

GARDNER MINE.

The hoist for the year was as follows;

Gardner Ore	42 tons
Rock	<u>15,672</u> "
Total Hoist	15,714 "

An estimate of the ore, made in September, based on cross sections made from diamond drill holes was as follows;

	<u>Tons</u>	<u>2/3 Available</u>
Ore Above 1st Level	28,000	18,000
" " 2nd "	98,000	73,000
" " 3rd "	263,000	175,000
" " 4th "	<u>480,000</u>	<u>320,000</u>
TOTAL	869,000	586,000

This estimate must not be accepted as accurately giving the available tonnage. It is merely a conservative estimate based on drill records only.

The shaft was sunk 301 feet in 1918, the total depth being 926 feet. The 3rd and 4th levels have been opened, but at the close of the year work was confined to the 3rd level.

FOURTH LEVEL.

During 1918, the connecting drift from the Mackinaw shaft was completed. After sinking was finished the loading pocket was installed at the shaft and the tail drift driven beyond the shaft. The drift to the ore body was started near the Mackinaw shaft and driven across the north-west corner of the Gardner property. There was 430 feet of drifting on the Gardner, beyond which point the drift advanced to the south-west on the Mackinaw, until it had crossed the ore body. A drift was driven to the south on the Gardner, near the boundary line, a distance of 115 feet in the footwall, and two raises were put up to the elevation of the 3rd level. No ore was encountered in either one of these raises. The development work done just over the boundary line on the Mackinaw showed conclusively that there would not be any ore found on the Gardner property at the elevation of the 4th level. The ore passed over the boundary line at a point half-way between the 3rd and 4th levels.

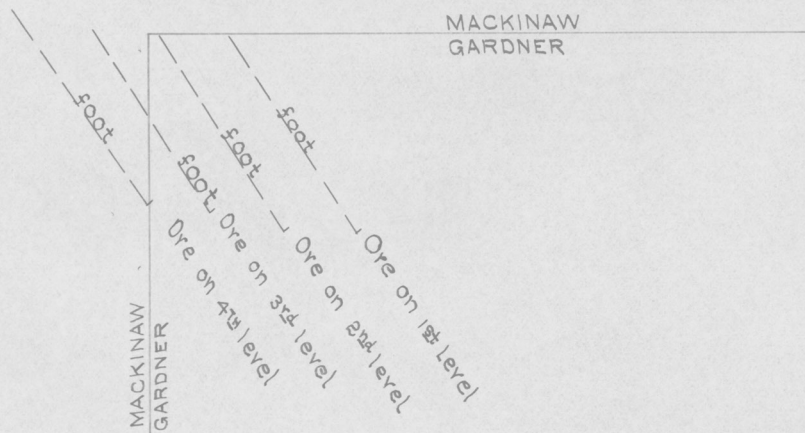
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THIRD LEVEL.

It was decided to drift back towards the footwall from the first raise and determine if there was any ore at the elevation of the 3rd level. After drifting 50 feet through hanging wall jasper, five feet of ore was found on the footwall. This ore will be followed to the north-west, where it is expected that it will soon widen out.

A raise was put up to the elevation of the 3rd level on the Mackinaw property, near the Gardner line, and a drift driven to the east over on the Gardner. By the end of December this drift had advanced 55 feet on the Gardner in high grade ore. The drift has not gone directly across the formation, but the work here indicates a much larger ore body than on the 4th level, 100 feet below. The actual indicated length of the ore body on the 3rd level on Gardner property is only 150 feet, so that there will be only a small tonnage of ore between the 4th and 3rd levels. The ore thus far developed on the 3rd level has been higher in sulphur than the ore on the 4th level, a condition which it is hoped is merely local.

From the diamond drill holes it is known that the ore body on the Gardner increases very rapidly in size above the 3rd level. The following sketch shows the ore body on the 3rd level and also its probable location on the upper levels with respect to the Mackinaw property line.



The ore thus far developed on the Gardner has averaged about .800

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in sulphur. This is considerably higher than on the 4th level at the same location in the ore body and is also higher than is indicated by the analyses of cores of the nearest diamond drill holes, therefore it is assumed that it is local to this particular part of the 3rd level. Accurate information will be available only when the ore body has been fully developed by drifts and crosscuts.

