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10. TAXES:
(Continued)

Taxes and amount of taxes paid by the company were greater in 1926 due to increased State, County and County Road taxes. The township is also raising more money for road and school purposes.

The valuation of the Morris Mine shows an increase and the Barnes-Hecker also went up slightly in value. This is shown by a table in another portion of this report.

11. ACCIDENTS AND PERSONAL INJURY:

We were fortunate in not having anyone seriously injured until the terrible disaster occurred on November 3rd, which took the lives of 51 men.

At 11:20 A.M. on that date, the mine was completely filled with water and debris in less than ten minutes.

The first warning of danger was felt on the second level. There was a sudden rush of air towards the shaft. Wilfred Wills, motorman on his way towards the mine workings, felt the concussion and immediately started back towards the shaft. He climbed the ladders to safety closely followed by three others who unfortunately were caught.

In the meantime, the cage was being hoisted to surface and the pipe gang and trackmen on the cage felt the same concussion.

As soon as the cage reached the surface, the foreman of the pipe gang started down the ladder road to look for a break in the air or water column. He met Wills climbing up who informed him that an air blast had occurred on the second level. At that moment, a very violent concussion occurred, the electric current went off and a section of 4" air pipe dropped from above, narrowly missing Wills and Hillman. The falling pipe wrecked the ladder way, preventing the three men following Wills from escaping. The sand and water came up above the first level very rapidly, filling the shaft to within 185 feet of surface.

Directly after the first blast was heard, the Captain rapped for the cage from the third level plat. The Captain's body and six others, were found shortly afterwards on the sixth level Morris Mine, 1000 feet East of the concrete bulkhead located on the line between Chase Leases Nos. 25 and 26.

In order to safe-guard the Morris Mine, three wooden bulkheads were constructed in the sixth level drift and bailers were hung in the shaft.

After a lapse of a few days, there being no movement of the sand on the sixth level and no increase in the flow of water, we cleaned out the drift up to the concrete dam and closed it with stop logs. Another concrete plug 20 feet long was placed in the drift close to the old concrete bulkhead.

In the meantime, repair work was started in the Barnes-Hecker shaft and pumps placed in operation at the caved area on surface. The pumps lowered the water level approximately five feet, when the inflow was as fast as we could pump it. The shaft was badly wrecked for quite a distance from a point about 250 feet below surface. After repairing to within 100 feet of the first level, the shaft was found in good condition.

At the first level elevation, a hopeless tangle of wreckage was encountered, making it impossible to go below that point with safety. The frequent boils occurring which caused the water to rise, rapidly for 80' or 90' above the first level, made it extremely hazardous for anyone to work in the shaft. For the last month, the water has been held at the first level elevation by bailing.

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11. ACCIDENTS AND PERSONAL INJURY:
(Continued)

During the trying days following the catastrophe, all of the personnel of the operating departments helped the local organization to carry on the repair work and it is largely due to the efforts of the other superintendents and captains, that the objectives were attained.

12. NEW CONSTRUCTION:

E. & A. #464:

This E. & A. covers the cost of digging the drainage ditch from the East end of old North Lake, deepening the former bed of the Carp River. Work was started in 1924 and not finished until last summer. The expenditures were nearly double the original estimate, due to delays and the fact that part of the work was done in the winter months.

13. EQUIPMENT:

d. Scrapers:

We added two more double drum outfits to our equipment and at the time of the disaster, were scraping nearly 95% of our product.

14. MAINTENANCE & REPAIRS:

No maintenance or unusual repairs were necessary on any of the equipment, except on the pumps. The Aldrich pump on the third level, broke down in April and the new crank shaft was not received and placed in service until August. The break-down increased our operating cost approximately $8500.00 for the year.

17. MINE LOCATION:

In the location, fences were built separating the lots and stumps blasted out of the roadway. The residents planted grass and flowers so that by fall, the location presented a very pleasing appearance.

18. NATIONALITY OF EMPLOYEES:

The men employed at the mine for the last quarter of the year, were classified as follows:-

English	33
Scandinavian	7
French	22
Finnish	50
Italian	11
Scotch	1
German	1
Irish	2
Total	127

19. ROYALTIES:

Accrued Royalties & Production From #31 Lease:

Tons of Ore Produced in 1926	163,380 Tons
Tons Mined Previous Years	271,193 "
Total Tonnage Produced	434,573 Tons
Accrued Royalties to Dec. 31st, 1926	945,000 "
Royalties Paid in Excess of Tons Mined	510,427 Tons

Chas. J. Stakel

Chas. J. Stakel, Superintendent.

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ANALYSIS OF COST SHEETS, EXPLAINING INCREASE OR DECREASE IN VARIOUS ACCOUNTS BETWEEN THE YEAR 1925 AND 1926

In analyzing costs, only ten months of 1925 and 1926 are being compared because of the disaster on November 3rd. The yearly costs are not comparable because the mine operated only ten months in 1926 and, furthermore, a 30,000 ton stockpile overrun was taken up in November 1926, throwing the unit costs for 1926 way out of line.

UNDERGROUND COSTS

ACCOUNT
DEVELOPMENT IN ORE

10 Months	1925	$3,377.49
" "	1926	5,502.80
Increase		$2,125.31

Although total cost shows a 63% increase, the footage of raises driven, more than doubled.

Raises for	1925 totalled	307 Ft.
" "	1926 "	783 "
Increase		476 Ft.

Unit cost per foot, therefore, shows a large decrease because of better labor employed on this class of work.

ACCOUNT
STOPING

10 Months	1926	$64,234.28	Cost Per Ton	.484
" "	1925	65,474.09	" " "	.581
Decrease		$ 1,239.81	" " "	.097

Unit cost decreased due to using more scrapers. Our tons per man stoping increased from 11.65 in 1925 to 16.90 in 1926

ACCOUNT
TIMBERING

10 Months	1926	$43,402.55	Cost Per Ton	.327
" "	1925	43,597.14	" " "	.387
Decrease		$ 194.59	" " "	.060

Decreased due to less timber used per ton of ore. This partially due to the fact that as the mine became deeper, less timber was required for lagging down floors. Furthermore, previous to 1926, some company account labor lagging down subs, was charged to the timbering account. In the past year, we made this operation a part of the miners contract and this cost was absorbed in Stoping.

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UNDERGROUND COSTS

ACCOUNT
TRAMMING

10 Months	1926	$20,799.78
" "	1925	17,085.49
Increase		$ 3,714.29

Increased due to employing trammers on 1060 foot sub, transferring ore from gangs mining on extreme East end above first level.

ACCOUNT
PUMPING

10 Months	1926	$32,990.00
" "	1925	30,339.89
Increase		$ 2,650.11

Increased because Aldrich Triplex pump broke down in April and water then had to be handled with centrifugal pumps. Our pumping cost was above normal from April to September.

ACCOUNT
COMPRESSORS AND
AIR PIPES

10 Months	1926	$13,845.03
" "	1925	13,335.10
Increase		$ 509.93

Cost for 1926 shows an increase due to charging a little larger proportion of air expense because of the operation of more scrapers.

ACCOUNT
UNDERGROUND SUPERINTENDENCE

10 Months	1926	$4,793.45
" "	1925	4,834.90
Decrease		$ 41.45

Decreased because in 1925, we operated six days a week up until September. From September 1925, we only worked five days a week.

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MAINTENANCE COSTS

ACCOUNT
COMPRESSORS AND
POWER DRILLS

10 Months	1925	$ 89.08
" "	1926	543.05
Increase		$453.97

Increased because of new R.B.12 machines purchased.

ACCOUNT
HAND TRAM EQUIPMENT

10 Months	1925	$88.92
" "	1926	37.69
Decrease		$51.23

Expense nominal because scrapers replaced tram cars in sub levels.

ACCOUNT
ELECTRIC TRAM EQUIPMENT

10 Months	1925	$5,183.77
" "	1926	5,753.02
Increase		$ 569.25

Increased because of charging out six new tram cars.

ACCOUNT
PUMPING MACHINERY

10 Months	1925	$12,647.94
" "	1926	6,471.29
Decrease		$ 6,176.65

Cost for 1925 very high due to taking up charges against drainage ditch. Cost for 1926 also above normal because new crank shaft was purchased for Aldrich Triplex pump on third level.

SURFACE COSTS

ACCOUNT
HOISTING

10 Months	1925	$6,595.47	Cost Per Ton	.059
" "	1926	8,094.03	" " "	.061
Increase		$1,498.56	" " "	.002

Increased due to larger tonnage handled and also due to employing two hoisting engineers full time in engine house on day shift. In 1925, the second engineer only worked part time.

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SURFACE COSTS

ACCOUNT
STOCKING ORE

10 Months	1925	$3,851.54
" "	1926	3,322.71
Decrease		$ 528.83

In 1925, costs were above normal due to putting up new Silica ore trestle.

ACCOUNT
DRY HOUSE

10 Months	1925	$3,193.64
" "	1926	2,744.99
Decrease		$ 448.65

Less fuel burned in 1926 due to mine operating only five days a week.

ACCOUNT
GENERAL SURFACE EXPENSE

10 Months	1925	$273.02
" "	1926	471.99
Increase		$198.97

Increase due to building new dam across creek near dry to provide larger basin from which to pump in case of fire and also due to cleaning-up expense in the spring.

MAINTENANCE COSTS

ACCOUNT
HOISTING EQUIPMENT

10 Months	1925	$1,029.28
" "	1926	1,558.38
Increase		$ 529.10

Two new skip ropes charged out in 1926 compared with one in 1925.

ACCOUNT
SHAFT

10 Months	1925	$ 6.34
" "	1926	92.04
Increase		$85.70

Expense under this heading nominal.

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MAINTENANCE COSTS

ACCOUNT
TOP TRAM EQUIPMENT

10 Months	1925	$ 968.01
" "	1926	1,671.89
Increase		$ 703.88

Cost of new top tram car charged out in 1926. New transformers and control apparatus put in use following fire in February.

ACCOUNT
DOCKS, TRESTLES
AND POCKETS

10 Months	1925	$218.98
" "	1926	891.75
Increase		$672.77

Cost increased because a large portion of the single leg stocking trestle had to be taken down and rebuilt.

ACCOUNT
MINE BUILDINGS

10 Months	1925	$218.98
" "	1926	413.71
Increase		$194.73

New top tram building completed in February following fire. Repairs to dry roof also made in August.

GENERAL MINE ACCOUNTS

ACCOUNT
INSURANCE

10 Months	1925	$121.61
" "	1926	191.20
Increase		$ 69.59

Increase due to increased premiums on policies covering fire protection.

ACCOUNT
ENGINEERING

10 Months	1925	$1,295.17
" "	1926	1,266.02
Decrease		$ 29.15

Nominal decrease.

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GENERAL MINE ACCOUNTS

ACCOUNT
ANALYSIS

10 Months	1925	$2,263.62
" "	1926	1,916.87
Decrease		$ 346.75

Decreased because larger proportion of district laboratory expense was borne by the Morris-Lloyd Mine.

ACCOUNT
PERSONAL INJURY EXPENSE

10 Months	1925	$1,806.09
" "	1926	1,380.60
Decrease		$ 425.49

Personal injury expense small up to November, after which the disaster of course, greatly increased this account.

ACCOUNT
SAFETY DEPARTMENT EXPENSE

10 Months	1925	$248.10
" "	1926	349.13
Increase		$101.03

Increased due to a larger amount of first aid supplies charged off in 1926.

ACCOUNT
TELEPHONES AND
SAFETY DEVICES

10 Months	1925	$110.47
" "	1926	187.27
Increase		$ 76.80

Increased due to installing and piping fire doors on main levels.

ACCOUNT
LOCAL GENERAL WELFARE

10 Months	1925	$1,179.15
" "	1926	1,156.60
Decrease		$ 22.50

Small decrease.

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GENERAL MINE ACCOUNTS

ACCOUNT
SPECIAL EXPENSE

10 Months	1925	$1,092.91
" "	1926	1,766.17
Increase		$ 673.26

Increased due to repairs on White Truck and purchase of two new tires.

ACCOUNT
MINE OFFICE

10 Months	1925	$4,544.87
" "	1926	5,567.95
Increase		$1,023.08

Increased due to employing two men in mine office in 1926.

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1. GENERAL:

The Ogden Mine was late in starting production in 1926, on account of the late spring and heavy snows, and worked on ore only five months, using a new electric shovel which was purchased early in the year. Stripping was continued simultaneously, and was in excess of the season's needs. The stripping will be finished fairly early in 1927.

There remains at this mine less than two full years' production above the floor of the pit, and 180,000 tons more in the floor, if it is mined fifteen feet below its present level. Below that elevation additional equipment will be necessary to get the cars out.

The iron and silica content of the ore has remained almost constant, but phosphorus has increased from .038 in 1925 to .049 in 1926, with a further increase probable in 1927 as greater depth in the hillside is reached.

A dike spoiled considerable tonnage near the south end of the pit in 1926, probably 5,000 tons being contaminated, and another dike has been found in the north end, which will give trouble in 1927. Some tonnage may be lost along the contact with the diorite on the south also.

The general condition of the pit and equipment is better than it was a year ago, and production can be materially increased in 1927, if the ore can be sold.

2. PRODUCTION, SHIPMENTS & INVENTORIES:

a. Production by Grades:

Tilden Silica	146,501 Tons
Rock	2,000 "

The mine started production on June 1st and finished October 27th. It worked six days a week, and was on single shift until August 11th. After this date loading was done on both shifts, except for three days in September, when production was stopped, because the Maas Crusher could not handle the ore. The mine worked 126 days, and produced 146,501 tons of Tilden Silica ore, an average of 1,163 tons per day. All the ore was shipped, except 1,394 tons, which was left in cars. All the ore was crushed at the Maas Crusher. The production in 1926 showed an increase of 81,679 tons over that in 1925, which was 64,822 tons.

About 2,000 tons of rock was overcast out of the way near the south end of the pit.

b. Shipments:

Grade of Ore	Tons
Tilden Silica	145,107

c. Stockpile Inventories:

Grade of Ore	Tons
Tilden Silica	1,394 in cars.

There is about 2,500 tons of broken ore in the pit in addition.

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e. Production by Months:

Month	Days	Tons Per Day	Total Tons
May			304
June	27	700	18,907
July	25	1,023	25,580
August	26	1,388	36,076
September	25	1,350	33,739
October	23	1,387	31,895
Year	126	1,163	146,501
Rock			2,000

f. Ore Statement:

	Year	Last Year
On Hand Jan. 1, 1926	-	-
Output for Year	146,501	64,822
Total	146,501	64,822
Shipments	145,107	64,822
Balance on Hand	1,394	-
Increase in Output	81,679	
Increase in Shipments	80,285	

1926 - 1-9 Hour shift, 6 days per week, June 1st to Aug. 11th, 1926
2-9 Hour shifts, 6 days per week, Aug. 11th to Oct. 23, 1926
1-9 Hour shift, 6 days per week, Oct. 23rd to Oct. 27, 1926
Idle Oct. 27th to Dec. 31st, 1926.

1925 - 1-9 Hour shift, 6 days per week, June 4th to Nov. 15th, 1925
Idle Nov. 16th to Dec. 31st, 1925.

g. Delays:

Up to August 1st there were almost daily delays of an hour or more on account of hot bearings on the shovel, and after that there were several delays from trouble with the trip-motor and its cable. In September no loading was done for three days from the 23rd to the 25th inclusive, because the Maas Crusher was crowded with ore, and during this time the shovel was used on rock and for cleaning up.

3. ANALYSIS:

a. Average Mine Analysis on Output:

Grade	Iron	Phos.	Silica
Tilden Silica	40.40	.058	38.10

b. Average Analysis on Straight Cargoes:

	Mine			Lake Erie		
Grade	Iron	Phos.	Silica	Iron	Phos.	Moisture
Tilden Silica	40.38	.058	38.02	40.58	.049	4.34

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4. ESTIMATE OF ORE RESERVES:

a. Developed Ore:

Assumption:- 15 cu. ft. equals one ton.
10% deduction for rock.
All ore is Tilden Silica grade.

	Tons	Rock	Net Tons
Above Floor of Pit	355,000	35,000	320,000
15 Ft. Below Pit Floor	200,000	20,000	180,000
Total	555,000	55,000	500,000

b. Prospective Ore:

By going 15 feet deeper another 180,000 tons can be obtained, but this cannot be mined with present haulage equipment.

c. Estimated Analysis:

	Iron	Phos.	Silica	Alum.	Mang.	Lime	Mag.	Sul.	Igni.	Moist.
Dried 212°	40.50	.055	38.87	.64	.160	.620	.260	.008	1.43	
Natural	39.00	.053	37.43	.62	.154	.597	.250	.008	1.38	3.70

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5. LABOR AND WAGES:

a. Comments:

1. Labor:

There was no shortage of labor in 1926.

b. Comparative Statement of Wages and Product:

	1926	1925	INCREASE	DECREASE
PRODUCT	146,501	64,822	81,679	
No. Shifts & Hours	1-9 hr	1-9 hr		
AVG. NO. MEN WORKING:				
Surface	8	5	3	
Underground	5	16		11
Total	13	21		8
AVG. WAGES PER DAY:				
Surface	4.04	4.16		.12
Underground	5.19	4.81	.38	
Total	4.39	4.66		.27
WAGES PER MO. OF 25 DAYS:				
Surface	101.00	104.00		3.00
Underground	129.75	120.25	9.50	
Total	109.75	116.50		6.75
PRODUCT PER MAN PER DAY:				
Surface	117.81	92.16	25.65	
Underground	215.60	28.33	187.27	
Total	76.18	21.67	54.51	
LABOR COST PER TON:				
Surface	.034	.045		.011
Underground	.024	.170		.146
Total	.058	.215		.157
TOTAL NO. OF DAYS:				
Surface	1,243½	703¾	539¾	
Underground	679½	2,287½		1,608
Total	1,923	2,991¼		1,068¼
AMOUNT FOR LABOR:				
Surface	5,025.70	2,927.21	2,098.49	
Underground	3,524.20	11,004.21		7,480.01
Total	8,549.90	13,931.42		5,381.52

Mine produced from June 4th to November 6th, 1925.
Mine produced from June 1st to October 27th, 1926.

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6. SURFACE:

a. Buildings and Repairs:

Two shelters, built of old square timbers were erected at opposite ends of the pit to protect the men from blasting.

b. Air-Compressor:

Most of the brass-tubes in the intercooler on the air-compressor were replaced in June.

c. Drill-Sharpener:

A drill-sharpener and forge were built at the Cliffs Shaft Mine for sharpening churn-drill bits, and a portable shanty was set up to protect them. This equipment was erected on the hill-side above the pit.

7. OPEN PIT OPERATIONS:

a. Stripping:

At the beginning of the season a small area at the south end of the pit had been partly stripped and stripping had been completed for a length of 120 feet and a width of 20 feet along the edge of the face at the north end. This strip was completed along the face and the partly stripped area was cleaned up and washed before blasting.

In order to remove the overburden above the high face in the middle section of the pit a track was laid along the hillside, and the earth was loaded by the Erie shovel into 1½ yard cars drawn by a small storage-battery locomotive, borrowed from the Cliffs Shaft Mine. This stripping was dumped at the south end of the hill where the ore is shallow and the overburden relatively deep. The ore below this track at the south end of the pit was stripped with a scraper and electric hoist. This work was started in June.

In May the electric shovel made a cut for 220 feet, following the edge of the ledge north-west from the end of the pit, and overcasting the earth on the north-east side. 6,250 yards were moved in this way. Late in June 1,605 yards more at the south end of the pit were loaded by the big shovel into cars for the L. S. &. I. Ry. to be used in the fill at the Empire Mine.

In August, September and October and in part of November two scraper outfits were used intermittently at the north end of the pit for stripping the hillside, where it was too steep for the Erie shovel to work. Much of this dirt that was dragged down the hill will have to be overcast by the big shovel next spring.

At the end of the season 6,535 sq. yds. of stripping had been done ahead of production, uncovering 196,000 tons of ore above the elevation of the quarry floor. 5,700 sq. yds. of stripping remain to be done.

The cost of stripping per cu. yd. is high on account of the rough nature of the ground and the shallow depth. Having to strip the mine ore at the same time has also added to the cost. The following statement gives the results obtained during the year.

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7. OPEN PIT
OPERATIONS: (Continued)
a. Stripping: (Continued)

STRIPPING STATEMENT.

	1926	1925	Total
Cubic Yards Stripped	15,308	7,553	22,861
Captain	$ 786.13	$ 82.50	$ 868.63
Labor At Mine	8,954.74	5,277.86	14,232.60
Supplies At Mine	3,308.03	1,984.14	5,292.17
Personal Injury Expense		21.40	21.40
Local General Welfare, Labor	21.59	8.34	29.93
Local General Welfare, Supplies	12.57	11.23	23.80
Contingent Expense	126.46	240.78	367.24
Central Office - Labor	582.26	328.26	910.52
Central Office - Supplies	326.52	186.75	513.27
Engineering	373.25		373.25
Clerk	437.12		437.12
Superintendent	201.01		201.01
Total	15,129.68	8,141.26	23,270.94
Charged To Production	7,325.05	1,101.98	8,427.03
Balance	$ 7,804.63	$ 7,039.28	$ 14,843.91
Tons Of Ore Stripped Above Pit Floor	294,000	113,000	407,000
Cost Per Cubic Yard	$ .988	$ 1.078	$ 1.018
Cost Per Ton Of Ore Stripped	.051	.072	.057

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f. Drilling, Blasting & Explosives:

Two Cyclone drills using 5-5/8" diameter bits were used for drilling holes for primary blasting throughout the season. At the beginning of the season there were ten holes drilled and ready to blast, left over from 1925, and drilling was started again in the middle of May. By the first of June, when loading started, eleven more holes had been drilled. One drill was put on double-shift on June 14th and the other one on August 30th. This drill went back to single shift after fifteen days, and the other one on October 1st. Drilling was continued through November, after loading was finished, but the weather was so bad that only sixteen shifts were worked in that month. Seventeen holes are finished and ready to blast, and two more have been started. All drilling was stopped on November 27th.

The following table shows the progress made:-

Blast-Hole Drilling:

	Holes			Feet		
Month	Drilled	Lost	Net	Drilled	Lost	Net
May	11	0	11	559	0	559
June	18	1	17	820	47	773
July	19	2	17	892	86	806
August	18	1	17	1,095	7	1,088
September	18	2	16	1,053	52	1,001
October	8	2	6	484	64	420
November	4	0	4	302	0	302
Year	96	8	88	5,205	256	4,949

A drill-sharpener was built and an oil-forge set up in June, and a slight change was made in the design of the bits, which resulted in faster drilling and fewer lost holes.

Cost of Drilling:

4,949 Feet of Holes (Not Including Lost Holes)

Operating	Labor	Supplies	Total	Per Foot
Drilling	$ 4475.23	$ 1101.90	$ 5577.13	$ 1.127
Building Roads	525.13		525.13	.106
Sharpening Bits	1212.51	452.79	1665.30	.336
Laying Pipe Line	40.95		40.95	.008
Drill-Bits		316.73	316.73	.064
Rope		828.63	828.63	.168
Power		222.60	222.60	.045
Jars		180.73	180.73	.036
Total	$ 6253.82	$ 3103.38	$ 9357.20	$ 1.890
Maintenance				
Drills		$ 677.83	$ 677.83	$ .137
Sharpener		207.70	207.70	.042
Total		$ 885.53	$ 885.53	$ .179
Total Maintenance and Operating	$ 6253.82	$ 3988.91	$ 10242.73	$ 2.069
Cost For Labor				$ 1.263

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At the beginning of the season there were ten holes with a total depth of 625 feet ready to blast, and at the end of the season there were seventeen holes completed and two partly completed with a total depth of 1,123 feet. By making allowance for ore already broken and ore broken by small drill-holes and "coyote" shots, the production for 1926 averaged 28 tons per foot of hole for the Cyclone drills. On the same basis the drilling now ready will therefore break over 30,000 tons.

