

THE
CLEVELAND - CLIFFS IRON CO.
MINING DEPARTMENT

ANNUAL REPORT OF GENERAL MANAGER
FOR
YEAR ENDING
DECEMBER 31ST 1925

MS 86-100
1996

Report received
Jan 28-1926

#1996

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Average
Shipments

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MADE IN U.S.A.

January 1, 1926.

Mr. Wm. G. Mather, Pres.,
Cleveland, Ohio.

Dear Sir:-

I am exceedingly sorry that Mr. Duncan is unable to personally transmit to you the report of the operations of the Mining Department for the year 1925. He is now in Charleston, S.C., and very favorable reports from him are being received. I sincerely hope that he will be greatly benefitted by living for a few months in a milder climate.

The inventories, maps and statements relative to the 1925 report have gone forward to you under separate cover.

The colored portions of the maps show the work for the year. The reports of the different mines of the Company were made by the Superintendents in charge and the reports of the Mechanical, Electrical, Geological, Safety and Welfare Departments, by the heads of these departments.

With the exception of the Barnes-Hecker and Republic Mines, which for the greater part of the year have worked two 8-hour shifts, five days per week, all of the other mines on the Marquette Range have worked one 8-hour shift five days per week. The Spies-Virgil, which is in the development stage, has worked two 8-hour shifts six days per week. There has been no curtailment in the operating time in the mines on the Mesaba.

From July 1st to October 15th the Maas Mine was shut down in order to rebuild the shaft. This is the most notable piece of construction work done during the year, and this mine is now modern in every respect.

MADE IN U.S.A.

Efficiency has been maintained and in a number of cases, greatly increased by the introduction of double drum hoist operating scrapers. These labor savers have come into very common use and are the most practical means of increasing efficiency and naturally lowering costs.

The following brief statement shows a comparison of all of the Company's mines for 1925 as compared with 1924:

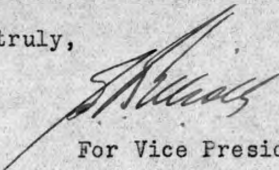
<u>YEAR</u>	<u>PRODUCTION</u>	<u>TONS PER MAN</u>	<u>COST ON CARS</u>	<u>AVG.RATE PER DAY</u>	<u>LABOR COST PER TON</u>	<u>TAXES PER TON</u>
1924	2,899,245	4.00	2.501	5.11	1.279	.3450
1925	3,166,062	4.635	2.370	5.13	1.107	.2717
Difference	266,817	.635	.231	.02	.172	.0733

The only outstanding lease is to the Empire Iron Company, covering the E $\frac{1}{2}$ of the SW $\frac{1}{4}$ and the W $\frac{1}{2}$ of the SW $\frac{1}{4}$ of Section 19, 47-26. It is commonly known that there are negotiations for the transfer of this lease to the Clement K. Quinn Company, it being their intention to open up this property for the production of silicious ore.

During the year, the Ogden Pit entered the production column and it is planned to purchase new equipment so that the production can be greatly increased in 1926. In order to crush this silicious ore economically and efficiently, the crushing plant at the Maas Mine will be rebuilt and made modern in every respect.

During the year the Helmer Lease, covering the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 14-58-19, St. Louis County, Minnesota, has been surrendered.

Yours truly,


For Vice President & General Manager.

LAKE MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

	GRADE	IRON	PHOS.	SILICA
Lake,		(No Production)		
Lakedale,		(No Production)		

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

	GRADE	Mine IRON	PHOS.	Lake Erie IRON	MOIST.
Lake,		(All Mixed)			
Lakedale,		(All Mixed)			

ORE STATEMENT - DECEMBER 31ST, 1925.

	LAKE ORE AT MINE	LAKEDALE AT MINE	LAKE ORE STOCKED AT PRESQUE ISLE	TOTAL	TOTAL LAST YEAR
On hand January 1, 1925,	11,522	18,499	22,963	52,984	99,471
Output for Year,	-	-	-	-	-
Transferred,	-	-	-	-	-
Stockpile Overruns,	3,826	20,099	8,508	32,433	-
Total,	15,348	38,598	31,471	85,417	99,471
Shipments,	15,348	32,598	31,471	79,417	46,487
Balance on Hand,	-	6,000	-	6,000	52,984
Decrease in Ore on Hand,				46,984	

1925 -- Mine Closed.

1924 -- Mine Closed.

LAKE MINE

SHIPMENTS FOR YEAR-1925

GRADE	POCKET	STOCKPILE	PRESQUE ISLE STOCKPILE	TOTAL	TOTAL LAST YEAR
Lake,	-	15,348	31,471	46,819	-
Lakedale,	-	32,598	-	32,598	46,487
Total,	-	47,946	31,471	79,417	46,487
Total Last Year,	-	46,487	-	46,487	
Increase,				32,930	

ANNUAL REPORT

OF THE

(A)

CLIFFS SHAFT MINE

(1925)

PRODUCTION AND SHIPMENTS.

The Cliffs Shaft Mine worked single shift five days a week in 1925, rock being hoisted at night. Beginning in March Bancroft ore was produced from the land leased from the Oliver Iron Mining Co. on the north boundary, and this was hoisted after five o'clock in "A" shaft usually two evenings a week after May 15th. From March 2nd to May 15th hoisting was done on two shifts, but the night shift was discontinued on May 15th.

The mine worked 260 days during the year, and produced 318,601 tons of ore of all grades, an average of 1,225 tons per day. 55,755 tons of overrun in the stock-piles was taken up into production for the year in addition to the production noted above, bringing the total for the year up to 374,356 tons.

20,892 tons of rock were produced, all of which was dumped underground.

Shipments to the dock were started on April 22nd, and were continued until November 23rd. All the Crushed Ore in stock and all but 24,200 tons of Lump, which was overrun, were shipped.

The Bancroft Ore was kept separate from Cliffs Shaft Ore both at the pocket and on the stock-pile.

TABLE I.

PRODUCTION BY GRADES.

Grade	Year 1925		Year 1924	
	Tons	Per Cent	Tons	Per Cent
Cliffs Shaft Lump	205,311	64.5	199,085	67.1
Cliffs Shaft Crushed	97,632	30.6	97,423	32.9
Bancroft Lump	10,587	3.3		
Bancroft Crushed	<u>5,071</u>	<u>1.6</u>		
Total	318,601	100.0	296,508	100.0

The total percentage of Lump was 67.8% for both grades, an increase of 0.7% over 1924.

TABLE II.

SHIPMENTS.

Grade	Pocket Tons	Stock-Pile Tons	Total Tons
Cliffs Shaft Lump	141,615	119,333	260,948
Cliffs Shaft Crushed	43,957	103,693	147,650
Bancroft Lump	8,262	521	8,783
Bancroft Crushed	<u>3,082</u>	<u>1,533</u>	<u>4,615</u>
Total	196,916	225,080	421,996

TABLE III.

ORE IN STOCK, DEC. 31ST, 1925.

Grade	Tons
Cliffs Shaft Lump	42,890
Cliffs Shaft Crushed	10,043
Bancroft Lump	1,421
Bancroft Crushed	<u>709</u>
Total	55,063

TABLE IV.

DIVISION OF PRODUCT BY LEVELS.

Level	"A" Shaft			"B" Shaft			Both Shafts		
	Ore Tons	Rock Tons	Total Tons	Ore Tons	Rock Tons	Total Tons	Ore Tons	Rock Tons	Total Tons
1st	5,603		5,603	28,864	132	28,996	34,467	132	34,599
2nd	2,716		2,716	809		809	3,525		3,525
3rd	12,270		12,270	2,001		2,001	14,271		14,271
4th	10,666		10,666	6,242		6,242	16,908		16,908
5th	21,499	1,990	23,489	5,000		5,000	26,499	1,990	28,489
6th	20,143	1,200	21,343	10,809		10,809	30,952	1,200	32,152
7th	44,005	1,702	45,707	10,036	662	10,698	54,041	2,364	56,405
8th	16,072	4,346	20,418	3,082		3,082	19,154	4,346	23,500
9th	12,451	514	12,965	9,509	572	10,081	21,960	1,086	23,046
10th	21,702	1,834	23,536				21,702	1,834	23,536
11th	7,665		7,665	6,719	1,284	8,003	14,384	1,284	15,668
12th	8,225		8,225	13,685	218	13,903	21,910	218	22,128
13th				16,243	1,762	18,005	16,243	1,762	18,005
14th				18,780	396	19,176	18,780	396	19,176
15th				<u>3,805</u>	<u>4,280</u>	<u>8,085</u>	<u>3,805</u>	<u>4,280</u>	<u>8,085</u>
Total	183,017	11,586	194,603	135,584	9,306	144,890	318,601	20,892	339,493

TABLE V.

PRODUCTION BY MONTHS.

Month	Days	Ore Per Day	Cliffs Shaft Ore			Bancroft Ore			Total Ore Tons	Rock Tons	Total Ore & Rock Tons
			Lump Tons	Crushed Tons	Total Tons	Lump Tons	Crushed Tons	Total Tons			
January	22	1071	15,756	7,796	23,552				23,552	2,386	25,938
February	20	1048	14,026	6,928	20,954				20,954	2,030	22,984
March	22	1175	17,139	8,348	25,487	240	120	360	25,847	1,752	27,599
April	22	1132	16,305	7,955	24,260	425	209	634	24,894	1,446	26,340
May	21	1219	17,190	8,083	25,273	222	96	318	25,591	1,672	27,263
June	22	1285	18,339	8,477	26,816	1,010	438	1,448	28,264	1,682	29,946
July	23	1356	19,475	8,889	28,364	1,926	903	2,829	31,193	1,910	33,103
August	21	1418	18,250	8,693	26,943	1,862	964	2,826	29,769	1,270	31,039
September	21	1382	18,183	8,579	26,762	1,585	683	2,268	29,030	1,504	30,534
October	22	1298	18,609	8,455	27,064	995	500	1,495	28,559	1,388	29,947
November	21	1229	16,360	7,606	23,966	1,235	615	1,850	25,816	1,720	27,536
December	23	1093	15,679	7,823	23,502	1,087	543	1,630	25,132	2,132	27,264
Year	260	1225	205,311	97,632	302,943	10,587	5,071	15,658	318,601	20,892	339,493
Stock-Pile											
Overrun		215	41,039	14,445	55,484	18	253	271	55,755	-	55,755
Total	260	1440	246,350	112,077	358,427	10,605	5,324	15,929	374,356	20,892	395,248

TABLE VI.

DELAYS.

1925 Date	Hours	Tons Lost	Cause	Repair Cost
Jan. 23	1	125	"A" shaft pocket blocked.	
Jan. 27	1 $\frac{1}{2}$	200	"A" shaft pocket blocked.	
Feb. 5	$\frac{3}{4}$	100	Pocket blocked at 6th level "A" shaft.	
Feb. 13	1	175	Hinges broke on "B" shaft top-tram car door.	\$ 2.13
Feb. 26	1	100	Repairing air-lift at 6th level "A" shaft.	1.78
Feb. 27	1	125	Plate pulled out of chute in crusher building.	2.40
Mar. 3	3 $\frac{1}{4}$	400	Top tram motor trouble.	8.38
Mar. 9	1	125	Top tram motor trouble.	2.61
Mar. 16	$\frac{3}{4}$	100	Top tram motor trouble.	1.45
April 2	1	125	Broken sheave in crusher building.	1.20
April 13	1 $\frac{1}{2}$	75	No current.	
April 14	1 $\frac{1}{2}$	200	Top tram motor pinion broke.	30.79
April 21	1	125	15th level "B" shaft pocket blocked.	
April 23	1 $\frac{1}{2}$	200	Top tram rope tangled on drum.	101.78
April 27	1	125	No current. Fuse burnt out at sub-station.	
May 12	1 $\frac{1}{2}$	200	"A" shaft pocket blocked.	
May 20	1	125	No current.	
May 25	1 $\frac{1}{2}$	75	No current.	
June 9	1	100	Wire burnt out on top tram motor.	1.56
June 12	$\frac{1}{2}$	75	No railroad cars.	
June 17	1 $\frac{1}{2}$	125	Repairing 8th level "A" shaft skip-gate and runner at 2nd level "A" shaft.	8.55
June 23	5	300	"A" shaft skip stuck in rock dump.	14.28
July 15	8	550	"A" shaft head-sheave broke.	625.00
Aug. 10	2 $\frac{3}{4}$	200	"B" shaft pocket blocked.	
Sept. 4	4 $\frac{3}{4}$	490	"A" shaft top-tram car went over the trestle. Solenoid brake failed.	325.00
Sept. 17	5	360	Wheel broke on "A" shaft top-tram car and the car went over the trestle.	325.00
Sept. 18	1 $\frac{3}{4}$	200	Putting on new car at "A" shaft.	
Oct. 21	1	100	Door opened on "B" shaft top tram car.	
Nov. 2	8	550	"B" shaft turn-sheave broke.	413.28
Nov. 23	2 $\frac{1}{2}$	350	Erecting stocking trestle and changing chutes in crusher building.	
Dec. 1	$\frac{1}{2}$	62	Piston pulled out air-lift 10th level "A" shaft.	1.05
Dec. 1	$\frac{1}{2}$	63	Top-tram motor trouble.	4.53
Dec. 14	2	200	"B" shaft hoist motor burned out.	12.27
Dec. 19	$\frac{3}{4}$	100	No current.	
Dec. 19	$\frac{3}{4}$	100	Finger broke in "A" shaft pocket.	7.40
Dec. 28	1 $\frac{1}{2}$	200	Wheel broke on "A" shaft top-tram car.	21.57
Total	68	6,825		\$ 1,912.01

TABLE VII.

DELAYS DUE TO LACK OF CURRENT.

Date 1925	Hours	Tons Lost	Cause
April 13	$\frac{1}{2}$	75	No current. Main line.
April 27	1	125	No current. Fuse burnt out at sub-station.
May 20	1	125	No current. Main line.
May 25	$\frac{1}{2}$	75	No current. Main line.
Dec. 19	$\frac{1}{2}$	<u>100</u>	No current. Main line.
Year	$3\frac{3}{4}$	500	

(B)

TABLE VIII.

ESTIMATE OF ORE RESERVES, DEC. 31ST, 1925.

	"A" Shaft Tons	"B" Shaft Tons	Total Tons
Pillars	1,017,000	688,000	1,705,000
Floors	2,058,000	909,000	2,967,000
Partly Developed	<u>64,000</u>	<u>10,000</u>	<u>74,000</u>
Total	3,139,000	1,607,000	4,746,000
Less 10% Rock	<u>314,000</u>	<u>161,000</u>	<u>475,000</u>
Net Total	2,825,000	1,446,000	4,271,000
To Support Surface	<u>1,548,000</u>	<u>978,000</u>	<u>2,526,000</u>
Available Ore	1,277,000	468,000	1,745,000
Less 10% Rock & 10% Loss in Mining	<u>255,000</u>	<u>94,000</u>	<u>349,000</u>
Net Available Ore	1,022,000	374,000	1,396,000

RECAPITULATION

	Developed Tons	Prospective Tons	Total Tons
Available Ore	1,681,000	64,000	1,745,000
Less 10% Rock & 10% Loss in Mining	<u>336,000</u>	<u>13,000</u>	<u>349,000</u>
Net Available Ore	1,345,000	51,000	1,396,000

Factors Used:- 8, 9 and 10 cu. ft. per ton.

TABLE IX.

ESTIMATE OF ORE RESERVES, BANCROFT ORE.

O.I.M. CO. LEASE ON S $\frac{1}{2}$ S.W. $\frac{1}{4}$ SEC. 3.

	Tons
Pillars	90,000
Floors	12,000
Partly Developed	<u>14,000</u>
Total	116,000
Less 10% Rock	<u>12,000</u>
Net Total	104,000
To Support Surface	<u>44,000</u>
Available Ore	60,000
Less 10% Rock and 10% Loss in Mining	<u>12,000</u>
Net Available Ore	48,000

Factor Used:- 9 cu. ft. per ton.

