Dry House,

1925 Amount	$7,273.54 -	Cost per ton $.021
1924	8,444.44	.026
Decrease	$1,170.90	$.005

Coal to Boiler House -	Tons	Cost
1925	1100	6,312.29
1924	1156	7,078.92

Decrease cost per ton due to less coal used and cost of Imperial boiler installed in 1923 and partly charged in 1924.

General Surface Expense,

1925 Amount	$5,322.68 -	Cost per ton $.015
1924	5,831.04	.018
Decrease	$ 508.36	$.003

Decrease cost per ton due to more product and less general surface repairs in 1925.

MAINTENANCE ACCOUNTS:

Hoisting Equipment,

1925 Amount	$4,425.66 -	Cost per ton $.013
1924	3,765.34	.012
Increase	$ 660.32	$.001

Sub Division.

	Wire Rope	Machinery Parts	Skips & Skip Roads
1925	1140.12	1442.58	1842.96
1924	102.88	1826.33	1836.13
Incr.	1037.24	Decr. 383.75	Incr. 6.83

Wire Rope: Increase due to two new ropes put on skip hoist in 1925, one on North side and one on South side. Also 800' ¾" wire rope put on #2 hoist.

Machinery Parts: Decrease due to less repairs in 1925.

Skips & Skip Roads: The repairs here were about equal in both years.

Shaft,

1925 Amount	$1,913.47 -	Cost per ton $.005
1924	1,961.19	.006
Decrease	$ 47.72	$.001

Decrease cost per ton is due to less general shaft repairs.

Top Tram Equipment,

1925 Amount	$1,579.62 - Cost per ton	$.005
1924	2,498.52	.008
Decrease	$ 918.90	$.003

Sub Division.

	General Repairs	Wire Rope
1925	1,049.49	530.13
1924	2,496.02	2.50
Decrease	1,446.53	Increase 527.63

General Repairs: Decrease due to 1924 excessive charges, replacing broken top tram gear and pinion, more general repairs, also replaced 400 more wood rollers in 1924.

Wire Rope: Increase due to putting new rope on North side 1925 (5150' of 5/8" wire rope, cost $469.00).

Docks, Trestles & Pockets,

1925 Amount	$649.53 - Cost per ton	$.002
1924	470.45	.001
Increase	$179.08	$.001

Increase cost per ton due to some trestle painting and more general repairs in 1925. No painting in 1924.

Mine Buildings,

1925 Amount	$ 726.38 - Cost per ton	$.002
1924	1,005.25	.003
Decrease	$ 278.87	$.001

Decrease cost per ton due to guniting shaft-house and completing surface dry house in 1924; compared with putting a little metal lath on shaft house and making new cement floor in dry house in 1925.

Total Surface Costs,

1925 Amount	$46,072.94 - Cost per ton	$.132
1924	47,538.21	.147
Decrease	$ 1,465.27	$.015

GENERAL MINE ACCOUNTS:

Insurance,

1925 Amount	$168.07 - Cost per ton	$.000
1924	189.82	.001
Decrease	$ 21.75	$.001

Decrease due to less insurance and more tonnage in 1925.

Engineering,

1925 Amount	$2,278.89 - Cost per ton	$.007
1924	2,312.73	.007
Decrease	$ 33.84	$.000

Engineering time about equal.

Analysis,

1925 Amount	$14,305.74 - Cost per ton	$.041
1924	11,983.63	.037
Increase	$ 2,322.11	$.004

Cost per determination 1925, $.190305
" " " 1924, .169169
Increase, $.021136

The principal increase was in labor. A night chemist was employed during the shipping season so that stockpile analyses would be had by the time cars reached the dock.

The account includes proportion of district laboratory and sampling. The total cost for the laboratory in 1925 was $18,765.54 and the total determinations 98,608. In 1924 the cost was $16,189.83 and the total determinations 95,702. An increase in cost of $2,575.71 and 2,906 determinations.

Personal Injury Expense,

1925 Amount	$4,464.79 - Cost per ton	$.013
1924	4,855.17	.015
Decrease	$ 390.38	$.002

Decrease cost per ton in 1925 due to less injury expense. No fatal accidents since 1919.

Safety Department Expense,

1925 Amount	$99.06 - Cost per ton	$.000
1924	86.71	.000
Increase	$12.35	$.000

More expense.

Telephones & Safety Devices,

1925 Amount	$1,096.20 - Cost per ton	$.003
1924	2,304.66	.007
Decrease	$1,208.46	$.004

Decrease cost per ton due to 1924 charges to E.&A. #445 underground fire protection. No charges to this E.&A. underground in 1925.

Local General Welfare,

1925 Amount	$1,626.79 - Cost per ton	$.005
1924	1,598.10	.005
Increase	$ 28.69	$.000

More welfare work done in 1925.

Mine Office,

1925 Amount	$11,207.38 - Cost per ton		$.032
1924	10,794.16		.033
Increase	$ 413.22	Decrease	$.001

Sub Division.

	Direct Charges		Mine Office
1925	$3,050.52		$8,156.86
1924	2,951.98		7,842.18
Increase	$ 98.54	Increase	$ 314.68

Increase direct charges due to more general office charge.

Increase in Mine Office due to increase in salaries of supply clerk and stenographer.

MAAS MINE - 1925.

A. PRODUCTION AND SHIPMENTS.

I. Production by Grades.

Bessemer,	4,153 tons,	-	2.7%
Maas,	145,726 "	-	97.3%
Total,	149,879 "	-	100.0%
Rock,	1,200 "		

In 1924 the production was 226,167 tons with 2.3% Bessemer. The falling off of production in 1925 was due to the mine being idle three and one-half months on account of remodelling the shaft.

II. Shipments.

Grade of Ore	Pocket Tons	Stockpile Tons	Total Tons
Bessemer,	250	45,494	45,744
Maas,	51,689	249,010	300,699
Total -	51,939	294,504	346,443

III. Stockpile Balances.

	1925	1924
Bessemer Ore on Hand Dec. 31st,	17,892 tons,	59,483 tons,
Maas " " " "	367,558 "	522,531 "
Total ore on hand -	385,450 tons.	582,014 tons.

The ore in stock was reduced during the year nearly 200,000 tons. This was due principally to the Cliffs Group Ore shipped. This mixture contains 40% Maas Ore. The mine being idle three and one-half months was another factor - ore was taken from stockpile which otherwise would have come from the pocket.

IV. Division of Product by Levels.

The product by levels is as follows:-

Second Level,	34,264 tons,
Third Level,	1,132 "
Fourth Level,	114,485 "
Total -	149,879 tons.

V. Production by Months.

Month	Bessemer	Maas	Total	Rock
January	1,040	18,092	19,132	420
February	1,600	16,016	17,616	388
March	1,740	17,428	19,168	240
April		17,011	17,011	44
May		16,519	16,519	24
June	683	16,869	17,552	
July		983	983	
August				
September				
October		6,169	6,169	
November		16,205	16,205	84
December		19,524	19,524	
Total -	5,063	144,816	149,879	1,200
Transferred from	910 to	910		
Total -	4,153	145,726	149,879	1,200

VI. Delays.

There was but one serious delay during the year which occurred on December 28th, caused by ice in the skip compartments of the shaft. There was no hoisting for eight hours. The delays were as follows:-

January 7th, Three hours delay account of skip off track in dump.

February 3rd,	Three hours delay, hoisting on one side account of broken top tram rope.
June 22nd,	One hour delay account of skip off track.
June 23rd,	Two hours delay account of skip off track.
November 9th,	Two hours delay account of ice in shaft.
December 28th,	Eight hours delay account of ice in shaft.

VII. Delays from Lack of Current.

There were only two electrical delays during the year as follows:-

October 19th,	No current due to transmission line down on account of heavy snow storm.
December 18th,	One-half hour delay account of no current.

B. VIII. ESTIMATE OF ORE RESERVES - December 31st, 1925.

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

AVAILABLE ORE

Ore reserve between 1st and 2nd levels - - - -	248,980 tons,
Ore reserve between 2nd and 3rd levels - - - -	1,249,065 "
Ore reserve between 3rd and 4th levels - - - -	1,898,704 "
Total available - - - - - - - -	3,396,749 tons.

NON-AVAILABLE ORE

Between 3rd and 4th levels - - - - - - -	1,430,390 tons.
Total All Ore, above 4th level - - -	4,827,139 tons.
Percentage of Bessemer equals 10% - - - -	482,714 tons.

BESSEMER ORE	TRADE NAME	TONS
Developed	Maas-Bessemer	339,675
NON-BESSEMER ORE		
Developed	Maas	3,057,074
Total Bessemer and Non-Bessemer - -		3,396,749

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ESTIMATED ANALYSIS.

	IRON	PHOS.	SILICA	ALUM.	MANG.	LIME	MAG.	SUL.	IGNI.	MOIST.
Dried 212°										
Maas-Bessemer	61.00	.044	7.50	1.79	.206	.510	.218	.007	1.50	
Natural	53.39	.039	6.56	1.57	.181	.446	.191	.006	1.31	12.50
Dried 212°										
Maas	59.90	.116	7.60	2.34	.280	.820	.256	.009	2.80	
Natural	52.25	.101	6.63	2.04	.244	.715	.224	.008	2.44	12.75

C. GENERAL.

(1) Labor.

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

At the time of the shut-down, it was thought that a number of men would have to be laid off, however, practically every one was taken care of. The remodelling work needed a good sized crew in the shaft and on surface; and underground timbering crew was maintained and the Negaunee Mine employed ninety miners and several surface men. This enabled us to keep our organization intact.

(2) New Construction.

The new construction at the Maas Mine during the past year was covered by E.&A.'s #476, #481 and #467. I have sub-divided E.&A. #476 under headings "a" to "e" inclusive and have taken up new construction work under separate headings as follows:-

E.&A. #476 - a. Remodelling Shaft.
Do. - b. Remodelling Headframe.
" - c. Building Steel Trestles.
" - d. Idler Stands.
" - e. Transfer Engine House.
E.&A. #481 - f. Crusher.
E.&A. #467 - g. Ventilating System.

a. Remodelling Shaft.

When the Maas shaft was sunk it was very crooked from surface to ledge. The skip and cage compartments were made as straight as possible, but it was impossible to make them of standard size. The space in the West end of the shaft, occupied by the skips, was so narrow that long and narrow skips had to

be installed and rails used for guides, as the space would not permit wooden runners. The cage compartment permitted the use of a narrow cage, only 8' in length, or too short for regulation mine timber.

The skips had given considerable trouble the past couple of years on account of the rail guides, which wore unevenly and were extremely hard to replace. Occasionally the skips would jump the guides and several times serious accidents were avoided only through luck.

Early in the year the remodelling of the shaft was authorized and as a result we now have a shaft which is practically the Cleveland-Cliffs standard. The skip compartments being standard and the cage compartment being of standard width and 10' 6 1/8" long, whereas the standard is 10'10". It has steel sets from the collar to 48' below the third level, and steel dividers between the cage and skip compartments and between the two skip roads, from that point to the bottom of the shaft.

The engineer in charge of the remodelling, H. O. Moulton, submitted a report on the work which is practically as follows:-

For convenience in keeping records, the shaft was divided into sections as follows:-

Section "A".

This section extends from the collar at a mean sea elevation of 1410.53 to ledge at 1220 and was concreted by the New York Foundation Company in 1911. Here it was only necessary to change the position of the existing steel shaft sets as will be described later.

Section "B".

This is the main section in the shaft and extends from ledge at 1220 elevation to 48' below the third level at an elevation of 253.0. Here the wooden sets were replaced by steel and the North and South sides were stripped.

Section "C".

This section extends from an elevation of 253' to the bottom of the shaft or an elevation of 20.0'. In this section only the skip-cage divider

and the skip divider were replaced with steel, the remaining wooden members being left in their old position.

There was certain work done in advance or before the mine was shut down, making a considerable saving in time and cost. This work was as follows:- In Section "A" the former steel members rested on cast iron brackets bolted to the concrete. The cage ladder divider remained in its original position and the angle holding the cage guide was moved 1'½" South and the corners of these chairs or brackets were cut off to allow clearance for the cage. The skip cage divider and also the dividing between the two skips had to be removed to make a 6'0" opening for the cage and to obtain standard skip compartments. As the wooden skip guides were so much larger than the former steel rail runners, it was necessary to bolt special brackets (shown on drawing N-57) to the concrete. The new position of all these brackets were laid out by using plumb lines and a pattern of the bracket.

Before the mine was shut down, a crew of three men was employed night shift and Saturdays for twenty-one shifts, drilling holes and placing the bolts with a lead collar shown on drawing N-57. A crew of three men and two drills were occupied for sixty shifts drilling the rock in Section "B" on the North and South sides of the shaft behind the lath so that later blasting would remove approximately 6" to make room for the new steel sets.

The mine was shut down on June 30th and on Wednesday, July 1st, the shaft crew started operations. This crew was divided into three shifts of eight men and one boss and worked eight-hour shifts.

On July 1st and 2nd the men cleaned out the skip pit pocket, the second and fourth level pockets, placed a pentice on the second and fourth levels to divert any falling material away from the bottom of the shaft and to protect the ladder road, where the pumpmen and men repairing drifts were obliged to climb from the second to the third levels. The casing was also removed from the sides of the headframe on surface and some of the underground casing plank and netting was removed. On July 3rd, the first set was taken out and changes made in the

shop while the brackets were being bolted in their new position. This work in the shop was slow as the brackets had to be heated and cut off at the corners, the angle holding the cage guide was cut off and riveted in its new place. The sets being 10' apart with very poor support for staging, the men had to wait until the old set was returned and set in place before they could remove the next set. On July 4th the men took the only time off for the entire three months. The twenty-four sets in Section "A" were completed by July 12th, making nine days for twenty-four sets. The rate of progress through "A" Section would have been increased if new steel had been purchased instead of trying to re-fabricate the old members.

In Section "B" everything was removed but the pipes and cables and a complete new steel set (as per drawing N-62) was placed at 6' centers.

This set was made up of 6" I beams reinforced with $\frac{1}{4}$x$2\frac{1}{2}$x$3\frac{1}{2}$ angles top and bottom. These beams except the divider between the skip compartments were set on their side and the inside space between the flange and the angle took the casing plank which was $2\frac{1}{4}$" fir. The wall and end plates were both bolted on the inside to a 6"x6"x3/8" angle which formed the stuttle. This stuttle was placed on the inside to save excavation of the rock in the corners between sets. Using this plan it was only necessary to cut a channel-like opening at each set. These stuttles were 6' long, joined together with two plates and punched in the center to take the set. It would have been better if they had been punched one foot above the bottom as the 3' piece extending below was very much in the way. Very often it was necessary to remove an extra set below the one being replaced to allow for these corner pieces.

The cage guides and the two outside skip guides were fastened to a $\frac{1}{4}$" plate riveted to the I beam. The two center skip guides were fastened to an angle riveted on alternate sets top and bottom of the skip dividers. The guides were of pine $5\frac{1}{2}$"x$7\frac{1}{2}$" dimensions. The dividing between the skip and cage was wood and that between the cage and ladder, standard wire netting.

The first set or set #25 was placed 7' below the last set in Section "A" and then the standard 6' interval was carried below. The interval from

set #26 up to the old concrete was concreted after reinforcing with rails extending into the rock for bearers. On July 31st set #53 was placed, making 29 sets from July 13th to the last of the month or an average of 1.8 sets per day.