The following large blasts were put off during the season.

1. On May 31st five blast-holes and four small holes were blasted at the south end of the pit, breaking approximately 5,000 tons of ore.

2. On June 22nd eighteen blast-holes in one section 250 feet long and 60 feet high in the middle of the quarry-face were blasted, breaking over 30,000 tons.

3. On July 31st five blast-holes were shot, breaking about 7,000 tons.

4. On August 1st twenty-nine blast-holes were shot at the south end of the pit, breaking over 40,000 tons.

5. On September 9th sixteen blast-holes and a "coyote" shot equivalent to three holes were fired in the middle section, breaking about 45,000 tons of ore.

6. On September 22nd four large holes were blasted at the south end of the pit, breaking 5,000 tons.

This totals 132,000 tons. The rest of the ore was broken by small machines.

Cost Per Ton For Drilling & Blasting:

	Primary Blasting	Secondary Blasting	Total
Drilling	$ .074	$ .031	$ .105
Explosives	.041	.008	.049
Total	$ .115	$ .039	$ .154

Secondary blasting costs are high, because so many chunks have to be blasted to make them small enough to pass through the doors of the railroad cars. If the crusher were at the mine much of this expense would be eliminated.

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f. Drilling, Blasting and Explosives: (Continued)

Statement of Explosives Used:

Kind	Quantity	Average Price	Amount 1926
40% Extra Dynamite 1¼"	600	.1300	78.00
40% Gelatine 1¼"	400	.1300	52.00
60% " "	300	.1550	46.50
60% " 1½"	6,850	.1550	1,061.75
60% " 1½"	2,400	.1625	390.00
60% " 5"	28,050	.1550	4,347.75
80% " 5"	2,100	.1950	409.50
Total Powder 1926	40,700	.157	6,385.50
Fuse Cordeau-Dble. Countered	5,974		291.97
" " -Sgle. "	538		25.15
" " -Plain	2,103		89.38
Total Cordeau	8,615		406.50
Crescent Fuse	32,000		221.44
Connecting Wire	16 lbs.	.40.74	6.52
No. 6 Caps	7,000		74.53
No. 6 Electric Exploders	200	7.16	14.32
Cordeau Slitter	1	1.50	1.50
Total Fuse, etc. 1926			724.81
TOTAL ALL EXPLOSIVES			7,110.31

Product	146,501
Pounds of Powder per ton of Ore	.28
Cost per ton for Powder	.044
" " " " Fuse, Caps, etc.	.005
" " " " all Explosives	.049
Average Price per pound of Powder	.157

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8. COST OF OPERATING:

a. Comparative Mining Costs:

	1926	1925	Increase	Decrease
PRODUCT	146,501	64,822	81,679	
Pit Operating Cost	.383	.581		.198
Pit General Costs	.014	.036		.022
Total Producing Cost	.397	.617		.220
Plant Account	.067	.018	.049	
Taxes	.030	.000	.030	
Central Office	.004	.022		.018
Contingent Expense	.005	.008		.003
Stripping	.050	.017	.033	
Cost Adjustment	.008	.011		.003
Total Cost on Cars	.561	.693		.132
Misc. Debits & Credits		-.005	.005	
Grand Total Cost	.561	.688		.127
No. Days Operating	126	110	16	
No. Shifts and Hours	1 - 9	1 - 9		
Average Daily Product	1,163	589	574	
COST OF PRODUCTION:				
Labor	.115	.292		.177
Supplies	.282	.325		.043
Total	.397	.617		.220

Note:- Ogden Mine production started June 4th, 1925.

b. Detailed Cost Comparison:

(1) Days and Shifts:

The mine worked six days a week one nine-hour shift per day from June 1st to October 27th, 116 days, but from August 11th loading was done on night shift also with the exception of three days in September. In 1925 the mine worked 110 days with the same hours, but did not load at night regularly.

PIT OPERATING ACCOUNTS:

Drilling and Blasting:

1925	$ 12300.32	$ .190
1926	22629.30	.154
Increase	$ 10328.98	
Decrease		$ .036

The increase is due to larger tonnage in 1926.

Steam-Shovels, Operating:

1925	$ 6263.37	$ .097
1926	4774.12	.033
Decrease	$ 1489.25	$ .064

In 1926 the electric shovel used seven less men than the steam-shovel in 1925.

Steam-Shovels, Reprs. & Maintenance:

1925	$ 3557.68	$ .055
1926	459.87	.003
Decrease	$ 3097.81	$ .052

In 1925 $ 3000 was set up for steam-shovel overhaul at the end of the season.

Locomotive & Cars, Operating:

1925	$ 1658.68	$ .026
1926	1825.51	.013
Increase	$ 166.83	
Decrease		$ .013

In 1926 the locomotive worked double shift from Aug. 11th to Oct. 23rd.

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8. COST OF OPERATING: (Continued)

PIT OPERATING ACCOUNTS: (Continued)

Locomotive & Cars, Reprs. & Maint.			
1925	$	177.05	$ .002
1926		150.51	.001
Decrease	$	26.54	$ .001
Track Expense:			
1925	$	800.48	$ .012
1926		636.50	.004
Decrease	$	163.98	$ .008
Pumping and Drainage:			
1925	$	49.18	$ .001
1926		4.88	.000
Decrease	$	44.30	$ .001
Screening and Crushing:			
1925	$	10834.41	$ .167
1926		23716.49	.162
Increase	$	12882.08	
Decrease			$ .005
General Open Pit Expense:			
1925	$	1051.98	$ .016
1926		1271.70	.007
Increase	$	219.72	
Decrease			$ .009
Open Pit Superintendence:			
1925	$	971.00	$ .015
1926		599.87	.004
Decrease	$	371.13	$ .011

It was not necessary to move track as much in 1926 on account of the longer reach of the shovel.

The increase is due to larger production.

In 1926 the watchman's time after the mine closed was charged to this account. There was no watchman in 1925.

In 1926 part of the captain's time was charged to stripping. In 1925 it was all charged to this account.

PIT GENERAL ACCOUNTS:

Insurance:			
1925	$	29.95	$ .000
1926		57.06	.000
Increase	$	27.11	$ .000
Engineering:			
1925	$	962.67	$ .015
1926		401.58	.003
Decrease	$	561.09	$ .012
Analysis:			
1925	$	653.65	$ .010
1926		884.78	.006
Increase	$	231.13	
Decrease			$ .004
Personal Injury Expense:			
1925	$	219.00	$ .004
1926		137.27	.001
Decrease	$	81.73	$ .003

In 1926 part of the engineering expense was charged to stripping.

The increase is due to larger shipments in 1926.

In 1925 there were two accidents, and in 1926 one.

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8. COST OF OPERATING: (Continued)

PIT GENERAL ACCOUNTS: (Continued)

Safety Department Expense:

1925	$	$
1926	2.00	.000
Increase	$ 2.00	$ .000

Local General Welfare:

1925	$ 43.17	$ .001
1926	19.83	.000
Decrease	$ 23.34	$ .001

Mine Office:

1925	$ 396.99	$ .006
1926	599.03	.004
Increase	$ 202.04	
Decrease		$ .002

In 1926 a clerk was employed at the mine during the shipping season. In 1925 the clerical work was done at the Negaunee Mine office.

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9. EXPLORATION & FUTURE EXPLORATIONS:

In the North Half of the North-West Quarter of Section 26, T. 47 N., R. 27 W., a quarter of a mile south of the old Foster Mine, there is a hill with extensive outcrops of ore similar in character to that at the Ogden Mine. These outcrops have been sampled at various times, and about twenty five years ago a cross-cut tunnel was driven eighty feet into the hillside, and test-pits were sunk. From information available it seems highly probable that there is here a deposit of high silica ore containing between four and five million tons. Authorization has been given for an expenditure of $ 10,000 to test this ore-body by diamond-drilling, and work was started on December 1st. This is known as the Tilden Exploration and will be described in more detail in the report of the geologist.

13. NEW EQUIPMENT & PROPOSED EQUIPMENT:

a. Electric Shovel:

A new electric revolving shovel, size 80 B, mounted on caterpillar tread, was received from the Bucyrus Co. on March 25th, and was taken to the mine and erected. Erection proceeded slowly, and was held up two weeks on account of a burned out bearing, so that it was not completed until May 12th. The shovel did not develop enough power at first, and a great deal of delay was caused by hot bearings until nearly August 1st.

This shovel has a wide reach and requires no track to travel on. On this account only one pit-man is needed, it is safe to work very much higher benches than with a railroad type shovel. The bench in the middle part of the face is now seventy feet high, and has caused no trouble.

d. Sub-Station:

A new sub-station was necessary to supply current for the electric shovel. Three transformers of 75 K.W. capacity each were erected south of the engine-house in April, and on April 19th current was turned on.

e. Pump:

For water-supply and for washing off the ledge after it had been stripped, a 500 gal. centrifugal pump and motor, formerly used at the Angeline Mine, was set up in the pump-house and a pipe-line was laid along the west boundary line and above the upper limits of the pit, and a tank was erected at the top of the hill. This equipment could be used for washing only intermittently, because the wash-water might discolor the city water-supply in Lake Ogden.

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10. TAXES:

In 1925 only $28.32 in taxes were charged against the ore, but in 1926 taxes amounted to $4,395.40, or $.030 per ton. Supplies and equipment were assessed at $54,000, and the realty on Lot 5, where the pit is located was raised from $150 to $40,000. The taxes are collected in Tilden Township.

Statement of Taxes:

	1926		1925	
	Valuation	Taxes	Valuation	Taxes
Supplies & Equipment	$ 54,000.00	2,488.15	$ -	-
Lot 3-Sec. 13,47-27	150.00	6.91	150.00	7.01
Part of Lot 4-Sec. 13,47-27	100.00	4.61	100.00	4.67
Lot 5-Sec. 13,47-27	40,000.00	1,843.00	150.00	7.01
SE¼ of SW¼ Sec.13,47-27	200.00	9.21	200.00	9.35
Total	94,450.00	4,351.88	600.00	28.04
Collection Fees		43.52		.28
TOTAL	$	4,395.40	$	28.32

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18. NATIONALITY OF EMPLOYES:

The following report is based on the month of October, and covers all men employed at the mine on both deferred and operating accounts. All are United States citizens, and the report shows nationality at birth.

American	22
English	3
Scandinavian	3
Finnish	5
French Canadian	3
German	1
Total	37

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1. GENERAL:

The mine operated throughout the year on a five day per week schedule the same as in 1925. There were a number of holidays when the mine was idle, but the men were permitted to work the following Saturday so that there was practically no lost time throughout the year. Stoping was continued on the north foot wall and along the Maas boundary between the ninth and tenth levels. The rest of the mining was in the main ore body south of #1 and #2 dikes between the ninth and tenth levels, and north of #2 dike between tenth and eleventh levels. The development of the twelfth level progressed satisfactorily throughout the year. Here on account of the pitch of the ore, most of the work has been in rock and considerable raising from the twelfth to the eleventh levels will also be in rock.

The water situation was satisfactory, the gallons pumped per minute increased during the year due principally to a greater precipitation. The grade of the ore was up to guarantee, and toward the end of the year an increased percentage of Bessemer was mined. It is expected that the portion of Bessemer from now on will be somewhat larger than it has been for the past several years.

The labor conditions were satisfactory. At no time was there a shortage of men.

The mine is in excellent condition and the product could be increased almost immediately if desired.

2. PRODUCTION, SHIPMENTS& INVENTORIES:

a. Production by Grades:

Negaunee Bessemer Ore	46,362 tons
Negaunee Ore	316,880 "
Total Ore	363,242 "
Rock	14,956 "

The product for the year was 12,997 tons more than the year 1925, although in 1925 from July 1st to October 15th the Negaunee force was increased by a large number of men from the Maas Mine while the Maas shaft was being remodeled. The increase in 1926 was due principally to the installation of more mechanical loading devices.

b. Shipments:

Grade of Ore	Pocket Tons	Stockpile Tons	Total Tons	Total Last Year
Negaunee Bess.	3,413	15,370	18,783	28,530
Negaunee	163,943	195,971	359,914	361,709
Total	167,356	211,341	378,697	390,239
Total Last Year	182,326	207,913	390,239	
Decrease			11,542	

The total shipments for the year was slightly more than the tonnage mined.

c. Stockpile Inventories:

The ore by grades in stock December 31, 1926, was as follows:

Negaunee Bessemer	34,027 tons
Negaunee	65,052 "
Total	99,079 "

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2. PRODUCTION, SHIPMENTS & INVENTORIES:

c. Stockpile Inventories:(Cont.)

On December 31, 1925, there were 6,448 tons of Bessemer. The increase in Bessemer in stock is due to very little Bessemer being shipped during the past season and to an increase in our Bessemer production. The Negaunee ore in stock December 31, 1925, was 108,086 tons, showing that this stockpile was reduced practically 43,000 tons during the year.

d. Division of Product by Levels:

The ore hoisted from the various levels was as follows:

Tenth Level	141,776 tons
Eleventh Level	214,571 "
Twelfth Level	6,895 "
Total	363,242 "

e. Production by Months:

The production by months is as follows:

Month	Bessemer	Negaunee	Total	Rock
January	2,160	25,595	27,755	756
February	3,272	23,965	27,237	1,036
March	4,180	26,915	31,095	924
April	2,764	27,095	29,859	728
May	2,808	26,407	29,215	796
June	4,728	25,683	30,411	1,252
July	4,831	25,702	30,533	932
August	5,536	26,432	31,968	824
September	5,057	26,826	31,883	1,484
October	4,816	26,813	31,629	1,204
November	4,228	25,703	29,931	1,388
December	4,112	27,614	31,726	1,060
Total	48,492	314,750	363,242	12,384
Transferred from	2,130 to	2,130		
	46,362	316,880	363,242	12,384

The production was distributed as follows:

Negaunee Bessemer	46,362 tons
Negaunee Ore	310,572 "
D. S. S. & A. Right of Way	6,308 "
Total	363,242 "

f. Ore Statement:

	Negaunee Bessemer	Negaunee	Total	Total Last Year
On Hand Jan. 1, 1926	6,448	108,086	114,534	154,527
Output for Year	48,492	314,750	363,242	350,260
Transferred	2,130	2,130	-	-
Total	52,810	424,966	477,776	504,773
Shipments	18,783	359,914	378,697	390,239
Balance on Hand	34,027	65,052	99,079	114,534
Increase in Output			12,982	
Decrease in Ore on Hand			15,455	

1926 - 1-8 Hour Shift, 5 days per week, Jan. 1st to Dec. 31st, 1926.

1925 - 1-8 Hour Shift, 5 days per week, Jan. 1st to Dec. 31st, 1925.

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2. PRODUCTION, SHIPMENTS & INVENTORIES:

g. Delays:

There were no serious delays during the past year; minor delays follow:

February 10th, 1/3 hour delay due to butterfly freezing.
February 10th, ½ hour due to changing and repairing skip.
March 16th, 2 hours delay due to replacing two broken dump stringers.
March 20th, ½ hour delay due to replacing burned coil on skip armature.
September 2nd, ½ hour delay due to hoist getting hot.
September 13th, ½ hour delay due to sticky dirt in 11th level measuring pocket.
September 17th, Slow hoist, due to Nordberg compressor being out of order.
December 15th, Slow hoist, due to freezing at butterfly.
December 21st, 1 hour delay due to broken skip stringers in shaft house.
December 22nd, 1 hour delay, due to broken skip stringers in shaft house.

h. Delays from Lack of Current:

There were no serious electrical delays during the past year.
March 20th, ½ hour delay due to no power.
July 9th, Slow hoist for four hours due to poor current, which was on and off four times.

3. ANALYSIS:

a. Average Mine Analysis on Output:

Grade	Iron	Phos.	Silica
Negaunee Bess.	62.23	.048	5.37
Negaunee	60.61	.095	6.88

b. Average Analysis on Straight Cargoes:

	Mine			Lake Erie		
Grade	Iron	Phos.	Moist.	Iron	Phos.	Moist.
Negaunee Bess.	62.60	.046	-	61.90	.044	-
Negaunee	60.05	.095	-	60.14	-	10.98

c. High Sulphur Ore:

There was no high sulphur ore encountered during the year.

4. ESTIMATE OF ORE RESERVES:

a. Developed Ore:

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

Percentage of Bessemer equals 11.

Above 9th Level:

No. 1 Shaft Pillar	1,148,681	tons
No. 2 Shaft Pillar	113,906	"
Total above 9th Level	1,262,587	"
Between 9th and 10th Levels	703,013	"
Between 10th and 11th Levels	2,012,175	"
Between 11th and 12th levels	1,474,706	" (Twelfth level is only partially developed)
Total above 12th Level	5,452,481	tons.

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4. ESTIMATE OF ORE RESERVES:

a. Developed Ore:(Cont.)

This estimate, together with the estimated analysis shown under section "c", is the estimate which will be presented to the Tax Commission. There is much more ore between the 11th and 12th levels than shown in this report. This will be shown next year when the 12th level is completely developed. To arrive at the estimate shown between the 11th and 12th levels in the above statement, we have taken the average area developed on each level and multiplied by 100', which is the distance between the levels, to get the cubical contents. We do not include in the estimate to the Tax Commission any ore which lies below the 12th level.

b. Prospective Ore:

This we have not estimated for our Tax Commission report, which exists between the 11th and 12th levels and below the 12th level. The total ore shown by cross section in the mine as of December 31, 1926, is 8,047,227 tons. If from this is deducted the ore shown above in our report to the Tax Commission of 5,452,481 tons, it leaves a balance of 2,594,746 tons as prospective ore.

c. Estimated Analysis:

Ore Reserves: Approximate Natural Analyses.

	Iron	Phos.	Silica	Mang.	Alum.	Lime	Mag.	Sul.	Igni.	Moist.
Bessemer	52.80	.042	6.20	.209	2.39	.567	.270	.008	1.82	12.00
Negaunee	52.00	.088	6.78	.285	2.32	.792	.269	.008	2.73	12.00

Ore in Stock: Average Natural Analyses.

	Iron	Phos.	Silica	Mang.	Alum.	Lime	Mag.	Sul.	Igni.	Moist.
Bessemer	54.88	.042	5.22	.220	2.23	.560	.250	.007	.81	11.75
Negaunee	52.88	.083	6.49	.194	2.46	.830	.350	.010	2.05	11.75

5. LABOR AND WAGES:

a. Comments:

(1) Labor:

The labor conditions at the mine throughout the year were very satisfactory. At no time was there a shortage of men. The district was practically free from labor agitators.

(2) New Construction:

The only new construction at the mine during the year was the installation of a new spray pond in the office yard. This is described under the heading 6-d.

b. Comparative Statement of Wages & Product:

	1926	1925	INCREASE	DECREASE
PRODUCT	363,242	350,245	12,997	
No. Shifts and Hours	1-8	1-8		
AVERAGE NO. OF MEN WORKING:				
Surface	38	39		1
Underground	186	202		16
Total	224	241		17
AVERAGE WAGES PER DAY:				
Surface	4.34	4.35	.10	.01
Underground	5.23	5.13		
Total	5.07	4.99	.08	

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5. LABOR AND WAGES:

b. Comparative Statement of Wages & Product:(Cont.)

	1926	1925	INCREASE	DECREASE
WAGES PER MO. OF 25 DAYS:				
Surface	108.70	108.75		.05
Underground	130.75	128.25	2.50	
Total	126.75	124.75	2.00	
PRODUCT PER MAN PER DAY:				
Surface	31.79	29.98	1.81	
Underground	7.33	6.52	.81	
Total	5.95	5.36	.59	
LABOR COST PER TON:				
Surface	.137	.144		.007
Underground	.714	.787		.073
Total	.851	.931		.080
TONS PER MAN PER DAY (Stoping & Ore Dev.)	16.03	12.82	3.21	
AVG. WAGES CONTRACT MINERS	5.63	5.33	.30	
" " " LABOR	5.63	5.33	.30	
TOTAL NO. OF DAYS:				
Surface	11,425	11,682		257
Underground	49,580	53,682		4,102
Total	61,005	65,364		4,359
AMOUNT FOR LABOR:				
Surface	49,605.99	50,448.86		842.87
Underground	259,491.57	275,527.95		2,036.38
Total	309,097.56	325,976.81		2,879.25

Proportion of Surface to Underground Men:

1926 - 1 to 4.89	1-8 hour shift five days per week.
1925 - 1 to 5.18	1-8 hour shift five days per week.
1924 - 1 to 4.33	Jan. 1st to Aug. 1st, 1-8 hr. shift 6 days per week.
	Aug. 1st to Dec. 1st, 1-8 hr. shift 4 days per week.
	Dec. 1st to Dec. 31st, 1-8 hr. shift 5 days per week.
1923 - 1 to 4.35	1-8 hour shift six days per week.
1922 - 1 to 5.11	Jan. 1st to June 5th, 1-4 hr. shift 6 days per week.
	June 5th to Dec. 31st, 1-8 hr. shift 6 days per week.
1921 - 1 to 4.70	Jan. 1st to Mar. 26th, 1-8 hr. shift 6 days per week.
	Mar. 26th to May 17th, 1-8 hr. shift 5 days per week.
	May 17th to Dec. 31st, 1-4 hr. shift 6 days per week.

6. SURFACE:

a. Buildings, Repairs:

The cost for repairs during the year was nominal. During the coming season, however, the outside woodwork on all the buildings should be re-painted.

The concrete steps leading from the engine house down to the track level were re-surfaced this summer.

b. Stockpiles:

It was necessary to extend the east stocking trestle eight wood bents to accommodate the Bessemer ore for the coming stocking season. If the Negaunee ore had all been removed from the east end of the east trestle, this wood trestle would have been unnecessary.

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6. SURFACE:

d. Cooling Pond:

The circulating water for the compressors has been cooled by means of a tower which was erected south of the change house. We have had considerable trouble due to leakage in the concrete base of this tower, and during the past summer the whole super-structure started to give way, so that it was necessary either to re-build or to provide a spray or cooling pond. It was decided to replace the old tower by a pond 30 feet in diameter by two feet deep, made of concrete. This work was started in September and finished in October, at a cost of $677.48. It is located in the center of the quadrangle midway between the office and the engine house, and has a fountain effect which makes it an attractive addition to the grounds.

7. UNDERGROUND:

a. Shaft Sinking:

There was no sinking done at the Negaunee shaft during the year 1926.

b. Development:

The development during the year was practically all in raising from the eleventh level and in opening the twelfth level.

Eleventh Level:

Work on this level, in addition to raising, was general repairing. In #7 crosscut seven raises were put up to the 460' sub level, a distance of 54', with ore the entire distance in all the raises. These raises were as follows: No.'s, 239, 239A, 240A, 241A, 242A, 244A, and 245A. They were all of single compartment with the exception of #239A and #241A.