(C)

GENERAL.

LABOR.

There was no shortage of labor during the year, except during the haying and hunting seasons. Good trammers are scarce, but poor ones have been plentiful.

The mine was worked five days a week throughout the year, and there was no change in the wage-scale.

POWER.

There was a shortage of water-power generally throughout the year, and the steam-driven air-compressor was started on August 6th and the steam-pumps on September 3rd. These were shut down again on December 7th.

NEW CONSTRUCTION.

E AND A. 473. STORAGE-BATTERY LOCOMOTIVE.

A two-ton storage-battery locomotive was received in April and sent down to the second level for the rock dump early in May. In November it was moved to the seventh level in "B" shaft, and the locomotive from the Salisbury Mine was used on the rock-dump.

STOCK-PILE TRETTLES.

The permanent trestles at the crusher-building built in 1910 were torn down and rebuilt, and four temporary trestles were erected to stock the four grades of ore now produced.

GIN-POLE.

A new gin-pole which is much more efficient in erecting trestles was built for the Cliffs Shaft Mine by the Holmes Mine in September.

E AND A. 482. STEAM-GENERATOR UNIT.

Late in September the Electric Power Department started the erection of an auxiliary steam-generator unit in the engine-house. This is a 400 H.P. Corliss engine, driving a synchronous motor as a generator. The engine has been erected, but the generator is not yet entirely in place. There was a good deal of delay in getting the shaft and cranks finished. This construction is not a part of the mine expense, but the work is being done by the mine personnel.

E AND A. 483. UNDERGROUND EQUIPMENT.

In December eighteen five-ton steel cars, similar to those on the fifteenth level, were ordered, eight to go on the eighth level and ten on the tenth level in "A" shaft. The work of changing chutes and raising the trolley-wire for these cars has been started. Four two-ton storage-battery locomotives have been ordered also, and work has started on four new top-tram cars of greater capacity. Four scraper-hoists have also been ordered. When these changes have been made and the new equipment is installed the hoisting and top-tram capacity will be increased two hundred tons a shift, and a corresponding increase in the speed of development by drifts and stopes underground will be made possible.

SCRAPER-HOISTS.

Five new scraper-hoists have been purchased and put at work during the year, and one air-hoist was electrified. The scraper slide started last year for experimental purposes was completed.

ROCK DRILLS.

Eighteen new rock-drills were purchased during the year, half of which were used to replace worn out machines and half were given to new contracts.

EXPLORATION.

UNDERGROUND DIAMOND DRILLING.

The diamond drill was kept busy all year underground, and eighteen horizontal drill-holes were put down with a total depth of 2,420 feet. A detailed description of these holes is included in the Geologist's report. A gross amount of 181 feet of ore was cut in these holes, but some of it was in veins too narrow to be mined profitably.

On the sixth level in "A" shaft in the South-East Deposit two holes were drilled to the south and two to the north to determine the structure, and one ten foot vein of good ore was found. Four holes were drilled on the seventh level in the same deposit, two to the north and two to the south, and several small veins of ore were cut. Two long holes were drilled from the Main Vein on the same level, 2200 and 2300 feet east of "A" shaft, one to the north and one to the south, but no minable ore was found. After that two holes were drilled to the north and one to the south from a sub-level just below the ninth level in the South-East Deposit, and several veins eight to ten feet wide were cut. The drill was then moved to "B" shaft and a hole was drilled to the south-west from the Main Vein 1340 feet west of "B" shaft to cut the Fault Vein, in which fifteen feet of fairly good ore was found. Two holes were next drilled to the north and one to the south from the Main Vein near the west end of the eleventh level in the same shaft, and twelve feet of good ore was found in the Fault Vein. A hole 150 feet east of this on the twelfth level cut the same vein with twelve feet of ore, and another hole has been started to the south near the west end of the twelfth level to cut the same vein. It was in ten feet at the end of the year.

DRIFTING AND RAISING.

For the first six months of the year one contract was drifting and raising at the east end of the seventh level in "A" shaft below the bottom of the Incline Mine, but no ore of consequence was found. This territory has proved very disappointing thus far, but hope of finding the extension of the Incline Vein has not been abandoned. This exploration will be renewed, when

sufficient geological work has been done to determine the best method of attack.

ACCIDENTS TO EQUIPMENT.

TOP-TRAM MOTOR.

So much trouble was experienced with the 50 H.P. top-tram motor in March, that it was taken out, and the 100 H.P. motor used to drive the spare motor-generator set was put in its place. On September 4th the solenoid brake on this hoist failed to work, when the current went off, and both top-tram cars were wrecked, the car from "A" shaft being thrown from the trestle.

ROTARY GRIZZLY.

On the evening of July 8th the shaft of the rotary disc grizzly in the crusher-building broke, while over-time hoisting was being carried on. A new shaft and a new set of discs were on hand, and repairs were completed before morning.

SHEAVES.

Some time during the night of July 14th a piece broke out of the rim of the head-sheave at "A" shaft, but the break was not discovered till morning. Repairs were started immediately, and the old sheave was replaced by a new one before night.

On November 2nd the pillow-blocks on the twelve-foot turn-sheave in "B" shaft-house broke, and the sheave was wrecked and the hoisting-rope ruined, but not broken. This shaft was idle during the day, while a new sheave was being erected. The sheave was nearly worn out and the rope had been in use about three fourths of its expected life.

New head-sheaves for both the hoisting rope and the counter-weight rope in "B" shaft were put up during the year.

TOP-TRAM CAR.

On September 17th a wheel on the top-tram car for "A" shaft broke, as the empty car was going up the trestle, and the car was thrown off the trestle and wrecked. Nickel steel wheels will be put on in place of the cast-iron wheels now in use.

(D)

SURFACE.

BUILDINGS.

During the year few repairs were needed for the mine-buildings other than the coal-dock. The coal-dock was thoroughly repaired, except the top and side casing. New stringers were put on for nearly the full length on both tracks, and such caps, corbels and legs as were in poor condition were replaced. The side casing could not be repaired, because the dock was filled with coal early in the summer.

STOCK-PILES.

All of the Crushed ore in stock was shipped except about 500 tons scattered along the base of the embankment of the pocket-track, and all the Lump ore in stock was shipped except 24,200 tons, which was all overrun. The stock-piles have not been as nearly cleaned up since 1916. The necessity for keeping Bancroft Lump and Crushed ore separate from Cliffs Shaft ore of the same grades has complicated the arrangement of the stock-piles, and several hundred feet of new trestle had to be erected. The lump stock-pile trestle has not been entirely completed.

(E)

UNDERGROUND.

GENERAL.

OLIVER IRON MINING CO. LEASE.

Early in the year negotiations with the Oliver Iron Mining Co. started in 1924 were concluded, and a lease was obtained on the South Half of the South-West Quarter of Section 3, adjoining the Cliffs Shaft Mine on the north, and mining operations were started immediately. The ore mined from this lease had to be kept separate from the Cliffs Shaft ore and is called Bancroft ore. Nearly 16,000 tons of this grade was mined during the year.

DEVELOPMENT.

Development underground may be put into two classes, (1) that which opens new ore or extends known ore-limits by means of drifts, raises and stopes, and (2) that which prepares known ore-bodies for economical mining. The development work in "A" shaft has been of both classes, but in "B" shaft it has been mostly of the second class.

In "A" shaft the possibilities of finding ore are in the following places:-

- (1) Along the north boundary above the eighth level in the land leased from the Oliver Iron Mining Co.
- (2) Between the Cliffs Shaft and No. 3 Mines.
- (3) Between the Cliffs Shaft and Incline Mines.
- (4) In the South-East Deposit and between this deposit and the Moro Mine.
- (5) On the eleventh and twelfth levels.

In "B" shaft the chances are not nearly so good, but some additional tonnage may be expected in the following places.

- (6) Above the first level along the south boundary between the shafts.
- (7) In the Fault Vein at the west end of the levels below the tenth level.
- (8) Below the fifteenth level. These possibilities will be taken up in order.

(1) OLIVER IRON MINING CO. LEASE.

Along the north boundary in "A" shaft ore was mined at or very close to the boundary in Cliffs Shaft Mine workings from the first to the seventh levels at various places over a length of nearly 2000 feet. The largest exposures are on the sixth and seventh levels. It is not expected that the ore is continuous over this entire length or that it extends very far north of the boundary, but the acquisition of this lease will undoubtedly add materially to the ore reserves in "A" shaft. The estimate of ore reserves made this year for this land is not all that is expected to be found, but covers only that ore which is directly indicated by the stopes and raises now opened.

Development is being carried on by a breast stope 600 feet north of "A" shaft on the first level, by a breast stope on a sub-level ten feet below the sixth level 900 feet north-east of "A" shaft, and by three raising stopes put up from the seventh level 1320 to 1420 feet north-east of "A" shaft. Nearly 16,000 tons of ore was produced from these five stopes during the year, and drifting and raising is under way on the eighth level to make it possible to increase the number of working-places and the production from this lease in 1926.

(2) BETWEEN THE CLIFFS SHAFT AND NO. 3 MINES.

Work in this territory has been confined to the sixth, seventh and eighth levels. The exposures made on these levels in the Cliffs Shaft Mine and the ore shown in Drill-Holes 413 to 417 from the fifth level in No. 3 Mine hold out the hope that a substantial tonnage may be developed in this territory during the next five years. The shortest distance between the Cliffs Shaft and No. 3 Mines on the sixth level is 550 feet, and it is over 600 feet where the greatest amount of ore is shown. The eighth level in the Cliffs Shaft is within 400 feet of the end of the sixth, or bottom level of the No. 3 Mine, but there is no ore in either mine at this point. On the sixth level in "A" shaft three contracts have been stoping all the year, continuing the work done last year. One stoped north 50 feet east of the center-line of Section 3, which at this point is the boundary between the O.I.M. Co. and C.C.I. Co., till they reached the foot-wall, 90 feet north of the quarter-post, and are now stoping east along the south line of Section 2. Another gang has followed the south line of Section 3 west for 120 feet from the south quarter-post, and is still in ore.

From the eighth level 2050 feet north-east of "A" shaft a raise was completed to the sixth level with two branches, and a stope was opened ^{on the seventh level} north and south for 120 feet. Some rock has been encountered, but both breasts are in ore, and the place looks very promising. It is doubtful if the ore extends much further to the east, however, because Diamond Drill Hole No. 352, less than 100 feet further east, showed no ore.

In this same ore-body the stope on the eighth level was advanced 110 feet east to the end of the ore, and a raise was put up to the seventh level. The ore is now being followed to the north 80 feet back from the breast.

(3) BETWEEN THE CLIFFS SHAFT AND INCLINE MINES.

As described under the heading "Exploration," one contract worked for six months drifting and raising in this territory at the east end of the seventh level, and Diamond Drill Hole No. 353 was drilled south from the Main Vein 343 feet, but so little ore was found that work was temporarily suspended, until more definite geological information could be obtained.

The possibilities in this area are not as great as in the space between the Cliffs Shaft and No. 3 Mines, but ore should be found between the bottom level of the Incline Mine, at the elevation of the sixth level, and the ninth level, for on the ninth and tenth levels in the Cliffs Shaft Mine what was apparently the lower extension of the Incline Vein was found and mined several years ago. This has been described in previous reports.

(4) IN THE SOUTH-EAST DEPOSIT AND BETWEEN THIS DEPOSIT AND THE MORO MINE.

The South-East Deposit occupies the south side of the faulted syncline in which the Main Vein and the South Lens of "A" shaft occur. It has been opened from the fourth to the tenth levels for a length of over 1000 feet. The ore is usually narrow and irregular, and in the eastern portion contains a good deal of magnetite. On account of the irregularity of the ore-bodies the tonnage developed thus far is not great, but on all the levels above the ninth the end of the ore has not been reached on the east side, and on the fifth level the western limit has not been found. The extent of the ore upwards is also unknown. The east breasts of the sixth and seventh levels are approximately 200 feet west and 200 feet north of the 1/16 post north of the center of Section 10, this 1/16 post being the corner post of the Moro Mine, and there is a possibility that the ore will be found to extend into Moro Mine territory. The workings of the two mines are 700 feet apart. Two contracts are following the ore east on the sixth and seventh levels, and the vein is being followed both east and west on the fifth level and east on the fourth

level. Nothing is being done on the eighth level, but two gangs are mining the floors of the ninth level.

(5) ON THE ELEVENTH AND TWELFTH LEVELS IN "A" SHAFT.

The eleventh level is opened in the Main Vein for a length of 450 feet, and one contract is stoping west along the foot-wall. Two drill-holes to the north and two to the north-east and east show substantial amounts of ore, but there is nothing to the south at this depth except at a point 250 feet to the south-east, where Diamond Drill Hole No. 197 shows some ore.

The twelfth level is opened for a length of 350 feet and a maximum width of 160 feet. One contract is stoping east along the north foot-wall, and one is putting up a branch raise from the west raise to make a chute to the fifteenth level for Bancroft ore.

Ore slightly above the level is shown by diamond-drilling to the north-west 40 feet north of the west drift and 300 feet to the south-east of the south stope. Apparently the limits of the Main Vein have been reached, except on the north-east and north-west corners. There is approximately 25 feet of ore in the floor.

(6) ABOVE THE FIRST LEVEL ALONG THE SOUTH BOUNDARY BETWEEN THE SHAFTS.

Diamond Drill Hole No. 8 on Section 10, 750 feet south-east of "B" shaft, shows a small amount of ore 60 feet above the first level, and Drill-Hole "P", 250 feet further south-east, shows ore also at approximately the elevation of the first level. Workings on the 1190 foot sub-level around Drill-Holes Nos. 7 and 9, 200 feet west and south-west of Hole No. 8, where two gangs have been mining all the year, give promise of ore over a large part of this area. Drifts and raises are being started to develop this ore. This ore is too thin and lies at too flat an angle to be economically mined by old methods, but can, if found, be handled efficiently with scrapers.

(7) IN THE FAULT VEIN BELOW THE TENTH LEVEL IN "B" SHAFT.

On nearly all the levels the merchantable ore stops at or near a line 1600 feet west of "B" shaft. Toward the end of the year diamond-drilling on the eleventh level proved the presence of an overlapping lens in the Fault Vein west of the 1600 foot line, and on the twelfth level cut apparently the same ore 220 feet further east. A drill-hole on the thirteenth level shows apparently the same vein considerably larger 1800 feet west of the shaft, and 300 feet east of this hole a drift is being driven west in what may be the same vein. This ore is narrow, but of good quality, and stands at a high angle, so that it was missed by vertical holes from above.

(8) BELOW THE FIFTEENTH LEVEL IN "B" SHAFT.

At the west end of the fifteenth level in "B" shaft one contract has been following the ore north-east along the hanging-wall throughout the year. The ore is narrow, having a width, normal to the foot-wall, of about twelve feet, and its length as far as developed is only 150 feet, but its quality is good, and it may open out again lower down, as so often happened on the upper levels of the mine. Development of this ore is to be continued during the coming year and its downward extension tested by diamond drill.

DEVELOPMENT FOR MINING KNOWN ORE-BODIES.

"A" SHAFT.

In "A" shaft early in the year a cross-cut was driven north to reach the Bancroft ore on the first level 520 feet north of the shaft, and a raise was put up from the second level for a chute for this ore. On the seventh level a drift is now being extended to the north-west to facilitate mining Bancroft ore 900 feet north-east of the shaft, and on the eighth level close to the north boundary, 1200 feet north-east of the shaft, a rock-drift has been driven west for 160 feet, and one double raise put up and another started to aid in mining the Bancroft ore above the seventh level. On the same level a cross-cut was driven south for 120 feet, 1100 feet south-east of the shaft to simplify the mining of the ore in the South-East Deposit on

the sixth and seventh levels.

On the tenth level a rock-drift was driven south-east 200 feet to get under the South-East Deposit, 1600 feet south-east of the shaft, and two raises were put up to the ninth level.

