pits. Practically all of the direct ore loading during the year was handled by the Model "36" revolving shovel. At the end of the season both the Nos. 26 and 27 machines were worked in the direct ore area, as the rocky conditions made it impossible to secure satisfactory results with the smaller revolving shovel.

Lean & Waste Ore:

It was not necessary to load out any lean ore upon the conclusion of the shipping season, as has been the case the two previous years. Such lean ore as was encountered in the Trumbull pit during the season was handled with the wash ore.

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7. OPEN PIT:
(Continued)

g. Open Pit Mining & Loading - Continued:

Lean & Waste Ores - Continued:

In mining the second bench in the Trumbull pit, a considerable tonnage of lean ore will be outlined and it is anticipated that this material will be loaded out and taken to the lean ore dump during the fall of 1927.

k. Water Level in Pit:

The water level in the Hill pit dropped 6.8' during the year, the elevation on January 1st., 1926, being 1254' and on January 1st., 1927, 1247.2'. There is only a small pond of water remaining along the south side of the Hill pit and the deepest water at any point is 11'.

l. Dyke:

During November a dyke was built across the draw to the north of the Hill pit. This is to prevent the water flowing down the face of the stripping bank and washing material onto the cleaned ore. We have had considerable trouble from the drainage coming from this draw and it is contemplated placing a pump here next year and lifting the water during the spring freshet and times of heavy rains into the main drainage drift, some distance to the north. Considerable material has been washed down onto the ore at this point during the past several years, but it has never troubled our operations. Next year, we will be working in this vicinity and it will be necessary to keep the tracks and ore body free of wash.

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8. COST OF OPERATING:

a. Comparative Mining Costs:

<u>PRODUCT:</u>	1926	1925	<u>INCREASE</u>	<u>DECREASE</u>
Direct Shipping-----	123,959	98,893	<u>25,066</u>	
Concentrates-----	378,405	406,094		<u>27,689</u>
Total Production-----	502,364	504,987		<u>2,623</u>
 <u>DIRECT SHIPPING ORE:</u>				
Labor-----	.099	.095	.004	
Supplies-----	.052	.043	.009	
Total-----	.151	.138	.013	
 <u>CRUDE ORE - CONC. BASIS:</u>				
Labor-----	.123	.126		.003
Supplies-----	.081	.079	.002	
Total-----	.204	.205		.001
 <u>MISCELLANEOUS GROUP:</u>				
Superintendence-----	.005	.005		
Concentrating-----	.113	.126		.013
Stripping-----	.560	.560		
Insurance-----	.001	.002		.001
District Office-----	.013	.009	.004	
Central Office-----	.010	.011		.001
Contingent Expense-----	.000	.000		
Special Expense-----	.001	.001		
Occupational Tax-----	.019	.037		.018
Taxes-----	.241	.258		.017
Winter Expense-----	.155	.123	.032	
Cost adjustment-----	.001	.002		.001
Depreciation-----	.200	.200		
Misc. Debits & Credits-----	.000	.004	.004	
Total Cost on Cars-----	1.510	1.530		.020
 <u>DIRECT SHIPPING:</u>				
No. Days Operating-----	108	83	25	
No. Shifts & Hours-----	1-10	1-10		
Avg. Daily Product-----	1148	1191		43
 <u>CRUDE ORE - CONC. BASIS:</u>				
No. Days Operating-----	134	141		7
No. Shifts & Hours-----	1-10	1-10		
Avg. Daily Product-----	2824	2880		56

b. Detailed Cost Comparison:

(1) Product:

There was an increase of 25,066 tons in the production of direct ore in 1926, as compared with the previous year. In order to secure the minimum tonnage requirements from the Hill Mine, it was necessary to forward 150,000 tons. The direct ore was available, whereas it would have required considerable track work to make available a larger tonnage of Hill wash ore and for this reason the direct ore operations were increased as far as practical.

The tonnage of concentrates turned out from the Hill-Trumbull Mine in 1926 was 27,689 tons less than in 1925. This was due to the increase in the tonnage of direct ore and the fact that there was less shrinkage in Lower Lake weights during 1926.

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8. COST OF
OPERATING:
(Continued)

b. Detailed Cost Comparison - Continued:

(2) Direct Ore Costs:

The cost per ton for producing direct ore in 1926 was \$.013 higher than in 1925, the labor increase being \$.004 and supplies \$.009. The direct ore loaded out in 1925 was comparatively free from rock and was dug with very little blasting. In 1926 several horses of rock were encountered and the ore itself was much harder. Considerable blasting was done in the direct ore area in 1926 and it was also necessary to load out a quantity of rock. The General Expense items under Direct Ore loading were \$.009 per ton less in 1926, the large increase, as noted above, being in the operating accounts.