In the main north-south Winze drift four raises were put up to the tenth level, two of which were later pushed up to the 545' sub level. They are as follows:

Raise #190, material 0' to 70' Jasper, and 70' to 149' ore.
Raise #192, material 0' to 40' Jasper, and 40' to 149' ore.
Raise #194, material 0' to 112' ore.
Raise #196, material 0' to 98' ore, and 98' to 114' Jasper.

Considerable re-timbering was done on this level throughout the year, particularly in #7 and #8 crosscuts, and in the connecting drift through the American Mining Company Pillar to the Maas Mine. In December, one gang started raising at #189 raise, located in #2 dike just north of the vertical Winze.

Twelfth Level:

Development on this level started in 1916, when a drift was started from the Winze toward #3 Shaft. Nothing further was done except at the shaft site until November, 1925, when the development for actual mining started.

In November of last year, #4 crosscut had been started to the northwest, and a foot wall drift to the northeast, both of which were in ore.

In December, 1925, #4 crosscut passed from ore into #1 dike, beyond which it turned to the northwest, and ore was again encountered, which extended to #2 dike, a distance of 80'. Beyond #2 dike for 35' was Jasper, then ore again, which continued to within 50' of the Maas boundary, where the drift ran into a roll of Jasper from the hanging. The drift was continued around a curve to the right, to parallel the Maas boundary, and struck ore 60' beyond the point of tangency, after passing through 75' of Jasper.

At a point 65' northwest of #2 dike, #3 crosscut was turned off to the left from #4 crosscut to drift to the southwest. This drift advanced 50' in ore, and was stopped temporarily.

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7. UNDERGROUND:

b. Development:(Cont.)

The main foot wall drift encountered #1 dike about the first of the year. After passing through this, the material was Jasper until #2 dike was cut, and has been Jasper from this dike to the present breast. This foot wall drift was turned to the northwest, and became #8 crosscut, which is now being driven parallel to #4 crosscut at an interval of 600' between the two, leaving space for #5, #6, and #7 crosscuts to be driven at 150' intervals. The breast of #8 crosscut is now 280' from the Maas boundary. This drift will be continued to the Maas, to be used as a second outlet.

#5 crosscut was started from the foot wall drift in October, at a point 25' northeast of #1 dike. It has advanced 110', passing through #2 dike into Jasper, which lately has turned to lean ore. The breast is running over 50% in iron.

#6 crosscut was cut out of the foot wall drift in March at #2 dike. It was advanced 25' and stopped.

In #8 crosscut, two raises, #1282 and #1284 have been cut out, but no raising has been done.

In December the work on this level was confined to #5 and #8 crosscuts; the former is driving to the northwest in lean ore, and the latter is driving to the northwest in Jasper.

c. Stoping:

The stoping for the year 1926 was confined to the area between the 9th and 12th levels.

In the territory between the 9th and 10th levels, mining was continued from two areas. First, along the north foot wall near the Maas boundary in the 588' and 565' sub levels. Second, on the south foot wall on the 555' and 545' sub levels, both of which are south of #2 dike. In this latter territory the workings are now approaching the 10th level, and raises have been put up from the 11th level, through which most of this ore will be taken. The mining between the 10th and 11th levels was in the center of the ore deposit between #2 dike and the hanging Jasper.

On the 11th and 12th levels, there was no stoping, the work here being entirely of a development nature. The mining during the year in detail is as follows:

Subs between ninth and tenth levels:

588' Sub Level:

North Foot:

This sub level near the Maas boundary was started in the fall of 1924 and was worked continuously until September of this year, when it was completed.

565' Sub Level:

North Foot:

This sub level was opened in March of this year at #59 and #60 raises.

In December there were eight contracts employed in this territory, five to the south of #4 dike, and three to the north near the foot wall, all stoping.

South Foot:

During January and February the pillars remaining between #127 and #157 raises were removed, this sub level being completed in February.

555' Sub Level:

South Foot:

This sub level was opened late in 1924, and worked until May of this year, when it was completed.

545' Sub Level:

South Foot:

This was opened late in 1925 and work has been in progress throughout the year. In December, eight contracts were stoping north of #1 dike, and five

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7. UNDERGROUND:

c. Stoping:(Cont.)

to the south of this dike along the foot wall.

530' Sub Level:

South Foot:

This sub level was opened at #161A raise in November of this year. In December one contract was employed driving a development drift to the southwest in the direction of #129 raise.

Tenth Level:

Raises #190, #192, #194, #196 from the eleventh level holed through to the Winze or North-South crosscut. Up to this time the ore on the south foot has been handled through tenth level raises from the crosscut east of the Winze. The mining is getting so close to this level that the old raises will soon have to be abandoned, at which time the ore will be handled through the new raises mentioned above, to the eleventh level.

Subs between tenth and eleventh levels:

475' Sub Level:

This sub level north of #2 dike was opened in 1923 and completed in October of this year. This is the main ore body of the mine.

460' Sub Level:

This large sub level north of #2 dike was opened under the hanging at the southwest end in 1924. Work is still in progress.

In December, four contracts were stoping in the territory tributary to #10 crosscut, eleventh level, while in the territory above #6 and #8 crosscuts were ten contracts.

450' Sub Level:

This sub level was started under the hanging in 1924, was discontinued in 1925, but worked throughout the present year.

In December, two contracts were developing in the territory above #6 crosscut, eleventh level.

Above #5 crosscut one contract is stoping.

Above #3 crosscut one contract is stoping.

440' Sub Level:

This sub level was opened under the hanging in 1924, after which the work was discontinued. Operations started again in June of this year, and work is still in progress.

In December, two contracts were stoping above #4A crosscut.

d. **Timbering:**

In the timber statement which follows, it will be noticed that a considerable quantity of treated timber was used during the year. Practically all of this was on the 12th level, where the main level drifts will have to remain open a number of years.

Statement of Timber Used:

	LINEAL FEET	AVG. PRICE PER FOOT	AMOUNT 1926	AMOUNT 1925
6" to 8" Crib. Timber	74,212	.0400	2,966.77	2,380.60
8" to 10" Stull Timber	71,866	.0615	4,419.44	5,290.81
10" to 12" " "	52,960	.0898	4,756.01	4,174.90
12" to 14" " "	15,996	.1251	2,001.65	2,450.21
Athens Treated "	5,399	.3124	1,686.67	
Total Timber - 1926	220,433	.0713	15,830.54	
Total Timber - 1925	196,695	.0727		14,296.52

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7. UNDERGROUND:

d. Statement of Timber Used:(Cont.)

	LINEAL FEET	PER FOOT AVG. PRICE	AMOUNT 1926	AMOUNT 1925
7' Lagging	1,023,800	.749 C	7,666.40	7,996.47
Poles, 9½'	649,841	1.157 C	7,519.72	6,046.44
Covering Boards 1" Sq.Ft.	31,200	18.04 M ft.	562.70	1,232.72
Total - 1926			15,748.82	
Total - 1925				15,275.63
Grand Total - 1926			31,579.36	
Grand Total - 1925				29,572.15
Product			363,242	350,246
Feet of Timber per ton of ore			.6068	.5616
Feet of Lagging per ton of ore			2.8185	3.0055
Feet of Lagging per foot of timber			4.6445	5.3520
Cost per ton for Timber			.0436	.0408
" " Lagging			.0211	.0228
" " Poles			.0207	.0173
" " Covering boards			.0034	.0035
" " tbr., lagging, poles & cover boards			.0868	.0844
Equivalent of stull timber to board measure			408,663	347,667
Feet of board measure per ton of ore			# 1.125	.993

Due to twelfth level development, more large timber was used, part of which was treated.

Total cost for timber, poles and cover boards, and lagging, and cost per ton:

1926	$31,579.36	$.0868
1925	29,572.15	.0844
1924	25,226.86	.0781
1923	32,507.41	.0851
1922	24,766.16	.0828
1921	27,285.61	.1063
1920	37,934.19	.0666
1919	35,620.73	.0715
1918	21,403.96	.0415
1917	22,137.51	.0407
1916	21,510.67	.04

e. Drifting and Raising:

As mentioned under "Development", these items were considerable during the past year. In opening the twelfth level, most of the drifting was in rock. This is of a such a nature that in a number of places it will be necessary to timber. Most of the twelfth level crosscuts drifting during the coming year will be in rock. The raising has been mentioned in detail under "Development". Most of this has been in ore, but during the coming year the raising from the twelfth level will be principally in rock. The following is a statement of the drifting and raising for the years 1926 and 1925:

YEAR	ORE DRIFTING	ORE RAISING	ROCK DRIFTING	ROCK RAISING
1925	109 ft.	300 ft.	524 ft.	25 ft.
1926	564 ft.	964 ft.	1357 ft.	57 ft.
Incr.	455 ft.	664 ft.	833 ft.	32 ft.

It will be noted in each case that the totals for the past year were in excess of the previous year.

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7. UNDERGROUND:

f. Explosives, Drilling and Blasting:

The ore formation at the Negaunee Mine northwest of #2 dike has been getting slightly harder to break the last few years. As the largest part of our product comes from this territory, it has slightly increased the pounds of powder per ton of ore. The hardness of the formation between #2 dike and the foot wall is about the same as it has been for the past several years.

The cost per ton for powder in 1925 and 1926 is practically the same.

Statement of Explosives Used:

	Quantity	Average Price	1926 Amount	1925 Amount
40% Powder	300	.1300	39.00	156.50
50% "	111,170	.1443	16,038.87	14,552.00
60% "	36,900	.1567	5,782.26	6,470.39
Total Powder - 1926	148,370	.1473	21,860.13	
Total Powder - 1925	133,650	.1583		21,178.89
Fuse	393,900	.6401 C	2,521.21	2,400.30
Blasting Caps #6	68,700	1.0315 C	708.67	751.40
Cap Crimpers	17	.667 ea.	11.33	41.65
Tamping Bags	15,300	2.16 M	33.09	59.12
Connecting Wire	18#	.377 lb.	6.79	3.27
Electric Exploders	76	.043	3.27	2.04
Leading Wire				4.21
Total Fuse, etc., 1926			3,284.36	
Total Fuse, etc., 1925				3,261.99
Total All Explosives - 1926			25,144.49	
Total All Explosives - 1925				24,440.88
Product			363,242	350,246
Pounds of Powder per ton of ore			.4085	.3816
Cost per ton for Powder			.0602	.0605
" " Fuse, Caps, etc.			.0090	.0093
" " All Explosives			.0692	.0698
Average price per lb. for Powder			.1473	.1585

g. Mining and Loading:

The mining throughout the year was all by the slicing method, as has been employed here for the last several years. Considerably more loading has been done by mechanical means. The mine is now equipped with twenty-one double drum hoists which are used with slushers where the ore is dragged from the breast to the chute. We also have ten Mayne Loaders, nine of which are used in the contracts, and one on the main level. This latter loader was built to accommodate a main level four ton car. Two-thirds of our product is now mined by means of mechanical loading devices. The following is a statement showing the ore loaded by the various means, together with the tons per man per day by each method:

Comparison of Scrapers, Mayne Loaders, and Hand Shoveling for year 1926:

	Men-Days	Product	Tons per man	%	Inc. over hand shov.
Hand Shoveling	10,667	118,700	11.12	33%	-
Mayne Loaders	4,236	80,510	19.00	22%	71%
Tugger Hoists & Scrapers	7,761	164,032	21.13	45%	90%
Total	22,664	363,242			
Average for all			16.03		

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7. UNDERGROUND:

g. Mining and Loading:(Cont.)

It will be noted that the mechanical loaders have increased the average tons per man per day about 50% over the average of hand shoveling.

h. Incline Slicing:

This method of mining was used for a couple of years with satisfactory results. However, it was somewhat more hazardous than ordinary mining and only our very best miners could be employed at it. During the past year we have practically done away with it.

i. Ventilation:

The ventilating plant located at the collar of #2 Shaft has worked satisfactorily during the year. During the winter of 1924-1925, when this was installed, we had a great deal of trouble with ice forming in the downcast due to the water in the shaft. This ice nearly filled the air compartment and retarded the air current. Last winter we found that by reversing the fan every day or so and making this shaft an upcast, very little ice was formed. We are doing the same this year.

The primary air course from the Negaunee to the Maas is located in the American Mining Company strip just above the 11th level. There was considerable weight on this section of the mine, so that this drift required continual re-timbering. During the coming year we expect to connect the 12th level, Negaunee Mine, through to the third level, Maas Mine.

j. Pumping:

The number of gallons pumped per minute in 1926 as compared with 1925 is shown by the following report:

Month	1926	1925
January	708	742
February	683	790
March	786	689
April	806	700
May	816	698
June	821	711
July	784	725
August	843	626
September	870	742
October	886	661
November	911	710
December	921	662
Total Average	817	705

This shows an increase of 112 gallons per minute during the year, and is probably due to the very wet season.

The average number of gallons pumped per minute over the past five years is as follows:

Year	Gals. per minute
1922	943 gals.
1923	927 "
1924	796 "
1925	705 "
1926	817 "

It is interesting to note that the water diminished gradually during the years 1922, 1923,,1924, and 1925, whereas last year it showed an increase over 1925.

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7. UNDERGROUND:(Cont)

k. Underground in General:

New scraper outfits were installed at the rate of one per month the past year, and we can probably use several more. These will be added as needed. The development of the 12th level will be continued and this level put in shape to receive the ore from the sub levels immediately above the 11th level when the weight on the eleventh level makes the cost for upkeep prohibitive. The efficiency in the mine is about as high as it has ever been, and as I have mentioned above, the product could be increased almost immediately if it were desired.

It will be necessary to install a pump station on the twelfth level near the shaft. This will be equipped with one of the 1000 gallon pumps from the eleventh level.

8. COST OF OPERATING:

a. Comparative Mining Costs:

	1926	1925	INCREASE	DECREASE
PRODUCT	363,242	350,246	12,996	
Underground Costs	1.154	1.240		.086
Surface Costs	.130	.132		.002
General Mine Accounts	.093	.101		.008
Cost of Production	1.377	1.473		.096
Original Cost	.088	.088		
Plant Account	.031	.031		
Depletion of Appreciated Value	.301	.300	.001	
Taxes	.543	.520	.023	
Central Office	.072	.076		.004
Contingent Expense	.009	.010		.001
Cost Adjustment	.006	.003	.003	
Cost on Stockpile	2.427	2.501		.074
Loading & Shipping	.019	.026		.007
Less Misc. Debits and Credits	.004	.004		
Total Cost on Cars	2.442	2.523		.081
No. of Days Operated	261	260	1	
No. Shifts & Hours	1-8 hr.	1-8 hr.		
Average Daily Product	1,392	1,347	45	
COST OF PRODUCTION:				
Labor	.864	.943		.079
Supplies	.513	.530		.017
Total	1.377	1.473		.096

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8. COST OF OPERATING:

b. Detailed Cost Comparison:

(1) Days and Shifts:

During both the years 1926 and 1925 the mine operated on a five day a week schedule, Saturdays idle.

During 1926, the mine worked one eight-hour shift for 261 days, and the average number of men employed during the year was 224, for a total of 61,005 days. During 1925 the mine worked one eight-hour shift for 184 days and two eight-hour shifts for 76 days. The total days operating in 1925 was 260 days. The average number of men employed during the year was 241 men, for a total of 65,364 days. From July 1st to October 15th, 90 Maas miners were employed, while the Maas Mine was shut down for remodelling the shaft. During this period a small force worked night shift.

(2) Wages:

Both years the mine operated on the same wage schedule.

(3) Comparison of Production:

Production of 1926,	363,242	tons
Production of 1925,	350,246	"
Increase	12,996	"

Tons of Ore Mined per man per day:

	1926	1925	INCREASE	DECREASE
Surface	31.79	29.98	1.81	-
Underground	7.33	6.52	.81	-
Total	5.95	5.36	.59	

Increase is due to more efficient operation underground.

(4) Comparison of Number of Men and Wages:

	No. Men	No. Days	Amount	Rate per day
1926	224	61,005	$309,097.56	$5.07
1925	241	65,364	325,976.81	4.99
	17	4,359	16,879.25	.08
	Decrease	Decrease	Decrease	Increase

(5) Tons per man per day:

See #8-b-3.

(6) Cost of Production:

1926 -	$500,078.16	Cost per ton,	$1.377	
1925 -	515,805.99	" " "	1.473	
	15,727.83	" " "	.096	Decrease
	Decrease			

	Total Cost				Cost per ton		
	Labor	%	Supplies	%	Labor	Supplies	Total
1926 -	$313,650.33	62.7%	$186,427.83	37.3%	$.864	$.513	$1.377
1925 -	330,303.15	64.0%	185,502.84	36.0%	.943	.530	1.473
	16,652.82		924.99		.079	.017	.096
	Decrease		Increase		Decr.	Decr.	Decr.

(7) Detail of Accounts:

UNDERGROUND COSTS:

Shaft Sinking

1926 Amount ------- Cost per ton $.000

1925 $11,343.64 .032

This work was completed in 1925.

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Development in Rock

1926 Amount	$8,736.44	Cost per ton,	$.024
1925 Amount	3,154.62	" " "	.009
Increase	5,581.82		.015

	Total	Drifting	Raising
No. of ft. of rock work, 1926 -	1,414'	1,357'	57'
No. of ft. of rock work, 1925 -	549'	524'	25'
Increase	865'	833'	32'

Increase in the cost per ton is due to more rock work in 1926.

Development in Ore

1926 Amount	$7,707.26	Cost per ton,	$.024
1925 Amount	$2,149.46	" " "	.006
Increase	5,557.80		.018

	Total	Drifting	Raising
No. of ft. ore development, 1926 -	1,528'	564'	964'
No. of ft. ore development, 1925 -	409'	109'	300'
Increase	1,119'	455'	664'

Increase in the cost per ton is due to more ore development in 1926.

Stoping

1926 Amount	$169,556.31	Cost per ton,	$.467
1925 Amount	186,206.41	" " "	.532
Decrease	16,650.10		.065

Detail.

	Labor		Supplies	
1926 -	$129,142.15	76.2%	$40,414.16	23.8%
1925 -	152,238.44	81.8%	33,967.97	18.2%

	Cost per ton		
	Labor	Supplies	Total
1926	$.356	$.111	$.467
1925	.435	.097	.532
Decrease	.079	Incr. .014	Decr. .065

Explosives.

	1926	1925
Total lbs. of powder	148,370	133,650
Average price per pound	.1473	.1583
Cost of Powder	$21,860.13	$21,178.89
Cost of Fuse, Caps, etc.	3,284.36	3,261.99
Cost of all explosives	25,144.49	24,440.88
Lbs. of powder per ton of ore	.4085	.3816
Cost per ton for powder	.0602	.0605
Cost per ton for fuse, caps, etc.	.0090	.0093
Cost per ton for All Explosives	.0692	.0698

Timbering

1926 Amount	$106,732.28	Cost per ton,	$.294
1925 Amount	104,068.56	" " "	.297
Increase	2,663.72	Decrease	.003

	1926	1925
Timber cost	15,830.54	14,296.52
Lagging, Poles & Cover Boards	15,748.82	15,275.63
Total	31,579.36	29,572.15

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Timbering (Cont.)

	1926	1925
Feet of timber per ton of ore	.6068	.5616
Feet of lagging " "	2.8185	3.0055
Cost per foot for timber	.0713	.0727
" " ton for "	.0436	.0408
Cost per ton for lagging	.0211	.0228
" " " poles	.0207	.0173
" " " cover boards	.0034	.0035
" " " timber, lagging, poles, and cover boards	.0868	.0844
Equivalent of stull timber to board measure	408,663	347,667
Feet of board measure per ton of ore -	1.125	.993

The increased cost per ton for supplies is due to twelfth level development. More large timber was used, part of which was treated. Also more poles were used.
The decrease in cost per ton is due to less labor to timber, and more product.

Tramming

1926 Amount	$29,964.47	Cost per ton,	$.083
1925 Amount	$29,135.01	" " "	.083
Increase	829.46		.000

Ventilation

1926 Amount	$1,863.46	Cost per ton,	$.005
1925 Amount	4,011.20	" " "	.012
Decrease	2,147.74		.007

This amount covered operating charges only in 1926, while in 1925 it covered equipment and operating.

Pumping

1926 Amount	$31,452.86	Cost per ton,	$.087
1925 Amount	30,842.08	" " "	.088
Increase	610.78	Decrease	.001

	1926	1925
Total gallons of water pumped	429,052,405	370,072,500
Gallons pumped per minute	817	704

There was an increase of 58,979,905 gallons of water pumped, and 113 gallons per minute.
The decrease in the cost per ton is due to an increase in production.

Compressor & Air Pipes

1926 Amount	$28,121.40	Cost per ton,	$.077
1925 Amount	28,432.73	" " "	.081
Decrease	311.33		.004

	Compressor	Air Pipes	
1926 -	22,571.18	5,550.22	
1925 -	23,920.45	4,512.28	
Decrease	1,349.27	1,037.94	Incr.

Total cu. ft. of air used in 1926 - 601,017,000 cu. ft.
" " " " " 1925 - 660,600,000 cu. ft.
Cubic feet per ton of ore in 1926 - 2,007 " "
" " " " " 1925 - 1,886 " "

The decrease is due tooperating day shift only in 1926,

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Compressor & Air Pipes (Cont.)

while in 1925, the mine was operated on a double shift for 3½ months.

Back Filling

1926 Amount,	$2,378.89	Cost per ton,	$.006
1925 Amount,	3,154.14	" " "	.009
Decrease	775.25		.003

Less filling in 1926.

Underground Superintendence

1926 Amount,	$13,089.84	Cost per ton,	$.036
1925 Amount,	13,154.34	" " "	.038
Decrease	64.50		.002

The decrease in the cost per ton is due to an increase in production.

Cave-In

1926 Amount,	$ 15.83	Cost per ton,	$.000
1925 Amount,	203.21	" " "	.000
Decrease	187.38		

Less repairs to fences at surface caves in 1926.

MAINTENANCE ACCOUNTS:

Compressors & Power Drills

1926 Amount,	$174.22	Cost per ton,	$.000
1925 Amount,	315.00	" " "	.001
Decrease	140.78		.001

The decrease in the cost per ton is due to less compressor repairs. No power drills were purchased in 1926.

Hand Tramming Equipment

1926 Amount,	$2,496.50	Cost per ton,	$.007
1925 Amount,	4,359.78	" " "	.012
Decrease	1,863.28		.005

	Cars	Tracks
1926 -	$666.43	$1,830.07
1925 -	2,406.79	1,952.99
Decrease	1,740.36	122.92

The decrease in the cost per ton here is due to replacing hand tramming equipment with tugger hoists and scraper equipment.

Electric Tram Equipment

1926 Amount,	$15,864.22	Cost per ton,	$.044
1925 Amount,	12,377.92	" " "	.035
Increase	3,486.30		.009

Sub Division.

	Gen. & Motor		Locomotives	Wiring	
1926 -	84.52		3,715.08	1,879.82	
1925 -	215.87		3,116.50	1,677.98	
Decrease	131.35	Incr.	598.58	201.84	Incr.

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Electric Tram Equipment
(Continued)

	M. L. Tracks	M. L. Cars
1926 -	5,191.73	4,993.07
1925 -	3,513.12	3,854.45
Increase	1,678.61	1,138.62

Generator and Motor: Decrease due to less repairs.
Locomotives: Increase due to more repairs to locomotives.
Wiring: Increase due to more wiring on twelfth level.
M. L. Tracks: Increase due to opening twelfth level.
M. L. Cars: Increase due to more repairs to motor cars.