A raise has been put up from the eleventh to the tenth level in the Main Vein 1200 feet east of the shaft, and another raise is being put up from the twelfth to the eleventh level under it, to make a chute for transferring Bancroft ore from the tenth level to the fifteenth, and allow it to be hoisted through "B" shaft. This will permit an increase in production of Bancroft ore and will do away with over-time hoisting of this grade.

"B" SHAFT.

On the seventh level 400 feet north-east of the shaft a drift was driven east 100 feet from the end of an old stope, and a raise was put up to the sixth level and from there up to the fifth level in "A" shaft. Ore is being dumped into this raise on the sixth level, and it will be used later in mining the floor of the fifth level.

On the fifteenth level the south branch of the main drift was continued to the south-west and west under the Fault Vein for 250 feet, and three raises were put up to the fourteenth level and three more have been started. Other raises have been put up above these on the fourteenth level to facilitate handling the ore from the levels above.

STOPPING.

In addition to the stopping described under the heading "Development" the following stopping operations have been carried on.

"A" SHAFT.

A little ore was mined in the floor of the second level by two gangs in the first few months of the year in the Main Vein from 600 to 800 feet north-east of the shaft.

During the last two months of the year one gang has been mining the floor of the third level 400 feet north-west of the shaft. In the first eight months of the year one gang was mining floors and backs in the South Lens 300

feet south-west of "A" shaft between the first and third levels, and since then has been stoping 200 feet further east.

On the fifth level in the North Vein one gang did a little breast-stopping and took down the back 350 feet north of "B" shaft, and are now raising in ore at this point, having passed through 25 feet of rock. Another gang mined the floor of a sub-level 300 feet further east during the first half year. Another gang mined the floor of the fifth level in the South Lens 600 feet south-east of "A" shaft for two months late in the year.

Mining operations in the South-East Deposit above the ninth level have been mostly in development stopes and raises, and have been touched upon under "Development." Two gangs are stoping on the fourth level, two on the fifth, one on the sixth, and one on the seventh.

In the North Vein one gang has been mining the floor of the sixth level 1000 feet north-east of the shaft all the year, and another mined the floor 200 feet further north-west before starting on Bancroft ore. One gang has been mining the floor of the seventh level 1500 feet north-east of the shaft, and two more have been drift-stopping and back-stopping throughout the year 1400 and 1600 feet east of the shaft.

The floor of the eighth level has been mined by two gangs in the South Lens 700 and 1150 feet south-east of the shaft for most of the year, and the floor of the ninth level by two more gangs in the same vein and by two others in the South-East Deposit 1400 and 1600 feet south-east of the shaft.

"B" SHAFT.

One gang continued mining throughout the year by breast-stopping and taking down the back on a sub-level under the first level and on the first level 400 feet north-east of "B" shaft. No new ore was developed except as mined.

Four gangs have been mining floors on the 1190 and 1170 foot sub-levels south of "B" shaft above the first level, and have produced a large tonnage of good ore cheaply. This ore is all handled by scrapers and storage-

battery locomotives.

The floor of the second level was mined 400 feet north of the shaft for a length of 100 feet and a depth of 12 feet during the first half of the year, and another contract mined the floor of the second level 250 feet further east for ten months. All this ore and that mentioned in the first paragraph was hoisted from the fifth level in "A" shaft.

Between the shafts one gang has worked all year mining the floor of the third level 250 feet south-east of "B" shaft, the product going out through the fourth level to "B" shaft.

In the North Vein one gang has mined the floor of the fifth level 600 feet north of the shaft, and another has mined the floor of the sixth level on a sub-level 450 feet north of the shaft. In the Main Vein west of the shaft one gang has been stoping nearly all year between the fifth and sixth levels, and is now mining the floor of the sixth level 450 feet north-west of the shaft.

Two gangs have worked in the Fault Vein, mining the floors of the seventh and eighth levels 1050 and 1250 feet south-west of the shaft.

Below the tenth level one gang has been mining the floor of the tenth level 800 feet north-west of the shaft, and one has been mining the floor of the eleventh level 280 feet further north-west. Another gang has mined the floor of the Fault Vein 1250 and 1350 feet west of the shaft on the eleventh and twelfth levels.

On the thirteenth level one gang mined the back 1300 feet west of the shaft for most of the year, and another stoped west and north 200 feet further west. Two gangs are now drifting west here. Two more gangs are mining the floor of the thirteenth level under the hanging-wall.

One gang has been stoping all year on the fourteenth level from 1300 to 1500 feet west of the shaft in the Fault Vein.

PERSONNEL.

The number of contracts underground was increased in "A" shaft early in the year, the average number in 1925 being five greater than in 1924, and the December number being two greater than the average. The increase is practically all in Bancroft ore. A further increase in the contracts working in "A" shaft is necessary to meet the greater demand for ore, and to make the production from "A" shaft territory more nearly proportional to the ore-reserves. All the ore mined in "A" shaft below the tenth level is hoisted through "B" shaft, and soon half the Bancroft ore will be transferred to the fifteenth level, so that it can be hoisted through "B" shaft also.

The average classification of contracts for the year is shown in the following table. As long as half the contracts working on ore are "Developing New Ore" by stopes, drifts and raises, the ore-reserves do not materially decrease, because a breast-stope on the average proves up as much new ore as it mines. Unfortunately many of the breast-stopings have been narrower in 1925 than in years past, so that the amount of new ore proved up did not equal the loss in known and developed ore.

	<u>CLASSIFICATION OF CONTRACTS.</u>		(1925)
	"A" Shaft	"B" Shaft	Total
Stopes	16	5	21
Floors	8	11	19
Backs	1	1	2
Drifts and Raises	4	1	5
Rock	<u>4</u>	<u>3</u>	<u>7</u>
Total	33	21	54
Developing New Ore	18	6	24
Mining Known Reserves	11	12	23
Rock	<u>4</u>	<u>3</u>	<u>7</u>
Total	33	21	54

CLIFFS SHAFT MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

GRADE	IRON	PHOS.	SILICA
Lump Cliffs Shaft,	60.34	.103	5.35
Crushed Cliffs Shaft,	57.80	.105	7.24
Bancroft Lump,	60.91	.127	3.86
Bancroft Crushed,	59.39	.122	4.68

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

GRADE	Mine		Lake Erie	
	IRON	PHOS.	IRON	MOIST.
Lump Cliffs Shaft,	59.92	.079	60.09	.31
Crushed Cliffs Shaft,	58.02	.107	58.41	1.52
Bancroft Lump,	(All Mixed)			
Bancroft Crushed,	(All Mixed)			

ORE STATEMENT - DECEMBER 31ST, 1925.

	LUMP CL. SHAFT	CRUSHED CL. SHAFT	BANCROFT LUMP	BANCROFT CRUSHED	TOTAL	TOTAL LAST YEAR
On hand January 1, 1925,	57,087	45,616	-	-	102,703	126,099
Output for Year,	205,311	97,632	10,587	5,071	318,601	296,508
Transferred,	401	-	401	-	-	-
Stockpile Overrun,	41,039	14,445	18	253	55,755	-
Total,	303,838	157,693	10,204	5,324	477,059	422,607
Shipments,	260,948	147,650	8,783	4,615	421,996	318,904
Balance on Hand,	42,890	10,043	1,421	709	55,063	103,703
Increase in Output,					77,848	
Decrease in Ore on Hand,					48,640	

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 Aug. 4th, 1924.
1-8 Hour Shift, 5 days per week, Aug. 4th to Dec. 31st, 1924.

CLIFFS SHAFT MINE

SHIPMENTS FOR YEAR-1925.

GRADE	POCKET	STOCKPILE	TOTAL.	TOTAL LAST YEAR
Lump Cliffs Shaft,	141,616	119,332	260,948	196,010
Crushed Cliffs Shaft,	43,956	103,694	147,650	122,894
Bancroft Lump,	8,262	521	8,783	-
Bancroft Crushed,	3,082	1,533	4,615	-
Total,	196,916	225,080	421,996	318,904
Total Last Year,			318,904	
Increase,			103,092	

CLIFFS SHAFT MINE

COMPARATIVE MINING COST FOR YEAR

	1925	1924	INCREASE	DECREASE
PRODUCT	374,356	296,508	77,848	
Underground Costs	1.231	1.524		.293
Surface Costs	.172	.199		.027
General Mine Accounts	.070	.088		.018
Cost of Production	1.473	1.811		.338
Plant Account	.021	.021		
Equipment	.001	.004		.003
Uncompleted Construction	0	0		
Taxes	.270	.351		.081
Central Office	.086	.100		.014
Contingent Expense	.067	.041	.026	
Cost Adjustment	.040	.047		.007
Cost on Stockpile	1.958	2.375		.417
Loading & Shipping	.047	.043	.004	
Total Cost on Cars	2.005	2.418		.413
No. Days Operating	261	277		16
No. Shifts & Hours	1-8	1-8		
Avg. Daily Product	1434	1070	364	
<u>COST OF PRODUCTION</u>				
Labor	.947	1.159		.212
Supplies	.526	.652		.126
Total	1.473	1.811		.338

CLIFFS SHAFT MINE

COMPARATIVE WAGES AND PRODUCT

	1 9 2 5	1 9 2 4	INCREASE	DECREASE
PRODUCT	374,356	296,508	77,848	
No.Shifts & Hours	1-8	1-8		
AVG. NO. MEN WORKING				
Surface	60	60		
Underground	205	188	17	
Total	265	248	17	
AVG. WAGES PER DAY				
Surface	4.40	4.34	.06	
Underground	5.10	5.12		.02
Total	4.93	4.93		
WAGES PER MO. OF 25 DAYS				
Surface	110.00	108.50	1.50	
Underground	127.50	128.00		.50
Total	123.25	123.25		
PRODUCT PER MAN PER DAY				
Surface	21.53	17.62	3.91	
Underground	6.94	5.68	1.26	
Total	5.25	4.30	.95	
LABOR COST PER TON				
Surface	.205	.246		.041
Underground	.735	.902		.167
Total	.940	1.148		.208
AVG. PRODUCT BRK'G & TRM'G	10.46	8.14	2.32	
" WAGES CONTRACT MINERS	5.50	5.45	.05	
" " " TRAMMERS	5.47	5.43	.04	
" " " LABOR	5.49	5.44	.05	
TOTAL NO. OF DAYS				
Surface	17391-1/4	16825-1/2	565-3/4	
Underground	53935-3/4	52187-3/4	1748	
Total	71327	69013-1/4	2313-3/4	
AMOUNT FOR LABOR				
Surface	76599.71	72957.80	3641.91	
Underground	275122.63	267492.32	7630.31	
Total	351722.34	340450.12	11272.22	

Proportion Surface to Underground Men:

1925 - 1 to 3.41
 1924 - 1 to 3.13
 1923 - 1 to 3.37
 1922 - 1 to 3.39
 1921 - 1 to 2.44
 1920 - 1 to 2.44

1924 - Mine worked 1 - 8hr 5 days per week from July 30th.

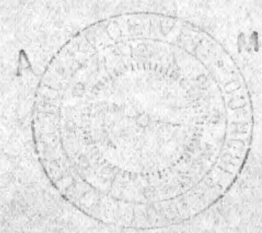
CLIFFS SHAFT MINE

STATEMENT OF EXPLOSIVES USED FOR BREAKING ORE

<u>KIND</u>	<u>QUANTITY</u>	<u>AVERAGE PRICE</u>	<u>AMOUNT 1925</u>	<u>AMOUNT 1924</u>
50% Powder	220,050	.145	31,907.25	33,292.00
60% Powder	20,100	.155	3,115.50	2,115.75
60% Gelatin	1,100	.1675	184.26	
Total Powder	241,250	.1459	35,207.01	35,407.75
Fuse	317,600	6.382	2,027.06	2,073.80
Caps	68,900	10.648	733.69	810.93
Crimpers	31	.882	27.34	9.00
Total Fuse, Etc.			2,788.09	2,893.73
Total Explosives			37,995.10	38,301.48
Product			318,601	296,508
Pounds Powder Per Ton Of Ore			.7572	.8204
Cost Per Ton For Powder			.1105	.1194
Cost Per Ton For Fuse, Etc.			.0088	.0098
Cost Per Ton For All Explosives			.1193	.1292
Average Price Per Pound For Powder			.1459	.1456

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CLIFFS SHAFT MINE

COMPARISON OF COST SHEETS FOR 1924 AND 1925.

PRODUCTION

	<u>1924</u>	<u>1925</u>
Days Worked	277	260
	Tons	Tons
Ore	296,508	318,601
Stock-Pile Overrun	<u> </u>	<u>55,755</u>
Total Ore	296,508	374,356
Rock	<u>14,116</u>	<u>20,892</u>
Ore and Rock	310,624	395,248
Ore Per Day	1,070	1,225
Stock-Pile Overrun Per Day	<u> </u>	<u>215</u>
Total Ore Per Day	1,070	1,440
Rock Per Day	<u>51</u>	<u>80</u>
Ore and Rock Per Day	1,121	1,520

LABOR

	<u>1924</u>	<u>1925</u>
Average Number of Men	248	265
Average Rate Per Day	\$ 4.92	\$ 4.93

TONS PER MAN PER DAY

	<u>1924</u>	<u>1925</u>	
		Without Overrun	With Overrun
Surface	17.62	18.32	21.53
Underground	<u>5.68</u>	<u>5.91</u>	<u>6.94</u>
Total	4.30	4.47	5.25

COST OF PRODUCTION

	<u>1924</u>	<u>1925</u>	
		Without Overrun	With Overrun
Labor	\$ 1.159	\$ 1.113	\$.947
Supplies	<u>.652</u>	<u>.618</u>	<u>.526</u>
Total	\$ 1.811	\$ 1.731	\$ 1.473

No actual comparison can be made between the cost per ton in 1924 and that in 1925 without making a correction for the stock-pile overrun, which was taken into production in 1925. This has reduced the cost per ton 14.9% from what it normally would have been.

UNDERGROUND COSTS.

Exploring in Mine.

1924	\$ 7,976.16	\$.027
1925	<u>8,250.96</u>	<u>.022</u>
Increase	\$ 274.80	
Decrease		\$.005

In 1924 2402 feet cost \$ 3.32 a foot. In 1925 2420 feet cost \$ 3.41 a foot.

Development in Rock.

1924	\$ 31,925.48	\$.108
1925	<u>43,102.64</u>	<u>.115</u>
Increase	\$ 11,177.16	\$.007

In 1924 2476 feet cost \$ 12.89 a foot, and in 1925 3305 feet cost \$ 13.04 a foot.

Development in Ore.

1924	\$ 19,097.73	\$.064
1925	<u>15,832.54</u>	<u>.042</u>
Decrease	\$ 3,265.19	\$.022

The decrease is in ore-raising. In 1924 384 feet of ore-drift cost \$ 8.18 a foot and 1461 feet of ore-raise cost \$ 8.55 a foot. In 1925 570 feet of ore-drift cost \$ 7.79 a foot and 786 feet of ore-raise cost \$ 8.16 a foot.

Stoping.

1924	\$ 126,061.33	\$.425
1925	<u>125,058.47</u>	<u>.334</u>
Decrease	\$ 1,002.86	\$.091

Labor decreased \$ 4,382 and supplies increased \$ 3,380. There were 38 gangs stoping in 1924 and 42 in 1925, but in 1925 more contracts had only one miner each. Supplies cost \$.153 per ton in each year.

UNDERGROUND COSTS. (Continued)

Timbering.

1924	¢	9,667.22	¢	.033
1925		<u>8,265.49</u>		<u>.022</u>
Decrease	¢	1,401.73	¢	.011

The decrease is in cost of chutes, and is about evenly divided between labor and supplies.

Tramming.

1924	¢	123,051.36	¢	.415
1925		<u>128,103.56</u>		<u>.342</u>
Increase	¢	5,052.20		
Decrease			¢	.073

The increase is due to larger tonnage produced. Without the stock-pile overrun the cost of tramming was ¢ .402 per ton, ¢ .013 cheaper than in 1924.