The first 50' below the ledge being close timbered, made much more material to be removed. Sets #39 and #40 were concreted in for a second bearer. Up to this time the rock had been hoisted on the temporary cage and trammed out on the old timber field. Later the rock was handled with a bucket and temporary rock trestle and the timber dumped off the tracks near the entrance to the tunnel and thence carted away later. This timber was scattered around the field between the county road and the rock pile and given to anyone who would take it away for fire wood as it was of no value to the Company.

The temporary cage was of standard gauge and had 10' extension runners above the bonnet to allow the cage to drop below the last set of guides. This facilitated the handling of small material being hoisted or lowered in the shaft. The long pieces and the rock bucket were slung underneath the cage.

During August, 67 sets were placed, to set #120 or nine sets below the first level, averaging a little better than two sets per day. Four concrete bearers were placed as follows:- Sets #60 to #61, #82 to #83, #100 to #101 and #116 to #117. Just previous to the 1st of October, Section "B" was finished with set #185 or eight sets below the third level. On October 1st, set #189 had been placed, making 69 sets, a slightly better average than for August. Concrete bearers were set as follows:- Sets #132 to #133, #150 to #151, and #167 to #168.

Section "C" was completed on October 8th, placing 18 sets in eight days. Here it was only necessary to remove the wooden skip gage dividers and the small wooden members in the skip compartment. Two steel members were bolted to the wall places to form the new dividers. The shaft throughout this section was raised from the fourth level in 1917 and 1918 and was made of standard size at that time. Notches were left in the wall plates at that time to take wood dividings if the shaft were made standard, but it was thought best to use

steel. The cage-ladder dividing was left in place and only the position of the cage guide was changed 3" to the South to allow for clearance.

While the steel shaft is only 10' 6 1/8" by 13'10" inside, this lower section is 10'10" by 14'10", the extra room being to the South and West.

From October 8th to 15th the skip guides and dividing plank were placed, the shaft plats cleaned up, skips put on and tried out in the new dump. The mine resumed regular operations on October 20th, being delayed one day on account of no current.

The following is a statement of the cost of remodelling the Maas shaft to December 31st, 1925:-

Section "A" - 180' - 24 sets.		
Cost of Chairs, Brackets, Etc.,	$ 966.47	
Installing steel sets,	1,246.99	
Cost of casing plank,		
a. Casing Plank,	681.27	
b. Installing,	616.59	
c. Ladders & Solars,	96.56	
Total, Section "A" -		$ 3,607.88
Section "B" - 968' - Ledge to 48' below 3rd Level.		
Cost of Steel,	12,288.08	
Concreting,	1,108.16	
Installing Sets,		
a. Drilling & Blasting,	4,883.81	
b. Installing Sets,	2,867.83	
Removing Timber and Lath,	6,447.49	
Casing Plank,		
a. Casing Plank,	6,090.56	
b. Installing,	285.64	
c. Ladders & Solars,	938.85	
Total, Section "B" -		34,910.42
Section "C" - 235' - From 48' below 3rd Level to bottom.		
Cost of Steel,	3,412.52	
Installing Sets,		
a. Installing Sets,	374.62	
Removing Timber and Lath,	176.53	
Casing Plank,		
a. Casing Plank,	1,243.54	
b. Installing,	257.35	
c. Ladders & Solars,	9.02	
Total, Section "C" -		5,473.58
For Entire Shaft.		
Cost of Runners & Installing,		
a. Runners,	2,299.64	
b. Installing,	2,034.85	
Miscellaneous,		
a. Hoisting,	2,539.59	
b. Hoisting Machinery,	372.68	
c. Compressors,	2,673.00	
d. Top Landing,	2,584.78	
e. Dry House,	1,007.38	
Total -		13,511.92
Grand Total - 1,383 feet -		$57,503.80

b. Remodelling Headframe.

During the time the shaft was being remodelled, the headframe was leveled and alterations made. Due to settlement, the headframe was out of plumb. It was jacked into position and the piers built up under the column supports.

In the old design the skips dumped to the West directly into the top tram cars. Both stockpiles were to the West of the shaft, the Bessemer pile being to the North, the Maas to the South of the shaft loading tracks.

Under the new arrangement, both stockpiles are to the South of the tracks, the Bessemer being to the East in the space used for timber, the Maas to the West where it formerly was stocked.

The dump in the headframe was changed and a butterfly installed, the top tram cars run East and West and by changing the butterfly, ore can be dumped into either the North or South car. This is the arrangement used at our other mines and is practically standard.

The alterations were made by the Wisconsin Bridge & Iron Company.

Cost of Remodelling Headframe (E.&A.#476) to December 31st, 1925:-

Wisconsin Bridge & Iron Company's Contract and Extras,	$6,252.13
Company charges, Rebuilding dumps and miscellaneous,	2,109.89
Enclosing Shafthouse,	283.28
Foundation for Headframe,	209.21
Total -	$8,854.51

c. Building Steel Trestles.

Two permanent trestles of steel now connect the headframe with the temporary stocking trestles. Each are 225 feet in length, one running East, the other West. Both are on the South side of the shaft.

The trestles were built on contract by the Wisconsin Bridge & Iron Company.

Cost of Permanent Trestles (E.&A.#476) to Dec. 31st, 1925:-

Cost of Steel & Erecting,	$13,898.35
Piers,	
a. Excavation,	137.56
b. Forms,	287.17
c. Concreting,	509.41
Decking,	2,214.84
Laying Rail,	139.58
Sheaves, Spools and Ropes,	267.81
Total -	$17,454.72

d. Idler Stands.

A contract was let with the American Bridge Company for two steel pulley stands to replace the old wooden stands. These also were erected when the shaft was being remodelled. The work was done by the Wisconsin Bridge & Iron Company's crew on the cost plus basis.

Cost of Idler Stands (E.&A.#476) to Dec. 31st, 1925:-

Cost of Pulley Stands,	$1,943.96
Foundation for Pulley Stands,	
a. Excavation,	43.37
b. Forms,	22.19
c. Concreting,	93.89
Total -	$2,103.41

e. Transfer Engine House.

The changing of the top tram system required a new location for the top tram engines. The engine house was originally to the West of the head-frame between the shaft loading tracks. It was moved to a point near the new West permanent trestle in line with the East-West stockpiles.

Cost of Transfer Engine House (E.&A.#476) to Dec. 31st, 1925:-

Re-Locate Controller House,	$ 123.03
Transfer System,	
a. Building,	411.50
b. Foundations for Engine,	
1. Excavation,	33.23
2. Forms,	92.67
3. Concreting,	112.12
c. Installing Machinery,	1,154.11
Total -	$1,926.66

f. Crusher - E.&A. #481.

The crushing plant just North of the Maas, erected in 1917, was designed to handle South Jackson and stockpile ores. During tht year considerable trouble was had in crushing the Ogden Ore so as to make a satisfactory product. In the fall alterations were authorized, E.&A.#481.

The estimate is as follows:-

Revolving Screen - 72" x 12',	$ 9,000.00
No. 10 Superior McCully Gyratory Crusher,	7,000.00
Belt Conveyor,	6,000.00
Building for Screen,	5,000.00
Building for Belt Conveyor,	3,000.00
Pocket,	4,000.00
Foundation for Crusher,	1,000.00
Freight & Erecting Machinery,	4,000.00
Motors & Wiring,	6,000.00
Installing 1 40x42 Jaw Crusher instead of #7½ Gyratory Crusher,	12,000.00
Total -	$57,000.00
Contingencies 10% -	5,700.00
Total -	$62,700.00

As soon as foundation plans were received, work was started so that the new plant will be ready for operations in the spring.

Foundations have been built for the #10 Gyratory Crusher and the motor to run this crusher, for the new building and pocket and also small piers for the bents to support the belt running from the present plant to the new pocket. The old #7½ Gyratory Crusher has been dismantled and the foundations have been made for the new jaw crusher.

The carpenters have started work on framing timber for the new buildings. The steel men have been notified to start their work.

g. Ventilating System - E.&A. #467.

The surface plant for this ventilating system was completed at #2 shaft Negaunee Mine in June and the plant is now in operation. The cost of the surface installation which amounted to $7,735.49 was divided equally between the Maas and Negaunee Mines. The underground work at each mine was assumed by the mines themselves. At the Maas this amounted to $2,815.92.

A detailed report on this installation appears in the Negaunee Mine

annual report for this year.

(3) Explorations.

There were no explorations at this mine during the year.

(4) Fatal Accidents.

There were no fatal accidents.

(5) Accidents to Equipment, Fires, etc.

a. Underground Pumping Plant.

On April 18th the pinion shaft broke on the Prescott pump in the third level pumping station. This pump was idle 32 hours while repairs were being made. During this period the mine water was handled by the Aldrich and the reserve centrifugal.

On August 3rd the same shafting and pinion on this third level Prescott pump broke again. This was during the period that the mine was shut down so that the pinion had to be taken out through the Negaunee shaft. It took seven days to make the repairs. The position of the motor operating this pump had to be changed slightly. On the night of August 3rd, the first and second level water from the Maas Mine was pumped to the tenth level Negaunee Mine and handled through the Negaunee pumping plant.

b. Maas Crusher.

The accidents to the equipment of this plant are covered under Item D, Surface, Maas Crusher. While this plant is called Maas Mine Crusher, it is really the Range Crusher and not Maas Mine equipment.

D. SURFACE.

(1) Buildings.

The transfer engine house West of the shaft was dismantled and a new engine house was built at the East end of the Maas stockpile. The engines are in line with the East and West stocking trestles. The new building is 19' by 23'. The walls are of common boards covered with gunite, making the

building practically fire-proof.

(2) Stockpiles.

During the past few years it has been necessary to provide new stockpile ground for the Maas ore to the South of the original pile. This year the shipments from the Maas pile were confined to the North side. This permitted the erection of the stocking trestle on the site of the original pile immediately alongside of and paralleling the pocket tracks. Twenty-six double bents have been erected connecting with the new permanent trestle. Next year, after the winter's product has been shipped, the pile to the extreme South, covering the Northeast corner of Stewart Field, should be removed to permit the construction of a new road from the end of Cherry Street to connect with the present county road at a point due South of the shaft.

The new Bessemer stockpile has been arranged on the South side of the loading track to the East of the headframe in the space formerly used as a timber yard. Five single bents have been erected.

The new rock trestle extends from the end of the East permanent trestle Southeasterly to the old rock pile.

There still remains 17,892 tons of Bessemer ore in the old pile to the Northwest of the tracks. When this is removed this ground will be used for storing mine timber.

(3) Open Pits.

There are no open pits on this property.

(4) Coal Dock.

Repairs to the power plant coal dock for the season were as follows:- Replaced twelve stringers, two legs, forty-eight corbells, nineteen caps and spliced eight legs. This work was all on the center track of the dock and was done in September and October.

(5) Maas Crusher.

Operations at the Maas Crusher started on April 22nd and continued

until November 13th. The product crushed by grades is in the following tabulation:-

Morris-Lloyd,	92,847 tons,
Negaunee,	13,934 "
Maas,	29,019 "
Athens,	4,427 "
Tilden Silica,	64,822 "
Barnes,	4,698 "
Total -	209,747 tons.

During the first few months the ore was handled by a day shift crew with occasional over-time to complete shipments. During the latter part of the year it was necessary to operate throughout the twenty-four hours. This was due partly to weather conditions and partly to the rush of crushing orders at the end of the season.

The Ogden Ore is of flag-like structure, breaking in flat slabs. In August, complaints were received that this ore was not crushed as fine as desired. The crusher was set up to a smaller opening and new concaves installed. The grizzleys were practically elliminated requiring nearly all of the ore to go through the crusher. The plant was not designed for this kind of a product and undue strain was brought on it, causing all kinds of trouble. In August there were several accidents to this equipments; two spiders were broken also the crusher pinion. New concaves had to be installed and also a new mantle. These repairs were the most extensive made since the plant was installed and added greatly to the maintenance costs.

It was seen that alterations in the plant would have to be made in order to supply a satisfactory Ogden product. These were authorized in the fall and the construction work of remodelling the plant is now underway. This is reported under C-2-f.

(6)x<u>Steam Turbine.</u>

On account of low water in the storage resevoirs, the steam turbine

was started on July 15th and ran continuously until December 19th when it was shut down on account of satisfactory water conditions.

The boiler plant which operates the turbine is being overhauled.

E. UNDERGROUND.

(1) Development.

The development work at the mine this year was very small. It consisted in driving 170' of rock drift on the 245' tramming sub level and putting up one two compartment raise from this sub level to the third level. This raise went 40' in rock and 15' in ore. The other development work was in connection with our sub level mining and stoping.

(2) Stoping.

Practically all of the ore that was mined came from the territory adjacent to the Negaunee Mine; on the foot side between the first and second levels where most of the ore came from the Cemetery Tract; from foot to hanging between the second and third levels and on the hanging side only below the third level near the Negaunee boundary. In the Railroad Pillar the operations were above the fourth level and extended under the hanging across the formation.

From July 1st to October 15th no work was done on the sub levels, but timbermen were employed on main level repair work.

The work on the various levels and sub levels in detail is as follows:-

SUBS BETWEEN FIRST AND SECOND LEVELS.

600' SUB LEVEL.

This sub level which was opened in 1923 should be completed within one or two months.

In December two contracts stoped in the Cemetery Tract.

588' SUB LEVEL.

This sub level in the extreme Eastern end of the mine was opened in January and development work was carried on throughout the year.

In December there were six contracts employed, three to the North of

the dike, one of which was stoping, the other two developing; to the South of the dike were three contracts stoping under the hanging.

SECOND LEVEL.

A narrow drainage drift was driven along the East side of the old main drift between the present and old foot wall drifts. The idea was to help drain the water which is seeping down to the trench stope on the 245' sub level. This drift is helping somewhat but we are not getting the water we had hoped at this point.

During the period the mine was shut down to make repairs in the shaft, the East end hanging drift was retimbered from the forks to the Negaunee boundary.

325' SUB LEVEL.

A drainage drift was driven along the foot from #2 raise Easterly to a point 40' beyond #4 raise and then turned to the South for 40'. This drift is catching a considerable quantity of water which otherwise would have reached the trench stope below.

THIRD LEVEL.

During the year the pillars between the old rooms were mined from the 300' sub level.

SUBS BETWEEN THIRD AND FOURTH LEVELS.

300' SUB LEVEL.

This was opened in 1923 and has been worked since that date.

In the West end a pillar has been left to protect the winze leading to the fourth level. Mining has been practically completed from a point 30' East of the winze to #3-W raise.

Between #3-W and #224 raises, the trench stope from the 245' sub level has been opened at this elevation and mining is still in progress at this point.

In the East end, South of the second level supporting pillar and adjoining the Negaunee boundary, mining has been continuous throughout the year.

In December in the West end one contract was mining the pillar near #6-W raise.

In the trench stope section were two contracts slicing. In the East end, the trench drift to the Northwest from the traveling road holed through to the old third level foot wall drift and is draining the water from the old level.

Six contracts were stoping between #1-E and #4-E raises.

280' SUB LEVEL.

In January the territory under the hanging South of #21-S raise was completed.

The section around #5-E raise in the Railroad Pillar was started in January and is still in progress.

In the West end mining was started in October at #6-W raise.

In December in the West end, one contract was developing toward the foot between #5-W and #6-W raises. At the West end of the trench stope one contract was slicing to the North and South.