Pumping Machinery

1926 Amount,	$ 936.34	Cost per ton,	$.003
1925 Amount,	1,578.03	" " "	.005
Decrease	641.69		.002

The decrease in the cost per ton is due to less pump repairs and an increased tonnage.

Total Underground Costs

1926 Amount,	$419,090.32	Cost per ton,	$1.154
1925 Amount,	434,486.13	" " "	1.240
Decrease	15,395.81		.086

SURFACE COSTS:

Hoisting

1926 Amount,	$20,826.60	Cost per ton,	$.057
1925 Amount,	20,552.40	" " "	.059
Increase	274.20	Decrease	.002

Electric Power 1926 - $14,409.60
Electric Power 1925 - 14,268.30

The decrease in the cost per ton is due to more tonnage in 1926.

Stocking Ore

1926 Amount,	$4,097.67	Cost per ton,	$.011
1925 Amount,	3,629.66	" " "	.010
Increase	468.01		.001

The increase in the cost per ton is due to erecting a portable Bessemer trestle in 1926.

Dry House

1926 Amount,	$7,877.56	Cost per ton,	$.022
1925 Amount,	7,273.54	" " "	.021
Increase	604.02		.001

Coal to Boiler House:	Tons	Cost
1926 -	1,229	$6,855.17
1925 -	1,100	6,312.29

Increase in the cost per ton is due to more coal used in the Boiler House, and repairs to Dry House steam pipes.

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General Surface Expense

1926 Amount,	$5,665.43	Cost per ton,	$.015
1925 Amount,	5,322.68	" " "	.015
Increase	342.75		.000

The general surface expense here has increased in proportion to tonnage.

MAINTENANCE ACCOUNTS:

Hoisting Equipment

1926 Amount,	$3,846.94	Cost per ton,	$.011
1925 Amount,	4,425.66	" " "	.013
Decrease	578.72		.002

	Sub Division.		
	Wire Ropes	Machinery Parts	Skips & Skip Roads
1926 -	417.63	950.26	$2,479.05
1925 -	$1,140.12	$1,442.58	1,842.96
Decrease	722.49	492.32	Incr.- 836.09

Wire Rope: One new rope put on south side in 1926, and one put on both north and south sides in 1925.
Machinery Parts: Less repairs in 1926.
Skips & Skip Roads: More repairs to skips and skip roads.

Shaft

1926 Amount,	$1,851.69	Cost per ton,	$.005
1925 Amount,	1,913.47	" " "	.005
Decrease	61.78		.000

There was little difference in shaft repairs in 1926 and 1925.

Top Tram Equipment

1926 Amount,	$1,677.24	Cost per ton,	$.005
1925 Amount,	1,579.62	" " "	.005
Increase	97.62		.000

	Sub Division.		
	General Repairs		Wire Rope
1926 -	$1,172.45		$504.79
1925 -	1,049.49		530.13
Increase	122.96	Decr.	25.34

General Repairs: Increase is due to more sheaves and rollers replaced in 1926.
Wire Rope: Put 4000' of 5/8" wire rope on south side tram in 1926, and in 1925, 5,150' of 5/8" wire rope was put on the north side tram.

Docks, Trestles & Pockets

1926 Amount,	$963.96	Cost per ton,	$.003
1925 Amount,	649.53	" " "	.002
Increase	314.43		.001

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Docks, Trestles & Pockets (Continued)

Increase is due to repairing a brace on the permanent trestle and preparing the stocking grounds under the portable Bessemer trestle.

Mine Buildings

1926 Amount,	$570.71	Cost per ton,	$.001
1925 Amount,	726.38	" " "	.002
Decrease	155.67		.001

The repairs to buildings in 1926 was general, except the repairs to the coal dock, which cost $258.24 in 1926, as compared to $18.04 in 1925.
The repairs to the Dry House building in 1926 was $23.75, and in 1925 was $400.67. This decrease was due to making a new floor on the east end of the Dry Building in 1925.

Total Surface Costs

1926 Amount,	$47,377.80	Cost per ton,	$.130
1925 Amount,	46,072.94	" " "	.132
Increase	1,304.86	Decrease	.002

GENERAL MINE ACCOUNTS:

Insurance

1926 Amount,	$161.37	Cost per ton,	$.000
1925 Amount,	168.07	" " "	.000
Decrease	6.70		

Engineering

1926 Amount,	$2,329.38	Cost per ton,	$.006
1925 Amount,	2,278.89	" " "	.007
Increase	50.49	Decrease	.001

The decrease in the cost per ton is due to more tonnage.

Analysis

1926 Amount,	$11,923.89	Cost per ton,	$.033
1925 Amount,	14,305.74	" " "	.041
Decrease	2,381.85		.008

Cost per determination in 1926 -	$.17441
Cost per determination in 1925 -	.190305
Decrease	.015895

This account includes our proportion of district laboratory and sampling. The total cost for the laboratory in 1926 was $17,042.59, and the total determinations were 97,714. In 1925 the cost was $18,765.54, and the total determinations were 98,608. This is a decrease of $1,722.95 in costs, and 894 determinations. This decrease is due to less labor and supplies for 1926. The cost of the sample truck was included in 1925 supplies.

Personal Injury Expense

1926 Amount,	$5,403.09	Cost per ton,	$.015
1925 Amount,	4,464.79	" " "	.013
Increase	938.30		.002

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Personal Injury Expense
(Continued)

There were no fatal accidents since 1919. The increase in the cost per ton for 1926 is due to more injury expense.

Safety Department Expense

1926 Amount,	$145.61	Cost per ton,	$.001
1925 Amount,	99.06	" " "	.000
Increase	46.55		.001

Telephones & Safety Devices

1926 Amount,	$1,125.00	Cost per ton,	$.003
1925 Amount,	1,096.20	" " "	.003
Increase	28.80		

The cost per ton here was about normal for both years.

Local General Welfare

1926 Amount,	$1,454.38	Cost per ton,	$.004
1925 Amount,	1,626.79	" " "	.005
Decrease	172.41		.001

Special Expense

1926 Amount,	$83.62	Cost per ton,	$.000
1925 Amount,	-----		.000

Mine Office

1926 Amount,	$10,983.70	Cost per ton,	$.030
1925 Amount,	11,207.38	" " "	.032
Decrease	223.68		.002

	Direct Charge	Mine Office
1926 -	$3,644.11	$7,339.59
1925 -	3,710.52	7,496.86
Decrease	66.41	157.27

The decrease in direct charge is due to less general office charges.
The decrease in mine office is due to less mine office charges.

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9. EXPLORATIONS AND FUTURE EXPLORATIONS:

There were no explorations at the mine during the year.

10. TAXES:

The comparison of the total taxes for the Negaunee Mine Company for the years 1926 and 1925 are as follows:

DESCRIPTION	1926		1925	
CITY OF NEGAUNEE	VALUATION	TAXES	VALUATION	TAXES
Negaunee Mine Total by Tax Commission	6,146,500	195,151.38	6,902,587	180,129.99
Maas, Lonstorf, and Mitchell Addition lots	6,200	196.85	2,350	165.68
Collection Fees		1,953.48		1,802.96
TOTAL OPERATING NEGAUNEE MINE		197,301.71		182,098.63
Total Rented Buildings	14,500	464.97	14,800	390.10
TOTAL NEGAUNEE MINE CO.	6,167,200	197,766.68	6,923,737	182,488.73
Tax Rate		3.175		2.6096
Total City of Negaunee Tax		587,398.44		533,975.96
Negaunee Mine % of City Tax		34%		34%

11. ACCIDENTS AND PERSONAL INJURY:

The mine had no fatal accidents during the years 1926 or 1925. There were 27 minor accidents during 1926 as compared with 36 for the year 1925, or a decrease of nine for the year.

The 27 accidents are classed as follows:

Eighteen were slight injuries, the men returning to work in less than a month.

Four were injuries that kept the men away from their work one to two months, and were comparatively slight.

Three were injuries that kept the men away from work over three months, and were all fractures.

Two more were also fractures, and the men are still on compensation.

During 1926 we paid and are still paying compensation to two men who were injured previously. We are paying the difference in wages to three men, two of whom received their injuries prior to 1926.

12. NEW CONSTRUCTION AND PROPOSED NEW CONSTRUCTION:

The only new construction during the year was the erecting of a cooling pond which has been reported under 6-d.

13. EQUIPMENT AND PROPOSED EQUIPMENT:

a. Steam Shovels:

The ordinary overhauling of the steam shovels used in this district was done at the Negaunee shops last winter.

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13. EQUIPMENT AND PROPOSED EQUIPMENT:

b. Stockpile Trestle:

(1) Steel Trestle:

On Friday, March 29th, the 8" I-beam which runs to the northwest from the top of the first column of the west stocking trestle collapsed, permitting the north track to sag at this point. The examination showed no particular reason could be given for the collapse. Luckily the accident was discovered before any damage was done. The trestle was braced by a wooden bent and a new I-beam ordered. The trestle was repaired by the Worden-Allen Company in August.

(2) Wooden Trestle:

Eight wood bents were added to the east end of the east trestle to make room for stocking Bessemer ore during the coming season.

d. Tugger Hoists and Scrapers:

The mine is now supplied with twenty-one tugger hoists and scrapers, twelve of which were purchased during 1926. These are of different types. We are using the Ingersoll-Rand double drum air hoists, and the Sullivan and Waugh electric hoists. Just at present the Captain prefers the electric to the air hoists.

e. Mayne Loaders:

The mine is supplied with ten Mayne Loaders, nine of which are operated on the sub levels, and one, built here in the mine a year ago, is operated on the twelfth level in one of the main drifts. This latter machine cost $585.83. It is doing satisfactory work on this level. It is equipped with 8" thrust cylinders and 6" elevating cylinders, making it much more powerful than the sub level loaders.

14. MAINTENANCE & REPAIRS:

Ordinary maintenance and repairs were taken care of during the year. There were no unusual amounts expended for this work.

15. POWER:

There was no interruption on account of lack of power to the operations throughout the year. The power during the first part of the year was supplied by the Cleveland-Cliffs Iron Company, which was later taken over by the Cliffs Power and Light Company, a subsidiary of the Cleveland-Cliffs Iron Company. The rate charged was 1½¢ per k.w. hour.

17. CONDITION OF PREMISES:

The mine buildings and lawn were kept as neat as possible. The cooling pond in the center of the lawn will be an added attraction to the general appearance.

18. NATIONALITY OF EMPLOYEES:

This report has been prepared under two statements. The first gives the report as has been ordinarily submitted to the Company. It shows the

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18. NATIONALITY OF EMPLOYEES:

nationality of the employees as to parentage; for instance, a man has been classed as a Finn when born in this country of Finnish parentage. This naturally shows the number of Americans employed very small. The second separates the nationalities into "Foreign born" and "American born", the latter being shown as Americans.

As to parentage	1926	%	1925	%
English	64	27	72	29
Finnish	89	38	91	37
Italians	28	12	32	13
Swedish	20	9	19	8
French	16	7	18	7
Americans	8	4	7	3
Germans	3		3	
Austrians	2		2	
Danes	1		2	
Argentines	1	3 (All	1	3 (All
Norwegians	1	others)	1	others)
Total	233	100%	248	100%

As to birth	Total	American born	Native born
English	64	28	36
Finnish	90	17	73
Italian	28	4	24
Swedish	20	7	13
French	16	11	5
Germans	3	2	1
Austrians	1		1
Danes	1		1
Argentine	1		1
Norwegians	1		1
Americans	8	8	
Total	233	77	156
Percentage		33%	67%

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1. GENERAL:

Mining during the year 1926 was practically wholly in the area where work was in progress a year ago. The only new development was in re-opening the third level foot-wall drift to the Negaunee boundary and raising from this drift to take the ore left in this foot-wall pillar which rises to a point about midway between the first and second levels.

The main level drifts on the fourth level are now being re-timbered where necessary, and mining will start early in 1927 in the pillars left to support the surface near the Race Course tract. Plans have been made so that development work under the Race Course can start at any time it is decided to attack this territory. Speaking generally, the mine is in good shape for production.

2. PRODUCTION, SHIPMENTS & INVENTORIES:

a. Production by Grades:

Bessemer,	4,789 tons
Maas,	239,862 "
Total Ore	244,651 "
Rock,	1,404 "

The production for the year 1926 was 94,772 tons more than for 1925. The working schedule in days per week was the same in each year, but in 1925 the mine was shut down for remodeling the shaft from July 1st to October 15th.

b. Shipments:

Grade of Ore	Pocket Tons	Stockpile Tons	Total Tons	Total Last Year
Maas Bessemer	622	14,544	15,166	45,744
Maas	95,821	151,262	247,083	300,699
Total	96,443	165,806	262,249	346,443
Total Last Year	51,939	294,504	346,443	
Decrease			84,194	

The shipments for the year were about 18,000 tons more than were mined. The stockpile ore shipped came principally from the south pile where it had been stocked for several years. This pile was removed to make room for the proposed extension of Cherry Street to connect with the County road at a point opposite the Maas shaft.

c. Stockpile Inventories:

Bessemer	6,513 tons
Maas	361,339 "
Total	367,852 "

Practically all of the old Bessemer stockpile northwest of the shaft has been removed except a thin layer on the solar. The new Bessemer pile is on the south side of the track to the east of the headframe in the place which was formerly used as a timber yard.

d. Division of Product by Levels:

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

Second Level,	52,292 tons
Third Level,	39,517 "
Fourth Level,	152,842 "
Total	244,651 "

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e. Production by Months:

Month	Bessemer	Maas	Total	Rock
January	676	17,272	17,948	
February	876	14,980	15,856	52
March	296	18,804	19,100	244
April	540	19,060	19,600	332
May	108	18,813	18,921	140
June	16	20,936	20,952	224
July		21,628	21,628	48
August	209	22,475	22,684	212
September	1,172	22,096	23,268	16
October	84	21,895	21,979	
November		21,043	21,043	
December	812	20,860	21,672	136
Total	4,789	239,862	244,651	1,404

The production was distributed over the various leases as follows:

Month	George Maas Lease	Catholic Cemetery	C. I. M. Co.	Right of Way Adam's Strip
January	14,216	2,340	984	408
February	12,924	2,100	492	340
March	14,836	2,976	1,076	212
April	15,512	2,324	764	
May	14,045	2,828	1,264	784
June	15,052	3,600	896	1,404
July	15,448	3,284	1,548	1,348
August	16,228	3,664	1,272	1,520
September	16,476	4,164	1,088	1,540
October	15,027	4,352	1,836	764
November	13,243	4,628	2,080	1,092
December	14,224	4,096	2,312	1,040
Total	177,231	41,356	15,612	10,452

f. Ore Statement:

	Maas Bessemer	Maas	Total	Total Last Year
On Hand Jan. 1, 1926	17,892	367,558	385,450	582,014
Output for Year	4,789	239,862	244,651	149,879
Transferred	1,002	1,002	-	-
Total	21,697	608,422	630,101	731,893
Shipments	15,166	247,083	262,249	346,443
Balance on Hand	6,513	361,339	367,852	385,450
Increase in Output			94,772	
Decrease in Ore on Hand			17,598	

1926 - 1-8 Hour Shift, 5 days per week, Jan. 1st to Dec. 31st, 1926.

1925 - 1-8 Hour Shift, 5 days per week, Jan. 1st to June 30th, 1925.
Mine Idle July 1st to October 15th, 1925.
1-8 Hour Shift, 5 days per week, Oct. 15th to Dec. 31st, 1925.

g. Delays:

There were no non-electrical delays during the past year.

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2. PRODUCTION, SHIPMENTS & INVENTORIES:

h. Delays from Lack of Current:

There were practically no delays from this source during the year. On March 20th there was a quarter of an hour delay due to no current, and on December 13th there was a short delay due to trouble on the power line leading to the Athens Mine. In both instances the hoist was maintained by hoisting overtime.

3. ANALYSIS:

a. Average Mine Analysis on Output:

Grade	Iron	Phos.	Silica
Maas Bessemer	61.76	.048	7.50
Maas	60.28	.103	7.09

b. Average Analysis on Straight Cargoes:

	Mine		Lake Erie	
Grade	Iron	Phos.	Iron	Phos.
Maas Bessemer	(all mixed)			
Maas	60.23	.100	-	-

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 10.

Developed Ore Available:

Between first and second levels	221,375 tons
Between second and third levels	1,216,547 "
Between third and fourth levels	1,821,502 "
Total	3,259,424 "

Developed Ore Unavailable:

Between third and fourth levels	1,400,681 tons
Total developed ore	4,660,105 "

c. Estimated Analysis:

Ore Reserves - Approximate Expected Natural Analyses:

	Iron	Phos.	Silica	Mang.	Alum.	Lime	Mag.	Sul.	Igni.	Moist.
Bessemer	53.39	.039	6.56	.181	1.57	.446	.191	.006	1.31	12.50
Maas	52.25	.101	6.63	.244	2.04	.715	.224	.008	2.44	12.75

Ore in Stock - Average Natural Analyses:

	Iron	Phos.	Silica	Mang.	Alum.	Lime	Mag.	Sul.	Igni.	Moist.
Bessemer	54.16	.041	7.17	.222	2.15	.570	.257	.008	1.28	11.50
Maas	52.98	.096	6.25	.246	2.43	1.01	.414	.010	2.11	12.00

The ore reserves at this mine are the same as were reported to the Tax Commission this year, namely, all of the ores above the fourth level, both in the mining areas and in the pillars that have been left to support the surface. The latter we have termed "Unavailable." As mentioned elsewhere, mining will start in these supporting pillars during the coming year.

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.

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5. LABOR AND WAGES:

a. Comments: (Cont.)

(2) New Construction:

The only new construction at the mine during the year was the grading for a new timber track on the site of the old Bessemer stockpile ground to the northwest of the shaft. This work was done late in the fall and has not been completed, but will permit the unloading of timber during this winter.

The addition to the district crusher plant was completed early in the spring - E & A #481.

Both of the above will be treated in more detail under the heading #12 entitled "New Construction and Proposed New Construction."

b. Comparative Statement of Wages & Product:

	1926	1925	INCREASE	DECREASE
PRODUCT	244,651	149,879	94,772	
No. Shifts and Hours	1-8	1-8		
AVERAGE NO. OF MEN WORKING:				
Surface	40	29	11	
Underground	155	109	46	
Total	195	138	57	
AVERAGE WAGES PER DAY:				
Surface	4.31	4.37		.06
Underground	5.08	5.01	.07	
Total	4.91	4.87	.04	
WAGES PER MONTH OF 25 DAYS:				
Surface	107.75	109.25		1.50
Underground	127.00	125.25	1.75	
Total	122.75	121.75	1.00	
PRODUCT PER MAN PER DAY:				
Surface	22.44	18.84	3.60	
Underground	6.05	5.20	.85	
Total	4.77	4.07	.70	
LABOR COST PER TON:				
Surface	.192	.232		.040
Underground	.839	.964		.125
Total	1.031	1.196		.165
AVERAGE PRODUCT MINING:				
Stoping	12.57	11.38	1.19	
Ore Development	5.82	none		
Total	12.18	11.38	.80	
AVERAGE WAGES CONT. LABOR	5.42	5.29	.23	
TOTAL NUMBER OF DAYS:				
Surface	10,902	7,955	2,947	
Underground	40,417¾	28,846¼	11,571½	
Total	51,319¾	36,801¼	14,518½	
AMOUNT FOR LABOR:				
Surface	46,943.37	34,774.49	12,168.88	
Underground	205,220.72	144,417.82	60,802.90	
Total	252,164.09	179,192.31	72,971.78	

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5. LABOR AND WAGES:

b. Comparative Statement of Wages & Product:(Cont.)

AMOUNT FOR LABOR:

1925 - Mine operations stopped from July 1st to October 19th to remodel shaft.

Proportion of surface to Underground Men:

1926 - 1 to 3.87
1925 - 1 to 3.76
1924 - 1 to 4.16
1923 - 1 to 3.71
1922 - 1 to 4.34
1921 - 1 to 4.56

6. SURFACE:

a. Buildings:

(1) Head Frame:

During the winter, expanded metal lath was put on the inside of the head frame covering, and in August and September this was covered with gunite, making the structure practically fire-proof, as the outside of the wood covering is sheeted with asbestos roofing.

(2) Top Tram Engine House:

The top tram engine house located on the solar to the southwest of the head frame was lathed and covered with gunite in July and August.

(3) Control House for Top Tram:

This building was originally on the north side of the head frame. During July this was moved to the south side and placed on the permanent trestle at that point. This was done to give a clear view to the operator of the top tram cars.

(4) Wood Rock Trestle:

The old wood rock trestle to the south of the shaft was dismantled in January.

b. Stockpiles:

The balance of the Bessemer stockpile to the northwest of the shaft was removed during the year. As is mentioned elsewhere, there remains on the stockpile solar a thin layer of ore, in some places averaging a foot or more in thickness, which we were unable to clean up properly by means of the steam shovel. This is being picked up and hauled away by team to the new stockpile ground.

The Maas ore stocked last year to the west of the head frame was not moved during the past season, as it was necessary to move other stockpile ore. This necessitated building a new temporary trestle for stocking ore this coming winter at a point directly south of last years stockpile.

c. Tracks:

New Timber Track:

As mentioned under #5-a-2, a new timber track to supply the timber yard was started in the fall. The west end of this track is twelve feet above the solar, which gives sufficient height to store the quantity of timber needed for a year's operations.

New Lagging Track:

As the Bessemer stockpile now occupies the place that was formerly used for timber and lagging, it was necessary to provide a new lagging track. This has been supplied by the railroad department. This track branches from the main track to the mine at a point about 1000 feet west of the head frame, and runs to the east on the north edge and parallel with the new timber yard.

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6. SURFACE:(Cont.)

c. Tracks:

Tunnel Track:

During the coming year a track should be constructed running from the tunnel on the north side of the head frame to reach the new timber field. This should be covered throughout the entire distance to protect it from snow. The Maas Mine will then be equipped practically the same as the Negaunee and Athens Mines.

7. UNDERGROUND:

a. Shaft Sinking:

There was no sinking at the Maas shaft during the year.

b. Development:

Practically the only development during the year was the re-opening of the third level drift, and the starting of raises to open the territory on the north foot wall pillar between the third level and the subs above the second level. This work is explained in detail under the next caption "Stoping", under the headings "Third Level" and "401' Sub Level".

c. Stoping:

Mining during the past year was almost wholly along the eastern end of the property near the Negaunee Mine boundary in the various areas where mining has been in progress the past few years, namely, on the north foot wall between the first and second levels under the Catholic Cemetery, and the American Mining Company's strip; on the third level, east end, where the foot wall drift was re-opened and raising was started to reach the territory above the second level foot side. Between the third and fourth levels the mining was in two territories:- The first extending from the incline Winze east to the Negaunee boundary, south of the pillar left to support the third level foot side, and second, farther to the south adjoining the Negaunee boundary and under the hanging. The work in detail during the year was as follows:

Between first and second levels:

600' Sub Level:

This sub level was opened in 1923 and completed in January of this year by taking two small pillars in the Cemetery tract.