Ventilation.

1924	¢	2,576.75	¢	.009
1925		<u>1.63</u>		<u>.000</u>
Decrease	¢	2,575.12	¢	.009

In 1924 charges were for fire-doors, etc. authorized on E and A. No. 444.

Pumping.

1924	¢	26,731.12	¢	.090
1925		<u>22,760.21</u>		<u>.061</u>
Decrease	¢	3,970.91	¢	.029

The flow of water decreased about one third in 1925.

Compressors and Air Pipes.

1924	¢	33,040.20	¢	.111
1925		<u>34,652.48</u>		<u>.093</u>
Increase	¢	1,612.28		
Decrease			¢	.018

Labor increased ¢ 120, due to operating the steam-plant. Supplies increased because of greater production.

Back Filling.

1924	¢	5,667.83	¢	.019
1925		<u>9,148.91</u>		<u>.024</u>
Increase	¢	3,461.08	¢	.005

In 1924 14,116 tons of rock were dumped underground. In 1925 this increased to 20,892 tons. Cost per ton for loading and tramming increased from ¢ .403 in 1924 to ¢ .436 in 1925.

Underground Superintendence.

1924	¢	14,001.45	¢	.047
1925		<u>14,705.44</u>		<u>.039</u>
Increase	¢	703.99		
Decrease			¢	.008

In 1924 an additional shift-boss was put to work July 1st.

Cave-in.

1924	¢		¢	
1925		<u>31.26</u>		<u>.000</u>
Increase	¢	31.26	¢	.000

MAINTENANCE ACCOUNTS.

Compressors and Power Drills.

1924	¢	4,231.51	¢	.014
1925		<u>7,403.94</u>		<u>.020</u>
Increase	¢	3,172.43	¢	.006

In 1924 9 air-drills cost ¢ 3362. In 1925 16 drills cost ¢ 6819, an increase of ¢ 3437.

UNDERGROUND COSTS. (Continued)

Hand Trimming Equipment.

1924	‡	20,579.05	‡	.069
1925		<u>29,292.96</u>		<u>.078</u>
Increase	‡	8,713.91	‡	.009

Electric Tram Equipment.

1924	‡	23,624.80	‡	.080
1925		<u>13,007.35</u>		<u>.035</u>
Decrease	‡	10,617.45	‡	.045

Pumping Machinery.

1924	‡	3,673.84	‡	.013
1925		<u>1,302.76</u>		<u>.004</u>
Decrease	‡	2,371.08	‡	.009

SURFACE COSTS.

Hoisting.

1924	‡	16,405.43	‡	.055
1925		<u>16,335.88</u>		<u>.044</u>
Decrease	‡	69.55	‡	.011

Stocking Ore.

1924	‡	7,529.03	‡	.026
1925		<u>10,505.98</u>		<u>.028</u>
Increase	‡	2,776.95	‡	.002

Screening-Crushing at Mine.

1924	‡	9,842.45	‡	.033
1925		<u>10,469.01</u>		<u>.028</u>
Increase	‡	626.56		
Decrease			‡	.005

Dry House.

1924	‡	6,772.38	‡	.023
1925		<u>6,175.13</u>		<u>.016</u>
Decrease	‡	597.25	‡	.007

General Surface Expense.

1924	‡	7,096.71	‡	.024
1925		<u>7,343.59</u>		<u>.020</u>
Increase	‡	246.88		
Decrease			‡	.004

In 1924 3 scraper-hoists cost ‡ 1930.72. In 1925 5 scraper-hoists cost ‡ 2500 and 7 motors and compensators cost ‡ 2437. 2000 feet of No. 6 cable cost ‡ 561 and 26 electric couplings and one junction box cost ‡ 652. Wire rope cost ‡ 2517.

In 1924, B and A. 448, 16 steel rocker-dump cars cost ‡ 10,515.01.

In 1924 the pump-house was rewired and the centrifugal pump overhauled. In 1925 one pump-motor was repaired.

In 1925 tons stocked increased 53,441. Charges for new trestles for Bancroft ore were high in 1925.

A new rotary-disc grizzly in 1925 cost ‡ 441.74, but total maintenance increased only ‡ 32.

Operating expense increased ‡ 594 on account of over-time and night-shift hoisting and more ore stocked.

Heating charges:-

1924	‡	5,294.52
1925		<u>4,755.17</u>
Decrease	‡	539.35

Mild winter and cheaper coal.

Surface lighting charges were ‡ 84 higher on account of over-time hoisting and night shift work. Teaming charges for cleaning up and roads increased ‡ 162.

SURFACE COSTS. (Continued)

MAINTENANCE ACCOUNTS.

Hoisting Equipment.

1924	¢	4,837.18	¢	.016
1925		<u>6,042.49</u>		<u>.016</u>
Increase	¢	1,205.31	¢	.000

One new sheave was put up in 1924, costing \$ 290. In 1925 three sheaves cost \$ 1223, an increase of \$ 933. Wire-rope increased \$ 154 from \$ 1537 in 1924 to \$ 1691 in 1925. Labor on sheaves and rope increased proportionally.

Shaft.

1924	¢	2,271.43	¢	.008
1925		<u>763.64</u>		<u>.002</u>
Decrease	¢	1,507.79	¢	.006

In 1924 both shafts were re-lined with new casing plank. 1925 charges are largely for pocket-repairs.

Top Tram Equipment.

1924	¢	1,449.08	¢	.005
1925		<u>3,671.53</u>		<u>.010</u>
Increase	¢	2,222.25	¢	.005

In 1925 four cars were wrecked and rebuilt, and a steel car was partly built. Repairs to tracks and cars increased \$ 907 and changing motors and repairs to motors increased \$ 1146. Wire-rope increased \$ 178.

Docks, Trestles and Pockets.

1924	¢	645.38	¢	.002
1925		<u>909.08</u>		<u>.002</u>
Increase	¢	263.70	¢	.000

In 1924 repairs to shaft pockets cost \$ 645.38 and in 1925 \$ 522.86, a decrease of \$ 122.52. Erecting new trestles for stocking Bancroft ore cost \$ 386.22 in 1925.

Mine Buildings.

1924	¢	2,056.50	¢	.007
1925		<u>2,249.53</u>		<u>.006</u>
Increase	¢	193.03		
Decrease			¢	.001

Repairs to coal-dock cost \$ 1469 in 1925 and \$ 29 in 1924. All other buildings decreased.

GENERAL MINE ACCOUNTS

Insurance.

1924	¢	245.76	¢	.001
1925		<u>158.40</u>		<u>.000</u>
Decrease	¢	87.36	¢	.001

Engineering.

1924	¢	3,250.38	¢	.011
1925		<u>3,412.62</u>		<u>.009</u>
Increase	¢	162.24		
Decrease			¢	.002

Central Office charge.

GENERAL MINE ACCOUNTS. (Continued)

Analysis.

1924	\$	2,515.88	\$	.009
1925		<u>5,247.35</u>		.009
Increase	\$	731.47	\$	.000

Central laboratory charges increased \$ 730.

Personal Injury Expense.

1924	\$	7,249.54	\$	.024
1925		<u>4,993.95</u>		.013
Decrease	\$	2,255.59	\$	.011

1924 charges were high on account of fatal accident to Joseph Harrington.

Safety Department Expense.

1924	\$	68.40	\$	.000
1925		<u>52.46</u>		.000
Decrease	\$	15.94	\$	.000

Telephones and Safety Devices.

1924	\$	1,262.25	\$	.004
1925		<u>2,108.16</u>		.006
Increase	\$	845.91	\$	.002

Timbermen's time on safety-work underground increased \$ 914 in 1925.

Local General Welfare.

1924	\$	930.71	\$	.003
1925		<u>971.44</u>		.002
Increase	\$	40.73		
Decrease			\$	.001

Special Expenses.

1924	\$		\$	
1925		<u>9.50</u>		.000
Increase	\$	9.50	\$	.000

Mine Office.

1924	\$	10,774.32	\$	.036
1925		<u>11,475.28</u>		.031
Increase	\$	700.96		
Decrease			\$	.005

Charges at the mine decreased \$ 350, but direct salaries increased \$ 1049.

RECAPITULATION

	Year 1924		Year 1925		Increase		Decrease	
	Total	Per Ton	Total	Per Ton	Total	Per Ton	Total	Per Ton
Underground	451,945.83	1.524	460,940.60	1.231	8,994.77			.293
Surface	58,906.47	.199	64,265.66	.172	5,359.19			.027
Gen. Mine Accts.	26,297.24	.088	26,429.16	.070	131.92			.018
Cost of Production	<u>537,149.54</u>	<u>1.811</u>	<u>551,635.42</u>	<u>1.473</u>	<u>14,485.88</u>			<u>.336</u>

ANNUAL REPORT

OF THE

(A)

HOLMES MINE

(1925)

PRODUCTION AND SHIPMENTS.

The Holmes Mine worked on single shift five days a week throughout the year 1925. Shipments were very light until October, and were less than production, so that the stock-piles were pretty well filled at the end of the year. Large shipments from the Holmes Crushed pile were made in November, and an overrun of 17,795 tons in this grade was taken into production. The mine worked 260 days and produced 170,705 tons of all grades, not including stock-pile overrun, an average of 656 tons per day.

6,808 tons of rock were produced, an average of 26 tons per day.

From August to November all the hard ore was hoisted as Holmes, and was screened into Holmes Lump and Holmes Crushed grades. From May until October all soft ore was hoisted as Junction. During the rest of the year the soft ore was separated into Junction and Junction Bessemer grades.

14,769 tons of Holmes Bessemer were put through the fine crusher at the Cliffs Shaft Mine.

TABLE I.

PRODUCTION BY GRADES.

Grade	1925 Tons	1924 Tons
Holmes Bessemer	30,339	28,340
Holmes Lump	7,349	
Holmes Crushed	27,396	18,292
Junction Bessemer	20,396	37,948
Junction	<u>85,225</u>	<u>69,720</u>
Total	170,705	154,300
Stock-pile overrun - Holmes	<u>17,795</u>	
HOLMES MINE Total	<u>29</u> 188,500	154,300

TABLE II.

SHIPMENTS.

Grade	Pocket Tons	Stock-Pile Tons	Total Tons
Holmes Bessemer	11,913	14,770	26,683
Holmes Lump	7,349		7,349
Holmes Crushed	12,686	42,490	55,176
Junction	<u>31,259</u>	<u>24,696</u>	<u>55,955</u>
Total	63,207	81,956	145,163

TABLE III.

STOCK-PILE BALANCES, DEC. 31ST, 1925.

Grade	Tons
Holmes Bessemer	33,225
Holmes	20,282
Junction Bessemer	26,404
Junction	<u>224,419</u>
Total	304,330

TABLE IV.

DIVISION OF PRODUCT BY LEVELS.

Level	Holmes Bessemer Tons	Holmes Tons	Junction Bessemer Tons	Junction Tons	Total Ore Tons	Rock Tons	Total Ore and Rock Tons
Third	30,339	34,061	20,396	80,249	165,045	5,352	170,397
Fourth		684		4,976	5,660	1,456	7,116
Total	30,339	34,745	20,396	85,225	170,705	6,808	177,513

TABLE V.

PRODUCTION BY MONTHS.

Month	Days	Ore Per Day Tons	Holmes Bessemer Tons	Holmes Lump Tons	Holmes Crushed Tons	Junction Bessemer Tons	Junction Tons	Total Ore Tons	Rock Tons	Total Ore & Rock Tons
January	22	621	2,751		1,500	3,220	6,191	13,662	692	14,354
February	20	658	3,581		1,220	3,244	5,117	13,162	532	13,694
March	22	649	3,249		1,688	4,400	4,931	14,268	848	15,116
April	22	653	3,333		1,584	2,268	7,178	14,363	408	14,771
May	21	637	3,623		1,296		8,459	13,378	272	13,650
June	22	648	4,886		1,044		8,325	14,255	460	14,715
July	23	647	4,675		1,048		9,153	14,876	392	15,268
August	21	663	607	1,863	3,162		8,283	13,915	576	14,491
September	21	650		2,421	3,375		7,861	13,657	600	14,257
October	22	684	225	2,339	3,307	348	8,819	15,038	780	15,818
November	21	688	13	726	5,167	3,504	5,034	14,444	636	15,080
December	23	682	3,396		3,005	3,412	5,874	15,687	612	16,299
Year	260	656	30,339	7,349	27,396	20,396	85,225	170,705	6,808	177,513
Stock-Pile Overrun		69			17,795			17,795		17,795
Total	260	725	30,339	7,349	45,191	20,396	85,225	188,500	6,808	195,308

TABLE VI.

DELAYS.

There were no delays in 1925.

TABLE VII.

DELAYS DUE TO LACK OF CURRENT.

The mine was shut down on account of lack of current on October 19th, but worked the following Saturday instead, so that there was no loss of product from this cause.

(B)

TABLE VIII.

ESTIMATE OF ORE RESERVES.

Level	<u>DEVELOPED ORE.</u>				Total Tons
	Holmes Bessemer Tons	Holmes Tons	Junction Bessemer Tons	Junction Tons	
Third	68,000	23,000	23,000	234,000	348,000
Fourth	<u>69,000</u>	<u>66,000</u>	<u>96,000</u>	<u>547,000</u>	<u>778,000</u>
Total	137,000	89,000	119,000	781,000	1,126,000

<u>PROSPECTIVE ORE.</u>					
Fourth	8,000	12,000			20,000
Below Fourth			<u>40,000</u>	<u>235,000</u>	<u>275,000</u>
Total	8,000	12,000	40,000	235,000	295,000
Total Ore	145,000	101,000	159,000	1,016,000	1,421,000

Factors Used:- Hard Ore - 9 cu. ft. per ton.

Soft Ore - 12 cu. ft. per ton.

Deductions of 10% for loss in mining and 10% for rock were made in calculating tonnage.

(C)

GENERAL.

LABOR.

There was no shortage of labor in 1925. The number of men remained practically constant throughout the year, and the wage-rate was unchanged.

In September a few men left the mine to go to Iron Mountain, but the loss was not serious.

POWER.

There was a general shortage of electric power during the second half of the year, but it did not affect the Holmes Mine materially, as this mine has no steam-driven machinery to be called into service. There was some shortage of power due to low voltage that was felt particularly in the fall and winter, but this is due probably to local line drop, and steps are being taken to remedy it.

(D)

SURFACE.

There were no changes made in surface plans or in landscape work on the office grounds, but maintenance was carefully attended to. The changes in the timber-yard made in 1924 worked out satisfactorily, and no extensions were made.

The subsidence of the surface over the ore-body in the south-east corner of the property was unusually rapid, but the area caved was not materially extended. The crack close to the main line of the D.S.S. & A. Ry. on the Section 16 Mine property about 200 feet south of our south boundary-line increased in width, but has apparently not extended any farther to the north during the year, and has not yet appeared on the Holmes Mine ground. This crack is, however, headed for the temporary stock-pile on the south side of Excelsior St., where 60,000 tons of Junction ore is stocked, and it will be necessary to move this ore in 1926, if complications are to be avoided.

BUILDINGS.

On July 15th soon after the men had gone home a violent wind-storm blew off the office roof and part of the engine-house roof, and pushed in the north gable of the dry. No one was hurt and there was no loss of product. Repairs were started immediately, and were completed about the middle of August.

The engine-house roof was painted and the inside of the building was calcimined.

REPAIRS.

An extra bent was erected in September to support the permanent trestle on the south side of the shaft-house, and a new floor was laid on this part of the trestle during the following month.

The timber-tunnel was repaired in October and November.

In February one skip was rebuilt, and later during the year the ore-cars from the fourth level were successively brought up and repaired or rebuilt.

Extensive repairs were made to the crushers. New concaves were put in the No. 8 crusher and in one of the No. 6 crushers, and were set closer to the head, so that the ore is being more finely crushed than before. A new gear and pinion were put on one No. 6 crusher, and the 48-inch screen was overhauled and repaired.