In the East end along the Railroad Pillar were two contracts, one stoping South of #5-E raise, the other developing to the Southwest toward #4-E raise.

270' SUB LEVEL.

At the trench stope Southeast of #21-S raise stoping was completed on the 277' elevation in February and in March mining was started at the 267' elevation and has continued throughout the year.

Mining to the Southwest of #21-S raise was started in February.

In December there were three contracts operating on this sub level, two to the West of #21-S raise and one in the trench stope to the Southeast of this raise.

260' SUB LEVEL.

This sub level which was started in 1923 was completed in June of this year. The work was in the vicinity of #705 and #706 raises.

245' SUB LEVEL (TRAMMING SUB LEVEL).

The trench stope started last year opposite #224 to #5-W raises was continued to the West on the sill floor for 20' and on the top tiers to an

elevation of 296'. In all fifty-three sets were added to the stope during the year.

The drift in the foot wall along the Negaunee boundary was extended 140' to the Northeast and a raise from the inside end put up to the third level foot wall drift, holing on that level near #120 raise. This work was done in the months of January to May. This raise and drift provide the primary circulation in our new ventilating system from the Negaunee Mine to the third level Maas and to points below this level.

In the Southwest end of the mine near the Negaunee boundary mining has been continuous throughout the year between raises #425 and #706.

In December six contracts were working in this territory.

230' SUB LEVEL.

Development work has been in progress since April from #425 raise.

In December two contracts were employed, one developing to the East, the other stoping to the Southwest of #425 raise.

UNDERGROUND IN GENERAL.

The territory between the first and second levels now being worked is in the Railroad Pillar, Roman Catholic Cemetery and a small territory to the West of the Cemetery Tract. Foot wall dikes are crossing this territory, making the mining much slower and more expensive than if the ore body were clean.

A large pillar has been left on the foot wall from the 300' sub level to the second level to protect the foot wall pillar above the second level. Through this pillar runs the main third level drift which is used for ventilating purposes. During the coming year two and three compartment raises will be put up from this drift into the sub levels above the second level. This territory will be laid out so that mining can be done by means of tugger hoists and scrapers. Mining during the coming year will be in the same territory where it has been in progress the past year.

VENTILATING SYSTEM.

The ventilation at the Maas since the starting of the fan at #2 shaft Negaunee has been excellent in all parts of the mine. During the extremely

cold winter weather, the fan is shut down and the natural ventilation through #2 shaft is sufficient to give a good supply of fresh air to the Maas workings. The Maas shaft being the upcast.

FIRE DOORS.

Air lines to operate the fire doors were extended from surface down the shaft when the latter was being remodelled.

MAIN LEVEL TIMBERING.

Before the shut-down, a large quantity of timber was taken underground and while the shaft work was in progress, the main levels were kept in good repair. Where there was no crushing, timber treated with zinc chloride was used. This was obtained from the plant at the Athens Mine. The treated timber costs about twice as much pertfoot as the untreated, but the extra life obtained more than offsets this cost.

By keeping the main levels repaired, there was no delay in re-opening the mine in October.

SCRAPERS.

Several contracts are using scrapers and more outfits will be installed during the coming season. It has been a little hard to adopt this method of mining to the Maas as most of the raises were already up before the practise became so common - however, the new raises from the third to the second levels, which will be put up this coming year, will be located with this method of mining in mind.

WATER.

The number of gallons of water pumped per minute in 1925 as compared with 1924 is shown in the following table:-

	1925	1924
January	918	988
February	932	963
March	888	996
April	978	1042
May	887	961
June	883	1005
July	904	929
August	893	1001
September	902	1008

October	905	981
November	944	1031
December	942	981
Average -	915	990

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

1925	-	915	gals. per minute,
1924	-	990	Do.
1923	-	966	"
1922	-	985	"
1921	-	983	"

MAAS MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

GRADES	IRON	PHOS.	SILICA
Maas Bessemer,	61.37	.047	7.76
Maas,	59.89	.099	7.84

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

	Mine		Lake Erie	
GRADES	IRON	PHOS.	IRON	MOIST.
Maas Bessemer,	(All Mixed)			
Maas,	59.62	.099	59.45	10.40

ORE STATEMENT - DECEMBER 31ST, 1925.

	MAAS BESSEMER	MAAS	TOTAL	TOTAL LAST YEAR
On hand January 1st, 1925,	59,483	522,531	582,014	490,675
Output for Year,	5,063	144,816	149,879	226,167
Transferred,	910	910	-	-
Total,	63,636	668,257	731,893	716,842
Shipments,	45,744	300,699	346,443	134,828
Balance on Hand,	17,892	367,558	385,450	582,014
Decrease in Output,			76,288	
Decrease in Ore on Hand,			196,564	

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

1924 -- 1-8 Hour Shift, 6 days per week, Jan. 1st to July 26th, 1924.
1-8 Hour Shift, 4 days per week, July 26th to Nov. 30th, 1924.
1-8 Hour Shift, 5 days per week, Dec. 1st to Dec. 31st, 1924.

MAAS MINE

SHIPMENTS FOR YEAR-1925

GRADE	POCKET	STOCKPILE	TOTAL	TOTAL LAST YEAR
Maas Bessemer,	250	45,494	45,744	46,560
Maas,	51,689	249,010	300,699	88,268
Total,	51,939	294,504	346,443	134,828
Total Last Year,	64,363	70,465	134,828	
Increase,			211,615	

MAAS MINE

COMPARATIVE MINING COST FOR YEAR

	1925	1924	INCREASE	DECREASE
PRODUCT	149,879	226,167		76,288
Underground Costs	1.598	1.413	.185	
Surface Costs	.213	.189	.024	
General Mine Accounts	.180	.118	.062	
Cost of Production	1.991	1.720	.271	
Original Cost	.076	.073	.003	
Plant Account	.002	.186		.184
Taxes	.542	.365	.177	
Central Office	.149	.091	.058	
Contingent Expense	.020	.012	.008	
Cost Adjustment	.034	.016	.018	
Cost on Stockpile	2.814	2.463	.351	
Loading & Shipping	..119	.022	.97	
Total Cost on Cars	2.933	2.485	.448	
No.Days Operating	.186	261		75
No.Shifts & Hours	1-8	1-8		
Avg.Daily Product	806	866		60
COST OF PRODUCTION				
Labor	1.237	1.092	.145	
Supplies	.754	.628	.126	
Total	1.991	1.720	.271	

MAAS MINE

COMPARATIVE WAGES AND PRODUCT

	1925	1924	Increase	Decrease
PRODUCT	149,879	226,167	-	76,288
No. Shifts & Hours	1-8 hr.	1-8 hr.		
AVG.NO.MEN WORKING				
Surface	29	36		7
Underground	109	150		41
Total,	138	186		48
AVG. WAGES PER DAY				
Surface	4.37	4.37	-	
Underground	5.01	4.97	.04	
Total	4.87	4.84	.03	
WAGES PER MO.OF 25 DAYS				
Surface	109.25	109.25		
Underground	125.25	124.25	1.00	
Total	121.75	121.00	.75	
PRODUCT PER MAN PER DAY				
Surface	18.84	21.80		2.96
Underground	5.20	5.69		.49
Total	4.07	4.51		.44
LABOR COST PER TON				
Surface	.232	.201	.031	
Underground	.964	.872	.092	
Total,	1.196	1.073	.123	
AVG.PRODUCT BKK'G.& TRM'G.	9.05	9.36		.31
" WAGES CONTRACT MINERS	5.29	5.18	.11	
" " " LABOR	5.29	5.18	.11	
TOTAL NO. OF DAYS				
Surface	7,955	10,377		2,422
Underground	28,846¼	39,722		10,875¾
Total	36,801¼	50,099		13,297¾
AMOUNT FOR LABOR				
Surface	34,774.49	45,360.19		10,585.70
Underground	144,417.82	197,257.75		52,839.93
Total,	179,192.31	242,617.94		63,425.63

Proportion Surface to Underground Men:

1925 - 1 to 4.76
1924 - 1 to 4.16
1923 - 1 to 3.71
1922 - 1 to 4.34
1921 - 1 to 4.58
1920 - 1 to 4.56

1924 - 1-8 hr. 4 days per wk.from July 30th to Dec.1st.
1-8 hr. 5 " " " Dec. 1st.

Average number of men based on 12 months.

Production suspended during July 1,1925, to Oct. 15, 1925, during shaft alterations.

MAAS MINE

TIMBER STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1925

KIND	LINEAL FEET	AVG.PRICE PER FOOT	AMOUNT 1925	AMOUNT 1924
6" to 8" Timber	20,940	.0401	840.34	1,820.00
8" to 10" "	28,856	.0783	2,260.22	4,076.88
10" to 12" "	20,590	.0945	1,947.31	1,753.28
12" to 14"	10,102	.1206	1,218.21	1,120.85
Total - 1925	80,488	.0778	6,266.08	
Total - 1924	123,622	.071		8,771.01
	LINEAL FEET	PER 100'		
7' Lagging	402,561	.748	3,012.58	5,557.96
Poles	99,930	1.27	1,266.72	1,801.10
Total - 1925	502,491	.851	4,279.30	
Total - 1924	890,581	.826		7,359.06
Covering Boards - 1925	25,806	1.80	466.13	
Covering Boards - 1924	59,700	1.79		1,069.60
Total Timber			11,011.51	17,199.67

Product,	149,879	226,167
Feet of Timber per ton of ore,	.5370	.5469
Feet of Lagging per ton of ore,	2.686	3.285
Feet of Lagging per foot of timber,	5.00	6.00
Cost per ton for Timber,	.0418	.0388
" Lagging,	.0201	.0246
" Covering Boards,	.0031	.0047
" Poles,	.0086	.0079
" All Timber,	.0736	.0760
Equivalent of stull timber to board measure,	159,063	213,061
Feet of board measure per ton of ore,	1.061	.942

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

1925	$11,011.51	$.0736
1924	17,199.67	.0760
1923	18,150.64	.0796
1922	15,277.59	.0705
1921	25,610.04	.1230

Mine idle from July 1st to October 19th, 1925 account of remodeling shaft.

MAAS MINE

STATEMENT OF EXPLOSIVES USED FOR STOPING AND DEVELOPING IN ORE
-1925-

KIND	QUANTITY	AVERAGE PRICE	AMOUNT 1925	AMOUNT 1924
40% Powder	3,600	.1367	492.01	3,764.29
50% "	25,300	.1516	3,836.01	
60% "	23,300	.1606	3,741.51	9,497.27
Total Powder	52,200	.1546	8,069.53	
Total Powder - 1924	82,950	.1599		13,261.56
Fuse	173,800'	.655c	1,139.22	1,685.38
Blasting Caps	36,900	1.118c	412.52	697.43
Cap Crimpers	27	.823 ea.	22.22	18.00
Total Fuse, Caps, etc.			1,573.96	2,400.81
Total All Explosives,			9,643.49	15,662.37
Product,			149,879	226,167
Pounds of Powder per ton of ore,			.3483	.3668
Cost per ton for powder,			.0538	.0586
" " " " fuse, caps, etc.,			.0105	.0106
" " " " all explosives,			.0643	.0692
Average price per pound for powder,			.1546	.1599

Mine idle July 1st to October 19th, 1925 account of remodelling shaft.

F. COST COMPARISON.

(1) Days and Shifts.

The mine operated on one eight-hour per day schedule five days per week.throughout the year, 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 used to complete the remodelling of the shaft in the shortest period possible.

In 1924 the mine operated on a full time schedule of six days per week to July 29th, on four days per week from July 29th to December 1st, and five days per week during December.

The average number of men employed during the year was 201 for a total of 36,801¼ days; the mine operating 183 days. In 1924 an average of 192 men were employed for a total of 50,099 days; the mine operating 261 days. An increase of 9 men, a decrease of 13,297¾ days and a decrease of 78 working days.

(2) Wages.

There was no change in wages during 1925; both years 1924 and 1925 operated on the same wage scale.

(3) Comparison of Production.

Production of 1925,		149,879 tons,
"	" 1924,	226,167 "
Decrease,		76,288 tons.

Tons of Ore Mined per Man per Day.

	1925	1924	Decrease
Surface,	18.84	21.80	2.96
Underground,	5.20	5.69	.49
Total,	4.07	4.51	.44

(4) Comparison of Number of Men and Wages.

	No.Men	No.Days	Amount	Rate per day
1925 -	201	36,801¼	$179,192.31	$4.87
1924 -	192	50,099	242,617.94	4.84
	9 Increase	13,297¾ Decrease	$ 63,425.63 Decrease	$ .03 Increase

(5) Tons per man per day.

See #3.

(6) Cost of Production.

1925 - $298,329.91 - Cost per ton $1.991

1924 - 389,005.61 - " " " 1.720

$ 90,675.70 Decrease - Cost per ton $ .271 Increase

	TOTAL COST				COST PER TON		
	LABOR	%	SUPPLIES	%	LABOR	SUPPLIES	TOTAL
1925 -	$185,374.60	62.1	$112,955.31	37.9	$1.236	$.755	$1.991
1924 -	246,893.28	63.5	142,112.33	36.5	1.090	.630	1.720
	$ 61,518.68 Decr.		$ 29,157.02 Decr.		$ .146 Incr.	$.125 Incr.	$ .271 Incr.

(7) Detail of Accounts.

UNDERGROUND COSTS:

Development in Rock,

1925 Amount	$328.15	- Cost per ton $.002
1924	283.46	.001
Increase	$ 44.69	$.001

There was 49 feet of rock work in 1925 at $6.70 per ft; and 79 feet in 1924 at $3.59 per foot.

Development in Ore,

1925 Not any.

1924 Amount $3,749.77 - Cost per ton $.016

Decrease $3,749.77 $.016

No ore development work in 1925.

Stoping,

1925 Amount $ 88,695.50 - Cost per ton $.592

1924 127,721.55 .565

Decrease $ 39,026.05 Increase $.027

Detail.

	Labor		Supplies	
1925	$ 71,788.25	80.9%	$16,907.25	19.1%
1924	106,327.89	83.3%	21,393.66	16.7%
Decr.	$ 34,539.64		$ 4,486.41	

	Cost per ton		
	Labor	Supplies	Total
1925	$.479	$.113	$.592
1924	.470	.095	.565
Incr.	$.009	$.018	$.027

Four Ingersoll-Rand double drum slushers in 1925, cost $2,662.00. Two Ingersoll-Rand double drum slushers in 1924, cost $1,291.00

Explosives.

	1925	1924
Total Pounds of Powder,	52,200	82,950
Average Price per pound	.1546	.1599
Total Amount	8,069.53	13,261.56
Fuse, Caps, Etc.,	1,573.96	2,400.81
Grand Total,	9,643.49	15,662.37
Lbs. powder per ton of ore	.3483	.3668
Cost per ton for powder	.0538	.0586
" " " all explosives	.0643	.0692

Timbering,

1925 Amount $49,918.48 - Cost per ton $.333

1924 66,252.29 .293

Decrease $16,333.81 Increase $.040

	1925	1924
Timber Cost	6,266.08	8,771.01
Lagging, Poles, Etc.,	4,745.43	8,428.66
Total,	11,011.51	17,199.67
Ft. of Tbr. per ton of ore	.5370	.5469
Cost per ton, all timber,	.0736	.0760
Avg. price per ft., all tbr.,	.0778	.071

A crew of eight men was employed on timbering in the mine during the period the mine was closed down for alterations to the shaft, July 1st to October 19th.