588' Sub Level:

This sub level was opened the latter part of 1925 and work continued throughout the present year. In December five contracts stoped north of #4 dike, four of which were in the Roman Catholic Cemetery tract, and one in the American Mining Company Pillar.

575' Sub Level:

The east end of this sub level near the Negaunee boundary was originally opened in 1916 or 1917. In February of this year development started again in this territory and continued throughout the year. This area is cut by several dikes which are parallel to the foot wall dividing the ore into narrow lenses. In December four contracts were employed here, two developing and two stoping, three of which were in the Cemetery tract, and one in the American Mining Company pillar.

565' Sub Level:

This sub level was originally opened in 1916 or 1917, where development was carried on along the dike. In December one contract started to re-open this sub level at #62 raise under the hanging.

Second Level:

Raise #119 from the third level foot wall drift has holed to this level at a point south of #67 raise. The main shaft crosscut is being re-opened south of the rock foot wall drift. From this drift connections will be made to the raises being put up from the third level.

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7. UNDERGROUND:(Cont.)

c. Stoping:

Between Second and third levels:

401' Sub Level:

Raises #108, #110, #113, #115, #117, and #119 from the third level foot wall drift have reached this elevation and connections have been made from #108 to #110, from #113 to #115, and from #119 to the Negaunee Mine, eleventh level. The sub level was originally opened in 1916 or 1917, but as no mining was permitted on account of the pillars above, the timber was allowed to go without repairs. When mining starts, the sub level will have to be entirely re-opened. The raises from the third level are to be extended to a point 40' to 50' above the second level, which means a vertical height of 250'. By connecting the raises on the 401' sub level, cribbing can be hoisted to this elevation and handled from there to the top of the raises, which ought to help materially in the rate of advance.

Third Level:

The main foot wall drift was re-opened from a point 600' west of the Negaunee Mine to the Negaunee boundary. This territory is extremely heavy and has been re-timbered a number of times since it has been originally opened. It is an important connection, since it is on our primary air course. Already it shows signs of taking weight. The following raises have been put up from this drift:

Raise #108, two compartment, material 0' to 46' Jasper, 46' to 204' ore. This raise has not been completed.

Raise #110, two compartment, 0' to 105' ore. Raising is still in progress.

Raise #112, 0' to 85' ore. Raising is still in progress.

Raise #113, 0' to 129' ore. Raising is still in progress.

Raise #115, 0' to 115' ore. Raising is still in progress.

Raise #117, 0' to 115' ore. Raising is still in progress.

Raise #119, 0' to 210' ore. Raising is still in progress. This raise has holed through to the second level, and is to be extended 50' above this level during the coming year.

Pillars to the south of the old foot wall drift east of "C" crosscut, above "E" crosscut, east and west of "F" crosscut, and west of "G" crosscut, were taken during the year from the 300' sub level.

Subs between third and fourth levels:

300' Sub Level:

This sub level was opened in 1923 and work has been continued since that time. The west section from the Winze to #224 raise was completed about the middle of this year. In the spring, raise #707 from the fourth level was put up to the 245' sub level, where it connected with raise #168 which extends from the 245' sub to the 300' sub level. In July, development started under the hanging. Drifts have been driven from the top of #168 raise, or as we now call it, #707 raise, to the northwest, northeast, southwest, and a connection made to the old workings to the southeast. In December, slicing started to the southeast, where the product is running Bessemer. In the east section of this sub level, one contract stoped at #1E raise.

280' Sub Level:

This sub level is now being worked in two areas, one from the Winze to #224 raise, which we call the west foot-wall section, the other the east section from #1E to #6E raises. This latter section is along the Negaunee boundary south of the pillar left to support the third level foot side.

East Section:

This territory was opened in November, 1925, and has been working continually to the present time. To the north and south of the main development drift, the mining is done entirely with scrapers. In December, six contracts were slicing here.

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7. UNDERGROUND:(Cont.)

c. Stoping:

Between third and fourth levels:

280' Sub Level:

West Section:

This was opened in the fall of 1925 and mining has been in progress the entire year. This area was mined through a trench stope until the first of the year, when the territory became very wet and the ore quite muddy, and considerable trouble was had with the trench stope. It was abandoned early in the year, and since that time the mining has been carried on from #1W, #3W, and #224 raises. In December nine contracts were slicing here.

270' Sub Level:

West Section:

This was opened in October at #5W raise. In December there were two contracts at this territory, one at #5W raise stoping, the other driving a development drift to the north foot from #4W raise.

East Section:

At #6E raise, a small area was mined in July and August, but development was cut off by a bulge in the Jasper foot. At #21S raise the section near the Negaunee boundary was completed in October. At #705 raise, two slices were taken along the west hanging, the work being completed in May.

260' Sub Level:

The only work at this elevation during the year was at #705 raise where work was in progress from May until September slicing under the hanging.

245' Sub Level:

This sub level was developed as a tramming sub level in 1920. During 1925 mining started in the southeast end near the Negaunee Mine boundary through raises #705, #706, and #425. During the present year mining has been continued here with the exception of the months of July, August, and September.

In December one contract was slicing at #705 raise.

230' Sub Level:

This sub level was opened in December, 1925, at #425 raise, and work has been in progress there throughout all the present year at raises #705, #706, and #425. In December there were seven contracts stoping; there were three of these in the American Mining Company Pillar.

Fourth Level:

In the spring, raise #707 was put up from this level to the 245' sub level. This raise is located on the northwest side of the main tramming drift which runs from the 400 crosscut and connects with the foot wall drift near #223 raise. This raise is of two compartments. Material, 0' to 50', mixed slate and Jasper; 50' to 160', ore. Total height, 160'. Inclination of the raise is seventy degrees.

This raise connected with raise #16S on the 245' sub level, and ore is now being handled through it to the fourth level from the 300' sub level.

Preparatory to re-opening the territory above the fourth level near the Race Course, the main level drift has been repaired from the 400 crosscut to #508 raise. #504 raise will be opened to the 240' sub level. This raise formerly used both compartments for ore, one of which will now be changed to a ladder-way. Raise #406 has been examined to the 185' sub level. This is the only double compartment raise in the west end of 400 crosscut.

Ladders have been repaired in #422 raise and a contract has holed to this raise on the 430' sub level.

A new double raise has been started on the south side of 400 crosscut between #416 and #420 raises.

d. Timbering:

The timbering throughout the mine on the main levels is holding up in good shape with the exception of the third level foot wall drift. This drift was

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7. UNDERGROUND:(Cont.)

d. Timbering:

originally driven several years ago, and has shown considerable weight, requiring continual re-timbering. When the ventilating system was installed a year and a half ago, this drift was used as one of the main inlets to the mine, making it necessary to keep it in good shape. The drift was entirely re-timbered during the past year, and already is showing signs of excessive weight. It is hard to explain the cause of the crushing in this territory, as it is well back on the footwall and no mining has been done near it. We have had the same trouble in the connecting drift which is used as an outlet between the Maas and Negaunee Mines, which is located between the second and third levels, Maas Mine.

Statement of Timber Used:

	LINEAL FEET	AVG. PRICE PER FOOT	AMOUNT 1926	AMOUNT 1925
6" to 8" Timber	85,780	.0415	3,564.41	840.34
8" to 10" "	56,378	.0689	3,883.56	2,260.22
10" to 12" "	28,404	.091	2,584.06	1,947.31
12" to 14" "	5,544	.1231	682.33	1,218.21
12" to 14" Treated Timber	7,110	.2863	2,035.59	
Total Timber - 1926	183,316	.0695	12,749.95	
" " - 1925	80,488	.0778		6,266.08
		PER 100'		
7' Lagging	745,568	.716	5,342.08	3,012.58
Poles	284,340	1.105	3,141.73	1,266.72
Total - 1926	1,029,908	.824	8,483.81	
Total - 1925	502,491	.851		4,279.30
Covering Boards, 1926	52,000	1.79	929.80	
Covering Boards, 1925	25,806	1.80		466.13
Total Timber			22,163.56	11,011.51
Product			244,651	149,879
Feet of Timber per ton of ore			.7492	.5370
Feet of Lagging per ton of ore			3.047	2.686
Feet of Lagging per foot of timber			4.07	5.00
Cost per ton for timber			.0521	.0418
" " lagging			.0219	.0201
" " covering boards			.0038	.0031
" " poles			.0128	.0086
" " all timber			.0906	.0736
Equivalent of stull timber to board measure			308,265	159,063
Feet of board measure per ton of ore			1.26	1.061

Cost of timber, lagging, poles, and boards, and cost per ton:

1926 -	$ 22,163.56	.0906
1925 -	11,011.51	.0736
1924 -	17,199.67	.0760
1923 -	18,150.64	.0796
1922 -	15,277.59	.0705

It will be noticed that the cost per ton for poles is nearly 50% higher in 1926 than in 1925. This is due principally to the use of scrapers where poles were used for covering down, in preference to lagging. All the mines are showing an increase in the use of poles due to this new mining practice. The increase in timber used and the cost per ton for 1926 is due principally to ore raising.

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7. UNDERGROUND:(Cont.)

d. Timbering:

A crew of three men have been employed steadily since March 1st repairing the third level main drift, using treated timber. Also extensive repairing was done to the second level main drift.

e. Drifting and Raising:

YEAR	ORE RAISING	ROCK RAISING	ROCK DRIFTING
1926	1107'	41'	90'
1925	20'	90'	95'

Increase of 1087' ore raising - developing the mine for the use of scrapers.

There was very little rock drifting done in either 1925 or 1926, but in the latter year considerable raising was in progress. Most of this is from the third level foot wall drift. Raising in this territory will be continued throughout the year 1927.

f. Drilling and Blasting:

Statement of Explosives Used:

	Quantity	Average Price	Amount 1926	Amount 1925
40% Amonia Gel.				492.01
50% " "	99,150	.1440	14,277.24	3,836.01
60% " "	4,050	.1565	634.00	3,741.51
Total Powder - 1926	103,200	.1445	14,911.24	
Total Powder - 1925	52,200	.1546		8,069.53
Fuse	334,100	.67 C	2,238.96	1,139.22
Blasting Caps	60,500	1.063C	643.51	412.52
Cap Crimpers	25	.666ea.	16.66	22.22
Total Fuse, etc.			2,899.13	1,573.96
Total All Explosives			17,810.37	9,643.49
Product			244,651	149,879
Pounds of Powder per ton of ore			.4218	.3483
Cost per ton for Powder			.0609	.0538
" " Fuse, caps, etc.			.0119	.0105
" " All explosives			.0728	.0643
Average price per pound for powder			.1445	.1546

There was approximately 21% increase in pounds of powder per ton of ore, due to much harder ground encountered on the second level territory, and also more development.

g. Mining and Loading:

The mining throughout the year was all by the slicing method, the same as has been employed for the last several years. We are now employing fifteen double drum tugger hoists and slusher outfits, nine having been added during the year. More will be added when they can be used to advantage. With this style of mining the tons per man per day is practically doubled over hand shoveling. The hoists used at the Maas are entirely run by air.

The following is a statement showing the results obtained by the scrapers during the period from October 1st to December 31st, 1926.

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7. UNDERGROUND:(Cont.)

g. Mining and Loading:
(Cont.)

Contract No.	No. Men	No. Days	No. Tons	Tons per man per day
6	2	98	1896	19.14
8	2	102	1248	12.23
15	2	20	240	12.00
30	2	32	632	19.75
33	2	100	2160	21.60
36	2	120	2116	17.63
37	2	104	1872	18.00
40	2	112	1776	15.86
42	2	112	1756	15.68
43	2	86	1656	19.26
46	2	122	2216	18.16
53	2	84	1464	17.43
55	2	100	1900	19.00
60	2	120	2638	21.98
61	2	126	2208	17.78
Total		1438	25778	
Average tons per man per day with scraper -				17.93
Average tons per man per day, hand shoveling -				9.76
Increase in tons per man per day with scrapers over hand shoveling -				83.7%

h. Trench Stope:

The trench stope which was opened on the 245' sub level east of the transfer raise, and extending nearly to the Winze, was abandoned in March. This section of the mine is very wet and the muddy ore was extremely hard to handle through the trench stope. Since the stope was abandoned the ore has been handled through the raises which extend into that territory from the transfer sub level.

i. Ventilation:

The ventilating system has worked satisfactorily throughout the year. During the winter it was found that ice was collecting in the #2 Shaft, Negaunee, which is the downcast from the fan. Since then, in extremely cold weather, the fan has been reversed from time to time, which prevents the formation of large quantities of ice.

j. Pumping:

The number of gallons pumped per minute in 1926 as compared with 1925 is shown by the following table:

Month	1926	1925
January	941	918
February	996	932
March	985	888
April	983	978
May	972	887
June	997	883
July	992	904
August	976	893
September	951	902
October	919	905
November	951	944
December	991	942
Average -	970	915

The average number of gallons pumped per minute over the past five years is as follows:

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7. UNDERGROUND:

j. Pumping:(Cont.)

YEAR	Gals. Per Minute
1926	970 gals.
1925	915 "
1924	990 "
1923	966 "
1922	985 "

k. Underground in General:

During the coming year every effort will be made to increase the rate of mining between the first and second levels. We are now mining on the 565' sub level in this territory, where most of the mining will be in the Roman Catholic Cemetery tract. We have now reached the 565' sub level, which was originally opened about ten years ago. As mentioned elsewhere, in this report, this was cut by a number of small dikes that parallel the foot, which slows up the development and mining. Most of the sub levels on the foot side down to the second level will be hampered from this same cause. However, the hanging wall ore body should begin to open up nicely on about the second sub level from where we are now operating. It is hoped that slushers can be used in mining this pillar, but the west end of this section is extremely wet and it might be necessary to resort to the old method of mining and loading into small cars.

The section adjoining the Negaunee Mine between the third and fourth levels along the American Mining Company tract should be abandoned this coming year, as the mining on the Maas side is getting well below that on the Negaunee side, and it may cause a loss to the Negaunee mine if the mining on the Maas side advances much farther.

The new territory which will be attacked is in the supporting pillars near the Baldwin Kiln road where work was abandoned several years ago. This work can now be started, as houses which might be endangered will be moved to a new location the coming summer.

Considerable re-timbering will have to be done on the fourth level and in the raises leading from the fourth level to sections where no mining has been done for several years.

8. COST OF OPERATING:

a. Comparative Mining Costs:

	1926	1925	INCREASE	DECREASE
PRODUCT	244,651	149,879	94,772	
Underground Costs	1.398	1.598		.20
Surface Costs	.176	.213		.037
General Mine Accounts	.122	.180		.058
Cost of Production	1.696	1.991		.295
Original Cost	.076	.076		
Plant Account	.001	.002		.001
Taxes	.331	.542		.211
Central Office	.096	.149		.053
Contingent Expense	.012	.020		.008
Cost Adjustment	.030	.034		.004
Cost on Stockpile	2.242	2.814		.572
Loading and Shipping	.048	.119		.071
Total Cost on Cars	2.290	2.933		.643
No. Days Operating	261	186	75	
No. Shifts and Hours	1-8 hr.	1-8 hr.		
Average Daily Product	937	806	131	

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8. COST OF OPERATING:

a. Comparative Mining Costs:(Cont.)

	1926	1925	INCREASE	DECREASE
COST OF PRODUCTION:				
Labor	1.052	1.237		.185
Supplies	.644	.754		.11
Total	1.696	1.991		.295

The reduction in the cost on cars for 1926 over 1925 is taken up in detail in the yearly analysis of the cost sheet which follows this report. Of this decrease, 29.5¢ is in the cost of production. This is due to more efficient operation underground.

In the general accounts, there is a saving of 21.1¢ in taxes for the year 1926 over 1925. This is due wholly to the increase in production, as the amount paid for taxes in each year was practically the same.

b. Detailed Cost Comparison:

(1) Days and Shifts:

The mine operated on one eight-hour per day schedule five days per week throughout the year 1926.

In 1925 the mine operated on one eight-hour per day schedule five days per week, with the exception of the period from July 1st to October 19th, during which time mining operations were stopped to remodel the shaft. From July 1st to October 19th a schedule of three eight-hour shifts per day for seven days per week was in effect, to complete the remodeling of the shaft in the shortest period possible.

The difference in the working schedule above accounts for the difference in production and costs as shown in the figures comparing the two years.

(2) Cost of Production:

1926 Amount,	$414,841.55	Cost per ton,	$1.696
1925 Amount,	298,329.91	" " "	1.991
Increase	116,511.64	Decrease	.295

(3) Total Cost:

	Labor	%	Supplies	%
1926 -	$257,277.90	62 %	$157,563.65	38 %
1925 -	185,374.60	62.1%	112,955.31	37.9%
Decr.	71,903.30		44,608.34	

Cost per ton:	Labor	Supplies	Total
1926 -	$1.052	.644	1.696
1925 -	1.236	.755	1.991
Decrease	.184	.111	.295

The conditions at the mine were very different during the two years. In 1925 the mine did not operate for 3½ months when the shaft was being re-modeled, during which time repair men were employed on main level timbering.

The cost of pumping each year was practically the same, but on account of the larger product for 1926 the cost per ton was .105 less. The comparative cost per ton under the various headings and accounts is as follows:

(4) Detail of Accounts:

UNDERGROUND COSTS:

Development in Rock

1926 Amount,	$1,012.78	Cost per ton,	$.004
1925 Amount,	328.15	" " "	.002

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Development in Rock (Continued)

Increase $684.63 Inc. cost per ton, $.002

There was 131' of rock work in 1926 at $7.73 per foot, and 49' in 1925, at $6.70 per foot.

Development in Ore

1926 Amount,	$7,429.29	Cost per ton,	$.030
1925 Amount,	---		---
Increase	7,429.29		.030

No ore development work in 1925, and 1,107' in 1926.

Stoping

1926 Amount,	$136,637.69	Cost per ton,	$.558
1925 Amount,	88,695.50	" " "	.592
Increase	47,942.19	Decrease	.034

Detail.

	Labor		Supplies	
1926 -	$106,057.16	77.6%	$30,580.53	22.4%
1925 -	71,788.25	80.9%	16,907.25	19.1%
Increase	34,268.91	3.3% Dec.	13,673.28	3.3% Inc.

Cost per ton

	Labor	Supplies	Total
1926 -	.434	.124	.558
1925 -	.479	.113	.592
Decrease	.045	Incr .011	Decr .034

Nine Ingersoll-Rand double drum slushers were charged in 1926, costing $5,998.50. Four slushers were charged in 1925 costing $2,662.00.

Explosives;

	1926	1925
Total pounds of powder	103,200	52,200
Average price per pound	.1445	.1546
Total Amount	14,911.24	8,069.53
Fuse, Caps, etc.	2,899.13	1,573.96
Grand Total	17,810.37	9,643.49
Lbs. of powder per ton ore	.4218	.3483
Cost per ton for powder	.0609	.0538
Cost per ton all explosives	.0728	.0643

Increase in cost per ton is due to development in ore in 1926.

Timbering

1926 Amount,	$78,847.76	Cost per ton,	$.322
1925 Amount,	49,918.48	" " "	.333
Increase	28,929.28	Decrease	.011

	1926	1925
Timber cost	12,749.95	6,266.08
Lagging, Poles, etc.	9,413.61	4,745.43
Total	22,163.56	11,011.51

Timbering(Cont.)

	1926	1925
Feet of timber per ton of ore	.7492	.5370
Cost per ton, all timber	.0906	.0736
Average price per foot, all timber	.0695	.0778

Increased cost per ton in 1926 due to large quantity of cribbing timber used in raising, also to treated timber used on third level foot wall drift.

Tramming

1926 Amount,	$28,591.43	Cost per ton,	$.117
1925 Amount,	19,470.14	" " "	.130
Increase	9,121.29	Decrease	.013

Ventilation

1926 Amount,	$1,656.36	Cost per ton,	$.007
1925 Amount,	2,797.14	" " "	.019
Decrease	1,140.78		.012

Both years included Maas Mine proportion of expense of operating a joint ventilation system at the Negaunee Mine.

Pumping

1926 Amount,	$40,050.42	Cost per ton,	$.164
1925 Amount,	40,317.66	" " "	.269
Decrease	267.24		.105

	1926	1925
Total gallons water pumped	508,242,996	480,918,511
Gallons pumped per minute	970	915

The decrease in the cost per ton is due to a larger tonnage in 1926.

Compressors & Air Pipes

1926 Amount,	$21,441.24	Cost per ton,	$.088
1925 Amount,	14,831.84	" " "	.099
Increase	6,609.40	Decrease	.011

Cubic feet of air made by Maas Compressors,
1926 - 420,930,000 feet
1925 - 372,735,000 feet

Back Filling

1926 Amount,	$138.00	Cost per ton,	$.001
1925 Amount,	------		----
Increase	138.00		.001

Underground Superintendence

1926 Amount,	$11,404.65	Cost per ton,	$.047
1925 Amount,	9,353.53	" " "	.062
Increase	2,051.12	Decrease	.015

MAINTENANCE ACCOUNTS:

Compressors & Power Drills

1926 Amount,	$103.01	Cost per ton,	$.000
1925 Amount,	230.66	" " "	.002

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Compressors & Power Drills (Continued)

Decrease $127.65 Decr. cost per ton, $.002

The charge in both years was for small repairs to electric compressors.

Hand Tramming Equipment

1926 Amount,	$1,388.94	Cost per ton,	$.006
1925 Amount,	461.92	" " "	.003
Increase	927.02		.003

Increase due to more 16-lb. rail used.

Electric Tram Equipment

1926 Amount,	$10,138.47	Cost per ton,	$.041
1925 Amount,	7,661.72	" " "	.051
Increase	2,476.75	Decrease	.010

Sub Division.

	Gen. & Motor	Locomotives	Wiring
1926 -	40.67	2,171.83	1,526.84
1925 -	280.41	1,221.60	787.59
Decrease	239.74	Incr. 950.23	Incr. 739.25

	M. L. Tracks	M. L. Cars
1926 -	2,875.27	3,523.86
1925 -	1,642.31	3,729.81
Increase	1,232.96	Decr 205.95

Main Line Cars: Previous to July 1st, 1925, when the mine was stopped to repair the shaft, two men were employed repairing main line cars; since the shaft has been repaired the cars are taken into the blacksmith shop for heavy repairs, so that only one man is now employed underground oiling and doing small jobs to cars.

Pumping Machinery

1926 Amount,	$3,084.65	Cost per ton,	$.013
1925 Amount,	5,420.12	" " "	.036
Decrease	2,335.47		.023

New shafting and gear were installed on the Prescott pump in 1925.

Total Underground Costs

1926 Amount,	$341,924.69	Cost per ton,	$1.398
1925 Amount,	239,486.86	" " "	1.598
Increase	102,437.83	Decrease	.200

SURFACE COSTS:

Hoisting

1926 Amount,	$15,983.37	Cost per ton,	$.065
1925 Amount,	10,852.13	" " "	.072
Increase	5,131.24	Decrease	.007

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Stocking Ore

1926 Amount,	$7,538.90	Cost per ton,	$.031
1925 Amount,	6,104.27	" " "	.041
Increase	1,434.63	Decrease	.010

Twenty-eight bents of stocking trestle were erected in the fall of 1926.