STOCK-PILES.

Both the Holmes Bessemer and Junction Bessemer stock-piles are nearly full, but by building a little additional trestle for the Holmes Bessemer and by stocking Junction Bessemer against the Junction pile the product for the winter can be taken care of.

Large shipments of Holmes ore in November left plenty of room for this grade, and an extension of the Junction trestle will take care of the

winter's production. Substantial shipments of Junction ore must be made in 1926, however, in order to make room for next winter's production.

Two cuts were taken off the temporary stock-pile of Junction ore south of Excelsior St., and the overrun pile of Holmes Bessemer left along the main-line railroad tracks between the Junction pile and Excelsior St. was cleaned up, materially increasing the stocking room available for Junction ore.

(E)

UNDERGROUND.

GENERAL.

The number of contracts employed remained practically unchanged throughout the year, but the proportion working in the Hard Ore Vein was increased in the latter part of the year.

The average classification of contracts was as follows:-

Stopping -----	20	Contracts
Drifting and Raising in Ore -----	15	"
Drifting and Raising in Rock -----	<u>1</u>	"
Total -----	36	"
Hard Ore Vein -----	13	"
Soft Ore Vein -----	22	"

There was an increase in the proportion of hard ore mined from 30.2% in 1924 to 38.1% in 1925. No comparison of ^{any} value can be made in the percentages of bessemer and non-bessemer ores produced, because the Junction Bessemer was hoisted as Junction from May to October, and Holmes Bessemer was hoisted as Holmes from August to November.

In the Hard Ore Vein at the end of the year the ore at the east end was getting slightly softer, but the ore at the west end remains hard and

dense. Below the 340 foot sub-level the ore is wider than expected in the west half and is apparently not so badly mixed with rock.

In the Soft Ore Vein the high sulphur has been found to extend down to the 355 foot sub-level in Raise 320, the sulphur at this elevation being about .100 near the dike. The ore above this level has not been included in the estimate of reserves.

DEVELOPMENT.

No development of new ore was undertaken, but new raises were put up from the fourth level in preparation for mining, and some repairs and extensions were made on the 240 foot sub-level and the fourth level. Raises Nos. 464 and 465 were put up from the fourth level to the third, and Raises Nos. 454, 463 and 467 and a timber raise in the second cross-cut, from the 240 foot sub-level to the third level. Raises 452 and 470 are being put up from the fourth level, and have reached the elevation of the 240 foot sub-level. Both started in rock, but reached the ore about twenty-five feet above the level. Raises 463, 465, 467 and 470 are in hard ore above the 240 foot sub-level. The others are all in the Soft Ore Vein.

The north drift on the fourth level was extended to the east to make tail-room for cars behind Raise 452.

In stoping operations on the 345 foot sub-level the ore was followed to the north under the jasper seventy feet further than on the levels above, and was mined up to the elevation of the second level on the foot-wall over the third level cross-cut. The tonnage is not large, not over 10,000 tons, but the occurrence is outside the expected limits of the ore-body.

STOPPING.

HARD ORE VEIN.

Stoping has been continued in the Hard Ore Vein between the second and third levels in the same manner as in 1924, that is, in a series of

benches, but work was at a lower level and was concentrated more at the east end.

The west end of the 365 foot sub-level was finished early in the year, and the 355 foot sub-level was finished from Raise 323 west to the last raise, No. 317. West of No. 317 one gang is following the ore west, but has nearly finished it. A little ore was taken out on the 345 foot sub-level in the middle of the vein between Raises 361 and 365, as this part of the vein was not worked down as low as the rest.

The 340 foot sub-level was mined out from Raise 357 west to a point twenty feet east of Raise 363, all the ore east of Raise 357 having been mined before. Three gangs are now mining near Raises 363 and 365, and a block of ground seventy feet long and thirty feet wide has been mined west of Raise 365.

On the 330 foot sub-level the ore adjacent to Raise 360 has been mined, finishing the ore on this sub-level east of this point. Two contracts are now opening up in Raises 361 and 367. In Raise 367 the ore is considerably wider and cleaner than on the sub-level above.

On the 320 foot sub-level the ore adjacent to Raises 358 and 341 was mined during the year, and one gang is now stoping close to Raise 360.

At the beginning of the year no ore had been mined west of Raise 357. The ore east and south of this raise has been completely mined, and that tributary to Raises 341 and 358 has been nearly finished. Two contracts are finishing the ore between the raises.

On the 300 foot sub-level one contract is opening up north of Raise 358. Two raises, Nos. 462 and 463, from the fourth level, were extended to this sub-level, and all the hard ore south of the main third level drift was mined east of Raise 462, and most of the ore south of Raise 463, extending west to the hanging wall and east to Raise 462 has been finished. Three contracts were stoping here in December.

STOPPING.

SOFT ORE VEIN.

At the beginning of the year the 365 foot sub-level had been practically finished on the foot-wall side as far west as Raise 333, 370 feet west of the east boundary line, and under the hanging wall it had been finished 100 feet further west. All the ore has now been mined as far west as a point 15 feet east of Raise 315. A good deal of high sulphur ore was found at this point, and stoping was carried no further.

The 355 foot sub-level has been extensively opened and mined during the year, all the ore east and south of Raise 325 having been finished. This is a block of ground approximately 320 feet long and 120 feet wide. Five contracts are now working between Raises 325 and 320, and the ore has been found to extend to the north under the jasper 70 feet further than it did on the 365 foot sub-level. West of Raise 320 there has been some trouble with high sulphur, and no stoping has been done.

On the 340 foot sub-level at the beginning of the year the ore had been mined at the east end south of the big dike for a distance of 140 feet north of the south boundary and 240 feet west of the east boundary. During the year the ore has been mined on the foot-wall as far west as Raise 344, a distance of 110 feet, and along the hanging-wall westward to a point 60 feet beyond Raise 330, a distance of 350 feet. Six gangs are now working along the foot-wall drift over a distance of 200 feet between Raises 341 and 325.

At the beginning of the year the ore on the 330 foot sub-level had been mined for a distance of 300 feet west of the east boundary as far north as 100 feet from the south boundary. Further north a small block of ground has been mined this year near the foot-wall at the east end of the deposit, and four gangs are now opening up and stoping further west around Raises 330, 343, 345 and 346. This territory is producing some very good bessemer ore.

On the 320 foot sub-level a block of ground 140 feet long and 60 feet wide has been mined along the foot-wall at the east end of the sub-level, the ore along the south boundary having been mined in 1924. A small piece

of ore around Raise 348 has been mined also.

On the 310 foot sub-level the ore along the south boundary at the east end of the deposit had been mined in 1924 for a length of 160 feet and a width of 90 feet. Some ore immediately north of this has been mined in 1925, and three gangs are now working on the ore tributary to Raises 347, 348 and 350.

Last year on the 300 foot sub-level a little ore lying between the foot-wall and a dike was mined for a length of 100 feet north-west and south-east of Raise 352. All the ore in this territory south of the third level drift as far west as the Hard Ore Vein has been mined in 1925 and also a small block of ground north and west of Raise 353.

On the third level the east end of the vein near the south boundary has been mined for a distance of 140 feet along the line and as far north as the foot-wall east of Raise 353. One gang is working between Raises 357 and 462, and the drift is not open for electric haulage east of this point.

Only one gang is stoping below the third level. This contract is working east of Raise 460 on the 280 foot sub-level. The ore is badly cut up by dikes.

HOLMES MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

GRADE	IRON	PHOS.	SILICA
Holmes Bessemer,	62.14	.034	6.82
Holmes Lump,	62.14	.048	7.40
Holmes Crushed,	61.42	.059	7.31
Junction Bessemer,	61.83	.034	6.54
Junction,	58.97	.068	7.46

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

GRADE	Mine		Lake Erie		
	IRON	PHOS.	IRON	PHOS.	MOIST
Holmes Bessemer,	(All Mixed)				
Holmes Lump,	(All Mixed)				
Holmes Crushed,	61.03	.066	61.52	-	4.53
Junction Bessemer,	(No Shipments)				
Junction,	(All Mixed)				

ORE STATEMENT - DECEMBER 31ST, 1925.

	HOLMES BESS.	HOLMES LUMP	HOLMES CRUSHED	JUNCT. BESS.	JUNCTION	TOTAL	TOTAL LAST YEAR
On hand Jan. 1, 1925,	29,569		30,267	6,008	195,149	260,993	188,626
Output for Year,	30,339	7,349	27,396	20,396	85,225	170,705	154,300
Stockpile Overrun,	-	-	17,795	-	-	17,795	-
Total,	59,908	7,349	75,458	26,404	280,374	449,493	342,926
Shipments,	26,683	7,349	55,176	-	55,955	145,163	81,933
Balance on Hand,	33,225	-	20,282	26,404	224,419	304,330	260,993
Increase in Output,						34,200	
Increase in Ore on Hand,						43,337	
1925 -- 1-8 Hour Shift, 5 days per week, Jan. 1st to Dec. 31st, 1925.							
1924 -- 2-8 Hour Shifts, 6 days per week, Jan. 1st to Jan. 5th, 1924.							
1-8 Hour Shift, 6 days per week, Jan. 5th 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.							

HOLMES MINE
SHIPMENTS FOR YEAR-1925

GRADE	POCKET	STOCKPILE	TOTAL	TOTAL LAST YEAR
Holmes Bessemer,	-	14,770	26,683	5,999
Holmes Lump,	7,349	-	7,349	-
Holmes Crushed,	12,686	42,490	55,176	10,778
Junction Bessemer,	-	-	-	38,160
Junction,	31,258	24,697	55,955	26,996
Total,	63,206	81,957	145,163	81,933
Total Last Year,			81,933	
Increase,			63,230	

HOLMES MINE

COMPARATIVE MINING COST FOR YEAR

	1925	1924	INCREASE	DECREASE
PRODUCT	188,500	154,300	34,200	
Underground Costs	1.241	1.470		.229
Surface Costs	.238	.286		.048
General Mine Accounts	.110	.130		.020
Cost of Production	1.589	1.886		.297
Original Cost	0	0		
Plant Account	.002	.002		
Equipment	.00	.002		.002
Taxes	.309	.367		.058
Central Office	.098	.113		.015
Contingent Expense	.074	.046	.028	
Cost Adjustment	.012	.014		.002
Cost on Stockpile	2.084	2.430		.346
Loading & Shipping	.042	.040	.002	
Cost on Cars	2.126	2.470		.344
No. Days Operating	260	261		1
No. Shifts & Hours	1-8	2-8-4 1-8-257		
Avg. Daily Product	725	591	134	
<u>COST OF PRODUCTION</u>				
Labor	1.093	1.287		.194
Supplies	.496	.599		.103
Total	1.589	1.886		.297

HOLMES MINE

COMPARATIVE WAGES AND PRODUCT

	1 9 2 5	1 9 2 4	INCREASE	DECREASE
PRODUCT	188,500	154,300	34,200	
No.Shifts & Hours	1-8	2-8;1-8		
AVG.NO. MEN WORKING				
Surface	47	46	1	
Underground	108	105	3	
Total	155	151	4	
AVG.WAGES PER DAY				
Surface	4.43	4.39	.04	
Underground	5.32	5.31	.02	
Total	5.50	5.03	.02	
WAGES PER MO. OF 25 DAYS				
Surface	110.75	109.75	1.00	
Underground	134.00	132.75	1.25	
Total	126.25	125.75	.50	
PRODUCT PER MAN PER DAY				
Surface	15.48	13.19	2.29	
Underground	6.68	5.64	1.04	
Total	4.67	3.95	.72	
LABOR COST PER TON				
Surface	.287	.333		.046
Underground	.796	.940		.144
Total	1.083	1.273		.190
AVG.PRODUCT BRK'G & TRM'G	9.70	8.18	1.52	
" WAGES CONTRACT MINERS	5.63	5.63		
" " " LABOR	5.63	5.63		
TOTAL NO. OF DAYS				
Surface	12,180	11,702	.478	
Underground	28,208	27,344	.864	
Total	40,388	39,046	1.342	
AMOUNT FOR LABOR				
Surface	53998.58	51329.17	2669.41	
Underground	150063.94	145098.64	4965.30	
Total	204062.52	196427.81	7634.71	

Proportion Surface to Underground Men:

1925 - 1 to 2.3
 1924 - 1 to 2.28
 1923 - 1 to 3.01
 1922 - 1 to 2.78
 1921 - 1 to 2.63
 1920 - 1 to 2.87

1924 - 1-8hr shift from Jan.7th;
 1-8hr " 4 days per week from July 30th to Dec.1st
 1-8hr " 5 days " from December 1st.

HOLMES 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	75,226	.0392	2,947.84	2,906.69
8" to 10 "	31,818	.0651	2,072.08	1,811.21
10" to 12" "	26,073	.0799	2,083.84	1,704.25
12" and Larger	18,358	.0944	1,733.31	1,437.70
Total - 1925	151,475	.0583	8,837.07	
Total - 1924	137,140	.0573		7,859.85
5' Lagging	602,650	<u>.8616</u> PER 100'	5,192.67	4,855.40
7' "	35,050	.6000	210.30	40.03
Total Lagging	637,700	.8473	5,402.97	4,895.43
Poles	268,888	1,130	3,039.55	2,499.88
Total Lagging & Poles - 1925	906,588	.9312	8,442.52	7,395.31
" " " 1924	822,526	.8991		
Product			188,500	154,300
Feet timber per ton of ore			.804	.889
" lagging "			3.383	3.869
" " per ft. of timber			4.210	4.353
Cost per ton for timber			.0469	.051
" lagging			.0287	.032
" poles			.0161	.016
" all timber			.0917	.099
Feet bd. measure per ton of ore			1.53	1.67
Cost for timber, lagging and poles - 1925				17279.59
1924				15255.16

HOLMES MINE

STATEMENT OF EXPLOSIVES USED FOR BREAKING ORE

KIND	QUANTITY	AVERAGE PRICE	AMOUNT 1925	AMOUNT 1924
50% L.F. Powder	7,750	14.50	1,123.75	3,987.50
60% " "	69,900	15.50	10,834.50	6,988.95
60% Gelatin "	4,250	16.75	711.88	16.75
80% " "	300	21.00	63.00	197.13
Total Powder	82,200	15.49	12,733.13	11,190.33
Fuse	218,300	.6375	1,391.62	1,237.04
Caps	57,800	1.073	620.17	556.88
Tamping Bags	5,000	2.15	10.75	6.45
Cap Crimpers	9	1.00	9.00	13.00
Total Fuse, Etc.			2,031.54	1,813.37
Total Explosives			14,764.67	13,003.70
Product			188,500	154,300
Pounds Powder Per Ton of Ore			.4361	.4773
Cost per ton for Powder			.0675	.0725
" Fuse, Etc.			.0108	.0118
" Explosives			.0783	.0843
Avg. Price Per Pounds for Powder			.1549	.1520

COST OF PRODUCTION.

HOLMES MINE 1925

COMPARISON OF COST SHEETS FOR 1924 AND 1925.

		Overrun	Overrun
Labor	\$ 1.267	\$ 1.204	\$ 1.092
	<u>PRODUCTION</u>		
Supplies	.592	.548	.495
Total	\$ 1.859	\$ 1.752	\$ 1.587
Days worked		261	260
		Tons	Tons
Ore		154,300	170,705
Stock-File Overrun			<u>17,795</u>
Total Ore		154,300	188,500
Rock		<u>10,392</u>	<u>6,806</u>
Ore and Rock		164,692	195,306
<u>UNDERGROUND COSTS.</u>			
Ore Per Day		591	656
Stock-File Overrun Per Day			69
1924	\$ 10,837.59	\$.107	
1925	<u>3,255.02</u>	<u>.025</u>	
Decrease			
Rock Per Day		<u>40</u>	<u>27</u>
<u>Development in Ore.</u>			
Ore and Rock Per Day		631	752
1924	\$ 1,695.74	\$.011	
1925	<u>4,083.85</u>	<u>.023</u>	
Increase			
<u>LABOR</u>			
		1924	1925
Average Number of Men		151	159
<u>Stopping.</u>			
Average Rate Per Day	\$ 5.03	\$ 5.11	
1924	\$ 114,230.05	\$.740	
1925	<u>180,180.27</u>	<u>.627</u>	
Increase			
Decrease			
		<u>1924</u>	<u>1925</u>
<u>TONE PER MAN PER DAY</u>			
Surface		13.19	14.02
Underground		<u>5.64</u>	<u>6.05</u>
Total		5.95	4.23
			4.67

No actual comparison can be made between the cost per ton in 1924 and that in 1925 without making a correction for the stock-pile overrun which was taken up into production in 1925. This has reduced the cost per ton 2.4% from what it normally would have been.