Tramming,

1925 Amount	$19,470.14 -	Cost per ton	$.130
1924	25,622.95		.113
Decrease	$ 6,152.81	Increase	$.017

Ventilation,

1925 Amount	$2,797.14 -	Cost per ton	$.019
1924	1,296.76		.006
Increase	$1,500.38		$.013

Increase due to proportion of expense of operating joint ventilation system at Negaunee Mine charge to this account.

Pumping,

1925 Amount	$40,317.66 -	Cost per ton	$.269
1924	41,791.00		.185
Decrease	$ 1,473.34	Increase	$.084

	1925	1924
Total Gals. water pumped	480,918,511	522,683,088
Gals. pumped per minute	915	992

Increase in cost per ton due to decreased production.

Compressors & Air Pipes,

1925 Amount	$14,831.84 - Cost per ton		$.099
1924	20,824.93		.092
Decrease	$ 5,993.09	Increase	$.007

Cu. ft. of air made by Maas Compressors,
1925 - 372,735,000
1924 - 470,880,000

Back Filling,

1925 Amount	none		
1924	$18.40 - Cost per ton		$.000
Decrease	$18.40		

Underground Superintendence,

1925 Amount	$ 9,353.53 - Cost per ton		$.062
1924	11,643.53		.052
Decrease	$ 2,290.00	Increase	$.010

MAINTENANCE ACCOUNTS:

Compressors & Power Drills,

1925 Amount	$ 230.66 - Cost per ton		$.002
1924	1,168.42		.005
Decrease	$ 937.76		$.003

A larger circulating pump for the compressor was charged in 1924 at a cost of $570.00.

Hand Tram Equipment,

1925 Amount	$ 461.92 - Cost per ton		$.003
1924	1,491.53		.007
Decrease	$1,029.61		$.004

Decrease due to less labor on sub level cars.

Electric Tram Equipment,

1925 Amount	$ 7,661.72 - Cost per ton		$.051
1924	12,162.19		.054
Decrease	$ 4,500.47		$.003

Sub Division.

	Gen.&Motor	Locomotives	Wiring
1925	280.41	1,221.60	787.59
1924	113.11	1,938.26	1,522.24
Incr.	167.30	Decr. 716.66	Decr. 734.65

	M. L. Tracks	M. L. Cars
1925	1,642.31	3,729.81
1924	2,950.19	5,638.39
Decr.	1,307.88	1,908.57

Mine operations stopped for three months for alterations to the shaft.

Pumping Machinery,

1925 Amount	$5,420.12	- Cost per ton	$.036
1924	5,523.49		.024
Decrease	$ 103.37	Increase	$.012

New shafting and gear installed on Prescott pump in 1925.

Total Underground Costs,

1925 Amount	$239,486.86	- Cost per ton	$1.598
1924	319,541.27		1.413
Decrease	$ 80,054.41	Increase	$ .185

SURFACE COSTS:

Hoisting,

1925 Amount	$10,852.13	- Cost per ton	$.072
1924	15,229.14		.067
Decrease	$ 4,377.01	Increase	$.005

Stocking Ore,

1925 Amount	$6,104.27	- Cost per ton	$.041
1924	7,504.64		.033
Decrease	$1,400.37	Increase	$.008

Twenty-six bents of stocking trestle were erected in the fall of 1925.

Dry House,

1925 Amount	$5,304.37	- Cost per ton	$.035
1924	7,422.85		.033
Decrease	$2,118.48	Increase	$.002

General Surface Expense,

1925 Amount	$4,244.56	- Cost per ton	$.028
1924	4,301.64		.019
Decrease	$ 57.08		$.009

Policeman charged to this account full time during year.

MAINTENANCE ACCOUNTS:

Hoisting Equipment,

1925 Amount	$2,205.43	- Cost per ton	$.015
1924	4,154.28		.019
Decrease,	$1,948.85		$.004

Sub Division.

	1925	1924	Decrease
Electric Hoists,	505.70	732.34	226.64
Wire Rope,	407.10	1315.76	908.66
Skips, Cages & Roads,	1292.63	2106.18	813.55

Shaft,

1925 Amount	$ 89.91	- Cost per ton	$.001
1924	478.46		.002
Decrease	$388.55		$.001

Shaft timber repaired in 1924.

Top Tram Equipment,

1925 Amount	$1,880.77	- Cost per ton	$.013
1924	2,208.12		.010
Decrease	$ 327.35	Increase	$.003

Sub Division

	1925	1924
Engine and Motors,	8.81	27.87
Tracks and Cars,	1199.78	1620.70
Wire Rope,	574.74	315.47
Sheaves, Rollers, etc.,	97.44	244.08

Docks, Trestles & Pockets,

1925 Amount	$301.89	- Cost per ton	$.002
1924	12.45		.000
Increase	$289.44		$.002

Increase due to erecting new rock trestle in 1925.

Mine Buildings,

1925	Amount $ 969.33	- Cost per ton	$.006
1924	1,343.72		.006
Decrease	$ 374.39		$.000

Total Surface Costs:

1925	Amount $31,952.66	- Cost per ton	$.213
1924	42,655.30		.189
Decrease	$10,702.64	Increase	$.024

GENERAL MINE ACCOUNTS:

Insurance,

1925	Amount $223.03	- Cost per ton	$.002
1924	249.12		.001
Decrease	$ 26.09	Increase	$.001

Engineering,

1925	Amount $3,476.81	- Cost per ton	$.023
1924	2,309.29		.010
Increase	$1,167.52		$.013

Increase due to extra engineering work account of E.&A. #476 in 1925.

Analysis,

1925	Amount $7,059.88	- Cost per ton	$.047
1924	8,073.08		.036
Decrease	$1,013.20	Increase	$.001

This account includes the operating laboratory charge.

	No. of Dets.	Cost per Det.	Total
1925	22,018	$.19069	$4198.78
1924	28,181	.16838	4745.01
	6,163	$.02231	$ 546.23
	Decr.	Incr.	Decr.

Personal Injury Expense,

1925	Amount $5,343.63	- Cost per ton	$.036
1924	4,616.00		.020
Increase	$ 727.63		$.016

The 1924 charge included:

Final settlement with Herman Granlund $826.32,

Medical expense for Peter Haikkonen, Report #343, Amount $310.00,

Back payments to Domenic Francisco, Report #320, Amount $182.00.

The 1925 charge included:

Payments to Domenic Francisco, Report #320, amount $182.00,

Expense of Dr. Black, Milwaukee to Ishpeming to examine Isaac Salmi and John Kangas, Reports #371 & #372, Amount $535.36.

Expense of sending Isaac Salmi to Milwaukee for treatment under Dr. Black, amount $185.62.

Credited:

$1470.00 unpaid compensation at time of death of dependent of Alfred Franxen, Report #299.

Safety Department Expense,

1925 Amount	$ 43.63	- Cost per ton	$.000
1924	119.21		.000
Decrease	$ 75.58		$.000

Telephones & Safety Devices,

1925 Amount	$178.00	- Cost per ton	$.001
1924	611.40		.003
Decrease	$432.52		$.002

Local General Welfare,

1925 Amount	$1,330.88	- Cost per ton	$.009
1924	1,330.48		.006
Increase	$ .40		$.003

Special Expenses,

1925 Amount	none		
1924	$138.75	- Cost per ton	$.001
Decrease	$138.75		$.001

The charge in 1924 is for cost of cement sidewalk on Mitchell Ave., Anthony field plat.

Mine Office,

1925 Amount	$9,233.65	- Cost per ton	$.062
1924	9,361.71		.041
Decrease	$ 128.06		$.021

Total General Mine Accounts:

1925 Amount	$26,890.39	- Cost per ton	$.180
1924	26,809.04		.118
Increase	$ 81.35		$.062

ATHENS MINE - 1925.

A. PRODUCTION AND SHIPMENTS.

I. Production by Grades.

Athens Ore,	190,993 tons,
Mitchell Lease,	19,266 "
Lucky Star,	161 "
Total Ore,	210,320 "
Rock,	4,602 "

The product for the year 1925 was 37,549 tons less than the year 1924. This was due principally to the different working schedule. Throughout 1925 the mine operated on a five day per week basis, whereas in 1924 the schedule was six days per week from January 1st to July 31st, four days per week, Wednesdays and Saturdays being idle, from July 31st to December 2nd and five days per week from December 2nd to January 1st.

The product from the Mitchell Lease of 19,266 tons was 16,366 tons more than was mined from this Lease in 1924. Practically all of this ore came from Lot #11 above the fourth level.

II. Shipments.

Grade of Ore	Pocket Tons	Stockpile Tons	Total Tons
Mitchell Lease,	1,139	11,919	13,058
Athens,	4,229	193,787	198,016
Total -	5,368	205,706	211,074

The total shipments during the year was almost exactly equivalent to the tonnage mined. Practically all of this ore came from stockpile as we have continued the practice of dumping all ore mined on stockpile and re-loading for shipment to avoid wet sticky ore in our shipments. The stockpile ore came principally from the North steel stocking trestle. A little ore was taken the latter part of the season from the extension to the Southeast steel trestle.

III. Stockpile Balances.

Athens Ore,	307,615 tons,
Mitchell Lease,	17,654 "
Corbit Lease,	141 "
Lucky Star,	161 "
Total -	325,571 tons.

The ore in stock is all of one grade, namely, Athens Ore. On December 31st, 1924 there was in stock 326,340 tons or 769 tons more than at the same date this year.

IV. Division of Product by Levels.

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

Fourth Level,	40,577 tons,
Eighth Level,	128,146 "
Tenth Level,	41,582 "
Total -	210,305 tons.

V. Production by Months.

Month	Athens	Mitchell Lease	Corbit Lease	Lucky Star	Total	Rock
January	17,378	592			17,970	1,592
February	15,727	655			16,382	685
March	17,162	496			17,658	718
April	18,006	646			18,652	507
May	15,377	1,813			17,190	75
June	16,385	2,074			18,459	
July	16,529	1,817			18,346	323
August	13,595	2,420			16,015	138
September	14,674	1,501			16,175	273
October	15,073	1,779		161	17,013	276
November	14,128	2,602			16,730	15
December	16,844	2,871			19,715	
Total -	190,878	19,266		161	210,305	4,602
Transferred to	115		from 115			
Total -	190,993	19,266		161	210,305	4,602

During the past year there has been an unusual amount of raising, more so than we have done in several years. The tons per man per day is naturally less in this class of work than in stoping, however, during December more contracts were employed on regular mining and the product for that month was the highest for the year. It is expected that this monthly tonnage can be maintained or exceeded during the coming year.

VI. Delays.

There were no serious non-electrical delays during the past year. The most serious was an eight-hour delay on July 15th on account of the fourth level drift breaking down, cutting off the product from this level during that day.

April 3rd,	1/2 hour delay account of drift on sixth level broke down.
June 29th,	Delay account of drift broke down on eighth level.
July 15th,	Eight hours delay on fourth level account of drift broke down.

VII. Delays from Lack of Current.

The most serious electrical delay was on October 19th. The transmission lines from the water power stations were all down so that no hoisting could be done. The mine pumps were supplied with current from the steam-electric plant at the Maas Mine.

May 19th,	1½ hours delay account of no current.
August 4th,	45 minutes delay account of no current.
October 19th,	Eight hours idle account of no current.

B. VIII. ESTIMATE OF ORE RESERVES - December 31st, 1925.

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

Percentage of Bessemer equals 0.

DEVELOPED ORE.

Fourth level and above - - - -	1,345,040 tons,
Fourth level to sixth level, North side of dike - - - - - - - -	464,383 "
Sixth level to 660' sub level, North side of dike - - - - - - - -	499,238 "
Sixth level to 660' sub level, South side of dike - - - - - - - -	440,421 "
660' sub level to eighth level - -	1,260,444 "
Eighth level to ninth level - - -	505,203 "
Ninth level to tenth level - - -	451,683 "
Below tenth level - - - - - -	61,129 "
Total developed ore - - - -	5,027,541 tons.

PROSPECTIVE ORE.

Fourth level to sixth level, South side of dike - - - - - - - -	1,977,117 tons.
Total All Ore - - - - -	7,004,658 tons.

ESTIMATED ANALYSIS

	IRON	PHOS.	SILICA	ALUM.	MANG.	LIME	MAG.	SUL.	IGNI.	MOIST.
Dried 212°	59.80	.140	8.45	2.64	.530	.430	.480	.012	1.15	
Natural	52.03	.121	7.35	2.30	.461	.374	.418	.010	1.00	13.00

The total ore in the mine shown by plans December 31st, 1925 is 7,004,658 tons as compared with 6,731,624 tons for December 31st, 1924 or an increase of 273,034 tons. In order to show the ore developed during the year, to this difference should be added the tonnage mined of 210,320 tons, making a total new ore developed of 483,354 tons. Most of this increase is above the fourth level and between the eighth level and the 660' sub level.

C. GENERAL.

(1) Labor.

The labor conditions at the mine throughout the year were satisfactory. At no time was there a shortage of men. This was probably due to con-

ditions throughout this whole section, there being very little construction work in progress.

(2) New Construction.

There was no new construction work at the Athens during the year covered by E.&A's.

In April the ground around the spray pond near the engine house was prepared for planting.

A derrick was erected in the fall for the purpose of raising bents for the stocking trestle.

Timber Yard. In October 60' of ground was graded to the West end of the timber yard unloading track. In November rail was laid here by the Railroad Company. This provides extra skidways for the large timber opposite the treating tank.

(3) Explorations.

There were no explorations done at this mine during the year.

(4) Fatal Accidents.

There were no fatal accidents at this mine during the year.

(5) Accidents to Equipment, Fires, Etc.

There were no accidents to equipment or fires at this mine during the year.

D. SURFACE.

(1) Buildings, Repairs.

In November a tunnel was built from the shafthouse to the West covering a portion of the North track on the permanent trestle. This was done to cut off the prevailing Northwest winds from entering the covered headframe near the dump causing it to freeze. This tunnel has helped conditions.

(2) Stockpiles.

Last year it was necessary to extend the Southeast trestle twelve

bents. These were entirely filled during the winter. In addition to the ore stocked at the steel trestles and the Southeast extension, there still remains about 56,000 tons in the original pile to the Southeast of the shaft. The mine has been considerably handicapped on account of the stockpile condition. To provide for the present stocking season, it was necessary to add two extra bents to the extension of the Southeast trestle.

Several years ago it was brought to the company's attention that by the present system of mining it would be necessary to mine 400,000 tons per year from this property to reach and mine the ore on the Mitchell Lease, i.e., Lots #8, #9 and #11, before this lease expires in 1942. This rate of mining was authorized but before it was ever attained curtailment went into effect and we have operated on a curtailed basis ever since. An effort should be made during the coming season to reduce the ore in stock so that at any time it is desired the production could be increased.

(3) Open Pits.

There are no open pits on this property.

(4) Zinc Chloride Timber Treating Plant.

The number of pieces of timber treated at the Athens plant this past season is as follows:-

12" to 14" - 8'	-	1,967 pieces,
12" to 14" - 9'	-	546 "
Total -		2,513 pieces.

Cost of Treating, 1925.	Per Foot
Peeling,	$ .0312
Labor for Treating,	.0392
Decking,	.0086
Zinc Chloride,	.0341
Charge for Heat, Water, etc.,	.0046
Total -	$ .1177

Treated Timber used during the year:-

Athens Mine,	663	pieces,
Shipped to Negaunee Mine,	1,130	"
Shipped to Maas Mine,	336	"
Shipped to Gwinn,	177	"
Total -	2,306	pieces.