Dry House

1926 Amount,	$8,201.08	Cost per ton,	$.033
1925 Amount,	5,304.37	" " "	.035
Increase	2,896.71	Decrease	.002

General Surface Expense

1926 Amount,	$5,112.92	Cost per ton,	$.021
1925 Amount,	4,244.56	" " "	.028
Increase	868.36	Decrease	.007

MAINTENANCE ACCOUNTS:

Hoisting Equipment

1926 Amount,	$3,215.89	Cost per ton,	$.013
1925 Amount,	2,205.43	" " "	.015
Increase	1,010.46	Decrease	.002

	Sub Division.		
	Electric Hoists	Wire Rope	Skips, Cages, etc.
1926 -	295.19	1,407.14	1,513.56
1925 -	505.70	407.10	1,292.63
	210.51 Decr.	1,000.04 Incr.	220.93 Incr.

Three hoisting ropes replaced in 1926.
One hoisting rope replaced in 1925.

Shaft

1926 Amount,	$36.19	Cost per ton,	$.001
1925 Amount,	89.91	" " "	.001
Decrease	53.72		.000

Top Tram Equipment

1926 Amount,	$2,838.43	Cost per ton,	$.011
1925 Amount	1,880.77	" " "	.013
Increase	957.66	Decrease	.002

	Sub Division.	
	Engine & Motors	Tracks & Cars
1926 -	145.40	2,229.01
1925 -	8.81	1,199.78
Increase	136.59	1,029.23

	Wire Rope	Sheaves, Rollers, etc.
1926 -	274.60	189.42
1925	574.74	97.44
Decrease	300.14	Incr. 91.98

Tracks and cars cost high in both years due to making two new saddle back and two new side dump cars.

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Docks, Trestles & Pockets,

1926 Amount,	$165.13	Cost per ton,	$.001
1925 Amount,	301.89	" " "	.002
Decrease	136.76		.001

Mine Buildings

1926 Amount,	$ 21.17	Cost per ton,	$.000
1925 Amount,	969.33	" " "	.006
Decrease	948.16		.006

Addition to heating plant in 1925 to take care of larger boiler which was installed.

Total Surface Costs

1926 Amount,	$43,113.08	Cost per ton,	$.176
1925 Amount,	31,952.66	" " "	.213
Increase	11,160.42	Decrease	.037

GENERAL MINE ACCOUNTS:

Insurance

1926 Amount,	$219.84	Cost per ton,	$.001
1925 Amount,	223.03	" " "	.002
Decrease	3.19		.001

Engineering

1926 Amount,	$2,338.89	Cost per ton,	$.010
1925 Amount,	3,476.81	" " "	.023
Decrease	1,137.92		.013

Analysis

1926 Amount,	$8,351.79	Cost per ton,	$.034
1925 Amount,	7,059.88	" " "	.047
Increase	1,291.91	Decrease	.013

This account includes the operating laboratory charge.

	No. of Dets.	Cost per Det.	Total
1926 -	29,266	$.17441	5,110.56
1925 -	22,018	.19069	4,198.78
	Incr. 7,248	Decr. .01628	Incr. 911.78

Personal Injury Expense

1926 Amount,	$7,111.84	Cost per ton,	$.029
1925 Amount,	5,343.63	" " "	.036
Increase	1,768.21	Decrease	.007

The 1925 charge included a credit of $1470.00 being the unpaid compensation at time of the death of dependent of Alfred Franzen, report #299.
For 1926 charges, see detail in #11 - Accidents and Personal Injury.

Safety Department Expense

1926 Amount,	$114.41	Cost per ton,	$.000
1925 Amount,	43.63	" " "	.000
Increase	70.78		

Telephones & Safety Devices

1926 Amount,	$251.91	Cost per ton,	$.001
1925 Amount,	178.88	" " "	.001
Increase	73.03		

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Local General Welfare

1926 Amount,	$1,191.29	Cost per ton,	$.005
1925 Amount,	1,330.88	" " "	.009
Decrease	139.59		.004

Mine Office

1926 Amount,	$10,223.81	Cost per ton,	$.042
1925 Amount,	9,233.65	" " "	.062
Increase	990.16	Decrease	.020

Total General Mine Accounts

1926 Amount,	$29,803.78	Cost per ton,	$.122
1925 Amount,	26,890.39	" " "	.180
Increase	2,913.39	Decrease	.058

9. EXPLORATIONS AND FUTURE EXPLORATIONS:

There were no explorations at this mine during the year.

10. TAXES:

Ledger Index Number	DESCRIPTION CITY OF NEGAUNEE	1926 VALUATION	1926 TAXES	1925 VALUATION	1925 TAXES
	MAAS MINE - (Lease and Und. ½ fee)				
44A2	All that part of lands leased from Maas lying east of Baldwin Kiln Road & North of Main, 96.40 A.....			1,329,000	34,682.59
44A2	All that part of lands leased from Maas lying west of Baldwin Kiln Road except Harris Addition, 76.06 A.....			250,000	6,524.00
	A strip of land on West side of parcel of land formerly known as Barabe Farm, 3.87 A.			4,000	104.38
	16.6 Acre tract, East of Mine Street.....			- -	- -
	Minerals under 5.7 A. tract containing houses, which are assessed separately.....			- -	- -
	TOTAL MINERALS COVERED BY TAX COMMISSION -	1,333,700	42,344.98	1,585,000	41,310.97
44A3	HARRIS ADDITION - Lots 2, 3,4, 8 to 25, Blk. 1, and Lots 1 to 15, Blk. 2.....	9,100	288.94	9,100	237.48
44A7	CORBIT'S FARM.....				
44A8	MARTELL FARM.....	8,300	263.53	8,300	216.59
44C31	GAUTHIER FARM.....				
44A10	ANTHONY PROPERTY, 5.75 A.	7,000	222.25	7,000	182.67
44C42	CORBIT'S ADD., Lot 20, Block 1.....	400	12.70	500	13.05
44D49	EDW. LOBB'S ADDITION, Lots 1-2-3, 5 to 24 inc., 26 to 29, Blk. 1 (Playgrounds exempt).....	1,300	41.28	1,475	38.48

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10. TAXES:(Cont.)

Ledger Index Number	DESCRIPTION CITY OF NEGAUNEE	1926 VALUATION	1926 TAXES	1925 VALUATION	1925 TAXES
44D50	Lobb part of SW¼ of SW¼ Sec. 31 except BUZZO & FORGET. (This includes south water front but the north Redfern water front is not assessed) 14.25 A.	5,000	158.75	5,000	130.48
44D64	KIRKWOOD & KELLAN ADD. Lot 18, Block 2.....	500	15.88	600	15.65
	Personal - Maas Stock Pile	1,100,000	34,925.00	1,405,000	36,664.88
	Other Personal - Maas Mine	60,274	1,913.71	62,015	1,618.44
	Total -	2,525,574	80,187.02	3,081.990	80,428.69
	Collection Fees		801.87		804.29
	TOTAL MAAS MINE	2,525,574	80,988.89	3,081,990	81,232.98
	Tax Rate		3.175		2.6096
	Total City of Negaunee Tax		587,398.44		533,975.96
	Maas Mine % of City Tax		14%		15%

11. ACCIDENTS AND PERSONAL INJURY:

There were no fatal accidents at the Maas Mine during the year 1926. The following is a list of the more serious accidents which happened during the year:

January 15 - Domenic Francisco.
Fracture of upper end of femur. Received compensation the entire year of 1926.

April 26 - Adolph Laitinen.
Bruises of pelvis, hip and thigh. Received compensation from April 26 to September 21.

May 14 - Charles Pulkinen.
Crushing drift broke trolley wire, which injured Pulkinen. Difficult and stertorous respiration. Received compensation from May 14 throughout balance of 1926.

June 7 - Joseph A. Holman.
Sprained left ankle. Received compensation from June 7 to August 31.

June 19 - John Chiri.
Partial paralysis of left arm, fracture of left 9th rib, and dislocation of right shoulder. Received compensation from June 19 to October 18.

August 19 - Fred Carlson.
Lacerated first finger of right hand. Received compensation from August 19 to October 18.

September 16 - Gust Lampi.
Overcome with gas. Received compensation from September 16 to October 11.

November 13 - Sam Tripp.
Sprained ankle. Still home.

The following men were on full compensation for 1926.
Isaac Salmi.
Isaac Hill.
John Haiskonen, to June 7th.

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11. ACCIDENTS AND PERSONAL INJURY:

The following men were paid difference in wages, 1926.
Peter Haikkonen.
Joseph Petrone.
Peter Louisa.

12. NEW CONSTRUCTION AND PROPOSED NEW CONSTRUCTION:

a. E & A #476 - Remodeling Shaft:
Total expended in 1925 was $87,843.10
Total expended in 1926 was 8,117.67

During 1926 several sections of concrete were completed in the shaft. These were principally at the shaft stations.

Head Frame:
The head frame was enclosed and gunited from the top landing to the head sheave.

Transfer House:
A concrete floor was laid and the inside walls were gunited on the new transfer building.

Timber Yard:
The fill for the timber track for the new timber yard was practically completed this fall. However, some of the fill is so close to the main track leading into the shaft that it will have to be overcast with a steam shovel in the spring. At that time the timber stringers which were used in the temporary trestle will be removed and the track properly ballasted. According to the daily record, 9,694 cubic yards were used on this job, and the cost was $3,164.71. The largest part of the cost charged against this improvement would ordinarily have gone to ore loading and shipping, as the steam shovel crew loaded a large part of the rock during their idle time. As these crews are given full time, the rock loaded during the idle period in reality cost the Company nothing extra.

b. Proposed New Construction:
During the coming year a tunnel should be constructed on the north side of the shaft to extend along the north edge of the new timber yard. A portion of this would have to be concrete as at the Athens and Negaunee Mines, but as the greatest part of it will be in the open, a large section of it can be of framework covered with galvanized iron, the same as at the Athens and Negaunee. If this construction is authorized, I would recommend that a connection be made to this tunnel from the south side of the dry, so that the men can go from the dry-house to the shaft without going out of doors. I would consider this as part of E & A #476 - Remodeling Shaft. The cost of this tunnel was included in the original estimate of the cost of remodeling the shaft, but did not include the proposed connection with the change house.

13. EQUIPMENT AND PROPOSED EQUIPMENT:

a. Maas Crusher:
The alterations authorized last fall - E & A #481 - were completed early in the spring. These consisted in tearing out the old gyratory crusher and

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13. EQUIPMENT AND PROPOSED EQUIPMENT:

a. Maas Crusher:(Cont.)
replacing it with a 40" x 42" jaw crusher; installing a 10" Superior gyratory secondary crusher and a 72" x 12' revolving screen; erecting a steel frame building covered with galvanized iron to house the secondary crusher and screen; erecting a new ore pocket and installing a belt conveyor running from the secondary crusher to this new pocket.

A new bar grizzly was built between the pan conveyor and the jaw crusher.

This equipment was used throughout the 1926 season. The secondary crusher was used only for hard ores, such as the Ogden.

b. Proposed Steel Trestle:

Within a few years mining will start on the Race Course tract. Under the terms of the lease, this ore has to be stocked separately. At present all ore is stocked from temporary wooden trestles, and while it would be possible to continue stocking in this manner, it would make it very much simpler and less expensive if a steel trestle were provided. It is possible that some arrangement can be made with the Mitchell interests which will permit our mixing the ore with the other Maas ore. It has been suggested that they might be satisfied if the ore were weighed underground as it comes to the shaft.

If a steel trestle were built, the rock could be stocked from a wooden trestle beyond the east end of the permanent stocking trestle. The Race Course ore could then be stocked at one end of each permanent stocking trestle, and the Maas ore at the other end of each trestle.

d. Tugger Hoists and Scrapers:

Nine Ingersoll-Rand tugger hoists and scrapers were added to the mine equipment in 1926, making a total of fifteen of these outfits in service now.

Two single drum tuggers were purchased in 1926 for hoisting timber.

14. MAINTENANCE & REPAIRS:

Practically the only large items of maintenance and repairs for the year were at the Maas Crusher. On account of the extremely heavy work to which the crusher was subjected during the season, the maintenance was unusually heavy. The life of a conveying belt from the jaw crusher to the soft ore pocket is now less than one year, where it previously used to be four or five years. This is due to the Ogden ore, which is very sharp and cuts the belt. This ore also is extremely tough and makes it necessary to install new wearing plates at the jaw crusher, and new concaves and mantle at the secondary crusher each year.

15. POWER:

There was no shortage of water power throughout the year. However, there was an accident at the Carp River plant, which threw it out of commission from February 3rd to 13th, during which time it was necessary to operate the steam turbine at the Maas.

17. CONDITION OF PREMISES:

The premises around the mine were kept looking neat as usual. The ground immediately about the shaft presents a much cleaner appearance since the installation of the steel permanent trestle.

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18. NATIONALITY OF EMPLOYEES:

This has been prepared under two statements. The first statement gives the report as has been ordinarily submitted to the Company, that is, it shows the nationality of employees according to parentage. The second statement divides the employees according to country of birth.

Nationality of Employees:		Country of Birth:		Percent
Americans	26	United States	66	31
English	64	England	53	25
Finnish	60	Finland	52	25
Italians	24	Italy	19	9
Swedish	14	Sweden	8	4
French	8	Denmark	3	1.5
Danish	4	Ireland	1)	
Irish	5	Scotland	1)	1
Germans	4	Canada(French)	7	3.5
Scotch	1	Total	210	100
Total	210			

19. MAAS CRUSHER:

	1926	1925
PRODUCT	270,678	209,747
Composed of:		
Hard Ore	150,595	64,822
Hematite	120,083	144,925

The crusher operated 277 shifts in 1926 as follows:

88 1 - 9 hour shifts
43 2 - 9 hour shifts
44 2 - 11 hour shifts
15 1 - 11 hour shifts.

Average tons crushed per shift, 977 tons.

The crusher operated 247 shifts in 1925 as follows:

109 1 - 9 hour shifts
31 2 - 9 hour shifts
37 2 - 11 hour shifts
2 1 - 11 hour shifts.

Average tons crushed per shift, 857.

Cost per ton in 1926:

General Expense	.005
Maintenance	.012
Operating	.075
Depreciation	.050
Switching	.014
Total	.156

The maintenance of the crusher plant during the season of 1926 was large on account of crushing hard ores. Replacements were made as follows:

New Conveyor belt	$1800.00
3 New Toggles	366.00
Screen Section	514.60
Head Mantle	460.00
Plates renewed	384.00
Total	3524.60

We had considerable difficulty in the operation of the plant during the season. It seems impossible to design a crusher plant which is adapted to crushing both soft and hard ores. With the soft ores, our greatest trouble was with the grizzlies.

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19. MAAS CRUSHER:(Cont.)

The crusher operated on a heavy schedule, and although a number of changes might have helped us greatly, there was no time to shut down except in emergency. A number of alterations are now under way, among which are the change in the front of the railroad pocket to permit a freer flow of the ore on to the steel pan conveyor. A tightening device will be provided for the belt running from the jaw crusher to the soft ore pocket. A continuous chute will take the product from the belt at the soft ore pocket, and carry it to the revolving screen. This chute will be provided with steel castings or manganese wearing plates. Last year the chute running to the revolving screen had a number of angles in it which gave us continual trouble. A larger pulley will operate the belt leading to the hard ore pocket, so as to increase the speed.

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1. GENERAL:

The mine operated throughout the year on one eight hour shift, five days per week, the same as in 1925. Usual holidays were observed, but the men were permitted to make up the loss of time by working Saturdays. This meant a monthly average of practically 22 days, as compared with 25 days when working on the full time basis.

Stoping was continued on the south foot wall above the fourth level. Most of the ore in this territory came from the Mitchell Lot #11. It was also continued on both north and south sides of the dike immediately above and below the sixth level, and in the west end of the mine just above and below the ninth level near the Bunker Hill Pillar. There was practically no new development during the year.

The water situation changed very slightly from 1925. The grade of ore held up to guarantee and a larger portion was shipped than the previous year. This was due to a larger percentage being used in the Cliffs group mixture.

Labor conditions were satisfactory, and there was always a waiting list of applicants. The mine is in excellent condition and the product at any time could be increased by going on a double shift. The maximum production on a single shift is 100 tons per hour.

2. PRODUCTION, SHIPMENTS & INVENTORIES:

a. Production by Grades:

There is only one grade of ore at this mine, namely, Athens ore. Part of this ore came from the parcels owned in fee, the balance from the Mitchell Lease. The distribution of the product is as follows:

Athens Fee	191,355	tons
Mitchell Lease	35,060	"
Total Ore	226,415	"
Rock	484	"

The product for the year was 16,110 tons more than the year 1925.

b. Shipments:

Grade of Ore	Pocket Tons	Stockpile Tons	Total 1926	Total 1925
Athens Ore	19,237	315,522	334,759	198,016
Mitchell Lease	-	36,664	36,664	13,058
Corbit Lease	-	-	-	-
Lucky Star	-	121	121	-
Total	19,237	352,307	371,544	211,074
Total Last Year	5,368	205,706	211,074	
Increase			160,470	

c. Stockpile Inventories:

The ore in stock December 31, 1926, was as follows:

Athens Fee	164,316	tons
Mitchell Lease	16,050	"
Corbit Lease	36	"
Total	180,402	"

This is all Athens grade. There is also on hand 40 tons of Lucky Star ore which is not included in stockpile inventories.

On December 31, 1925, there was in stock 325,571 tons, or 145,129 tons more than on hand at the same date this year.

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2. PRODUCTION, SHIPMENTS & INVENTORIES:

d. Division of Product by Levels:

The ore hoisted for the various levels was as follows:

Fourth Level	48,442 tons
Eighth Level	144,335 "
Tenth Level	33,638 "
Total	226,415 "

e. Production by Months:

The production by months is as follows:

Month	Athens	Mitchell Lease	Total	Rock
January	15,305	2,226	17,531	
February	14,524	2,232	16,756	252
March	18,431	2,748	21,179	
April	17,166	1,742	18,908	172
May	15,574	2,986	18,560	60
June	14,363	3,494	17,857	
July	16,270	2,908	19,178	
August	15,928	3,250	19,178	
September	15,609	3,275	18,884	
October	16,485	3,499	19,984	
November	16,498	3,358	19,856	
December	15,202	3,342	18,544	
Total	191,355	35,060	226,415	484

f. Ore Statement:

	Athens	Mitchell Lease	Corbitt Lease	Lucky Star	Total	Total Last Year
On Hand Jan. 1, 1926	307,615	17,654	141	161	325,571	326,340
Output for year	191,355	35,060	-	-	226,415	210,305
Transferred	105	-	105	-	-	-
Total	499,075	52,714	36	161	551,986	536,645
Shipments	334,759	36,664	-	121	371,544	211,074
Balance on Hand	164,316	16,050	36	40	180,442	325,571
Increase in Output					16,110	
Decrease in Ore on Hand					145,129	

1926 - 1-8 hour shift, 5 days per week, Jan. 1st to Dec. 31st, 1926.
1925 - 1-8 hour shift, 5 days per week, Jan. 1st to Dec. 31st, 1925.

g. Delays:

Non-electrical delays were as follows:

June 8th - Three hours delay on account of brake stand on skip hoist being broken.

Aug. 4th - Five hours delay on account of broken axle on head frame sheave, north side.

h. Delays from lack of current:

There were no delays from lack of current during the year.

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3. ANALYSIS:

a. Average Mine Analysis on Output:

Grade	Iron	Phos.	Silica
Athens	61.23	.118	5.47
Mitchell Lease	60.70	.118	6.40
Corbitt Lease	(No Production)		
Lucky Star	(No Production)		

b. Average Analysis on Straight Cargoes:

	Mine		Lake Erie	
Grade	Iron	Phos.	Iron	Moist.
Athens	61.07	.126		
Mitchell Lease	(All Mixed)			
Corbitt Lease	(No Shipments)			
Lucky Star	(All Mixed)			

c. High Sulphur Ore:

High sulphur ore was encountered on the 230' sub level on the south foot above the fourth level in January. This was in the form of gypsum bands instratified with ore. The gypsum in places was over ¼" thick, which was much thicker than encountered heretofore. The breast samples showed 1.91 sulphur. The ore in one of the raises was slightly contaminated for one day, the samples running .055 sulphur. However, the weekly output was not affected. In April in the same territory as above, but on the 245' sub level near the Lucky Star Line, high sulphur was again encountered in the form of gypsum, one of the samples running 2% sulphur. As soon as this was discovered, the work was stopped so that the ore was not contaminated. In June the high sulphur ore was also found in this locality on the 275' sub level near the Lucky Star Line. Work was stopped so that the ore was not contaminated. No high sulphur ore was found on the sub levels below the 275' sub in this territory.

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.

Fourth level and above	1,239,350 tons
Fourth level to sixth, North side of dike	390,352 "
Sixth level to 660' sub level, North side	471,335 "
Sixth level to 660' sub level, South side	438,058 "
660' sub level to eighth level	1,260,444 "
Eighth level to ninth level	493,054 "
Ninth level to tenth level	417,555 "
Below tenth level	61,129 "
Total developed ore	4,771,277 tons.

b. Prospective Ore:

Fourth level to sixth, South side of dike	1,944,034 tons
Total all ore	6,715,311 tons

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4. ESTIMATE OF ORE RESERVES:

c. Estimated Natural Analysis:

Ore Reserves - Approximate Expected Natural Analysis:

	Iron	Phos.	Silica	Alum.	Mang.	Lime	Mag.	Sul.	Igni.	Moist.
Athens Ore	52.50	.122	6.00	2.50	.410	.865	.784	.012	1.30	13.25

Ore In Stock - Average Natural Analysis:

	Iron	Phos.	Silica	Alum.	Mang.	Lime	Mag.	Sul.	Igni.	Moist.
Athens Ore	53.11	.111	4.80	2.64	.408	.865	.784	.012	1.30	13.50

After taking into account the ore mined, this shows a slight reduction in the estimate of a year ago. This is due to the fact that above the fourth level on the south foot we have encountered an area of mixed ore, which last year was included in the estimate of merchantable ore.

5. LABOR AND WAGES:

a. Comments:

(1) Labor:

The labor conditions at the mine throughout the year were very satisfactory. At no time was there a shortage of men.

(2) New Construction:

There was no new construction at the mine during the year except the enclosing of a section under the head frame directly in front of the skip compartment. This has been mentioned under 6-a.

b. Comparative Statement of Wages & Product:

	1926	1925	INCREASE	DECREASE
PRODUCT	226,415	210,305	16,110	
No. Shifts & Hours	1-8	1-8		
AVERAGE NO. OF MEN WORKING:				
Surface	34	36		2
Underground	125	136		11
Total	159	172		13
AVERAGE WAGES PER DAY:				
Surface	4.48	4.48		
Underground	5.09	5.00	.09	
Total	4.95	4.88	.07	
WAGES PER MO. OF 25 DAYS:				
Surface	112.00	112.00		
Underground	127.25	125.00	2.25	
Total	123.75	122.00	1.75	
PRODUCT PER MAN PER DAY:				
Surface	23.00	20.58	2.42	
Underground	6.74	5.82	.92	
Total	5.21	4.54	.67	
LABOR COST PER TON:				
Surface	.195	.218		.023
Underground	.755	.857		.102
Total	.950	1.075		.125
AVG. PRODUCT BRK'G & TRM'G	15.58	14.12	1.46	
" WAGES CONTRACT MINERS	5.66	5.47	.19	
" " " LABOR	5.66	5.47	.19	

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5. LABOR AND WAGES:

b. Comparative Statement of Wages & Product:(Cont.)