In 1924 1974 feet cost \$ 9.52 a foot. In 1925 1880 feet cost \$ 8.32 per foot.

Development was as follows:-

Ore Drift	Ore Hoist
Feet	Rate
261	6.12
265	7.46
270	7.52
270	.59

The price of timber increased without Overrun in 1925, and the price per ton of ore remained constant. Labor charges higher in 1925. Increase in timber, proportional increase in Overrun.

Banner
~~cost~~ COST OF PRODUCTION. *Bond*

	1924		1925	
		Without Overrun	With Overrun	
Labor	\$ 1.287	\$ 1.206	\$ 1.092	
Supplies	<u>.599</u>	<u>.548</u>	<u>.495</u>	
Total	\$ 1.886	\$ 1.754	\$ 1.587	

No actual comparison can be made between the cost per ton in 1924 and that in 1925 without making a correction for the stock-pile overrun which was taken up into production in 1925. This has reduced the cost per ton 9.4% from what it normally would have been.

UNDERGROUND COSTS.

Development in Rock.

1924	\$ 16,537.39	\$.107
1925	<u>15,282.37</u>	<u>.071</u>
Decrease	\$ 3,255.02	\$.036

In 1924 1974 feet cost \$ 8.36 a foot. In 1925 1588 feet cost \$ 8.36 per foot.

Development in Ore.

1924	\$ 1,695.74	\$.011
1925	<u>4,083.55</u>	<u>.022</u>
Increase	\$ 2,387.81	\$.011

Development was as follows:-

	Ore Drift		Ore Raise	
	Feet	Rate	Feet	Rate
1924	261	6.12	265	7.44
1925	<u>268</u>	<u>4.82</u>	<u>533</u>	<u>7.83</u>
Increase	27		270	.39
Decrease		1.32		

Stoping.

1924	\$ 114,230.06	\$.740
1925	<u>120,130.27</u>	<u>.637</u>
Increase	\$ 5,900.21	
Decrease		\$.103

In 1925 the cost was \$.704 per ton without stock-pile overrun, \$.036 less than in 1924. Increase in gross is due to larger production.

Timbering.

1924	\$ 39,539.80	\$.256
1925	<u>42,117.54</u>	<u>.223</u>
Increase	\$ 2,577.74	
Decrease		\$.033

The price of timber increased \$.001 per foot in 1925, and the number of feet per ton of ore remained constant. Labor charges were \$ 116.65 higher in 1925. Balance is in timber, proportional to increased tonnage.

Banner
 HOLMES MINE *Bond*

UNDERGROUND COSTS. (Continued)

Tramming.

1924	\$	16,881.36	\$.110
1925		<u>16,887.83</u>	<u>.090</u>
Increase	\$	6.47	
Decrease			\$.020

Ventilation.

1924	\$	627.81	\$.004
1925		<u>558.12</u>	<u>.003</u>
Decrease	\$	69.69	\$.001

Pumping.

1924	\$	7,751.31	\$.050
1925		<u>6,232.11</u>	<u>.035</u>
Decrease	\$	1,519.20	\$.017

Compressors and Air Pipes.

1924	\$	11,368.36	\$.074
1925		<u>12,507.89</u>	<u>.066</u>
Increase	\$	1,139.53	
Decrease			\$.008

Underground Superintendence.

1924	\$	7,257.55	\$.047
1925		<u>8,080.22</u>	<u>.045</u>
Increase	\$	822.67	
Decrease			\$.004

MAINTENANCE ACCOUNTS.

Compressors and Power Drills.

1924	\$	1,233.15	\$.008
1925		<u>607.04</u>	<u>.003</u>
Decrease	\$	626.11	\$.005

Hand Tramming Equipment.

1924	\$	5,512.85	\$.025
1925		<u>5,562.98</u>	<u>.019</u>
Increase	\$	50.13	
Decrease			\$.004

Electric Tram Equipment.

1924	\$	5,088.18	\$.033
1925		<u>5,354.02</u>	<u>.028</u>
Increase	\$	265.84	
Decrease			\$.005

Labor decreased \$ 48.
Balance in supplies, due to
smaller flow of water.

In 1925 air-pipes increased
from \$ 2031 to \$ 2548 on account
of moving the main air-line to
the fourth level. Supply-charges
for compressors increased \$ 393,
because more air was used. Labor
charges increased \$ 229 on account
of a change in the proportion of
engine-house labor charged to
electric haulage and compressor.

One more shift-boss was
employed in July 1924.

In 1924 one drill was
charged out at \$ 225. In 1925
two new drills cost \$ 340. Air-
lines decreased \$ 100 and repairs
to compressors decreased \$ 642.

In 1924 cars and scrapers
cost \$ 2671 and tracks \$ 842.
In 1925 scrapers and cars cost
\$ 2798 and tracks \$ 765.

In 1924 repairs to the
rotary converter cost \$ 268
and in 1925 \$ 5. Repairs to
locomotives decreased \$ 706.
Wiring and tracks were practi-
cally the same for both years,
and repairs to cars increased
\$ 1248 from \$ 1727 to \$ 2975.

UNDERGROUND COSTS. (Continued)

Pumping Machinery.

1924	¢	1,075.05	¢ .007
1925		<u>515.70</u>	.003
Decrease	¢	559.35	¢ .004

Labor decreased ¢ 94 and supplies ¢ 465. In 1924 54 feet of 30" belt for the plunger pump cost ¢ 260.03, and repairs to the centrifugal pump cost ¢ 225.21.

SURFACE COSTS.

Hoisting.

1924	¢	11,791.20	¢ .076
1925		<u>11,493.62</u>	.061
Decrease	¢	297.58	¢ .015

Heating charges decreased ¢ 553.

Stocking Ore.

1924	¢	9,190.14	¢ .060
1925		<u>9,197.90</u>	.049
Increase	¢	7.76	
Decrease			¢ .011

Erecting portable trestles increased ¢ 900, but this was offset by lower tram costs. Rock-picking increased ¢ 268.

Screening-Crushing at Mine.

1924	¢	2,521.49	¢ .016
1925		<u>4,296.83</u>	.025
Increase	¢	1,777.34	¢ .007

Maintenance charges increased from ¢ 882 in 1924 to ¢ 2590 in 1925, on account of new concaves, gears, etc. for crushers and repairs to screens. Operating expense increased ¢ 70.

Dry House.

1924	¢	6,288.52	¢ .041
1925		<u>5,454.10</u>	.029
Decrease	¢	834.42	¢ .012

Heating charges decreased ¢ 869 in 1925.

General Surface Expense.

1924	¢	7,643.44	¢ .050
1925		<u>6,675.32</u>	.035
Decrease	¢	968.12	¢ .015

Surface-pumping costs charged to this account in 1924 and part of 1925 decreased ¢ 525. Land improvement decreased ¢ 297. Balance is in labor around the plant.

MAINTENANCE ACCOUNTS.

Hoisting Equipment.

1924	¢	1,764.02	¢ .011
1925		<u>1,705.22</u>	.009
Decrease	¢	58.80	¢ .002

In 1925 wire-rope cost ¢ 496 and in 1924 nothing. This was offset by two Lilly hoist controllers installed in 1924.

Shaft.

1924	¢	604.77	¢ .004
1925		<u>403.21</u>	.002
Decrease	¢	201.56	¢ .002

In 1924 the upper part of the shaft was lined with galvanized iron for fire-protection, E and A. 444.

SURFACE COSTS. (Continued)

Top Tram Equipment.

1924	⌘	1,238.13	⌘ .008
1925		<u>1,032.37</u>	<u>.005</u>
Decrease	⌘	205.76	⌘ .003

Tracks and cars decreased ⌘ 339 in 1925, but wire-rope, spools and rollers increased ⌘ 130.

Docks, Trestles and Pockets.

1924	⌘	1,610.03	⌘ .010
1925		<u>2,024.73</u>	<u>.011</u>
Increase	⌘	414.70	⌘ .001

Repairs to shaft-house pockets and chutes increased ⌘ 495, and permanent trestles decreased ⌘ 80.

Mine Buildings.

1924	⌘	1,504.29	⌘ .010
1925		<u>2,585.07</u>	<u>.014</u>
Increase	⌘	1,080.78	⌘ .004

In 1925 the roof was blown off the office, and the roof of the engine-house and the gable of the dry were damaged by a windstorm. Repairs to the office increased ⌘ 1552, but shaft-house repairs decreased ⌘ 284 and shops decreased ⌘ 112.

GENERAL MINE ACCOUNTS.

Insurance.

1924	⌘	32.78	⌘ .000
1925		<u>41.67</u>	<u>.000</u>
Increase	⌘	8.89	⌘ .000

Engineering.

1924	⌘	1,550.71	⌘ .010
1925		<u>1,626.41</u>	<u>.009</u>
Increase	⌘	75.70	
Decrease			⌘ .001

Central Office charge.

Analysis.

1924	⌘	7,046.67	⌘ .046
1925		<u>6,970.42</u>	<u>.037</u>
Decrease	⌘	76.25	⌘ .009

Personal Injury Expense.

Central Office charge.

1924	⌘	2,399.92	⌘ .015
1925		<u>2,424.47</u>	<u>.018</u>
Increase	⌘	24.55	
Decrease			⌘ .002

Safety Department Expense.

1924	⌘	222.45	⌘ .002
1925		<u>205.11</u>	<u>.001</u>
Decrease	⌘	17.34	⌘ .001

Bond

GENERAL MINE ACCOUNTS. (Continued)

Telephones and Safety Devices.

In 1924 mine telephones cost \$ 156 and in 1925 \$ 17.

1924	\$	222.22	\$	.001
1925		<u>114.62</u>		<u>.001</u>
Decrease	\$	107.60	\$	.000

Local General Welfare.

1924	\$	539.04	\$	.003
1925		<u>560.46</u>		<u>.003</u>
Increase	\$	21.42	\$	.000

Mine Office.

Charges for clerk's salaries increased \$ 534.91, partly on account of illness.

1924	\$	8,128.52	\$	.053
1925		<u>8,699.81</u>		<u>.046</u>
Increase	\$	571.29		
Decrease			\$	.007

RECAPITULATION

	Year 1924		Year 1925		Increase		Decrease	
	Total	Per Ton	Total	Per Ton	Total	Per Ton	Total	Per Ton
Underground	226798.61	1.470	233919.64	1.241	7121.03			.229
Surface	44156.03	.286	44870.37	.238	714.34			.048
Gen. Mine Accts.	<u>20142.31</u>	<u>.130</u>	<u>20652.97</u>	<u>.110</u>	<u>510.66</u>			<u>.020</u>
Cost of Production	291096.95	1.886	299442.98	1.589	8346.03			.297

NEGAUNEE MINE - 1925.

A. PRODUCTION AND SHIPMENTS.

I. Production by Grades.

Bessemer,	25,534 tons	-	7.3%
Negaunee,	324,712 "	-	92.7%
Total,	350,246 "	-	100.0%
Rock,	4,196 "		

The falling off in the percentage of Bessemer from 14.6% to 7.3% was due to less mining under the hanging than in the previous year.

II. Shipments.

Grade of Ore	Pocket Tons	Stockpile Tons	Total Tons
Bessemer,	10,921	17,609	28,530
Negaunee,	171,405	190,304	361,709
Total -	182,326	207,913	390,239

The shipments from the pocket to Charcoal Furnaces extended throughout the whole year. Shipping from stockpile started April 24th and continued until November 6th.

III. Stockpile Balances.

	1925	1924
Bessemer Ore on Hand Dec. 31st,	6,448 tons,	9,444 tons,
Negaunee " " " "	108,086 "	145,083 "
Total ore on hand -	114,534 tons.	154,527 tons.

From the above statement it is seen that there is 39,993 tons less ore in stock on December 31st of this year than there was the previous year.

IV. Division of Product by Levels.

The product by levels is as follows:-

Tenth Level,	37,187 tons,
Eleventh Level,	312,837 "
Twelfth Level,	222 "
Total -	350,246 tons.

V. Production by Months.

Month	Bessemer	Negaunee	Total	Rock
January	3,108	22,852	25,960	1,224
February	2,532	21,815	24,347	400
March	2,268	24,769	27,037	
April	2,392	23,795	26,187	56
May	2,653	22,680	25,333	48
June	2,566	23,839	26,405	
July	2,912	36,140	39,052	16
August	2,227	34,992	37,219	536
September	1,544	33,128	34,672	448
October	4,540	26,540	31,080	436
November	2,769	21,766	24,535	404
December	3,164	25,255	28,419	628
Total -	32,675	317,571	350,246	4,196
Transferred from	7,141	to 7,141		
Total -	25,534	324,712	350,246	4,196

VI. Delays.

We were fortunate in having no serious delays during the year. Those which did occur are as follows:-

August 24th, 3 hours delay on skip hoist account of two dividers and three stringers broken in shaft.

October 20th, 1 $\frac{3}{4}$ hours delay account of fire in generator set in engine house.

November 9th, 2 hours 40 minutes delay account of broken shaft stringers.

VII. Delays from Lack of Current.

The most serious electrical delay was on October 19th when the mine was closed down the entire day. This was due to the transmission lines being

down on account of a heavy snow storm on the day previous. Current was supplied to the pumps from the steam turbine.

Throughout the year there were only two delays on account of lack of current:-

May 19th, One hour delay account of no current.
 October 19th, Eight hours idle account of no current,
 due to snow storm on October 18th.

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

Above 9th level,
 No. 1 Shaft Pillar 1,148,681 tons,
 No. 2 Shaft Pillar 113,906 "
 Total above 9th level - - - - 1,262,587 tons,
 Total between 9th & 10th levels - - - 819,790 "
 Total between 10th & 11th levels - - - 2,190,437 "
 Total above 11th level - - - - 4,272,414 tons.

Percentage of Bessemer equals 11%.

GRADED AS FOLLOWS:

<u>Bessemer Ore</u>	<u>Trade Name.</u>	<u>Tons</u>
Developed	Negaunee-Bessemer	<u>469,966</u>
<u>Non-Bessemer Ore</u>		
Developed	Negaunee	<u>3,802,448</u>
Total Bessemer and Non-Bessemer,		4,272,414

ASSUMPTION:

12 cu. ft. equals one ton. 10% Deduction for Rock,
 10% " " Loss in Mining.

ESTIMATED ANALYSIS.

	<u>IRON</u>	<u>PHOS.</u>	<u>SILICA</u>	<u>ALUM.</u>	<u>MANG.</u>	<u>LIME</u>	<u>MAG.</u>	<u>SUL.</u>	<u>IGNI.</u>	<u>MOIST.</u>
Negaunee:										
Dried 212°	59.10	.100	7.70	2.64	.324	.900	.306	.009	3.10	
Natural	52.00	.088	6.78	2.32	.285	.792	.269	.008	2.73	12.00
Negaunee-Bessemer:										
Dried 212°	60.00	.048	7.04	2.72	.237	.644	.307	.009	2.07	
Natural	52.80	.042	6.20	2.39	.209	.567	.270	.008	1.82	12.00

C. GENERAL.

(1) Labor.