(3) Wash Ore Costs - Concentrated Basis:

The cost of producing wash ore (concentrated basis) in 1926 was \$.001 per ton lower than for the previous year. The labor item was \$.003 lower and the supplies \$.002 higher. The labor per ton for operating was higher for 1926, as were supplies for maintenance, but the General Expense was enough lower in 1926 to more than offset the increase in the above. The cost per ton for Analysis in 1926 was decidedly lower and was responsible for showing the decrease in the operating cost per ton. During 1925 a large amount of test-pitting was done and the analytical and hand wash tests made the charges against this account exceptionally high.

(4) Miscellaneous Group:

There was a decrease of \$.013 per ton in the 1926 "Concentrating" costs. This was due to the fact that labor saving devices were installed, with the result that less labor was employed.

The 1926 increase of \$.004 in "District Office" was occasioned by higher charges being made against the Hill-Trumbull operations as the result of A. Guthrie Co. having suspended their stripping work the previous year.

There was a decrease of \$.018 per ton under "Occupational Taxes" in 1926. This is explained by the fact that the State Tax Commission allowed more expense and depreciation charges against the ore, with the result that the profits were less.

Under "Ad Valorem Taxes" the cost per ton in 1926 was \$.017 less than for 1925. We estimated that the taxes to be paid in 1927 and absorbed in 1926 would be higher as the result of the west Trumbull forty being put in the active class. The Tax Commission allowed us a substantial reduction in the Trumbull estimate, as a result of reclassifying the drill holes, and this about offset the increased valuation in the west Trumbull forty. The ad valorem taxes for 1926 were approximately \$9,000 less than for 1925.

The 1926 cost per ton for "Winter Expense" was \$.032 higher than in 1925. This is due to the fact that lean ore stripping operations were carried forward into December, 1925, and extensive repair work in the shops was not carried on until the stripping job was finished, whereas during 1926, repair work in the shops was begun in October and carried forward until December 18th, when the men were given a

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8. COST OF
OPERATING:
(Continued)

b. Detailed Cost Comparison - Continued:

(4) Miscellaneous Group - Continued:

two weeks layoff. The repair work from January 1st., until the opening of the ore season was about the same for each year.

(5) Days and Shifts:

The production per shift for direct ore was 43 tons lower for 1926 than it was in 1925. This is due to the rocky conditions encountered in the operations for 1926.

The concentrates produced per shift in 1926 was 56 tons lower than for the previous year. This was the result of handling the lean wash ore in the southerly part of the Trumbull pit. When this material was being handled, it was necessary to slow down the mill in order to secure the best washing results possible.

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9. EXPLORATIONS
AND
FUTURE
EXPLORATIONS:

Other than test-pits to ascertain definitely the character and washability of the ore to be mined and treated during 1927, no exploratory work of any nature was undertaken during the past year. Test-pits to the number of 49 were put down in the Trumbull pit to an average depth of 22', along the rocky ledges on the north side of the Hill pit and in the direct ore area at the extreme east end of the Hill pit, 19 pits were put down for an average depth of 16' along the rocky ledges and 22 for an average depth of 26' in the direct ore. The test-pitting was finished December 22nd. These test-pits showed that the ore to be mined in the Trumbull pit during 1927 will at least give as satisfactory results from treatment as that handled during 1926. The pits along the north side of the Hill pit were rather disappointing. We had hoped to show up quite a little ore in this locality, but we found rocky conditions worse than anticipated. In the direct area, the test-pits showed a very limited tonnage of high grade direct ore remaining and our operations there during 1927 will be partly in wash material.

Future explorations in the Hill-Trumbull properties will consist of drilling along the north side of the Hill and Trumbull pits to the west of the rock island and in driving exploratory drifts into the fingers of high grade ore, which extend under the stripping bank in several places along the north side of the Hill pit. It is the present intention to drive several exploratory drifts and put up raises in these fingers of ore during 1927. The merchantable ore could be mined by a tram-to-pit method during times when market conditions would warrant.

10. TAXES:

The following statement shows the taxes and average rate for 1926 and 1925, covering the Hill-Trumbull, Bingham and North Star Mines, the Hill-Trumbull washing plant and the Bingham-North Star washing plant site and the Hill-Trumbull shops. The reason for including the Bingham and North Star Mines and washing plant site is that the Hill-Trumbull operations carry the taxes on these properties and as the Bingham and North Star are not operating properties, the taxes on these mines would not be shown otherwise in the annual report of the Mesaba District:

	1926	1925	Increase	Decrease
Hill-----	\$ 55,045.37	\$55,796.42	----	751.05
Trumbull-----	48,574.69	52,832.14	----	4,257.45
Bingham-----	7,476.86	7,837.70	----	360.84
North Star-----	5,690.31	5,421.60	268.71	----
Hill-Trumbull Wash.Plant--	3,687.16	7,296.57	----	3,609.41
Bingham-N.Star W.P.Site---	72.71	65.14	7.57	----
Hill-Trumbull Shops-----	693.52	1,099.73	----	406.21
TOTAL-----	\$121,240.62	\$130,349.30	----	\$9,108.68
Average Rate-----	8.75	8.43	.32	

The Hill Mine taxes are somewhat lower in 1926 than they were in 1925, even though the rate is higher in 1926. This is due to the tonnage shipped from May 1st., 1925 to May 1st., 1926.