	1926	1925	INCREASE	DECREASE
TOTAL NO. OF DAYS:				
Surface	9,846¼	10,211		364¾
Underground	33,600¼	36,076¼		2,476
Total	43,446½	46,287¼		2,840¾
AMOUNT FOR LABOR:				
Surface	44,091.73	45,782.54		1,690.81
Underground	170,933.58	180,250.92		9,317.34
Total	215,025.31	226,033.46		11,008.15

Mine started on operating basis Jan. 1, 1919.
Proportion of surface to underground men:
1926 - 1 to 3.68 One 8-hour shift 5 days per week.
1925 - 1 to 3.80 One 8-hour shift 5 days per week.
1924 - 1 to 3.99
1923 - 1 to 3.44
1922 - 1 to 3.75
1921 - 1 to 3.88

6. SURFACE:

a. Buildings, Repairs:

(1) Shaft House:

Under "Delays" I have mentioned a five-hour shut down on August 4th on account of a broken axle in the head sheave over the north skip compartment. The mechanical department thought that this accident might have been caused by the sheave having unequal lengths for the support of the shafting. They decided to change these supports, which work was done by the Worden Allen Company on November 1st.

(2) Skip Road Protection:

A sheet iron covering was placed under the ore pocket in front of the skip compartments to protect the men from the weather when changing skips. This was done about November 1st.

b. Stockpiles:

On account of a larger quantity of ore being shipped during the past season, it was unnecessary to erect wood bents at the end of the southeast trestle which we had to build last year. During the coming season we hope to be able to take some of the ore stocked several years ago from the old wood trestle, as this interferes with removing the ore from the northeast side of the southeast trestle.

c. Timber Treating Plant:

Comparative cost of treating timber, 1926 and 1925:

	Cost for treating, per foot	
	1926	1925
Peeling	.0312	.0312
Treating	.0400	.0392
Decking	.0069	.0086
Zinc Chloride	.0345	.0341
Water, heat and misc.	.0086	.0046
Total	.1212	.1177

Increase, 1926 - .0035
Size of timber, 12" to 14" tops.

No. of pieces treated, 1926 - 2,762 No. of feet - 23,052
No. of pieces treated, 1925 - 2,513 No. of feet - 20,650

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6. SURFACE:

c. Timber Treating Plant:Cont.

No. pieces used at Athens Mine		712
"	shipped to Maas Mine	1,008
"	shipped to Negaunee Mine	835
"	shipped to Morris-Lloyd	162
Total		2,717 pieces

Treated timber on hand December 31, 1926:

9 ft. pieces	-	666
8 ft. pieces	-	1,228
7 ft. pieces	-	19
Total		1,913

Timber on hand that has been peeled for seasoning, but not treated:

9 ft. pieces	-	1,947
8 ft. pieces	-	935
7 ft. pieces	-	31
Total		2,913

7. UNDERGROUND:

a. Shaft Sinking (or Stripping):

There was no shaft sinking or stripping at the Athens Mine during the year.

b. Development:

There was very little development during the year. The only work of this character which changed the estimate of ore was above the fourth level on the south foot. On the 245' sub level, mixed ore was encountered on the slate foot, which probably extends to the fourth level, as a horizontal drill hole put in several years ago showed a mixed formation on the foot. As mentioned under ore estimate, this mixed area made a considerable reduction on the ore shown above the fourth level.

The territory south of the dike or immediately below the sixth level is extremely wet. The hanging wall stands at a steep angle. We are now working on the sub levels immediately below the sixth level, and development should show the location of the south foot wall. This location is likely to have considerable effect on the tonnage classed as prospective between the fourth and sixth levels. The development on the individual sub levels will be taken up under the caption of "Stoping", in the summary of the year's mining operations.

c. Stoping:

Mining was carried on throughout the year in four different territories, the same as in 1925, namely: (1) Above the fourth level on the south foot. (2) On the north and south sides of the main dike at about the sixth level elevation. (3) At the west end of the main ore body, north of the fault dike between the sixth level and the 660' sub level. (4) The extreme west end of the property on the ninth level and immediately below, adjoining the Bunker Hill Pillar. During the year the work in the third territory was abandoned at the 660' sub level, as this territory became too small to continue further mining. The fourth territory will be discontinued some time during the coming year. The detail of the mining on the various levels and sub levels follows:

Subs above the fourth level:

230' Sub Level:

South Foot:

Mining was in progress here the first of the year, and the sub level was

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7. UNDERGROUND:

c. Stoping:(Cont.)

Cont.

completed in February. High sulphur ore was encountered on the south side lying on the slate foot wall close to the Lucky Star Line. The sulphur was in the form of gypsum, the ore analysis running from .90 to 1.90 sulphur.

A small triangular piece of ore was left on this sub level, which lies in the northwest corner of the Lucky Star property. It is probable that most of this is high sulphur ore.

245' Sub Level:

Work at this elevation was started in January and completed in July. High sulphur ore was encountered along the southeast side of the sub level. A small piece of ore was left on the Lucky Star property, probably all high sulphur. Diamond drill hole #7 from surface was found at this elevation at a point 65' due south of #425 raise. At this point the hole was dipping north at an angle of 45 degrees.

270' Sub Level:

This sub level was opened in 1925 as a development, and mining had been started at the north end under the flat hanging. Early in the year this was continued, and in June the area to the south under the 245' sub level was also started and has been continued since that time.

Developments found the foot wall at this elevation farther south than anticipated from the work above, with considerable paint rock along the Lucky Star line, indicating the displacement of the foot by a fault.

In December one contract was stoping west of #424 raise. The sub level should be completed early in 1927.

290' Sub Level:

This sub level was started in September at #422 raise.

In December, one contract was stoping northeast of #422 raise, one developing east from #423 raise, and one developing east and another south from #425 raise.

Fourth Level:

The only work here was that of extending #422 raise 30' to the 290' sub level. Material for the entire distance was Jasper.

Subs above the sixth level:

575' Sub Level:

Work was in progress here on the first of the year and was completed in June. The ore was found to extend westerly along the large north dike and two new raises, namely, #802 and #803, were put up from the eighth level into this territory, the latter part of 1925.

Sixth Level:

Mining was started at this elevation in December, 1925, and was continued throughout the year.

South of the fault dike, mining was completed in December of this year by the removal of the pillars at #835 raise.

Subs above the eighth level:

600' Sub Level:

Mining was started north of the dike in May and was continued throughout the year. In December one contract was stoping east of #802 raise, one stoping north of #803 raise, and another was developing south of #803 raise.

At #832 raise one contract was stoping to the east and one to the west.

At #833 raise one contract was stoping east and one to the west.

At #834 raise one contract was stoping to the east and one to the west.

At #855 raise one contract was stoping to the south.

South Side of Dike:

Work was started here in September.

In December one contract was developing to the southeast of #857 raise, and three contracts were developing to the east of #857 raise.

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7. UNDERGROUND:

c. Stoping:(Cont.)

At #835 raise one contract is cutting out on the south side. A drift will be driven to hole to #837 raise and then continued to the south foot wall.

615' Sub Level:

North Side of Dike:

In December, at #856 raise the drift which Had been started in November was continued to the west and slicing has been started on the south side. One contract is developing north to #855 raise. From #832 raise one contract drifted north to #831 raise, and is continuing this drift north to the big dike. One contract is developing west from #831 raise.

At #811 raise one contract cut out on the west side at an elevation of -620' and will drift west to the mining limit, where it will be turned to the northwest and southeast and continued along the mining limit so that slicing from #831, #832, #833, and #834 raises will hole to this drift to provide ventilation.

660' Sub Level:

The work on this sub level during the year consisted in a drift connecting #857 raise to the main traveling road to the north; the extension of the drift from #836 raise south to #837 raise; and the extension of the drift from #803 raise west to #804 raise. The mining of the west end of the ore body against the foot wall which had been started last year was completed in January. This territory is to the south of #852 raise.

Eighth Level:

During the summer a new drift paralleling the #820 crosscut was driven from a point immediately west of #804 raise to #921 raise for ventilation. #804 raise, two compartment, located on the main shaft crosscut at the entrance to #820 crosscut, was started in January and extended to a point 15' above the 660' sub level, a distance of 155', where Jasper was encountered. Material ore, 0' to 150'; Jasper, 150' to 155'. Inclination of the raise, 70 degrees.

Ninth Level:

On the first of the year mining was in progress at this elevation in the extreme west end of the mine along the Bunker Hill Pillar. Mining was completed in April. South of the old main haulage drift opposite #1024 raise a large mass of paint rock was encountered with numerous stringers of rock running out from it which made mining difficult. This rock pitches flatly to the westward and has been found on the subs below.

Subs above the tenth level:

905' Sub Level:

Work was started here in January and was completed in November, between the Bunker Hill Pillar and the mining limit. The same mass of paint rock encountered on the ninth level was found on the south side of this sub level.

920' Sub Level:

This sub level was opened in July at #1025 raise and mining was continued since that time.

In December one contract was stoping north of #1026 raise. One contract was stoping south of #1026 raise. One contract was developing north from #1025 raise. Two contracts were stoping north of #1024 raise. The mass of paint rock at this elevation occupies practically all of the area south of the raises except a small section along the Bunker Hill Pillar line.

930' Sub Level:

In December, one contract cut out from #1024 raise and drifted toward #1025 raise. This will probably be the last sub level that can be worked here on account of the convergence of the Bunker Hill Pillar and the mining limit, also the presence of the large mass of rock to the south.

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7. UNDERGROUND:

d. Timbering:

Statement of Timber Used:

	LINEAR FEET	AVG. PRICE PER FOOT	AMOUNT 1926	AMOUNT 1925
6" to 8" Timber	52,030	.0408	2,123.84	8,258.02
8" to 10" "	61,476	.0687	4,221.06	3,975.08
10" to 12" "	30,748	.0955	2,936.79	3,458.47
12" to 14" "	16,425	.1839	3,020.17	2,966.41
Total - 1926	160,679	.0766	12,301.86	
Total - 1925	321,294	.0581		18,657.98
		PER 100'		
7' Lagging	679,472	.7016	4,767.31	4,377.07
Poles	250,380	1.2337	3,088.90	2,639.97
Total - 1926	929,852	.845	7,856.21	
Total - 1925	843,414	.832		7,017.04
1" Covering Boards	82,800	1.787	1,479.63	1,407.03

Product for Year	226,415	210,305
Feet of Timber per ton of Ore	.710	1.528
Feet of Lagging per ton of Ore	3.001	2.940
Feet of Lagging per foot of Timber	4.229	1.924
Cost per ton for Timber	.0543	.0887
" " Lagging	.0211	.0208
" " Covering Boards	.0065	.0067
" " Poles	.0137	.0126
" " Timber, lagging, poles & boards	.0956	.1288
Equivalent of stull timber to board measure	295,386	514,648
Feet of Board Measure per ton of ore	1.305	2.447

	Amount	Cost per ton
Total Cost of Timber, Lagging, and Poles, 1926	21,637.70	.0956
" " " " " , 1925	27,082.05	.1288
" " " " " 1924	24,403.00	.0984
" " " " " 1923	23,356.15	.0951
" " " " " 1922	16,566.21	.0857
" " " " " 1921	23,169.19	.1316
" " " " " 1920	22,622.15	.1146

It will be noted that the number of feet of timber per ton of ore in 1926 was less than one-half of what it was in 1925. This was due entirely to raising. The material used for raising is 6" to 8" timber. Practically all the raises are two compartment close cribbed, with double cribbing in the middle between compartments. In 1926 there was 52,000 feet of this timber used, whereas in 1925 there was practically four times as much, or approximately 200,000 feet. The cost per ton for timber during the year was considerably less due principally to the fact that in 1925 there was a great deal of raising in progress, while in 1926 there was comparatively a small amount of raising.

In stoping and main level repairing, the quantities used were about the same for both years. In the ordinary repairs of main levels, except in places where there is a great deal of crushing, we have used for the past several years timber treated with zinc chloride.

Early in the year the U. S. Bureau of Mines and the U. S. Forestry Service asked permission to try out at our treating plant borax and sodium fluoride for the treatment of timber. Permission was granted, and in the

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7. UNDERGROUND:

d. Timbering:(Cont.)
interval between July 15th and August 15th, fifteen sets of treated timber were put underground by our timbermen, in conjunction with the Bureau of Mines and the Forestry Service. Each set was suitably tagged, and the sets were placed in rows of four each, with a different treatment in each set; one with zinc chloride, one with sodium fluoride, one with borax, and one untreated. Five of these sets were placed in the main levels for future inspection, two on the sixth level, one on the seventh, and one on each of the eighth, ninth, and tenth levels. It is the idea of the government officials to make periodic visits to the mine to observe these sets.

e. Drifting and Raising:
The following statement shows the drifting and raising for the years 1925 and 1926. In 1925 raises were put up from the eighth level to the sixth level, and also several from the new foot wall drift, fourth level, south side.

YEAR	ORE DRIFTING	ORE RAISING	ROCK RAISING	ROCK RAISING
1925	651 ft.	2,577 ft.	319 ft.	363 ft.
1926	301 ft.	604 ft.	24 ft.	42 ft.

f. Explosives, Drilling and Blasting:
Statement of Explosives Used:

	Quantity	Average Price	Amount 1926	Amount 1925
50% Ext. Powder	800	14.50 C	116.00	1,500.75
50% Gel. "	2,700	15.50	418.50	4,166.25
60% Gel. "	4,900	16.75	820.76	5,301.41
50% Am. Gel. Powder	61,950	14.29	8,855.40	
60% Am. Gel. "	4,750	15.64	743.00	
Total Powder - 1926	75,100	14.59	10,953.66	
Total Powder - 1925	68,950	15.92		10,979.41
Fuse	259,500'	6.92 M	1,795.75	1,779.14
Caps	44,300	10.65 M	471.81	453.77
Cap Crimpers	27	.716ea	19.33	24.00
Electric Exploders				13.35
Connecting Wire				16.19
Tamping Bags				10.75
Total Fuse, Caps, etc.,			2,286.89	2,297.20
Total All Explosives			13,240.55	13,276.61
Product			226,415	210,305
Pounds of Powder per ton of ore			.3317	.3279
Cost per ton for powder			.0484	.0522
" fuse, caps, etc.			.0101	.0109
" all explosives			.0585	.0631
Average price per pound for powder			.1459	.1592

This statement shows that there was a larger quantity of powder used in 1926 than 1925. However, there were 16,000 tons increase in product. The pounds of powder per ton of ore is slightly higher this year, but the cost per ton is less. This is due to the price of powder per pound being less for this year than for 1925.

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7. UNDERGROUND:

g. Mining and Loading:

The mining throughout the year was by the slicing method, the same as has been employed for several years. The slices have been averaging from 11 feet to 12 feet in thickness. An attempt was made to increase this to 15 or 16 feet, but the results were not as good as we have been obtaining with the thinner slices, so that the work will be continued with the sub levels at the same interval that we have used heretofore. The mine is equipped with 17 double drum tugger hoists which are used with slushers. The following is a statement showing the product handled by this mechanical means as compared with hand shoveling:

Statement of Scrapers and Hand Shoveling:

	No. of Men	No. of Days	Tons	Tons per man per day
Scrapers	27	6,949	139,456	20.07
Hand Shoveling	29	7,578	86,959	11.48
Total	56	14,527	226,415	15.58

The report shows that 47.8% of the men were employed on scrapers, and mined 61.6% of the product, while 52.2% were employed on hand shoveling and mined only 38.4% of the product.

There were five more Ingersoll-Rand tugger hoists purchased for use on the scraper method of mining this year, making a total of 17 now in use.

i. Ventilation:

During the year we had no trouble with our ventilating system. On account of a great deal of mining being done at the sixth level elevation, and immediately above and below, we were able to use our primary air course to reach most of the working places, so that booster fans were unnecessary except in a few places such as above the fourth level on the south foot. On the ninth level a new steel ventilation door was installed, which was set in a concrete frame.

j. Pumping:

The number of gallons pumped per minute in 1926 as compared with 1925 is shown by the following report:

Month	Gallons per minute 1926	1925
January	262	237
February	243	239
March	274	246
April	285	246
May	274	251
June	280	254
July	274	256
August	274	256
September	277	255
October	277	255
November	254	241
December	256	258
Total Average	268	251

The average gallons pumped per minute for the last five years is as follows:

Years	Gallons per minute
1926	268
1925	251
1924	218
1923	195
1922	164

ATHENS MINE

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YEAR 1926.

7. UNDERGROUND:

k. Disintegration of Concrete in Shaft:

During the past few years, or since the ventilation system was installed, on the tenth level, ice has collected in the downcast, that is, in the cage and ladder compartments. In order to keep the compartments open, it was necessary to chop out the ice and at times the shaft was covered over, or the air current reversed. There is a section in the shaft from 200' to 400' below the collar where the concrete has always shown a little seepage. The constant freezing and thawing of the last few years affected this section of the shaft on the north, south, and east sides, and this spring it was noticed that the concrete was disintegrating badly in this section. It was necessary to trim the shaft over this area, and on the north and south sides in the cage compartment, three vertical reinforcing ropes of 5/8" were suspended, which were fastened to the concrete at intervals to keep them snug against the wall. 36 weep holes were drilled to drain the area. The water from the weep holes was carried off by roofs fastened to blocks in the side of the shaft. These roofs were spaced at 50 foot intervals of the 200' being repaired, and covered the cage and ladder compartments of the shaft. This was done to prevent the washing off of the gunite which was applied to the wall. The guniting was completed in August. We have had no trouble from this section since that time. We hope to have no trouble from this source in the future, although each winter we will have the freezing and thawing action, which is extremely hard on the concrete.

Two doors to prevent the freezing in the upper part of the shaft, by admitting warm air from the skip side during the freezing weather, were put in between the second and third sets below the timber tunnel. The doors open on either side of the runners, and do not interfere with hoisting or lowering the cage. They close into the partition between the cage and skip compartments, and are out of the way when not in use.

l. Tenth Level Pocket:

A year ago the front of the eighth level pocket, which was originally made of timber, was replaced with concrete. This has proved to be very satisfactory. This fall, due to dry rot, it was found necessary to replace the front of the tenth level pocket. Concrete was used. Work started in November and was completed in December, without interfering with the hoist from this level, the front of one pocket being completed at a time.

m. Underground in General:

During the coming year mining will be continued above the fourth level on the south foot, and in the section between the sixth and eighth levels. A new territory will be opened between the sixth and fourth levels, lying east of that perviously mined. Preparations are now being made to start raising in this territory. No other new development will be taken up.

We expect to outline the south foot wall below the sixth level on the south side of the dike. Ore drifting is now in progress on the first sub level below the sixth.

Water conditions are about the same as they were in 1925.

Due to better ventilation, and the fact that we are using treated timber, we are not having the replacements of the main level timber that we had a few years ago, except where it is breaking due to pressure. We are now having some replacements of the treated timber, which has been in service for three years and did not have the proper penetration, due to being too green. We are now using seasoned timber and getting better penetration. We expect this will last much longer.

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YEAR 1926.

8. COST OF OPERATING:

a. Comparative Mining Costs:

	1926	1925	INCREASE	DECREASE
PRODUCT:	226,415	210,144	16,271	
Underground Costs	1.244	1.426		.182
Surface Costs	.235	.233	.002	
General Mine Accounts	.088	.095		.007
Cost of Production	1.567	1.754		.187
Plant Account	.179	.447		.268
Development	.089	.598		.509
Taxes	.457	.427	.030	
Central Office	.063	.134		.071
Contingent Expense	.004	.005		.001
Cost Adjustment	.006	.008		.002
Cost on Stockpile	2.360	3.373		
Loading and Shipping	.044	.035	.009	
Misc. Debits & Credits		.016		
Total Cost on Cars	2.404	3.392		
No. Days Operating	261	260	1	
No. Shifts & Hours	1-8	1-8		
Avg. Daily Product	868	808	60	
COST OF PRODUCTION:				
Labor	.972	1.093		.121
Supplies	.595	.661		.066
Total	1.567	1.754		.187

From the above statement the cost on cars is 98.8¢ lower in 1926 than in 1925, which in general is explained as follows:

The cost of production is 18.7¢ lower than in 1925. Of this amount there was a saving during the year of practically 2¢ in development in rock, of 5¢ in development in ore, 10¢ in timbering, 2¢ in tramming, 1¢ in pumping, and 1¢ in electric tram plant, while stoping for the year was 3¢ higher. Below the cost of production, the greatest difference is shown in plant account and development, the former is 26.8¢ and the latter 50.9¢ less than for 1925. These large decreases are due to an adjustment of previous years depreciation. There was a decrease in central office of 7¢, due to large capital stock and income taxes in 1925.

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YEAR 1926.

8. COST OF OPERATING:

b. Detailed Cost Comparison:

(1) Days and Shifts:

The mine operated on one eight-hour shift five days per week schedule during the entire year, the same as in 1925.

(2) Wages:

There was no change in the wage schedule, it being the same as for 1925.

(3) Comparison of Production:

Production of 1926, 226,415 tons
Production of 1925, 210,305 tons
Increase 16,110 tons.

The production for 1925 includes 161 tons of Lucky Star ore.

Tons of ore mined per man per day:

	1926	1925	INCREASE	DECREASE
Surface	20.65	20.60	.05	
Underground	6.62	5.83	.79	
Total	5.01	4.54	.47	

(4) Comparison of Number of Men and Wages:

	No. Men	No. Days	Amount	Rate per day
1926 -	159	43,446½	215,025.31	4.95
1925 -	172	46,287½	226,033.46	4.88
Decrease	13	2,841	11,008.15	.07 Incr.

(5) Cost of Production:

1926 - $354,771.28 Cost per ton, $1.567
1925 - 368,666.59 " " " 1.754
Decr. 13,895.31 Decrease .187

	Labor		Supplies	
1926 -	220,020.29	62.0%	134,750.99	38.0%
1925 -	229,828.22	62.3%	138,838.37	37.7%
Decrease	9,807.93		4,087.38	

	Cost per ton		
	Labor	Supplies	Total
1926 -	.972	.595	1.567
1925 -	1.093	.661	1.754
Decrease	.121	.066	.187

(6) Detail of Accounts:

UNDERGROUND COSTS:

Development in Rock

1926 Amount, $ 344.67 Cost per ton, $.002
1925 Amount, 4,289.38 " " " .020
Decrease 3,944.71 Decrease .018

Sub Division.

1926	Drifting	Per Ft.		Raising	Per Ft.
1926	24'	5.25		42'	4.75
1925	319'	5.20		363'	4.75
Decr.	295'	Incr .05	Decr	321'	--

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Development in Ore

1926 Amount	$3,908.49	Cost per ton,	$.017
1925 Amount	13,980.48	" " "	.067
Decrease	10,071.99		.050

In 1926, 4,523 tons of ore were mined in development work at an average of 8.24 tons per man per day, while in 1925, 16,767 tons were mined at an average of 9.09 tons per man per day, or a decrease in 1926 of 12,244 tons and .85 tons per man per day. The principal development in 1925 was ore raising.

Stoping

1926 Amount,	$105,322.58	Cost per ton,	$.465
1925 Amount,	91,395.34	" " "	.435
Increase	13,927.24		.030

Detail.