The labor conditions throughout the year were satisfactory and at no time was there a shortage of men. This was probably due to conditions throughout this whole section, there being very little construction work in progress. During the past few years there has been a general shortage of men throughout the summer months due principally to road work where large forces are employed. There was no State or County road construction in this County during the past summer.

(2) New Construction.

a. Maas-Negaunee Ventilating System.

Work on the Maas-Negaunee ventilating system which started last year was resumed as soon in the spring as weather would permit. The 100,000 cu. ft. reversible fan had been installed in the fall of 1924 and the housing completed with the exception of the guniting. This was done in April and May. The motor was received in April and immediately installed. This motor is 150 h.p. 10-pole, 50 h.p. 20-pole, two speed, 2200 A.C. squirrel cage, made by the Westinghouse Company.

In the spring the ice which had collected in #2 shaft during the winter broke down a number of sets between the old 400' level and the 6 $\frac{1}{2}$ ' level. The mass of timber and blocking nearly closed the shaft, necessitating repairs before the fan could be put in regular operation. This delayed the starting of the fan several weeks.

The underground ventilating doors were installed on the second and third levels Maas and on the ninth, tenth, eleventh and twelfth levels Negaunee in May and June. The fan started on regular operation the latter part of June, operating only when the mines were working, i.e., day shift.

A little trouble was experienced at first due to the fan belt slipping but this was soon remedied.

In September it was found there was a leakage of air about #2 shaft which is the downcast from the fan. It was necessary to gunite this shaft

from surface to 70' below or practically to the ledge.

The system has been working satisfactorily. During the fall weather it was cut down to one-half speed and it is hoped that during the extremely cold weather that natural ventilation can be secured through #2 shaft so that the fan can be shut down to prevent the filling of #2 shaft with ice.

In December the weather was extremely cold and ice had started to collect in #2 shaft. The day after Christmas, the fan was reversed to help cut out the ice. However, ice immediately started to form in the Maas shaft so that the fan had to be stopped.

The cost of the surface equipment for this system was divided equally between the Maas and Negaunee Mines. Each mine paid for its own underground work. The cost of the installation was as follows:-

Fan and Steelwork at site,	\$2,179.97
Motor and Compensator,	1,794.58
Belt,	111.05
Headframe Floor,	122.18
Drift & Motor House Floor,	244.34
Foundations,	462.44
Housing & Shaft Connection,	1,340.83
Enclosing Headframe,	824.71
Fan Testing Outfit,	150.90
Two Kata Thermometers,	17.24
Electrical Connection (Incl. Switchboard)	227.24
Erecting Fan,	260.01
Total -	\$ 7,735.49
Cost of Underground Work,	5,961.10
Grand Total -	\$13,696.59

The Negaunee Mine portion of underground work amounted to \$3,145.18.

B. Underground Pocket, Twelfth Level.

This construction is detailed underground in Section "E".

(3) Explorations.

There were no explorations at the Negaunee Mine during the year 1925.

(4) Fatal Accidents.

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

(5) Accidents to Equipment, Fires, Etc.

There were no serious accidents to equipment.

Under delays there is reported a fire in the generator set on October 20th due to a short circuit, causing $1\frac{3}{4}$ hours delay in hoisting.

D. SURFACE.

(1) Buildings, Repairs.

The floor in the North room of the dry was re-surfaced during January. This had been in poor shape since the fire which occurred in the dry November 1919.

Ventilating Fan. The ventilating fan installation has been reported under C-2-a, New Construction. The roof of the fan house was asphalted in September.

Boiler House. A new smoke stack was provided for the small boiler in September. A new coal bin was built in the boiler house to replace the one originally there where the wall had broken down.

The drainage sewer in front of the dry became clogged early in December necessitating its being dug up. It was found that roots from the trees had grown in through the joints. A section of the sewer had to be relaid.

(2) Stockpiles.

As there was less ore in stock at the end of the shipping season this year, it was unnecessary to provide temporary wooden bents for the Bessemer ore at the end of the East trestle. Our book balance shows 114,534 tons in stock December 31st or 40,000 tons less than last year, which give us that much more available room for winter stocking.

E. UNDERGROUND.

(1) Development.

Practically the only development underground during the year of any consequence was the opening of the twelfth level. Here the pocket was built at the shaft, the plat opened, a tail drift extended 100' South of the shaft

and the main haulage drifts started into the ore body. A detail of this work is reported under twelfth level operations which follows under E-2.

(2) Detail of Years' Work.

The product for the past year came from between the ninth and tenth levels in the vicinity of the Maas Mine and on the South foot near #1 shaft pillar; and in the center of the ore deposit between the tenth and eleventh levels.

An average product of about 1,200 tons per day was maintained from January to July, at which time the Maas Mine shut down for remodelling the shaft and ninety Maas miners were added to the Negaunee Mine force. These extra men were employed from July 1st to October 15th. During the three and one-half months with the extra men, the daily product was proportionately increased.

The following is a detail of the underground operations:-

NINTH LEVEL.

The ventilation drift to the winze in the Eastern section of the mine which was started last fall was completed in January. This was the only work done during the year on this level.

SUBS BETWEEN NINTH AND TENTH LEVELS.

595' SUB LEVEL.

NORTH FOOT.

The work here during the year was in the American Mining Company strip and supporting pillar. The sub level was completed in June.

588' SUB LEVEL.

NORTH FOOT.

This was opened the latter part of 1924. Work has been in progress throughout the year.

In December there were ten contracts stoping on this sub level as follows:- Four North of #4 dike, five between #3 and #4 dikes and one South of #3 dike under the hanging.

565' SUB LEVEL.

SOUTH FOOT.

This sub level was completed in April by taking the pillars on the North and South sides of #1 dike.

555' SUB LEVEL.

SOUTH FOOT.

This sub level was opened in 1924 and mining has been in progress during the entire year. Most of the ore North of #1 dike has been mined.

In December there were three contracts North of #1 dike and five to the South of this dike, all stoping.

545' SUB LEVEL.

SOUTH FOOT.

In August development work was started at this elevation from #128 raise.

In December the drift under the hanging from #128 raise holed to #161 raise. Two contracts are now driving development drifts from the latter raise. Another contract North of #1 dike is stoping near #259 raise.

South of #1 dike are two contracts repairing the old East-West drift from #126 raise.

SUBS BETWEEN TENTH AND ELEVENTH LEVELS.

488' SUB LEVEL.

Work on this sub level Northwest of #2 dike and Southeast of the American Mining Company supporting pillar was completed in February.

475' SUB LEVEL.

Mining here was started in 1923 and has been in progress since that time. The present workings are confined to the area between the railroad supporting pillar on the Northwest and #2 dike on the Southeast. Most of the ore on the foot and under the hanging in this section has been mined.

In December in the Northwest end were four contracts stoping. In the central portion between #6 and #8 crosscuts, eleventh level, were eighteen contracts stoping.

470' SUB LEVEL.

A stope over #4-A crosscut was started in January and finished in August.

460' SUB LEVEL.

The section under the hanging over #4 crosscut was mined in 1924. During the present year mining was started over crosscuts #4-A, #5 and #6. On the foot side a drift was driven connecting #211 and #214 raises. This work was stopped in October when the Maas Mine men returned to their mine.

In December there were five contracts stoping over #4-A and #6 crosscuts.

ELEVENTH LEVEL.

In #5 crosscut five raises were put up to the 460' sub level. These were located between the original raises, making the present interval between raises 30'. This was done to facilitate the mining by use of scrapers.

The new raises which were started in January and completed in March are as follows:-

No. 261-A raise, two compartment, material 0' to 58' ore.

No. 262-A raise, two compartment, material 0' to 58' ore.

No. 263-A raise, two compartment, material 0' to 58' ore.

No. 264-A raise, two compartment, material 0' to 58' ore.

No. 265-A raise, two compartment, material 0' to 58' ore.

In August and September #236 raise was put up from the drift paralleling the Maas boundary between #7 and #8 crosscuts for ventilation and drainage. This raise was two compartment. Material, 0' to 60' ore, 60' to 95' jasper, 95' to 110' ore. At 80' a connection was made with the 475' sub level and at 110' it holed to the tenth level.

TWELFTH LEVEL.

Flat and Pocket.

The work on the shaft storage pocket started in January and was completed in June. The pockets are standard design of three compartments where

ore in the middle compartment can be diverted to either measuring pocket. The bottom and sides of the storage pocket are of concrete. The front is of framed fir.

The opening of the plat was started in June and finished in August. The sides, walls and back at the pocket and the pillar between the pocket track and cage track, concreted.

To the South of the shaft 100' of tail room was provided. The material in this drift was lean ore, the breast showing high sulphur. The following are the analyses taken:-

	<u>Iron</u>	<u>Phos.</u>	<u>Sulphur</u>
Breast,	53.30	.040	1.059
25' Back of Breast,	35.50	.078	.096
50' Back of Breast,	42.70	.062	.027

It will be recalled that high sulphur was encountered in sinking the shaft to the thirteenth level. This was mentioned in the annual report for 1924. The only high sulphur ever found at the Negaunee Mine is that found in the shaft and in this tail drift.

Drifts, Ditches, Etc.

The development of the main ore crosscuts started in September. At a point 15' North of the curve leading West to the vertical winze ore was encountered South of #1 dike. This continued for a width of 65' or until the dike was reached. At a point 45' South of the dike the crosscut divided, one branch going to the Northwest forming crosscut #4, the other to the Northeast where it crossed #1 dike and entered the foot wall. This is being driven parallel to the foot. From this drift ore crosscuts will be turned off to the Northwest.

A ditch was excavated on the West side of the crosscut leading North from the shaft to the ore body.

In December the foot wall drift was extended 55' through #1 dike into the jasper.

No. 4 crosscut was advanced 25' and the breast is now in #1 dike.

UNDERGROUND IN GENERAL.

The mine is in excellent condition and the monthly product can be increased at any time as long as labor conditions remain as they are at present.

During the coming year the principal development work will be opening the twelfth level. Crosscuts through the ore body will be spaced at 150' intervals and raises will be started to the eleventh level and subs immediately above as soon as possible, as there has been considerable crushing on the eleventh level crosscuts #6, #7 and #8. This new level is being planned so that the ore can be mined as far as possible by mechanical means.

A new Mayne Loader has been built to use in driving our development drifts on the twelfth level.

MAYNE LOADERS.

During the year nine Mayne Loaders were used in the sub levels. No new loaders were purchased. The product from these loaders was 70,760 tons or 20.2% of the total mine output.

Below is a comparison of the results obtained with these loaders during the years 1925 and 1924:-

	<u>1925</u>	<u>1924</u>
Production,	70,760	72,392
Total days worked,	4,090	3,984
Average tons per man per day with loaders,	17.30	18.17
Average tons per man per day hand shoveling,	10.42	10.41
Tons per man per day increase over average hand shoveling,	66%	74.5%
Contract price per ton less than regular miners,	27.5%	27.2%
Total maintenance on nine loaders for the year,	\$513.04	\$904.15
Average maintenance for each loader for the year,	\$57.00	\$100.46

While the Mayne Loaders have been successfully used at this mine and show a large saving in the cost of mining over hand shoveling, they have not been

popular throughout the district. The tigger hoist and scraping outfit is somewhat simpler and is quite generally used throughout the Lake Superior region.

TUGGER HOIST AND SCRAPER.

The Negaunee Mine is now supplied with nine tigger hoists and scrapers and the twelfth level is being opened with the idea of using more of these outfits. The tigger hoist operates very satisfactorily up to a distance of 75' or 80' from the raise, and for that reason we are making the interval between our main ore drifts 150' on the twelfth level. The cost for mining with tigger hoists has averaged somewhat less than with the Mayne Loader.

The following is a statement showing the results obtained by the scrapers during December:-

Contract No.	20	28	38	49	56	59	62	70
No. of Men	2	2	2	2	2	2	2	2
No. of Days	46	46	42	46	42	46	28	38
Tons	1012	868	708	1004	600	992	648	528
Tons per man per day	20.70	18.87	16.85	21.82	14.28	21.56	23.14	13.89

The average tons per man per day for all scrapers for the month is 19.04 tons or 67.6% more than by hand shoveling which was 11.36 tons.

INCLINE SLICING.

During the past two or three years we have experimented with incline slicing, however, we have had practically as good results by cutting down on the incline so that the incline is now only 12° off of horizontal. The mining on the steeper incline worked successfully but the timbering was hazardous and only the very best men could be employed in this work.

HIGH SULPHUR ORE.

Last year when sinking the shaft to the thirteenth level, high sulphur ore was encountered. During this year when the drift on the twelfth level was being extended to the South in lean ore, high sulphur was encountered. At the breast or 100' from the shaft it gave an analysis of 1.059; at 75' South of the shaft .096.

VENTILATION.

In connection with the installation of the ventilating system, it was necessary to do some underground work. A drift was driven on the ninth level connecting with the old winze and the timber around the top of the winze repaired. On the eleventh level a drift was driven to the Maas Mine connecting with a raise from the second to the third levels Maas. Air lock doors were installed on the ninth, tenth, eleventh and twelfth levels. These are operated by counterweights.

The system has worked perfectly and given excellent air to practically all portions of the mine except one or two places which were nearly finished. It is possible that a few booster fans will have to be installed in sections where there is poor circulation.

SHAFT REPAIRS.

As mentioned elsewhere in this report, it was necessary to put a number of new sets in #2 shaft between the old 400' and 6 $\frac{1}{2}$ levels to repair the damage done by the ice last winter. This shaft is now in fairly good shape down to this point. A number of the sets were badly burned between the 6 $\frac{1}{2}$ and ninth levels at the time of the fire in January 1914, but we have had no trouble in that section. This shaft had been used very little for the past five years.

WATER.

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

	<u>1925</u>	<u>1924</u>
January	742	826
February	790	836
March	689	800
April	700	823
May	698	788
June	711	803
July	725	780
August	626	802
September	742	798
October	661	787
November	710	778
December	662	735
Average -	705	796

This shows a falling off of 91 gallons per minute during the year and is probably due to the very dry season.

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

1922 - 943	gals. per minute,
1923 - 927	Do.
1924 - 796	"
1925 - 705	"

NEGAUNEE MINE

AVERAGE MINE ANALYSIS ON OUTPUT FOR YEAR 1925.

GRADE	IRON	PHOS.	SILICA
Negaunee Bessemer,	62.00	.049	5.92
Negaunee,	59.96	.093	7.02

AVERAGE ANALYSIS ON STRAIGHT CARGOES FOR YEAR 1925.

GRADE	Mine			Lake Erie		
	IRON	PHOS.	MOIST.	IRON	PHOS.	MOIST.
Negaunee Bessemer,	62.17	.046	-	-	-	-
Negaunee,	60.04	.093	-	59.97		11.32

ORE STATEMENT - DECEMBER 31ST, 1925.

	NEGAUNEE BESSEMER	NEGAUNEE	TOTAL	TOTAL LAST YEAR
On hand January 1, 1925,	9,444	145,083	154,527	173,326
Output for Year,	32,675	317,571	350,246	323,123
Transferred,	7,141	7,141	-	-
Total,	34,978	469,795	504,773	496,449
Shipments,	28,530	361,709	390,239	341,922
Balance on Hand,	6,448	108,086	114,534	154,527
Increase in Output,			27,123	
Decrease in Ore on Hand,			39,993	

1925 -- 1-8 Hour Shift, Jan. 1st 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.