In spite of the fact that the west Trumbull forty was stripped and placed in the active class for valuation purposes, as of May 1st., 1926, the taxes at the Hill-Trumbull Mine were less for 1926 than for the previous year, due to the fact that the Tax Commission's engineers reduced the tonnage in the Trumbull Mine, as the result of reclassifying the drilling. We asked for a large reduction and obtained one very close to our request.

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10. TAXES:
(Continued)

There was a small decrease in the Bingham Mine taxes for 1926 as compared with 1925. This decrease would have been considerably larger had not the rate of valuation been raised. The Bingham Mine tonnage was reduced somewhat by the State Tax Commission as the result of their engineers re-classifying the old drilling. We asked for a considerably larger tonnage decrease than was granted by the Commission.

The increase in the North Star taxes for 1926, over those for 1925, is due entirely to the rate of valuation having been raised.

The Hill-Trumbull washing plant and auxiliary lands show a reduction of \$3,609.41 in the 1926 taxes, as compared with those for 1925. This is due to the personal property taxes for 1924 having been taken into the 1925 accounts.

The increase in the taxes of the Bingham and North Star washing plant site was due to the higher rate for valuation.

The reduction of \$406.21 in the 1926 taxes on the Hill-Trumbull shops, as compared with the previous year, is due to the local assessor in Marble allowing us a substantial depreciation.

11. ACCIDENTS
AND
PERSONAL
INJURY:

There were three accidents at the Hill-Trumbull Mine during 1926, as compared with four in 1925. The total number of days lost in 1926 was 55, against 79½ days in 1925. There were no accidents of a serious nature and the compensation payments were exceptionally light.

12. NEW CON.
AND
PROPOSED
NEW CON.:

Aside from the 300' of trestle, erected to handle the rejects from the washing plant, no new construction was attempted during 1926, nor is any contemplated for 1927.

13. EQUIPMENT
AND
PROPOSED
EQUIPMENT:

a. Steam Shovels & Crushers:

A second-hand gasoline driven dragline was purchased for \$1,000.00 and will be used in connection with the storage basin dyke.

14. MAINTENANCE
& REPAIRS:

Winter repair work in the shops was conducted from the first of the year until the shipping season started and from October 9th to December 18th.

The overhauling work which had been started on the #27 shovel in December was completed by January 9th. This machine was thoroughly gone over. Repairs on the boom were completed January 14th.

Shovel No. 26 was taken into the shop on January 9th. The machine was taken down for inspection and it was given a thorough overhauling.

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14. MAINTENANCE
& REPAIRS:
(Continued)

Repair work on locomotives Nos. 101, 102 and 103 was started in February. The side rods were removed and the cylinders opened, piston rods and valve stems turned down in the lathe, on account of being worn, numerous stay bolts were put in the fire boxes and the drivers were removed and new hub liners put in.

Locomotives Nos. 17 and 19 were thoroughly repaired. This work was begun in March and finished during the first week in May. More than the usual amount of repairs were put on these two engines.

All of the 20-yd. cars were thoroughly cleaned, repairs made where necessary and they were painted. Light repairs were made on the two 50-ton coal cars and some work was done on the old 12-yard dump cars.

Upon the completion of the 1926 ore season, winter repairs were started in the shop. All of the steam shovels were taken in and the repairs on them had been completed by December 18th, when the shop crew was given a two weeks layoff.

Shovels Nos. 26 and 27 were gone over and the usual minor repairs made. Shovel No. 19 was taken apart and thoroughly repaired. The boiler was removed and patched where it had cracked and a new set of flues was put in.

Locomotive No. 103 was taken into the shop in December.

Eight of the 16 - 20-yd. cars have been put through the shop and the necessary repairs made.

Washing Plant Repairs:

The biggest job attempted during last winter was the repairing, straightening and reinforcing of the paddle shafts on the logs and turbos.

The 8" pipe line which was used in connection with removing mud from the intake channel for the washing plant pumps, was removed and returned to the Boeing Mine.

Some of the washing plant chutes were relined and some light repair work was done on the tables.

After the close of the ore season, the mill was cleaned out and drained. The belt conveyor rollers were removed, cleaned and repaired where necessary. The head bearings on the logs are undergoing repairs, as well as the idler ring and rollers on the big screen. A number of worn out paddles were replaced on the logs and turbos. A number of the pans on the big conveyor are being repaired and the receiving bin overhauled.

Due to a settlement of the 20" pipe line causing leaks, it was necessary to jack up the line in places and make repairs. The entire pipe line was painted.