Number of pieces in stock to supply need until treating starts in summer 1926:-

8'	-	1,156 pieces,
9'	-	170 "

On hand, peeled and seasoning for treatment in 1926, 3,003 pieces.

E. UNDERGROUND.

It has been suggested that this portion of the Superintendent's report be written under three heads, (1) Development, (2) Stoping and (3) Personnel, Contracts, etc. This part had been written previous to receiving these instruction so that it does not conform to the suggested outline, but is in line with the previous annual reports covering the underground work.

The product came from the following areas:- Above the fourth level on the South foot principally in Mitchell Lot #11; above the sixth level on the North and South sides of the main Northeast-Southwest dike; on the eighth level and above where new raises were extended into the territory above the sixth level; on the continuation of the mining which had been started below the sixth level West end, and on and above the ninth level at the West end adjoining the Bunker Hill line.

The ore from the ninth level and immediately above is being handled through raises from the tenth level.

No ore was mined on the Corbit Lease during the year.

A small quantity of ore, namely 161 tons, was mined for the Lucky Star Mining Company.

Main level Drifting and Raising was as follows:-

Main Level Drifting, 155' rock - 108' ore.

Raising, Double Compartment, 2,960' ore - 80' rock.

The work for the year on the various levels and sub levels is as follows:-

SUBS ABOVE THE FOURTH LEVEL.

SOUTH FOOT.

The development of this territory from #402 crosscut was started early in the year from raises put up from the East side of this new crosscut. Development started from the two Southernmost raises namely #424 and #425.

220' SUB LEVEL.

Raises #424 and #425 reached this elevation in July. The sub level which averaged about 100' in length by 50' in width was completed in November. It was wholly under the hanging jasper.

One slice along the South side 25' in length was mined for the Lucky Star Mining Company. This was along the foot wall. After mining 161 tons, sulphur averaging 1.457 was encountered and as this ore would have had to be dumped on the stockpile with the Athens ore, thereby contaminating the latter, mining on the Lucky Star property was stopped and no mining has been done on this property from that date. The high sulphur ore mined, 30 tons, was dumped on the rock pile.

230' SUB LEVEL.

Mining at this elevation was started at #423 raise in September and has been continued since that time.

In December one contract was stoping to the West of #425 raise, one developing to the South and one stoping to the East of this raise.

At #424 raise one contract was stoping to the East.

475' SUB LEVEL.

Exploratory drifts were started at this elevation in June from #423 raise. The work since then has been chiefly in outlining the foot and hanging. To the Northeast of the raise the hanging is very flat and mining has

been started here which will not effect the sub levels above.

A few feet to the North of #423 raise is a dike running Northeasterly which appears to be a fault line as the jasper is lower on the North side than on the South.

In December two contracts were stoping along the hanging to the Northeast of #423 raise.

365' SUB LEVEL.

Mining at this elevation above #430 crosscut was completed in January by the removal of the pillars at #431 raise.

375' SUB LEVEL.

Mining at this elevation also from #430 crosscut was completed in August. The ore to the North of #431 raise was not mined as the weight crushed the main level immediately below. This will be recovered later by raises from the fifth level.

FOURTH LEVEL.

The new crosscut, #420, was advanced 55' in January and February in mixed ore, dike and jasper. From this crosscut four raises were put up, namely #422 to #425 inclusive.

No. 422 raise, two compartment, started in February, finished in March. Material 0' to 80' ore, 80' to 90' jasper.

No. 423 raise, two compartment, started in February, stopped at 275' sub level in April. Put up to 230' sub level in September. Material 0' to 150' ore with occasional small dikes, 150' to 200' ore with jasper along the North side, at 200' solid jasper hanging was encountered.

No. 424 raise, two compartment, started in February and completed in July. Material 0' to 80' ore with vertical dike on North side, 80' to 215' ore. At 215' jasper hanging.

No. 425 raise, two compartment, started in March and completed in July. Material 0' to 30' jasper, 30' to 215' ore, at 215' hanging jasper.

Main Level. The only other work done on this level outside of

driving #420 crosscut was maintaining the timber. This requires considerable attention. The main drift on the South side beyond #420 crosscut has been abandoned as all of the mining has been completed to the back of the level, in that territory.

SUBS ABOVE THE SIXTH LEVEL.

540' SUB LEVEL.

SOUTH SIDE OF DIKE.

Mining was completed here in April at #635 raise.

550' SUB LEVEL.

NORTH SIDE OF DIKE.

Mining was completed in June by the removal of the pillars at #646 and #647 raises.

SOUTH SIDE OF DIKE.

Mining was started in July and completed in November by the removal of the last pillar at #635 raise.

565' SUB LEVEL.

NORTH SIDE OF DIKE.

Mining was started in March and completed in December.

In December two contracts took the last pillars at #656 and #657 raises.

575' SUB LEVEL.

Mining was started in August and has continued since that date. Most of the ore is now being handled through raises to the eighth level.

In December one contract was stoping to the West of #856 raise.

At #834 raise one contract was stoping to the East and one to the West.

The drift South from #834 raise through the dike holed to #835 raise. There are four contracts developing in ore South of the dike.

The drift North from #834 raise holed to #832 from which are two contracts developing, one to the North, the other to the West.

At #655 raise are three contracts stoping, one North, one West and one East.

At #803 raise one contract is developing East toward #802 raise, another developing South.

SIXTH LEVEL.

In June a drift was driven from #811 raise to #5 crosscut to provide fresh air for the booster fan located in that crosscut.

In August #856 raise and in September #855 raise, both from the eighth level, holed through to this level.

In December mining started on the sixth level, one contract developing North from #855 raise.

Three main level crosscuts, #630, #640 and #650, have been abandoned for tramming purposes West of the established limit of mining. The ore to the Southwest of this point going to the eighth level.

SUBS ABOVE THE EIGHTH LEVEL.

635' SUB LEVEL.

Work was completed on this sub level in March at #852 raise.

645' SUB LEVEL.

Work was started in March and completed in December. The ore being handled through #852 raise.

In December one contract took the remaining pillars South of #852 raise.

660' SUB LEVEL.

The development of this sub level, as an intermediate sub level for the new raises from the eighth to the sixth levels, was started in January and continued throughout the year. A drift has been driven connecting #851, #855 and #856 raises and thence West has connected to #852 raise. Another drift has been driven connecting #831 and adjoining raises to #836 raise. From the Northwest end a drift has been driven Southwest connecting #802 and #803 raises.

Mining was started in September West of #852 raise and has continued since that time.

In December one contract was mining West of #852 raise.

From #836 raise one contract is developing West toward #857 raise.

No. 851 raise which is offset 10' to the Northwest at this sub level, the original raise having caved at this point, was completed during the year to the sixth level elevation.

EIGHTH LEVEL.

No. 830 crosscut which had been started in 1924 was continued to the Southeast passing through the flat dike and the ore to the South of it and into the slate foot wall. The total distance driven during the year being 215'.

From this crosscut seven raises were put up, namely, nos. 831 to 837 inclusive.

No. 831 raise, two compartment, holed to the 660' sub level in July and advanced to the sixth level in October. Material 0' to 220' ore.

No. 832 raise, two compartment, reached the 660' sub level in March and advanced to the 575' sub level in August. Material 0' to 240' ore.

No. 833 raise, two compartment, reached the 660' sub level in April and was advanced to a point 20' below the sixth level in September. Material 0' to 200' ore.

No. 834 raise, two compartment, reached the 660' sub level in May and advanced to the 575' sub level in September. Material 0' to 20' mixed ore and rock (slate or dike); 20' to 240' ore.

No. 835 raise, two compartment, reached the 660' sub level in June and the 575' sub level in October. Material 0' to 240' ore.

No. 836 raise, two compartment, reached the 660' sub level in June and the sixth level in October. Material 0' to 200' ore.

No. 837 raise, two compartment, was started in November by building a chute. Total height November 30th 20' all in slate.

In #850 crosscut four raises were put up during the year.

No. 851 raise, two compartment, had been started in 1924 and reached the 660' sub level in February, but caved at a point 30' above this sub level. In November an offset raise was started at the 660' sub level and completed to the sixth level in December. Material 0' to 220' ore.

No. 855 raise, two compartment. This raise had reached the 660' sub level in 1924. It was completed to the 575' sub level in September of this year. Material 0' to 240' ore.

No. 856 raise, two compartment. This was 75' high the first of the year. Reached the 660' sub level in January and was completed to the 575' sub level in June. Material 0' to 240' ore.

No. 857 raise started November 1st and was 150' high on December 31st. Advance for December 60'. Material 0' to 150' ore.

From the main haulage drift two raises were put up during the year.

No. 802 raise, two compartment, reached the 660' sub level in September and the 575' sub in December. Material 0' to 240' ore.

No. 803 raise, two compartment, reached the 660' sub level in August and the 575' sub level in October, after which point the hanging jasper was encountered. Material 0' to 250' ore, jasper at 250'.

SUBS ABOVE THE NINTH LEVEL.

865' SUB LEVEL.

Work on this sub level was completed in March at #927 raise.

875' SUB LEVEL.

Work was completed on this sub level in August by the removal of the pillar at #1024 raise.

NINTH LEVEL.

Mining was started at this elevation in May and was continued throughout the year.

In December one contract was stoping North of #1024 raise. One contract was stoping North of #1025 raise and one contract stoping West of #1026 raise.

To the South and Southwest of #1023 raise are three contracts stoping along the foot wall.

During the year a new drift was driven to the South paralleling the original South drift from #1023 to #1026 raises.

UNDERGROUND IN GENERAL.

Early in the year considerable trouble was had in maintaining the fourth level #430 crosscut, due to the mining immediately above. When this mining was completed that portion of the main level was permitted to cave.

The development above the fourth level was confined to #420 crosscut where raises were extended to the 220' sub level before the hanging was encountered. Considerable exploratory work was done on the sub level started from these raises. This work has been completed and mining is well under way. The 220' sub level was finished the latter part of the year and from now on a better tonnage should be secured.

On the sixth level the #630 and #640 crosscuts which parallel the main dike have required constant retimbering. During the past year in anticipation of this trouble #830 crosscut was driven and new raises put up to the subs above the sixth level where it was hard to maintain the sixth level drifts. Raises were also extended from the main shaft crosscut on the eighth level as well as from #830 and #850 crosscuts. Most of the ore that still remains at the West end of the sixth level is now being mined through these new eighth level raises, and principal product from the mine for the next several years should come from this section.

The territory between the ninth and tenth levels is small and is getting smaller with each succeeding sub level.

The timber cost for the Athens has always been high. Where there is weight as on the fourth and sixth levels, it has required continual retimbering. On the other levels where no particular weight is shown, we are gradually replacing the timber which has been affected by dry-rot with timber treated with zinc-chloride. We have been using this timber on our main levels for the past two years and have proved that its life is more than double the ordinary timber. The cost for treatment, however, practically doubles the initial cost of the timber. No treated timber is used in sub levels.

TUGGER HOIST AND SCRAPER.

Tugger hoists and scrapers are employed where they can be used to advantage. The cost of mining by this method is considerably less than by hand shoveling and tram cars. The mine is now employing thirteen tugger hoists and scraper outfits. In December, ten only were in operation. The results for December are tabulated below:-

Contract No.	1	3	10	12	14	15	24	26	28	46
No. of Men	2	2	2	2	2	2	2	2	2	2
No. of Days	42	28	28	46	46	46	22	32	32	44
Tons	788	480	708	1196	884	1084	480	792	512	1052
Tons per man per day	18.76	17.14	25.28	26.00	19.21	23.56	21.81	24.75	16.00	23.90

Tons per man per day - Average, All Scrapers, 21.79 tons.

VENTILATION.

The ventilating system worked very satisfactorily throughout the year. On account of the new raises from the eighth level to the sixth, more places received the benefit of the primary ventilation and fewer booster fans were needed than last year.

HIGH SULPHUR ORE.

High sulphur ore was encountered in a drift on the 220' sub level which was being driven to the East from #425 raise on the South foot above the fourth level. The sulphur was encountered almost on the line between Lots #11 and #12 and within 3' of the Lucky Star property. An analysis of this ore showed 1.038 sulphur. No high sulphur ore has been encountered in the Athens Mine for several years. The last was found at about this same elevation on the South foot at a point 200' East. This sulphur was in the form of gypsum. It occurs in the ore as filmsof infinitesimal thickness which glistens in the light. It was discovered by the Captain in the breast before any was mined.

In September an agreement was made to mine the Lucky Star ore on the foot wall in this territory. This agreement was made before the high sulphur ore was encountered. Mining started on the Lucky Star ground and after mining 161 tons of merchantable ore, high sulphur was encountered which ran 1.457.

Thirty tons of this grade were mined and placed in the chute before it was discovered. The cost of mining this ore was charged to the Lucky Star Company and the ore placed on the rock pile. With the finding of high sulphur ore, mining on the Lucky Star property was discontinued. Every care will be taken in mining the sub level immediately below to see that no sulphur ore is permitted to get in our product.

FAULTS.

On the Southeast end of #830 crosscut there is apparently a fault striking to the Northeast-Southwest with a dip of 70° to the Southeast. About 12" to 15" of gouge shows in the breast of the drift.

On the 230' sub level, immediately North of #423 raise, is a dike which runs to the Northeast and Southwest. This is evidently a fault as the jasper is considerably lower on the North than on the South side of the dike.

EIGHTH LEVEL POCKET.

The timber in the shaft pockets have given us considerable trouble due to dry-rot caused by poor ventilation and fungus growth. During the year it was necessary to replace the front of the eighth level pocket. Here, instead of timber, reinforced concrete was used. The work was done in sections so that two of the storage pockets could be used while the third was being repaired. The work was completed early in December. It is apparently very satisfactory.

WATER.

The average number of gallons of water pumped per minute as compared with 1924 is as follows:-

	1925	1924
January	237	209
February	239	208
March	246	211
April	246	214
May	251	218
June	254	218
July	256	222
August	256	222
September	255	225
October	255	227
November	241	229
December	258	232
Average -	251	218

The increase in the average number of gallons of water pumped per minute in 1925 over 1924 was 33 gallons. This does not seem to be a very large item, however, it represents an increase of 15%, showing that as the working areas increase in size that more water is reaching the workings.

ATHENS MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

GRADE	IRON	PHOS.	SILICA
Athens,	60.92	.119	5.77
Mitchell Lease,	60.39	.127	6.33
Corbett Lease,	(No Production)		
Lucky Star,	62.70	.130	-

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

	Mine		Lake Erie	
GRADE	IRON	PHOS.	IRON	MOIST.
Athens,	60.40	.134		
Mitchell Lease,	(All Mixed)			
Corbett Lease,	(No Shipments)			
Lucky Star,	(No Shipments)			

ORE STATEMENT - DECEMBER 31ST, 1925.

	ATHENS	MITCHELL LEASE	CORBETT LEASE	LUCKY STAR	TOTAL	TOTAL LAST YEAR
On hand Jan. 1, 1925,	314,638	11,446	256	-	326,340	207,429
Output for Year,	190,878	19,266	-	161	210,305	247,869
Transferred,	115	-	115	-	-	-
Total,	505,631	30,712	141	161	536,645	455,298
Shipments,	198,016	13,058	-	-	211,074	128,958
Balance on Hand,	207,615	17,654	141	161	325,571	326,340
Decrease in Output,					37,564	
Decrease in Ore on Hand,					769	

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

1924 -- 1-8 Hour Shift, 6 days per week, Jan. 1st to March 24th, 1924.
2-8 Hour Shifts, 6 days per week, Mar. 24th to July 26th, 1924.
1-8 Hour Shift, 4 days per week, July 26th to Nov. 30th, 1924.
1-8 Hour Shift, 5 days per week, Dec. 1st to Dec. 31st, 1924.