NEGAUNEE MINE

SHIPMENTS FOR YEAR-1925

GRADE	POCKET	STOCKPILE	TOTAL	TOTAL LAST YEAR
Negaunee Bessemer,	10,921	17,609	28,530	42,774
Negaunee,	171,405	190,304	361,709	299,147
Total,	182,326	207,913	390,239	341,921
Total Last Year,			341,921	
Increase,			48,318	

NEGAUNEE MINE

COMPARATIVE MINING COST FOR YEAR

	1925	1924	INCREASE	DECREASE
PRODUCT	350,246	323,123	27,123	
Underground Costs	1.240	1.177	.063	
Surface Costs	.132	.147		.015
General Mine Accounts	.101	.105		.004
Cost of Production	1.473	1.429	.044	
Plant Account	.031	.031		
Original Cost	.088		.088	
Taxes	.520	.563		.043
Dep.of Appreciated Value	.300		.300	
Central Office	.076	.124		.048
Contingent Expense	.010	.010		
Cost Adjustment	.003	.001	.004	
Cost on Stockpile	2.501	2.156	.345	
Loading & Shipping	.026	.032		.006
Misc.Debits & Credits	.004	.004		
Total Cost on Cars	2.523	2.184	.339	
No.Days Operating	260	261		1
No.Shifts & Hours	1-8	1-8		
Avg.Daily Product	1347	1238	109	
<u>COST OF PRODUCTION</u>				
Labor	.943	.910	.033	
Supplies	.530	.519	.011	
Total	1.473	1.429	.044	

NEGAUNEE MINE

COMPARATIVES WAGES AND PRODUCT

	1 9 2 5	1 9 2 4	INCREASE	DECREASE
PRODUCT	350,246	323,123	27,123	
No.Shifts & Hours	1-8	1-8		
AVG.NO.MEN WORKING				
Surface	39	41		2
Underground	202	178	24	
Total	241	219	22	
AVG.WAGES PER DAY				
Surface	4.32	4.31	.01	
Underground	5.13	5.12	.01	
Total	4.99	4.96	.03	
WAGES PER MO.OF 25 DAYS				
Surface	108.00	107.75	.25	
Underground	128.25	128.00	.25	
Total	124.75	124.00	.75	
PRODUCT PER MAN PER DAY				
Surface	29.99	27.21	2.78	
Underground	6.52	6.84		.32
Total	5.36	5.47		.11
LABOR COST PER TON				
Surface	.144	.158		.014
Underground	.787	.748	.39	
Total	.931	.906	.25	
AVG.PRODUCT BRK'G & TRM'G	11.18	11.23	.05	
" WAGES CONTRACT MINERS	5.33	5.27	.06	
" " " LABOR	5.33	5.27	.06	
TOTAL NO.OF DAYS				
Surface	11682	11874		192
Underground	53682 $\frac{1}{4}$	47190-3/4	6491 $\frac{1}{2}$	
Total	65364 $\frac{1}{4}$	59064-3/4	6299 $\frac{1}{2}$	
AMOUNT FOR LABOR				
Surface	50448.86	51180.85		731.99
Underground	275527.95	241818.38	33709.57	
Total	325976.81	292999.23	32977.58	

Proportion Surface to Underground Men:

1925 - 1 to 5.13

1924 - 1 to 4.34

1923 - 1 to 3.37

1922 - 1 to 5.11

1921 - 1 to 5.11

1920 - 1 to 5.15

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

NEGAUNEE MINE

TIMBER STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1925.

KIND	LINEAL FEET	AVG. PRICE PER FOOT	AMOUNT	
			1 9 2 5	1 9 2 4
6" to 8" Timber	63,525	.0375	2,380.60	1,746.29
8" to 10" "	74,396	.0711	5,290.81	4,910.83
10" to 12" "	43,298	.0964	4,174.90	3,769.69
12" to 14" "	15,476	.1583	2,450.21	1,781.02
Total - 1925	196,695	.0727	14,296.52	
Total - 1924	163,652	.0746		12,207.83
7' Lagging	1,052,663	.760c	7,996.47	6,259.43
Poles 10'	558,842	1.082c	6,046.44	5,604.74
Covering Boards 1" Sq.Ft.	697.10	17.70M ft.	1,232.72	1,154.86
Total - 1925			15,275.63	
Total - 1924				13,019.03
Grand Total - 1925			29,572.15	
Grand Total - 1924				25,226.86
Product,			350,246	323,123
Feet of Timber per ton of ore,			.5616	.5065
Feet of Lagging per ton of ore,			3.0055	2.5625
Feet of Lagging per foot of timber,			5.352	5.0596
Cost per ton for Timber,			.0408	.0378
" Lagging,			.0228	.0194
" Poles,			.0173	.0173
" Covering boards,			.0035	.0036
" tbr., lagging, poles & Cover Boards,			.0844	.0781
Equivalent of stull timber to board measure,			347,667	300,469
Feet of board measure per ton of ore,			.993	.930

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

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

G.M.

NEGAUNEE MINE

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

KIND	QUANTITY	AVERAGE PRICE	AMOUNT 1 9 2 5	AMOUNT 1 9 2 4
40% Powder	1,150	.1361	156.50	1,390.51
50% "	95,900	.1517	14,552.00	14,422.75
60% "	36,600	.1768	6,470.39	3,710.14
Total Powder - 1925	133,650	.1585	21,178.89	
Total Powder - 1924	125,000	.1562		19,523.40
Fuse	379,300	.6328c	2,400.30	2,085.59
Blasting Caps #6	774,000	1.0673c	751.40	615.41
Cap Crimpers	46	.905 ea.	41.65	24.00
Tamping Bags	27,500	2.15M	59.12	45.58
Connecting Wire	8#	.41 lb.	3.27	12.38
Electric Exploders	22	.092 ea.	2.04	4.22
Blasting Caps #8				25.66
Delay Igniters				3.91
Leading Wire	650'	.65 c.ft.	4.21	
Total Fuse, etc. - 1925			3,261.99	
Total Fuse, etc. - 1924				2,816.25
Total All Explosives - 1925			24,440.88	
Total All Explosives - 1924				22,340.15
Product,			350,246	323,123
Pounds of Powder per ton of ore,			.3816	.3868
Cost per ton for Powder,			.0605	.0604
" " Fuse, Caps, Etc.,			.0093	.0087
" " All Explosives,			.0698	.0691
Average price per lb. for Powder,			.1585	.1562

g. M.

F. COST COMPARISON.

(1) Days and Shifts.

During the year 1925 the mine operated on a five day per week schedule, Saturdays idle, as compared with 1924 when the mine operated as follows:- full time January 1st to July 30th, four days per week July 30th to December 1st, and five days per week from December 1st for the balance of the year.

During 1925 the mine worked one eight-hour shift for 184 days and two eight-hour shifts for 76 days. Total days operated in 1925 was 260 days. The average number of men employed during the year was 241, for a total of 65,364 days. From July 1st to October 15th, 90 Maas miners were employed while the Maas Mine was shut down for remodelling shaft. During this period a small force worked night shift. In 1924 the mine worked one eight-hour shift for 261 days. The average number of men employed during the year was 219 for a total of 59,065 days. An increase of 22 men and 6,299 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 1924,	323,123 tons,
" " 1925,	350,246 "
Increase,	27,123 tons.

Tons of Ore Mined per Man per Day.

	<u>1925</u>	<u>1924</u>	<u>Increase</u>	<u>Decrease</u>
Surface,	29.98	27.21	2.77	
Underground,	6.52	6.84		.32
Total,	5.36	5.47		.11

(4) Comparison of Number of Men and Wages.

	<u>No. Men</u>	<u>No. Days</u>	<u>Amount</u>	<u>Rate per day</u>
1924 -	218½	59,064½	\$292,999.23	\$4.96
1925 -	241	65,364½	325,976.81	4.99
	22½ Increase	6,299½ Increase	\$32,977.58 Increase	¢ .03 Increase

(5) Tons per man per day.

See #3.

(6) Cost of Production.

1925 - \$515,805.99 - Cost per ton \$1.473

1924 - 461,830.51 - " " " 1.429

¢ 53,975.48 - Cost per ton ¢ .044
Increase Increase

	<u>TOTAL COST</u>				<u>COST PER TON</u>		
	<u>LABOR</u>	<u>%</u>	<u>SUPPLIES</u>	<u>%</u>	<u>LABOR</u>	<u>SUPPLIES</u>	<u>TOTAL</u>
1925 -	\$330,303.15	64.0	\$185,502.84	36.0	¢.943	¢.530	\$1.473
1924 -	294,014.53	63.3	167,815.98	36.7	.905	.524	1.429
	¢ 36,288.62 Incr.		¢ 17,686.86 Incr.		¢.038 Incr.	¢.006 Incr.	¢ .044 Incr.

(7) Detail of Accounts.

UNDERGROUND COSTS:

Sinking in Shaft,

1925 Amount \$11,343.64 - Cost per ton \$.032

1924 7,922.26 .024

Increase \$ 3,421.38 \$.008

During 1925 the twelfth level pocket and plat were completed.

Development in Rock,

1925 Amount \$3,154.62 - Cost per ton \$.009

1924 1,748.38 .005

Increase \$1,406.24 \$.004

		<u>Drftg.</u>	<u>Raising</u>
No. feet of rock work 1925,	549'	524'	25'
" " " " " 1924,	448'	418'	30'
Increase,	101'	106'	
Decrease,			5'

Increase cost per ton due to more rock work in 1925.

Development in Ore,

1925 Amount	\$2,149.46	- Cost per ton	\$.006
1924	266.21		.001
Increase	\$1,883.25		\$.005

		<u>Drftg.</u>	<u>Raising</u>
No. feet Ore Dev. in 1925,	409'	109'	300'
" " " " " 1924,	87'		87'
Increase,	322'	109'	213'

Increase cost per ton due to more ore developmen in 1925.

Stoping,

1925 Amount	\$186,206.41	- Cost per ton	\$.532
1924	170,369.35		.527
Increase	\$ 15,837.06		\$.005

Detail.

	<u>Labor</u>		<u>Supplies</u>	
1925	\$152,238.44	81.8%	\$33,967.97	18.2%
1924	139,365.84	81.8%	31,003.51	18.2%

	<u>Cost per ton</u>		
	<u>Labor</u>	<u>Supplies</u>	<u>Total</u>
1925	\$.435	\$.097	\$.532
1924	.431	.096	.527
Incr.	\$.004	\$.001	\$.005

Explosives.

	<u>1925</u>	<u>1924</u>
Total lbs. Powder	133,650	125,000
Average price per pound	.1585	.1562
Total Amount,	\$21,178.89	19,523.40
Cost of Fuse, Caps, Etc.,	\$ 3,261.99	2,816.25
Grand Total,	\$24,440.88	22,340.15
Lbs. of powder per ton of ore,	.3816	.3868
Cost per ton for powder,	.0605	.0604
Cost per ton all explosives,	.0698	.0691

Timbering,

1925 Amount \$104,068.56 - Cost per ton \$.297
 1924 83,057.05 .257
 Increase \$ 21,011.51 \$.040

	<u>1925</u>	<u>1924</u>
Timber Cost,	14,296.52	12,207.83
Lagg.Poles & Cover Bds.,	15,275.63	13,019.03
Total,	29,572.15	25,226.86
Ft. of Tbr. per ton of ore	.5616	.5065
Ft. of Lagg. "	3.0055	2.5625
Cost per foot for timber,	.0727	.0746
Cost per ton for Timber,	.0408	.0378
" " " " Lagg.,	.0228	.0194
" " " " Poles,	.0173	.0173
" " " " Cover Bds.,	.0035	.0036
" " " " Tbr., Lagg., Poles & Cover Boards,	.0844	.0781
Equivalent of stull timber to board measure,	347,667	300,469

The increase cost per ton is due to more cribbing timber used, more repairs to main level drifts and crosscuts, and more lagging used.

Tramming,

1925 Amount \$29,135.01 - Cost per ton \$.083
 1924 25,491.38 .079
 Increase \$ 3,643.63 \$.004

Increase cost per ton is due to the increase in cost of tramming during the night shift period.

Ventilation,

1925 Amount \$4,011.20 - Cost per ton \$.012
 1924 524.49 .002
 Increase \$3,486.71 \$.010

Increase cost per ton due to installation of new ventilation fan and motor charged under E.A.A. #467.

Pumping,

1925 Amount	\$30,842.08	- Cost per ton	\$.088
1924	33,458.17		.103
Decrease	\$ 2,816.09		\$.015
Total Gals. water pumped	<u>1925</u> 370,072,500	<u>1924</u> 419,625,640	
Gals. pumped per minute	704	796	

A decrease of 49,553,140 gallons of water pumped and 92 gallons per minute.

Decrease cost per ton due to \$3,000.00 less charge for electric power in 1925.

Compressor & Air Pipes,

1925 Amount	\$28,432.73	- Cost per ton	\$.081
1924	23,811.79		.074
Increase	\$ 4,620.94		\$.007

	<u>Compressor</u>	<u>Air Pipes</u>
1925	\$23,920.45	\$4,512.28
1924	<u>19,793.79</u>	<u>4,018.00</u>
Increase,	\$ 4,126.66	\$ 494.28

Total Cu. Fir air used 1925 - 660,600,000
Do. 1924 - 559,980,000

Cu. ft. per ton of ore 1925 - 1,886 cu.ft.
Do. 1924 - 1,733 "

Increase cost per ton is due to more air required with mechanical loaders.

Back Filling,

1925 Amount	\$3,154.14	- Cost per ton	\$.009
1924	2,269.17		.007
Increase	\$ 884.97		\$.002

More filling.

Underground Superintendence,

1925 Amount	\$13,154.34	- Cost per ton	\$.038
1924	12,781.94		.040
Increase	\$ 372.40	Decrease	\$.002

Decrease cost per ton due to the 38% increase in production during July, August, September and

half of October, adding only one shift boss.

Cave In,

1925 Amount \$203.21 - Cost per ton \$.000
 1924 9.71 .000
 Increase \$193.50 \$.000

More repairs to fence around surface caves.

MAINTENANCE ACCOUNTS:

Compressors & Power Drills,

1925 Amount \$315.00 - Cost per ton \$.001
 1924 525.79 .002

Decrease cost per ton due to less compressor repairs in 1925. Purchased one Chicago Pneumatic Auger Drill in 1925.

Hand Trimming Equipment,

1925 Amount \$4,359.78 - Cost per ton \$.012
 1924 4,130.44 .013
 Increase \$ 229.34 Decrease \$.001

	<u>Cars</u>	<u>Tracks</u>
1925	2,406.79	1,952.99
1924	1,925.55	2,204.89
Incr.	481.24	Decr. 241.90

Increase in cars due to more repairs.

Decrease in Tracks due to less rail used.

Electric Tram Equipment,

1925 Amount \$12,377.92 - Cost per ton \$.035
 1924 10,541.71 .003
 Increase \$ 1,836.21 \$.002

	Gen. Motor	Sub Division.	
		Locomotives	Wiring
1925	215.87	3,116.50	1,677.98
1924	115.72	2,633.25	788.12
Incr.	100.15	483.25	889.86

	M. L. Tracks	M. L. Cars
1925	3,513.12	3,854.45
1924	3,047.94	3,956.68
Incr.	465.18	Decr. 102.23

Generator & Motor; Increase due to more repairs.

Locomotives: Increase due to more repairs to locomotives.

Wiring: Increase due to new wiring on twelfth level and more general wiring.

M. L. Tracks: Increase due to work on twelfth level track and more general track work.

M. L. Cars: Decrease due to less repairs to motor cars.

Pumping Machinery,

1925 Amount	\$1,578.03	- Cost per ton	\$.005
1924	3,249.48		.010
Decrease	\$1,671.45		\$.005

Decrease cost per ton due to pump repairs unusually high in 1924, charged four 8" valves in 1924.

Total Underground Costs,

1925 Amount	\$434,486.13	- Cost per ton	\$1.240
1924	381,157.32		1.177
Increase	\$ 53,328.81		\$.063

SURFACE COSTS:

Hoisting,

1925 Amount	\$20,552.40	- Cost per ton	\$.059
1924	19,479.67		.060
Increase	\$ 1,072.73	Decrease	\$.001

Electric Power 1925, \$14,268.30

" " 1924, 13,491.63

Decrease cost per ton due to more tonnage in 1925.

Stocking Ore,

1925 Amount	\$3,629.66	- Cost per ton	\$.010
1924	4,082.31		.013
Decrease	\$ 452.65		\$.003

Decrease due to no portable Bessemer trestle erected in 1925.