The loading pocket at the shaft on the 3rd level was installed as soon as sinking of the shaft was completed, after which the plat was cut. The drift to the ore body was then started and, up to the close of the year, it had advanced 545 feet. It is now 375 feet distant from the ore body, as shown up by a drift from a raise at the elevation of the 3rd level.

There was a total of 600 feet of rock drifting on the 3rd level in 1918.

#### SUMMARY.

During 1918 the shaft was sunk 301 feet, two plats cut and two loading pockets installed. There was 797 feet of rock drifting on the 4th level and 600 feet on the 3rd level. There was also 225 feet of rock raising, the grand total of rock drifting and raising being 1622 feet in 1918.

GARDNER-MACKINAW SURFACE.

As these two properties are now operated as one, the surface work is not reported separately.

During the past year stockpile grounds have been made at each property and plank sollars laid, only sufficient ground, however, was prepared to take care of the estimated output for the winter of 1918-1919.

Permanent trestles have been erected at each shaft and a few temporary bents put up for stocking the ore hoisted this winter. The last of the year timber was being framed for several additional bents for each mine, which will be put up so that two grades of ore can be made, based on sulphur in the ore.

Top tram engine houses have been put up at each shaft. They are frame buildings, with concrete floors and cement plastered walls on metal lath. Electric top tram engines have been installed, which are used for pulling the cars back from the stockpile. Owing to the height of the trestles it was considered advisable to have the cars run out by gravity. The Gardner system has been in operation more than a month and the Mackinaw will go in operation within three weeks.

Both the Mackinaw and the Gardner shafts have been closed in from the ground level up to the top of shaft-house. It is now possible to keep ice out of the shaft, which had previously interfered with the operation of the cage and skip.

Early in the fall it was decided to proceed with the building of the permanent heating plant for the dry and surface buildings, which are located at the Mackinaw. (The Gardner engine house is heated by a stove) The contractor, however, was not able to obtain brick masons and it was finally decided to defer the work until spring. The concrete foundations for the building, as also the boiler, are now in and the material for the building is all on the ground.

On account of the uncertainty connected with future work at these mines it was decided to build an addition to the present temporary dry, which would about double its capacity. The concrete foundations for this addition have been installed, and the building will be put up just as soon as the work on shaft-houses and trestles is completed.

The frame work for a water tank, which will be located 35 feet above the ground level, was erected in the fall, but it has not yet been possible to obtain a tank.

The C. & N. W. Ry. Company have not yet installed the pocket tracks at the Gardner shaft. It has been impossible to secure authorization for this work, which must be done before ore can be shipped from pockets. The M. M. & S. E. Ry. installed tracks to the mine in the summer of 1918. This work is not yet quite completed but very little additional work is necessary to enable shipments to be made from the pockets.

The top tram plant at Gardner went into operation the first week in December, and the Mackinaw plant will go into operation about Jan. 21st, 1919. Prior to Dec. 1st, rock had been handled on the top landing at the Gardner by using a puffer to pull back the empty car. Before this method was used, rock was hoisted on cars on the cage and trammed from the shaft by hand. Ore was not encountered on the Gardner property until the last of December, so that it has all been handled by the permanent top tram equipment. Both rock and ore have been handled during the entire year in cars on the cage at the Mackinaw shaft. The Gardner equipment was installed first, as it was expected from the drill records that ore would first be encountered on this property. Actual development of the mine resulted in the first ore being found on the Mackinaw property, after which work was pushed as rapidly as possible in order to complete the installation of equipment at the Mackinaw, so that all the material hoisted could be handled on the landing.

When the large amount of sulphur was found in the ore in August, all construction work was temporarily stopped. It was resumed again in September, when it was decided to proceed with the opening of these two properties.

A contract was let in the spring for the erection of 10 double houses and three cottages. Owing to shortage of labor and other delays, only one double house had been entirely completed by the end of the year,

however, three others are practically finished and three others nearly ready for plastering. The three cottages have been completed. There are a number of applications for houses already and more will be made as soon as additional men are obtained.