ATHENS MINE

SHIPMENTS FOR YEAR-1925.

GRADE	POCKET	STOCKPILE	TOTAL	TOTAL LAST YEAR
Athens,	4,229	193,787	198,016	127,818
Mitchell Lease,	1,139	11,919	13,058	1,140
Corbett Lease,	-	-	-	-
Total,	5,368	205,706	211,074	128,958
Total Last Year,	16,068	112,890	128,958	
Increase,			82,116	

ATHENS MINE

COMPARATIVE MINING COST FOR YEAR

	1925	1924	INCREASE	DECREASE
PRODUCT	210,144	247,869		37,725
Underground Costs	1.426	1.370	.056	
Surface Costs	.233	.258		.025
General Mine Accounts	.095	.109		.014
Cost of Production	1.754	1.737	.017	
Plant Account	.447	.210	.237	
Development	.598		.598	
Taxes	.427	.363	.064	
Central Office	.134	.079	.055	
Contingent Expense	.005	.004	.001	
Cost Adjustment	.008	.001	.007	
Cost on Stockpile	3.373	2.394	.979	
Loading & Shipping	.035	.021	.014	
Misc.Debits & Credits	.016	.002		.014
Total Cost on Cars	3.392	2.413	.979	
No.Days Operating	260	261		1
No.Shifts & Hours	1-8	2-8-95 1-8-166		
Avg.Daily Product	808	950		142
COST OF PRODUCTION				
Labor	1.083	1.064	.029	
Supplies	.661	.673		.012
Total	1.754	1.737	.017	

ATHENS MINE

COMPARATIVE WAGES AND PRODUCT

	1 9 2 5	1 9 2 4	INCREASE	DECREASE
PRODUCT	210,144	247,869		37,725
No.Shifts & Hours	1-8	1-8		
AVG.NO. MEN WORKING				
Surface	36	40		4
Underground	136	159		23
Total	172	199		27
AVG.WAGES PER DAY				
Surface	4.48	4.44	.04	
Underground	5.00	4.96	.04	
Total	4.88	4.86	.02	
WAGES PER MO. OF 25 DAYS				
Surface	112.00	111,00	1.00	
Underground	125.00	124.00	1.00	
Total	122.00	121.50	.50	
PRODUCT PER MAN PER DAY				
Surface	20.58	22.49		1.91
Underground	5.82	6.78	.04	
Total	4.54	4.60		.06
LABOR COST PER TON				
Surface	.218	.198	.020	
Underground	.857	.859		.002
Total	1.075	1.057	.018	
AVG.PRODUCT BRK'G & YRM'G	11.46	10.06	1.40	
" WAGES CONTRACT MINERS	5.47	5.41	.06	
" " " LABOR	5.47	5.41	.06	
TOTAL NO.OF DAYS				
Surface	10211	11022½		811-1/2
Underground	36076¼	42904½		6828-1/4
Total	46287¼	53927		7639-3/4
AMOUNT FOR LABOR				
Surface	45782.54	48991.52		3208.98
Underground	180250.92	212924.32		32673.40
Total	226033.46	261915.84		35882.38

Mine started on operating basis Jan.1,1919.
Proportion Surface to Underground Men:

1925 - 1 to 3.80
1924 - 1 to 3.99
1923 - 1 to 3.44
1922 - 1 to 3.75
1921 - 1 to 3.88

1924 - 1-8hr.shift 4 days per wk.from July 31 to Dec.1
1-8hr " 5 " Dec.1st.

ATHENS MINE

TIMBER STATEMENT FOR YEAR ENDING DECEMBER 31, 1925.

KIND	LINEAL FEET	AVG.PRICE PER FOOT	AMOUNT 1925	AMOUNT 1924
6" to 8" Timber	210,042	.0393	8,258.02	2,999.55
8" to 10" "	56,838	.0691	3,975.08	5,956.62
10" to 12" "	36,356	.0951	3,458.47	3,103.65
12" to 14" "	18,058	.1643	2,966.41	1,828.50
Total - 1925	321,294	.0581	18,657.98	
Total - 1924	206,394	.0673		13,888.32
	LINEAL FEET	PER 100'		
7' Lagging	618,314	.708	4,377.07	6,104.24
Poles	225,100	1.173	2,639.97	3,098.45
Total - 1925	843,414	.832	7,017.04	
Total - 1924	991,526	.928		9,202.69
1" Covering Boards	84,000	16.75	1,407.03	1,311.99

Product,	210,305	247,869
Feet of Timber per ton of ore,	1.528	.833
Feet of Lagging per ton of ore,	2.940	2.940
Feet of Lagging per foot of Timber,	1.924	3.531
Cost per ton for Timber,	.0887	.0560
" Lagging,	.0208	.0246
" Covering Boards,	.0067	.0053
" Poles,	.0126	.0125
" Timber, Lagging, Poles & Boards,	.1288	.0984
Equivalent of stull timber to board measure,	514,648	337,969
Feet of board measure per ton of ore,	2.447	1.363

Total cost for timber, lagging and poles and cost per ton,

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

NOTE: During the year 1925 there was 3,040' of double compartment raising as compared with 766' in 1924. The bd.measure per ton of ore of the 6" to 8" cribbing timber for 1925 figured .915 while in 1924 it figured .051, or an increase for the year in bd.measure for the cribbing timber used amounted to .864. In 1925 the feet of bd.measure per ton of ore in the 12" to 14" stulls was .447, while in 1924 it was .243, an increase in 1925 in this size timber of .204. This increase is due to retimbering of the 4th and 6th levels The large consumption of timber with the little return in ore naturally brought up the cost per ton for timber and the bd.ft. per ton of ore greatly above last year. G.R.J.

ATHENS MINE

STATEMENT OF EXPLOSIVES USED FOR STOPING AND DEVELOPING IN ORE
-1925-

KIND	QUANTITY	AVERAGE PRICE	AMOUNT 1925	AMOUNT 1924
40% Ext. Powder				1,134.00
50% Ext. "	10,350	.1450	1,500.75	
50% Gel. "	26,950	.1550	4,177.25	7,587.25
60% Gel. "	31,650	.1675	5,301.41	3,597.09
Total Powder - 1925	68,950	.1592	10,979.41	
Total Powder - 1924	78,825	.1563		12,318.34
Fuse	257,100	.692c	1,779.14	2,051.57
Caps	42,700	1.063c	453.77	612.15
Cap Crimpers	24	1.00 ea.	24.00	34.24
Electric Exploders	200	6.675c	13.35	23.36
Connecting Wire	40#	.405	16.19	23.19
Tamping Bags	5,000	2.15M-	10.75	
TOTAL FUSE, ETC. - 1925			2,297.20	
TOTAL FUSE, ETC. - 1924				2,744.51
TOTAL ALL EXPLOSIVES			13,276.61	15,062.85
Product,			210,305	247,869
Pounds of Powder per ton of ore,			.3279	.3180
Cost per ton for Powder			.0522	.0497
" Fuse, Caps, etc.,			.0109	.0111
" All Explosives,			.0631	.0608
Average price per pound for powder,			.1592	.1563

GN

F. COST COMPARISON.

(1) Days and Shifts.

The mine operated on one eight-hour shift five days per week schedule during the entire year. In 1924 it worked one eight-hour shift six days per week from January 1st to March 25th; two eight-hour shifts March 25th to July 28th; one eight-hour shift four days per week July 28th to December 3rd and one eight-hour shift five days per week the balance of the year. The total working days for 1925 was 260 as compared with 261 for 1924.

(2) Wages.

There was no change in the wage schedule during the year, it being the same as for 1924.

(3) Comparison of Production.

Production of 1925,	210,305 tons,	
" " 1924,	247,869 "	
Decrease,	37,564 tons.	

Tons of Ore Mined per Man per Day.

	1925	1924	Increase	Decrease
Surface,	20.60	22.49		1.89
Underground,	5.83	5.78	.05	
Total,	4.54	4.60		.06

(4) Comparison of Number of Men and Wages.

	No.Men	No.Days	Amount	Rate per day
1925 -	172	46,287¼	$226,033.46	$4.88
1924 -	199	53,927	261,915.84	4.86
	27 Decrease	7,639¾ Decrease	$ 35,882.38 Decrease	$ .02 Increase

(5) Tons per man per day.

See #3.

(6) Cost of Production.

1925 -	$368,666.59 -	Cost per ton $1.754
1924 -	430,432.64	1.737
	$ 61,766.05 Decrease	$ .017 Increase

	TOTAL COST				COST PER TON		
	LABOR	%	SUPPLIES	%	LABOR	SUPPLIES	TOTAL
1925 -	$229,828.22	62.3	$138,838.37	37.7	$1.093	$.661	$1.754
1924 -	263,677.62	61.3	166,755.02	38.7	1.064	.673	1.737
	$ 33,849.40 Decr.		$ 27,916.65 Decr.		$ .029 Incr.	$.012 Decr.	$ .017 Incr.

(7) Detail of Accounts.

UNDERGROUND COSTS:

Development in Rock,

1925 Amount	$4,289.38 -	Cost per ton $.020
1924	946.17	.004
Increase	$3,343.21	$.016

Sub Division.

	Drifting	Per Ft.	Raising	Per Ft.
1925	319'	5.20	363'	4.75
1924	64'	4.90	86'	4.75
Incr.	255'	.30	Incr. 277'	

Development in Ore,

1925 Amount	$13,980.48 -	Cost per ton $.067
1924	7,058.97	.029
Increase	$ 6,921.51	$.038

In 1925, 16,767 tons of ore were mined in development work at an average of 9.09 tons per man per day, while in 1924, 9,316 tons were mined at an average of 8.75 tons per man per day, or an increase in 1925 of 7,451 tons and .34 tons per man per day.

Stoping,

1925 Amount	$ 91,395.34 -	Cost per ton $.435
1924	133,159.95	.537
Decrease	$ 41,764.61	$.102

Detail.

	Labor		Supplies	
1925	$ 73,935.73	80.9%	$17,459.61	19.1%
1924	104,310.24	78.3%	28,849.71	21.7%
Decrease	$30,374.51		$11,390.10	

	Cost per ton		
	Labor	Supplies	Total
1925	$.352	$.083	$.435
1924	.421	.116	.537
Decrease	$.069	$.033	$.102

In 1924 twelve double drum Ingersoll-Rand Tugger Hoists were purchased for use on the scraper method of mining at a cost of $8,004.00 which amounted to $.032 per ton, while in 1925 no tugger hoists were purchased. Due principally to the scraper method of mining the average contract rate per car stoping was reduced from $1.84 in 1923 to $1.57 in 1925. In 1924 there were only a couple scrapers in use the first part of the year and the rest were added at the rate of about two scrapers each month. The average contract rate per car was $1.78 for 1924.

Explosives	1925	1924
Total lbs. Powder	68,950	78,825
Avg. price per lb.	.1592	.1563
Total Amount	10,979.41	12,318.34
Fuse, Caps, etc.,	2,297.20	2,744.51
Grand Total,	13,276.61	15,062.85
Lbs. powder per ton of ore	.3279	.3180
Cost per ton for powder	.0522	.0497
Cost per ton all explosives	.0631	.0608

Increase 1925 $.0023 per ton.

Timbering,

1925 Amount	$87,346.94 - Cost per ton	$.416
1924	87,004.80	.351
Increase	$ 342.14	$.065

Detail Cost of Timber.

	1925	1924
Cost of stull timber	18,657.98	13,888.32
Cost of Lagging & Poles	8,424.07	10,514.68
Total Cost,	27,082.05	24,403.00
Ft. tbr. per ton of ore	1,528	.833
Cost per ton for Timber, Lagging & Poles,	.1288	.0984

Increase 1925 $.0304 per ton.

The number of feet raising in 1925 was 2,940 ft. while in 1924 only 766 ft., an increase in 1925 of 2,174 ft. This increased the feet of cribbing timber per ton of ore from .039 in 1924 to 704 in 1925 or .665 ft. per ton of ore.

During 1925 there was also an increase in large stull timber used in repairing and replacing main level timber which was all treated, peeled and treated with chloride of zinc.

Tramming,

1925 Amount	$28,406.29 - Cost per ton	$.135
1924	35,255.41	.142
Decrease	$ 6,849.12	$.007

Sub Division

	1925	1924
Tramming	23,581.92	28,896.08
Skip Tenders & Bellmen	3,211.19	4,099.02
Cleaning Skip Pit,	1,613.18	2,260.31

Ventilation,

1925 Amount	$3,519.05 - Cost per ton	$.017
1924	6,133.46	.025
Decrease	$2,614.41	$.008

During 1924 we purchased three, size 2½, Anaconda type mine ventilating fans with 5 h.p. motors from Morgan-Gerrish Company at a cost of $1176.00 and one #125 Coppus Vaino electric blower from Coppus Engineering Corporation costing $78.00. This year no additional blowers were purchased. Also more primary ventilation in 1925.

Pumping,

1925 Amount	$21,875.72 - Cost per ton	$.104
1924	19,626.52	.079
Increase	$ 2,249.20	$.025

Gallons of water pumped during 1925, 131,-715,395; gallons per minute 251. Gallons pumped in 1924, 116,161,813; gallons per minute 225. Increase 1925 of 15,553,582 gallons and 26 gallons per minute.

Compressors & Air Pipes,

1925 Amount	$26,333.21 - Cost per ton	$.125
1924	28,487.28	.115
Decrease	$ 2,154.07	$.010

Sub Division.

	1925	1924
Compressors	21,278.05	24802.16
Air Pipes	5,055.16	3685.12

Cu. ft. air compressed in 1925, 468,900,000 @ $.0454 per M cu. ft.

Cu. ft. air compressed in 1924, 581,130,000 @ $.0427 per M cu. ft. A decrease in 1925 of 112,230,000 cu. ft. and an increase of $.0027 per M cu. ft.

The increase in 1925 to Air Pipes was due to running 2" pipe in raises. In 1924 there were only 766 ft. of raising while in 1925, 2,940 ft.

Underground Superintendence,

1925 Amount	$11,632.36 - Cost per ton	$.055
1924	10,277.95	.042
Increase	$ 1,354.41	$.011

In 1924 three shift bosses were employed from the first of the year to March 25th, and four from then on. This year four bosses were employed throughout the year. Last year the underground foreman was put on August 1st, while in 1925 he was employed all year.

MAINTENANCE ACCOUNTS:

Compressors & Power Drills,

1925 Amount	$521.35 - Cost per ton	$.002
1924	784.72	.003
Decrease	$263.37	$.001

Sub Division.

	Repairs to Compressor	Power drills
1925	521.35	none
1924	274.72	510.00
Increase	246.63	

Increase in 1925 due to repairs for Ingersoll Rand compressor valves and stop plates $267.00, compressor rings $37.00 and belting $40.00.

In 1924 three Cleveland Auger drills were charged out while in 1925 there were no drills purchased.

Hand Tramming Equipment,

1925 Amount	$ 920.08 - Cost per ton	$.004
1924	1,763.64	.007
Decrease	$ 843.56	$.003

Sub Division.