	Labor		Supplies	
1926 -	83,131.28	78.9%	22,191.30	21.1%
1925 -	73,935.73	80.9%	17,459.61	19.1%
Incr.	9,195.55		4,731.69	

During the year five more double drum Ingersoll-Rand tugger hoists were purchased for use on the scraper method of mining, at a cost of $3,351.52, which amounted to $.015 per ton, while in 1925 no tugger hoists were purchased. We now have a total of 17 tugger hoists on the scraper method of mining. The average rate per car in 1926 was $1.53 as against $1.57 in 1925.

Explosives

	1926	1925
Total lbs. of Powder	75,100	68,950
Avg. price per pound	.1459	.1592
Total Amount	10,953.66	10,979.41
Fuse, caps, etc.	2,286.89	2,297.20
Grand Total	13,240.55	13,276.61
Lbs. powder per ton of ore	.3317	.3279
Cost per ton for powder	.0484	.0522
Cost per ton all explosives	.0585	.0631

Decrease 1926, $.0046

Timbering

1926 Amount,	$72,525.42	Cost per ton,	$.320
1925 Amount,	87,346.94	" " "	.416
Decrease	14,821.52		.096

Detail Cost of Timber.

	1926	1925
Cost of stull timber	12,301.86	18,657.98
Cost of Lagging & Poles	9,335.84	8,424.07
Total Cost	21,637.70	27,082.05
Ft. of tbr. per ton of ore	.710	1.528
Cost per ton for timber, lagging and poles	.0956	.1288

Decrease 1926, $.0332

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Timbering (Cont.)

The number of feet of raising in 1925 was 2,940 feet, while in 1926 it was only 646 feet; a decrease of 2,294 feet. The decrease in feet of timber per ton of ore and also the cost per ton was principally due to this decrease in raising; all stull timber used in main level drifts, except in crushing territory, were peeled and treated with chloride of zinc.

Tramming

1926 Amount,	$25,901.74	Cost per ton,	$.114
1925 Amount,	28,406.29	" " "	.135
Decrease	2,504.55		.021

Sub Division.	1926	1925
Tramming	21,439.42	23,581.92
Skip Tenders & Bellmen	2,962.56	3,211.19
Cleaning Skip Pit	1,499.76	1,613.18

Ventilation

1926 Amount,	$3,172.48	Cost per ton,	$.014
1925 Amount,	3,519.15	" " "	.017
Decrease	346.57		.003

The decreased cost is due to more primary ventilation. There were no additional blowers purchased in 1925 or 1926.

Pumping

1926 Amount,	$21,969.99	Cost per ton,	$.097
1925 Amount,	21,875.72	" " "	.104
Increase	94.27	Decrease	.007

	Gallons pumped	Gals. per minute
1926 -	140,788,044	268
1925 -	131,715,395	251
Increase	9,072,649	17

In 1925 there was an increase over 1924 of 15,553,582 gallons and 26 gallons per minute.

Compressors & Air Pipes

1926 Amount,	$28,028.87	Cost per ton,	$.124
1925 Amount,	26,333.21	" " "	.125
Increase	1,695.66	Decrease	.001

Sub Division.	1926	1925
Compressors	23,945.75	21,278.05
Air Pipes	4,083.12	5,055.16

Cubic feet of air compressed in 1926, 547,650,000 at $.0437 per thousand cubic feet.
Cubic feet of air compressed in 1925, 468,900,000 at $.0454 per thousand cubic feet. An increase in 1926 of 78,750,000 cubic feet, and a decrease of $.0017 per thousand cubic feet.
During 1926 five more air scrapers were put in use on the scraper method of mining.

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Compressors & Air Pipes (Continued)

The decrease in 1926 to air pipes was due to running 2" pipe in new raises in 1925. There was only 646' of raising in 1926 as compared with 2,940' in 1925.

Underground Superintendence

1926 Amount,	$11,819.86	Cost per ton,	$.052
1925 Amount,	11,632.36	" " "	.055
Increase	187.50	Decrease	.003

There were four bosses and an underground foreman employed throughout the year. The increase in 1926 is due to more overtime put in by bosses.

MAINTENANCE ACCOUNTS:

Compressors & Power Drills

1926 Amount,	$658.53	Cost per ton,	$.003
1925 Amount,	521.35	" " "	.002
Increase	137.18		.001

Sub Division.

	Repairs to Compressors	Power Drills
1926 -	$658.53	None
1925 -	521.35	"
Increase	137.18	

On January 21st, 1926, the piston rings in the low pressure cylinder of the Ingersoll-Rand compressor broke, and the cost of making new rings at the General Shops, and the labor of installing them, amounted to $126.77

Hand Tramming Equipment

1926 Amount,	$451.47	Cost per ton,	$.002
1925 Amount,	920.08	" " "	.004
Decrease	468.61		.002

Sub Division.

	Cars	Tracks
1926 -	327.34	124.13
1925 -	696.26	223.82
Decrease	368.92	99.69

The decrease in both sub level tracks and cars is due to a number of contracts using scrapers, which does away with the use of sub level cars and tracks.

Electric Tram Equipment

1926 Amount,	$6,223.15	Cost per ton,	$.028
1925 Amount,	7,878.71	" " "	.038
Decrease	1,655.56		.010

Sub Division.

	Gen. & Motor		Locomotives	Wiring	
1926 -	46.81		2,742.23	574.05	
1925 -	5.84		1,792.51	1,048.75	
Increase	40.97	Incr.	949.72	474.70	Decr.

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Electric Tram Equipment
(Continued)

	M. L. Tracks	M. L. Cars
1926 -	253.86	2,606.20
1925 -	511.47	4,520.14
Decrease	257.61	1,913.94

Increase in Generator and Motor is due to repairs to generator.
Increase in Locomotives is due to the purchase of a second-hand motor from the Francis Mine at a cost of $1500.00. This was the motor received from them in 1924.
Decrease in Wiring is due to less repairing and no extension of trolley lines.
Decrease in M. L. Tracks is due to less repairs to tracks.
Decrease in M. L. Cars is due to charging out four second-hand cars purchased from the Francis Mine and overhauling two of them in 1925.

Pumping Machinery

1926 Amount,	$1,224.50	Cost per ton,	$.006
1925 Amount,	$1,584.78	" " "	.008
Decrease	360.28		.002

A ditch was dug around the settling pool for discharge water.
One set of four new pump plungers was purchased from the Prescott Company at a cost of $280.00.
The decrease in 1926 is due to less replacements and repairs to pump valves.

SURFACE COSTS:

Hoisting

1926 Amount,	$21,406.94	Cost per ton,	$.094
1925 Amount,	20,636.60	" " "	.098
Increase	770.34	Decrease	.004

In 1926 the tons of ore and rock hoisted were 226,899 tons at an average depth of 2,145 feet. In 1925, 214,910 tons were hoisted at an average depth of 2,160 feet, or an increase in 1926 of 11,989 tons and a decrease in depth of 25 feet.

Stocking Ore

1926 Amount,	$4,990.56	Cost per ton,	$.022
1925 Amount,	5,078.79	" " "	.024
Decrease	88.23		.002

In 1926, 207,179 tons were placed on stockpile, while in 1925, 204,937 tons were stocked; an increase of 2,242 tons in 1926. In 1925 two bents of wood stocking trestle were erected, while in 1926 no wood bents were erected.

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Dry House

1926 Amount,	$5,437.07	Cost per ton,	$.024
1925 Amount,	5,110.55	" " "	.024
Increase	326.52		---

The heating charge to dry house in 1926 was $3,985.98; in 1925 it was $3,572.92; 1926 increase over 1925 was $413.06.

General Surface Expense

1926 Amount,	$6,017.34	Cost per ton,	$.027
1925 Amount,	5,790.74	" " "	.028
Increase	226.60	Decrease	.001

Charges to improvement and care of grounds in 1926 were $693.50, while in 1925 they were $756.19; a decrease in 1926 of $62.69.
In 1926, considerable repairs were made to fencing around the property.

MAINTENANCE ACCOUNTS:

Hoisting Equipment

1926 Amount,	$8,560.12	Cost per ton,	$.038
1925 Amount,	5,908.28	" " "	.028
Increase	2,651.84		.010

	Sub Division.		
	Machinery Parts	Skips & Skip Roads	Wire Rope
1926 -	3,467.22	2,806.71	2,286.19
1925 -	1,682.72	2,011.87	2,213.69
Incr.	1,784.50	794.84	72.50

In 1926, two 8-foot steel lined sheaves, costing $475 each, and one cast iron sheave, costing $237.00, were charged out, while in 1925 only one cast iron sheave costing $237.00 was charged out.
In 1926 the carbon brushes on the skip hoist generator set were replaced at a cost of $91.38.
In 1926 one 1 3/8" hoisting rope and one 1¼" hoisting rope were charged out, which was the same as last year. The increase in skips and skip roads was due to repairing skip roads. In 1926, 816 feet of runners were replaced, as against 128 feet in 1925.

Shaft

1926 Amount,	$2,049.09	Cost per ton,	$.009
1925 Amount,	1,668.69	" " "	.008
Increase	380.40		.001

In 1926 repairs were made to the concrete in the shaft. The front of the tenth level pocket was also rebuilt in 1926. This is the last of the pockets to be rebuilt, as one was finished in 1925, and one in 1924.

Top Tram Equipment

1926 Amount,	$3,226.92	Cost per ton,	$.014
1925 Amount,	3,408.86	" " "	.016
Decrease	181.94		.002

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Top Tram Equipment
(Continued)

Sub Division.

	Engines & Motors		Tracks & Cars
1926 -	393.96		1,982.85
1925 -	502.98		1,585.74
Decr.	109.02	Incr.	397.11

	Wire Rope	Sheaves, Rollers, etc.
1926 -	396.45	453.66
1925 -	879.13	436.01
Decr.	482.68	Incr. 17.65

Decrease in Engines & Motors in 1926 was due to repairs to motors in 1925.
Increase in Tracks & Cars in 1926 is due to building one new top tram car and overhauling two other cars.
Decrease in Wire Rope in 1926 is due 10,200 feet being charged in 1925 and only 4,600 feet in 1926.

Docks, Trestles, & Pockets

1926 Amount,	$315.57	Cost per ton,	$.001
1925 Amount,	760.02	" " "	.004
Decrease	444.45		.003

Decrease in 1926 due to repairs to chutes and butterfly in shaft house, extending rock trestle, and painting trestle in 1925. In 1926 a part of the southeast stocking trestle was painted.

Mine Buildings

1926 Amount,	$1,234.96	Cost per ton,	$.006
1925 Amount,	632.45		.003
Increase	602.51		.003

Detail of Mine Buildings.

	1926	1925
Office	45.79	11.48
Shops	9.01	34.77
Stables	33.00	31.13
Shaft House	715.93	274.58
Engine House	23.00	51.40
Boiler House	3.82	-
Dry House	156.79	127.26
Coal dock and Trestle	178.35	-
Miscellaneous	69.27	101.83

The charges to office were for a new hot water tank.
The charges to shops were for repairs to doors and new window lights.
The charges to stables were for new roofing and repairs to horse shed in the horse pasture.
The charges to shaft house were for extra braces put in around the head sheave stations by the Worden-Allen Company.

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Mine Buildings
(Continued)

The charges to engine house were for repairs to roof and replacing window lights.
The charges to dry house were for repairs to sewer, and wiring and installing new drinking bubbler. Also putting new locks on doors.
The charges to coal dock and trestle were for repairs to trestle, and putting in new plank walks on top of trestle.
The charges to miscellaneous buildings were for painting the timber tunnel.

GENERAL MINE ACCOUNTS:

Insurance

1926 Amount,	$12.97	Cost per ton,	$.000
1925 Amount,	13.03	" " "	.000
Decrease	.06		

Engineering

1926 Amount,	$3,184.27	Cost per ton,	$.014
1925 Amount,	2,118.24	" " "	.010
Increase	1,066.03		.004

Analysis

1926 Amount,	$4,195.63	Cost per ton,	$.019
1925 Amount,	4,239.75	" " "	.020
Decrease	44.12		.001

The Athens samples are worked at the Negaunee Mine laboratory. The number of determinations in 1926 was 17,186; in 1925, 16,174; an increase in 1926 of 1,012. The increase in the number of determinations is due to a greater amount of ore shipped from stockpile.

Personal Injury Expense

1926 Amount,	$4,231.93	Cost per ton,	$.019
1925 Amount,	5,399.51	" " "	.026
Decrease	1,167.58		.007

There were no fatal accidents in 1926 or 1925. A settlement with Otto Laitinen, accident report #153, dated December 23rd, 1922, was made in 1925.

Safety Department Expense

1926 Amount,	$208.04	Cost per ton,	$.001
1925 Amount,	138.32	" " "	.001
Increase	69.72		

Telephones & Safety Devices

1926 Amount,	$741.34	Cost per ton,	$.003
1925 Amount,	926.61	" " "	.004
Decrease	185.27		.001

Sub Division

	1926	1925
Lighting shaft and levels	499.75	449.50
Mine Telephones	64.50	59.14

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Telephones & Safety Devices (Continued)

	1926	1925
Safety Gates & Underground Improvements,	48.98	46.14
Fire Equipment	83.74	232.20
Shaft House	17.12	139.63
Appliances for care of Injured persons,	27.25	

Special Expenses

1926 Amount, $75.86 Cost per ton, $.000
1925 Amount, None.
Increase 75.86

Traveling expenses of engineer on account of drying three cars of ore at the Wakefield Dryer.

Mine Office

1926 Amount, $7,330.92 Cost per ton, $.032
1925 Amount, 7,157.46 " " " .034
Increase 173.46 Decrease .002

	Sub Division. Direct Charges		Central Office
1926 -	837.65		6,493.27
1925 -	933.50		6,223.95
Decrease	95.85	Incr.	269.32

RECAPITULATION:

Total Underground Costs:

1926 Amount, $281,551.75 Cost per ton, $1.244
1925 Amount, 299,683.69 " " " 1.426
Decrease 18,131.94 .182

Total Surface Costs:

1926 Amount, $53,238.57 Cost per ton, $.235
1925 Amount, 48,989.98 " " " .233
Increase 4,248.59 .002

Total General Mine Accounts:

1926 Amount, $19,980.96 Cost per ton, $.088
1925 Amount, 19,992.92 .095
Decrease 11.96 .007

ATHENS MINE

ANNUAL REPORT

YEAR 1926.

9. EXPLORATIONS AND FUTURE EXPLORATIONS:

There were no explorations or future explorations at the mine during the year 1926.

10. TAXES:

DESCRIPTION	1926 VALUATION	1926 TAXES	1925 VALUATION	1925 TAXES
CITY OF NEGAUNEE				
Realty(Tax Commission)	2,169,000	68,865.75	2,487,000	64,899.76
Ore in Stock	1,025,000	32,543.80	876,000	22,860.10
Equipment & Supplies	36,000	1,143.00	37,300	973.38
HARVEY PLAT				
Lot 1, Portion of	1,000	31.75	1,000	26.10
Lot 2, " "	200	6.35	200	5.22
Lot 3, " "	100	3.18	50	1.31
STERLING ADDITION				
Lots 4, 5 & 6, Office - Included with Mine valuation.				
Total	3,231,300	102,593.83	3,401,550	88,765.87
Collection Fees		1,025.94		887.66
TOTAL OPERATING ATHENS MINE	3,231,300	103,619.77	3,401,550	89,653.53
Tax Rate		3.175		2.6096
Total City of Negaunee Tax		587,398.44		533,975.96
Athens Mine % of City Tax		17½%		17%

11. ACCIDENTS AND PERSONAL INJURY:

There were no fatal accidents during the year. There was a total of 32 accidents for the year in which the men remained home more than one day. The most serious injuries were as follows:

George Chapman - Accident report No. 270, dated July 8th, 1926. Chapman was struck on the back by a fall of ground. He received bruises and contusions over the back, and also internal injuries. He is still home, partially paralyzed.

William Ghischia - Accident report No. 265, dated April 16th, 1926. His back was injured by a fall of ground. He was sent to Detroit for treatment. He is still home, but may be able shortly to do light work.

Andrew Tellam - Accident report No. 267, injured May 10th, 1926. Tellam was coming down #811 raise on his way to dinner when he slipped and fell about twelve feet and landed on the last collar plank in the raise. He fractured both bones of his left leg near the ankle. Returned to work on September 20, 1926.

Arthur Paulon - Accident report #278, injured September 1st, 1926. Paulon was picking room for lagging when a chunk of heavy blue ore fell from the back of the drift and struck the third finger of his right hand, crushing it. The finger was amputated. He returned to work on November 22, 1926.

12. NEW CONSTRUCTION AND PROPOSED NEW CONSTRUCTION:

a. There was practically no new construction during the year 1926.

ATHENS MINE

ANNUAL REPORT

YEAR 1926.

12. NEW CONSTRUCTION AND PROPOSED NEW CONSTRUCTION:

b. Proposed New Construction:

Proposed Drying Plant:

The Athens ore contains a high percentage of water as it comes from the mine, and the ore is naturally sticky. When shipments were made directly from pockets, we had a number of complaints on account of the wet and sticky condition. During the past few years we have stocked practically all of the product, which gave the ore a chance to drain out somewhat, and showed a loss of moisture of from 1% to 2% when loaded by steamshovel. During the last few years a considerable quantity of this ore has been used in the Cliffs group mixture with other ores of more favorable physical structure, and we have had no complaints. However, the Pickands Mather Company have to use their proportion of Athens ore in straight cargoes and find it difficult to dispose of their portion of the product. They have suggested that a drying plant be erected by means of which they feel that a most desirable product can be obtained. The ore from the mine runs normally from 14% to 15% moisture. If this is dried to about 9½%, it loses one of its principal drawbacks, namely, its plasticity. If the drying is carried on farther it immediately produces dust. A tentative estimate has been prepared which shows that the net cost of drying would be approximately 15¢ per ton, and that the probable cost for the installation of a plant would be $170,000.

If the installation of a drying plant would secure a market for this grade, it is possible that the product could be increased, which would mean a saving in overhead expense. It might mean, also, that the mine could be exhausted before the termination of the Mitchell Lease in 1943. A decision as to whether it would be advisable to make this installation will probably be made early this year.

13. EQUIPMENT AND PROPOSED EQUIPMENT:

a. Steam Shovels and Crushers:

The Athens Mine owns no steam shovel.

Crusher:

There was no change in the crusher equipment during the past year. The only ore crushed was a little that was sent to charcoal furnaces. Ore which was loaded from stockpile, which had to be crushed, was sent to the district plant at the Maas Mine.

b. Stockpile Trestle:

The southeast steel stocking trestle was painted during the summer. There were no temporary bents erected at the southeast trestle this year.

c. Timber Treating Plant:

This plant operated as usual during the summer months. There was no addition to the equipment. The Bureau of Mines, in conjunction with the U. S. Forestry Service, used our plant to experiment with borax and sodium fluoride solutions for treating mine timber. I have mentioned this under the heading 7-d. For statement of the cost of treating, see 6-c.

d. Tugger Hoists and Scrapers:

Five more double drum tugger hoists and scrapers were purchased in 1926, making the total number employed 17. These were all of the Ingersoll-Rand 6-H type. A table showing the operations of the scrapers is included under 7-g, Mining and Loading.

ATHENS MINE

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YEAR 1926.

13. EQUIPMENT AND PROPOSED EQUIPMENT:

f. Steel Lined Top Sheave:

During the past year a steel lined top sheave was ordered for the cage compartment. This has not been received. When this is installed, all three compartments will be equipped with steel lined sheaves. These sheaves have been very satisfactory.

14. MAINTENANCE AND REPAIRS:

a. Repairs to Shaft:

Under the heading 7-k I have gone into detail regarding repairs to the circular section of the shaft where there had been a disintegration of the concrete due to freezing and thawing.

15. POWER:

The power used at this mine is wholly electrical. This was furnished until May of this year by the Cleveland-Cliffs Iron Company. It is now supplied by the Cliffs Power and Light Company, a subsidiary of the Cleveland-Cliffs Iron Company. There has been no change in the charge per k.w. hour, which is 1½¢.

17. CONDITION OF PREMISES:

The premises were kept neat and clean, and were very attractive. We have had a great many compliments from visitors.

18. NATIONALITY OF EMPLOYEES:

This has been prepared under two statements. The first gives the report as ordinarily submitted to the Company. It shows the nationality of the employees as to parentage. The second separates the nationalities into foreign-born and American-born, the latter being shown as Americans.

Nationality	1926	Percent	1925	Percent
English	41	26	44	25.5
Finnish	55	35	61	35.5
Italian	22	14	25	14.5
Swede	13	8	12	7
Irish	2)		2)	
Scotch	1)	2	1)	2
French	17	11	18	10.5
German	4	2	4	2
Austrian	1		1	
Norwegian	3	2	3	3
Dane			1	
Total	159	100%	172	100%

Nationality	According to Parentage	American Born	Native Born	Percent
American			78	49
English	41	22	19	12
Finnish	55	20	35	22
Italian	22	3	19	12
Swede	13	7	6	4

ATHENS MINE

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YEAR 1926.

18. NATIONALITY OF EMPLOYEES:(Cont.)

Nationality	According to Parentage	American Born	Native Born	Percent
Irish	2	2		
Scotch	1	1		
French	17	16	1	1 (All others)
German	4	4		
Austrian	1		1	
Norwegian	3	3		
Total	159	78	159	100%

SOUTH JACKSON MINE

ANNUAL REPORT

YEAR 1926.

1. GENERAL:

The South Jackson Mine has not operated for the past two years. Therefore the estimate of ore reserves is the same as reported December 31, 1924. This will be shown under #4, Estimate of Ore Reserves. The only other work was that at the crusher plant, which operated for a short time in the fall.

4. ESTIMATE OF ORE RESERVES:

a. Available Ore:

Above present pit available by present system of mining:

On Southwest side	35,000 tons
North of Lucy Pit	5,000 "
South and Southwest of Lucy Pit	3,000 "
Total	43,000 tons.

Below present pit and above drainage tunnel available by milling:

West of Crusher	186,000 tons
Area below bottom of present pit shown by churn drilling	105,226 "
Total	291,226 "
GRAND TOTAL	334,226 tons.

c. Estimated Analysis:

	Iron	Phos.	Silica	Alum.	Mang.	Lime	Mag.	Sul.	Igni.	Moist.
Natural	34.55	.066	36.00	1.42	2.00	.435	.175	.010	2.00	7.00

6. SURFACE:

a. Buildings, Repairs:

(1) Crusher:

On account of the large quantity of ore which had to be crushed before the close of navigation, it was decided to operate the Jackson Crusher for certain soft ores. This plant had not been in operation for a matter of eight years, so it was necessary to do considerable overhauling and repair work around the machinery and buildings. The shaft house had settled badly. A new floor had to be installed at the top of the crusher. The skip road and both the railroad pocket and the crushed ore pocket were repaired. If this plant is to be used for future operations, it should be thoroughly overhauled.

c. Tracks, Roads, and Fences:

The fences around the open pits were repaired during May.

d. Crusher:

The work of repairs to the crusher building started on September 23rd, and the first cars were sent through the crusher on the 30th. The ore handled was very wet and gave us considerable trouble in the dump pocket which feeds the skips. The crusher operated on a single shift from September 30th to October 10th, and from then to the 18th on a double shift, when it was shut down. The tonnage handled was comparatively small and nothing but the soft ores were crushed.

It was necessary during the short interval that the crusher was used to shut down several times in order to make repairs to the shaft house. A number of the timbers had rotted away and had to be either braced or replaced.