	Cars	Tracks
1925	696.26	223.82
1924	998.68	764.96
Decrease	302.42	541.14

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

Electric Tram Equipment,

1925 Amount	$7,878.71 -	Cost per ton $.038
1924	7,172.12	.029
Increase	$ 706.59	$.009

Sub Division.

	Gen.&Motor	Locomotives	Wiring
1925	5.84	1,792.51	1,048.75
1924	98.81	2,184.27	713.63
Decr.	92.97	Decr. 391.76	Decr. 335.12

	M. L. Tracks	M. L. Cars
1925	511.47	4,520.14
1924	732.30	3,443.11
Decr.	220.83	Incr. 1,077.03

Decrease in Generator & Motor due to repairs to generator in 1924.

Decrease in Locomotives due to overhauling a motor received from Francis Mine in 1924.

Increase in Wiring due to repairs to extensions to trolley lines.

Decrease in M. L. Tracks due to less repairs to tracks.

Increase in M. L. Cars due to charging out four second hand cars bought from Francis Mine and overhauling two of them.

Pumping Machinery,

1925 Amount	$1,584.78 -	Cost per ton	$.008
1924	1,807.44		.007
Decrease	$ 222.66	Increase	$.001

Decrease in 1925 due to purchase of two

new cylinders from Prescott Pump Company in 1924 costing $300.00 to replace two which were cracked.

SURFACE COSTS:

Hoisting,

1925 Amount	$20,636.60	- Cost per ton	$.098
1924	24,146.61		.097
Decrease	$ 3,510.01	Increase	$.001

In 1925 the tons of ore and rock hoisted were 214,910 tons at an average depth of 2160 ft. In 1924, 249,536 tons at an average depth of 2156 ft., or a decrease in 1925 of 34,626 tons and an increase depth of 4 feet.

Stocking Ore,

1925 Amount	$5,078.79	- Cost per ton	$.024
1924	6,445.58		.026
Decrease	$1,366.79		$.002

In 1925, 204,937 tons were placed on stock-pile while in 1924 231,804 tons were stocked; a decrease of 26,867 tons in 1925. In 1924 twelve bents of stocking trestle were erected as against two this year.

Dry House,

1925 Amount	$5,110.55	- Cost per ton	$.024
1924	5,331.54		.022
Decrease	$ 220.99	Increase	$.002

The heating charge to dry house in 1925 was $3,572.92; in 1924, $3,806.24; decrease 1925 $233.32.

General Surface Expense,

1925 Amount	$5,790.74	- Cost per ton	$.028
1924	6,199.66		.025
Decrease	$ 408.92	Increase	$.003

Charges to improvement and care of grounds

in 1925 were $756.19; while in 1924 $706.11; increase 1925, $50.08.

MAINTENANCE ACCOUNTS:

Hoisting Equipment,

1925 Amount	$5,908.28	- Cost per ton	$.028
1924	12,585.79		.051
Decrease	$6,677.51		$.023

Sub Division.

	Machinery Parts	Skips & Skip Roads	Wire Rope
1925	1682.72	2011.87	2213.69
1924	3634.56	2242.32	6708.91
Decr.	1951.84	230.45	4495.22

In 1925 one 8' cast iron sheave casting $237.00 charged, while 1924 there were 3 cast iron sheaves costing $672.60 and one steel lined sheave costing $497.40 charged out.

In 1925 one 1 3/8" hoisting rope and one 1¼" hoisting rope were charged out while in 1924 four 1 3/8" ropes and one 1¼" rope were used. Two new ropes and two new sheaves were put in use the latter part of the year.

Shaft,

1925 Amount	$1,668.69	- Cost per ton	$.008
1924	1,459.71		.006
Increase	$ 208.98		$.002

Increase due to repairs to underground pockets.

Top Tram Equipment,

1925 Amount	$3,403.86	- Cost per ton	$.016
1924	6,824.12		.028
Decrease	$3,420.26		$.012

In 1924 a new rock tram plant was purchased and erected and a new car for rock tram was built. In 1925 a new side dumping car was built and one of the saddle back cars converted into a side

dumping car.

In 1925, 10,200 ft. of 5/8" rope was used while in 1924, 6,010 ft. were used.

Docks, Trestles & Pockets,

1925 Amount	$760.02 - Cost per ton	$.004
1924	269.05	.001
Increase	$490.97	$.003

Increase 1925 due to repairs to chutes and butterfly in shaft house, extending rock trestle and painting trestle.

Mine Buildings,

1925 Amount	$632.45 - Cost per ton	$.003
1924	609.03	.002
Increase	$ 23.42	$.001

Detail of Mine Buildings.

	1925	1924
Office,	11.48	25.10
Warehouse,		8.28
Shops,	34.77	5.75
Stables,	31.13	
Shafthouse,	274.58	5.40
Engine House,	51.40	28.06
Boiler House,		2.58
Dry House,	127.26	308.90
Miscellaneous,	101.83	224.96

The charges to office were for making and repairing screens.

Charges to shops were for repairs to doors and new window lights.

Charges to stables were for putting on new roofing and repairs to horse shed in horse pasture.

Charges to shaft house were for extending covering over top tram.

Charges to engine house were for repairing roof and painting floor.

Charges to dry house were for repairs to

heaters and benches.

Charges to miscellaneous buildings were for repairs to storage building and painting timber tunnel.

GENERAL MINE ACCOUNTS:

Insurance,

1925	Amount	$13.03 - Cost per ton	$.000
1924		17.28	.000
Decrease		$ 4.25	

Engineering,

1925	Amount	$2,118.24 - Cost per ton	$.010
1924		2,671.59	.011
Decrease		$ 553.35	$.001

Analysis,

1925	Amount	$4,239.75 - Cost per ton	$.020
1924		3,709.29	.015
Increase		$ 530.46	$.005

The Athens samples are worked at the Negaunee Mine laboratory.

1925 -	16,174	Determinations at	$.19065	per determ.,	
1924 -	14,960	" "	.16945	"	"
Incr.	1,214	Incr.	$.02120	"	"

Personal Injury Expense,

1925	Amount	$ 5,399.51 - Cost per ton	$.026
1924		12,164.80	.049
Decrease		$ 6,765.29	$.023

There were no fatal accidents in 1925. In 1924 there were two fatal accidents. A settlement with Otto Laitinen, Accident Report #153, dated Dec. 23rd, 1922, was made this year.

Safety Department Expense,

1925 Amount	$138.32 - Cost per ton	$.001
1924	169.86	.001
Decrease	$ 31.54	

Telephones & Safety Devices,

1925 Amount	$ 926.61 - Cost per ton	$.004
1924	1,526.24	.006
Decrease	$ 599.63	$.002

Sub Division.

	1925	1924
Lighting shaft & levels,	449.50	493.92
Mine Telephones,	59.14	238.60
Safety Gates & Underground Improvements,	46.14	55.40
Sign Boards, Signals, etc.,		65.90
Fire Equipment,	232.20	664.54
Shaft Houses,	139.63	
Engine House,		7.88

New safety railings were placed on shaft house in 1925.

Mine Office,

1925 Amount	$7,157.46 - Cost per ton	$.034
1924	6,824.06	.027
Increase	$ 333.40	$.007

Sub Division

	Direct Charges	Central Office
1925	933.50	6,223.96
1924	876.27	5,947.79
Increase	57.23	276.17

A new filing case was bought for the mine office in 1925.

(8) Recapitulation.

Total Underground Costs:

1925 Amount	$299,683.69 - Cost per ton		$1.426
1924	339,478.43		1.370
Decrease	$ 39,794.74	Increase	$ .056

Total Surface Costs,			
	1925 Amount	$48,989.98 - Cost per ton	$.233
	1924	63,871.09	.258
	Decrease	$14,881.11	$.025
Total General Mine Accounts,			
	1925 Amount	$19,992.92 - Cost per ton	$.095
	1924	27,083.12	.109
	Decrease	$ 7,090.20	$.014

OGDEN MINE - 1925.

A. PRODUCTION AND SHIPMENTS.

I. Production by Grades.

Tilden Silica,	64,822 tons.

II. Shipments.

Tilden Silica,	64,822 tons.

V. Production by Months.

Month	Tilden Silica
June,	6,417 tons,
July,	11,754 "
August,	14,628 "
September,	9,986 "
October,	18,429 "
November,	3,608 "
Total -	64,822 tons.

VI. Delays.

August 13th,	Broken bail on dipper of shovel.
August 26th,	3 hours delay account of broken rocker shaft on shovel.
September 3rd,	2½ hours delay account of steam shovel.
September 4th,	6 hours delay account of two loaded cars off track.
October 22nd,	5 hours, shovel crew, thawing out pump and water pipes.
October 23rd,	1½ hours delay account of shovel repairs.
October 25th,	5 hours delay account of shovel repairs.
October 26th,	2 hours delay account of shovel repairs.

October 28th, 1½ hours delay account of shovel repairs.

October 29th, Idle 9 hours, repairing boom on #11 shovel.

October 30th, Idle 9 hours, repairing locomotive.

October 31st, 3 hours delay waiting for engine.

November 4th, 4 hours delay account of swinging cable on shovel broke.

November 13th, Compressor motor coils burned out.

VII. Delays from Lack of Current.

October 19th, 20th & 21st, Pit idle account of no current due to transmission lines down account of snow storm on October 18th.

B. VII. ESTIMATE OF ORE RESERVES, December 31st, 1925.

Factor, 15 cu. ft. equals one ton.

Developed Ore.

Above bottom of present pit from Jones & Laughlin line on the West to a point 900' to the Southeast of this line parallel with the lake shore - - - - - - 431,900 tons.

From bottom of present pit to lake level 1526'. This gives an 8' depth at the Southeast end and 20' at the Jones & Laughlin line - - - - - - - 200,000 tons.

Bottom of present pit below lake level 15,900 tons per foot of depth.

Prospective Ore.

Section to the Southeast and South of present developed area on Sec. 13 - - - 157,900 tons.

1894 00

ANALYSIS

	IRON	PHOS.	SILICA	ALUM.	MANG.	LIME	MAG.	SUL.	IGNI.	MOIST.
Dry	40.50	.038	38.87	.640	.160	.62	.260	.008	1.43	3.70
Natural	39.00	.037	37.43	.616	.154	.597	.250	.008	1.38	3.70

C. GENERAL.

(1) Labor.

There was an abundance of labor throughout the entire season. Every

day there were applicants looking for work.

(2) New Construction.

Under new construction is the opening and developing of this pit under E.&A. #478. The original estimate totaled $9,735.00, however, there were a number of items in this installation which were authorized later. The various items on the E. & A. covered by the original estimate together with the additions is tabulated below:-

	Estimate	Total to date
One-half mile transmission line,	$1,500.00	$2,580.72
Moving & Installing Compressor,	1,200.00	1,934.87
Housing Compressor,	2,000.00	938.93
Piping,	200.00	329.23
Blacksmith Shop, Office & Warehouse,	2,500.00	670.12
Blacksmith Shop Equipment,	300.00	10.18
Two Drill Machines,	600.00	542.74
Ford Truck,	550.00	
Installing Pump,		38.79
Erecting Sub-Station,		196.13
Locomotive,		1,211.51
Cyclone Churn Drill,		1,922.51
Line to Cyclone Drill,		361.65
Personal Injury Expense,		2.40
Contingent Expense,		13.13
Engineering,		135.70
Total -	$8,850.00	$10,888.61
10% Contingencies,	885.00	
Grand total -	$9,735.00	$10,888.61

A detail of work under several of these items appears later in the report under D-3.

(3) Explorations.

There were no explorations during the year.

(4) Fatal Accidents.

There were no fatal accidents during the year.

(5) Accidents to Equipment, Fires, Etc.

On November 13th the armature on the motor which operates the compressor burned out. It was taken to the Ishpeming shops where it will be rewound before operations start next spring.

The steam shovel, locomotive, revolving shovel, were all old equipment when sent to the pit. Here they had service every day with no time for repairs and as a result there were innumerable break-downs, causing delays which have been reported under A-6.

D. SURFACE.

(1) Buildings.

Compressor Building. A frame building 18' by 48' was built to house the compressor, in one corner of which a small room was partitioned off for the Captain. This building was gunited on the outside for fire protection.

Blacksmith Shop-Dry. A frame structure 18' by 30' was erected for this purpose. The Southeast end is used for a blacksmith shop. The Northwest end for a dry. The latter end contains, benches, wash trough, and stove for heating. The outside of this building was gunited.

Powder House. Back in the woods a small wooden structure was erected for storing powder. This building was also gunited for fire protection.

(3) Open Pit.

General.

During the past few years there has been an increased demand for high silica ore. The Jackson Pit produced an ore of this grade but with 2% manganese content which made it unsalable in competition with other low iron silicious ores offered on the market. To meet this demand, it was decided to re-open the Ogden Pit which had been idle for a number of years and from which only a few thousand tons had been mined.

Location.

The Ogden Pit is located on the SW¼ of Sec. 13-47-27 along the Southwest shore of Lake Ogden, which is one of the chain of lakes which supplies the

City of Ishpeming with water. The ore formation is exposed on the side of a wooded hill which extends nearly down to the shore of the lake. The capping of the hill is diorite. The iron formation as far as shown dips slightly toward the hill and the top contact of this formation against the diorite is at mean sea elevation of 1630. The mean lake level is 1526 and the track level at the starting of the pit is 1534. The width of the formation from the edge of the lake to the diorite is approximately 300'. The length of the deposit, where the surface has been exposed and where we estimate our developed ore, is approximately 900'. The formation extends to the South and East of the present pit but here the ore is estimated as prospective.

To the Northwest of the Ogden and adjoining it on Section 14 is the Jones & Laughlin property where a pit was operated several years ago and where also a shaft was sunk. The ore shown in this pit is the same as that in the Ogden.

Several years ago the L. S. & I. Railroad built a spur into the Ogden. This extends along the Southwest side of Lake Ogden and supplies both this and the Jones & Laughlin pits. The Iron Cliffs Road crosses the property just at the entrance to the pit so that it is easily accessible to workmen from both Ishpeming and Negaunee.

Preliminary Work.

When orders were received in May to open the mine, it was necessary that the work be rushed as much as possible in order to produce the tonnage sold. The railroad track had to be repaired, compressor installed, transmission line extended to the pit, transformer station set up and the pit cleared of debris, etc. The work started on May 11th and on June 4th the first car of ore was loaded.

Clearing.

When operations started, the only portion cleared was an area about 300' long by 100' wide where the pit had been opened. The rest of the hill was covered with second growth, consisting of maple, birch, poplar, etc. During

the summer and fall, a strip was cleared from the Jones & Laughlin line to a point opposite the compressor building, one-fourth mile Southeast. The brush was burned and the larger trees used for blocking, etc.

Stripping.

An area 20' wide by 300' long was found stripped when the mine was opened. A section adjoining this to the Northwest 100' wide by 150' long was stripped and later a section at the Southeast end of the pit. The over burden is sandy loam and averages from 2' to 30" in thickness, except at the Southeast end where in places it is 10' or more. In this end the ledge on top is more or less disintegrated so that in stripping it broke up readily. On the Northwest end, it is hard and very irregular. This end was stripped with tugger hoist and scraper and was difficult to clean on account of the uneven surface of the ledge. In August an Erie revolving steam shovel on caterpillar treads was brought to the pit for stripping. With this equipment the work was done much faster than by scraper, however, the shovel was badly in need of repairs so that there were innumerable delays, the treads giving the most trouble. The shovel stripped a width of about 30', the material being thrown down the bank. A parallel cut would then be taken and the material which had been previously overcast would be re-handled together with the regular stripping for this cut. The stripped material was thrown over the ore bank where it could be loaded on dump cars by steam shovel. A stripping dump was made to the Southeast of the pit, just beyond the Cliffs Drive and on the Northeast side of the Railroad track. During the season 11,589 yards were handled.

Drilling and Blasting.

The iron formation in this locality is hard to drill. In places it is very much fractured and in others it is extremely hard and tough. Representatives from nearly all of the drill companies sent demonstrators to the pit to try out their machines. The one adopted was the Turbo Waughammer made by the Denver Rock Drill Company. This is of the jack hammer type with a very strong rotation.

It was difficult to drill some of the holes on account of the broken formation, so that after a month or so, it was decided to try churn drilling. In July a steam operated Keystone Drill was taken to the pit. Vertical holes were laid out, spaced at 20' intervals 15' back of the brow. This drill was slow and out of date and was in poor repair and gave considerable trouble. After drilling two or three holes, it was decided to purchase a Cyclone electrically operated machine. This was so much faster, the Keystone was shut down and double shift worked on the Cyclone. An expert was hired to give instruction in drilling with this machine and to show the blacksmith the proper method of sharpening the bits. Satisfactory headway was made with the Cyclone, although there were a number of holes that gave considerable trouble when slips were encountered. The holes, which averaged 6" in diameter, were drilled to a point 5' below the bottom of the pit and averaged from 36' to 52' in depth. At the toe of the hole, i.e., from the hole horizontally to the edge of the pit, the distance averaged from 25' to 35'. On September 24th fourteen holes were blasted under the direction of an expert from the Hercules Powder Company. The charge in each hole was divided into two sections, the bottom load which contained 60% gelatin and the top or deck load which was principally 35% #1 Special powder. Screened loam was used for tamping. The holes were blasted simultaneously electrically - Cordeau-Bickford being used. The charge contained 3500 pounds of powder and it is estimated that 18,000 tons were broken. The charge was figured at 2½ cubic yards of ground per pound of powder.

The structure of the formation varies throughout the length of the pit. To the Southeast and Northwest it is dense, but the Southeast end breaks in large chunks which later have to be block holed or bulldozed, while in the Northwest end it breakes into sizes satisfactory for loading. In the center the structure is more broken, requiring no block holing. While the heavy blast broke the ground, it did not dislodge it sufficiently to make easy loading. The later blasts were made heavier to overcome this.

Mining and Loading.

When the pit was opened originally, a bench was left about 10' above the floor of the pit so that tram cars could run from the face and dump directly into the top of the ore cars. The ore was loaded by hand into hand tram cars. When mining started this year, it was decided to use a steam shovel. The bench was blasted and the ore loaded directly into ore cars on the switch where they were originally loaded by hand. When this cut was completed, the shovel was brought back and a second cut started. A loading track being laid parallel to the new cut. During the summer three cuts were made along the face of the bank, averaging 500' in length. It would have been better if the cut had extended through to the Jones & Laughlin line, but the Northwest end was not stripped and when mining was in progress, we were kept busy clearing and stripping opposite the face we were working. When the deep holes were blasted, it was necessary to take up the spotting track and re-lay it after the blast.

The steam shovel was supplied with cars by a dinky locomotive, three cars being handled at a time. At the beginning of the season the little Rhode Island Locomotive, formerly at the Jackson and later at the Hoist Dam, was used. This was in poor condition and needed an overhauling.

Early in August a Dickson Locomotive was purchased from the Gladstone Furnace and was used throughout the rest of the season. After the railroad cars were filled, they were placed on the main line opposite the pit. By using our own locomotive, we were not delayed in the handling of cars.

Most of the ore broke in flat pieces or slabs, but at times it was necessary to do considerable block holing and bulldozing in order to break the chunks to a size that could be handled at the Maas Crusher. This took considerable time, often delaying the loading ten minutes or more each time the shovel moved ahead. During the coming season larger chunks can be handled on account of the new Maas Crusher which will cut down the chunk blasting in the pit. The loaded cars averaged forty tons in weight.

Tracks.

The switch which supplies the pit turns off to the left opposite the dry. As it enters the pit it is on a heavy curve and before it reaches the West end it has a sharp reverse curve. During the latter part of the season, the Erie Shovel made a cut to the South of the compressor house and dry and next season the loading track should be moved to the South of these buildings. The new switch should lead from the main track at a point about 500' East of the compressor building. If this is done, the loading track will gradually straighten out as the ore is mined from the Southeast end of the pit. A second switch for empty cars should parallel this new line at the Southeast end to cut down the switching distance.

Road.

It was necessary to abandon the road which crossed the Southeast end of the pit and extended to the Jones & Laughlin property. A new road was made on the Northeast side of the railroad track. Filling from the pit was used for this road.

Transmission Line.

The Ishpeming-Gwinn high power transmission line ran North and South at a point about one-half mile East of the Ogden. A pole line was built running from this line to the compressor house. Lightning arrestors were installed and the company's emergency transformers were used for the summer. These were on a railroad flat car so that they could be taken away on short notice in case of trouble at any of our sub-stations.

Equipment.

Most of the equipment used at the mine the past summer was obtained from various mines on this range.

Compressor. The compressor came from the Salisbury Mine. A Laidlaw-Dun-Gordon electrically operated which had a capacity of 1000 cu. ft. per minute. This was larger than needed so a smaller pulley was substituted, cutting

it down to 500 cu. ft. per minute. In November the motor was burned out due to a short circuit. This compressor will be part of the regular equipment of the mine.

Dickson Locomotive. This was purchased in August from the Gladstone Furnace for $1,000.00. It is saddle back type and in good condition. It should serve the mine for a number of years.

Cyclone Churn Drill. This is an electrically operated churn drill. It had been used but a short time by the Mesaba Iron Company and is practically as good as new. It was purchased from them at a greatly reduced price.

Power Drills. Two Turbo Waughammer drills were purchased from the Denver Rock Drill Company.

Other Equipment. A #60 Marion Steam Shovel belonging to the Maas Mine. This shovel operated throughout the season and was badly in need of repairs when the pit closed down. The shovel needs a thorough overhauling including a new boom. This shovel has too short a boom for a high bank like that at the Ogden.

Rhode Island Locomotive. This is owned by the Company and as I mentioned above had been used several years at the Jackson Pit and later at the Hoist Dam. It was in bad shape when it was taken to the pit last spring, as it had not been overhauled after being used in the dam construction. It is held at the pit for emergency purposes and helped out last October when the Dickson Locomotive was being repaired.

Blacksmith Equipment. Consists of a forge, anvil and an Ingersoll-Rand drill sharpener discarded by one of the Ishpeming mines.

The Keystone Churn Drill was used for a portion of the season but was discarded as soon as the Cyclone Drill started operations.

Erie Shovel. A small revolving type Erie Shovel on caterpillar treads was used in stripping operations. This shovel had been used by the company for several years and has never been completely overhauled. As a consequence there were repeated delays in its operation the past summer. It has been taken to the shop for a thorough overhauling this winter which will

cost a considerable amount. I do not think that the charge for this overhauling should go against the pit, but should be pro-rated to the operations that have used it. With this shovel put in good condition, it should do twice as much work per day as it did last summer.

Suggested Equipment.

The equipment most needed at the pit is a large revolving shovel. This, if electrically operated on caterpillar treads and with a long boom, would reduce the labor of handling the ore to a minimum. With a long boom it could load far enough away from the foot of the bank to be practically out of danger of material rolling down and hitting the shovel. If a small shovel is used with a short boom, the bank has to be blasted continuously to protect the men working in front of the shovel and also the shovel itself.

The new jaw crusher which has been authorized for the Maas Crushing Plant will also help out in the operation of this pit. This crusher is 40" by 42" and will handle most of the chunks that are mined without being block holed.

Future Exploration.

In the immediate vicinity of the Ogden there is apparently a large tonnage of ore of practically the same grade as that being mined at the pit. However, in order to know definitely what this tonnage amounts to, it should be explored by means of drill holes and test pits and analyses taken.

One-fourth mile to the Southeast of the pit is a hill which shows a formation which apparently is the same as the Ogden. This is immediately alongside of the railroad and as close to the compressor house as the present pit. The surface could be hydrauliced away and the pit opened at very little cost, if explorations prove that the grade is satisfactory. The tonnage in this hill above the present track level as shown by the engineer's estimate is 800,000 tons; with a large additional tonnage below the track level. The formation extends to the South along the Cliffs Drive in the direction of School House Lake.

OGDEN MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

GRADE	IRON	PHOS.	SILICA
Tilden Silica,	40.47	.052	36.98

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

	Mine			Lake Erie	
GRADE	IRON	PHOS.	SILICA	IRON	MOIST.
Tilden Silica,	40.53	.052	36.89	40.52	3.60

ORE STATEMENT AND SHIPMENTS FOR YEAR 1925.

	YEAR	LAST YEAR
On hand Jan. 1, 1925,	-	
Output for Year,	64,822	-
Total,	64,822	-
Shipments,	64,822	-
Balance on Hand,	-	-

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

OGDEN MINE

COMPARATIVE MINING COST FOR YEAR

	1925
PRODUCT	64,822
Open Pit Costs	.581
Gen.Mine Accounts	.036
Total Cost of Production	.617
Stripping	.017
Equipment	.001
Uncompleted Construction	.017
Taxes	.0
Central Office	..022
Contingent Expense	.008
Cost Adjustment	.011
Misc. Debits & Credits	.005
Total Cost on Cars	.688
Days Operating	110
No.Shifts & Hours	1-9
Avg.Daily Product	589
Cost of Production	
Labor	.292
Supplies	.325
Total	.617

NOTE: Ogden Mine production started June 4, 1925.

OGDEN MINE.

OGDEN MINE

COMPARATIVE WAGES AND PRODUCT

	1925	1924	INCREASE	DECREASE
PRODUCT	64,822	-		
No.Shifts & Hours	1-9hr			
AVG.NO.MEN WORKING				
Surface	5			
Underground	16			
Total	21			
AVG.WAGES PER DAY				
Surface	4.16			
Underground	4.81			
Total	4.66			
WAGES PER MO.OF 25 DAYS				
Surface				
Underground				
Total				
PRODUCT PER MAN PER DAY				
Surface	92.16			
Underground	28.33			
Total	21.67			
LABOR COST PER TON				
Surface	.045			
Underground	.170			
Total	.215			
AVG.PRODUCT BRK'G & TRM'G				
" WAGES CONTRACT MINERS				
" " " TRAMMERS				
TOTAL NO.OF DAYS				
Surface	703-3/4			
Underground	2287-1/2			
Total	2991-1/4			
AMOUNT FOR LABOR				
Surface	2927.21			
Underground	11004.21			
Total	13931.42			

Mine produced from June 4th to Nov.6th,1925.

F. COST COMPARISON.

(1) Days and Shifts.

Operations began on May 11th with clearing and cleaning out the old working, erecting buildings, etc., as reported under Surface D-1. Actual production began on June 4th and stopped November 6th. The pit operated on a nine-hour per day, six days per week schedule throughout the season.

The average number of men employed during the operating months, June to October inclusive, was 21 men. The total number of shifts charged to operating was 2,931¼. The number of days operating was 147 days.

(2) Wages.

There was no increase or decrease in wages during this operating period.

(3) Production.

Production of 1925, 64,822 tons.

Tons of ore mined per man per day:-

	1925
General Surface,	100.70
Pit,	28.34
Total,	22.12

(4) Number of Men and Wages.

No. Men	No.Days	Amount	Rate per day
21	2,931¼	$13,950.22	$4.76

(5) Tons per man per day.

See #3.

(6) Cost of Production.

1925 - $39,969.58 - Cost per ton $.617

	TOTAL COST				COST PER TON		
	LABOR	%	SUPPLIES	%	LABOR	SUPPLIES	TOTAL
1925 -	$18,905.93	47.3	$21,064.65	52.7	$.292	$.325	$.617

SOUTH JACKSON MINE - 1925.

There was no work done at this property during the year 1925.

B. VIII ESTIMATE OF ORE RESERVES, December 31st, 1925.

The estimate of ore reserves in the South Jackson Pit is the same as shown in the 1924 report, namely, 334,226 tons. The detail of this estimate is shown in the 1924 annual report.

SOUTH JACKSON MINE.

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

GRADE	IRON	PHOS.	SILICA	MANG.
South Jackson	(No Production)			

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

	Mine				Lake Erie		
GRADE	IRON	PHOS.	SILICA.	MANG.	IRON	MOIST.	MANG.
South Jackson	(No Shipments)						

ORE STATEMENT AND SHIPMENTS FOR YEAR 1925.

	YEAR	LAST YEAR
Output for Year,	-	33,262
Shipments,	-	33,262
Balance on Hand,	-	-

1925 -- Mine Idle During Year.

1924 -- Mine Idle Jan. 1st to Apr. 24th, 1924.
1-9 Hour Shift, Apr. 24th to June 16th, 1924.
Mine Idle June 16th to Aug. 30th, 1924.
1-9 Hour Shift, Sept. 1st to Sept. 26th, 1924.
Mine Idle Sept. 27th to Dec. 31st, 1924.

SOUTH JACKSON MINE

COMPARATIVE MINING COST FOR YEAR

	1925	1924	INCREASE	DECREASE
PRODUCT	0	33,262		
Open Pit Costs		.418		
General Mine Accounts		.022		
Cost of Production		.440		
Original Cost		.803		
Taxes		.160		
Central Office		.014		
Contingent Expense		.002		
Cost Adjustment		.011		
Winter Expense		.047		
Total Cost on Cars		1.477		
No.Days Operating		64		
No.Hours & Shifts		1-9		
Avg.Daily Product		520		
COST OF PRODUCTION				
Labor		.213		
Supplies		.227		
Total		.440		

No production for year 1925.

SOUTH JACKSON MINE

COMPARATIVE WAGES AND PRODUCT

	1925	1924	INCREASE	DECREASE
PRODUCT	-	32,262		
No.Shifts & Hours		1-9hr		
AVG.NO.MEN WORKING				
Surface		0		
Underground(Pit)		4		
Total		4		
AVG.WAGES PER DAY				
Surface		4.51		
Underground		5.02		
Total		4.98		
WAGES PER MO. OF 25 DAYS				
Surface		112.75		
Underground		125.50		
Total		124.50		
PRODUCT PER MAN PER DAY				
Surface		378.00		
Underground		31.57		
Total		29.13		
LABOR COST PER TON				
Surface		.012		
Underground		.159		
Total		.171		
TOTAL NO.OF DAYS				
Surface		88		
Underground		1053-3/4		
Total		1141-3/4		
AMOUNT FOR LABOR				
Surface		397.31		
Underground		5289.98		
Total		5687.29		

1924 - Mine only operated April 24th to Sept.30th.
1925 - No production.

NORTH JACKSON MINE - 1925.

There was no production and shipments at the North Jackson Mine in 1925.

D. SURFACE.

(1) Buildings.

In June and July the old office which is now being used by the State Constabulary as a barracks was repaired and a porch was built along the South side of the kitchen annex.

A new roof was placed on the garage which was formerly the blacksmith shop.

(3) Open Pits.

The fences around the open pits were repaired in April.