DEPARTMENTAL REPORT OF THE MAGNET MINE

INTRODUCTION -

The Magnet Mine was examined in detail in 1922 and the report thereon is included in Bulletin No. 33. The Mine was again visited in February 1926 and a typewritten report prepared bringing the information up to date.

During March, another visit of inspection was made, and the present report is based upon the results of this visit.

MAIN OR MAGNET LODE -

In 1926 the main shaft had been sunk to the No.16 level. The crosscut at this level had not been driven while that at No. 15 had not long previously cut the lode and only a small amount of driving north and south had been carried out. Since 1925, the No.15 level has been fully opened up and the No.16 crosscut has been driven and the No.16 level opened up.

No.16 Level. - The crosscut was driven and intersected the lode in the anticipated position. The north and south footwall drives were put in as usual and the crosscut continued westerly through the lode. The south footwall drive was driven in ore a short distance west of the "slide" which occurs near the footwall of the lode. Wing stopes have been opened out along the drive, but the ore is not so prominent as at No.15 level. At that level the main ore shoot had nearly an east-west trend (until it joined the footwall) and a southerly dip or pitch. This shoot does not come down to No.16 level as so far opened up, but should be encountered between Nos.15 and 16 levels.

The west side of the wing stopes show green altered igneous rock and the east side more or less unaltered dyke.

Further south, a vein of ore runs to the east and still further south the drive intersects the "slide", but there is no ore above (west of) the slide. It is apparent therefore that at the south end at N.16 level the ore did not make right over on to the slide or footwall as at the levels above.

At the face of the drive, the slide is visible in the foliated bastite alteration product of the websterite.

Near the south end of the drive a 50 foot crosscut has been driven to the west. The first 20 feet were through hard, fresh, fine-grained ultrabasic rock. A fissure from which water is issuring has a bearing of 35°. To the west, the rocks are softer and more altered, but gives place to a fine-grained greenish rock. At the face a fissure bears east of south and is yielding water. Narrow veins and lenses of ankerite appear near the face. This crosscut has not been driven sufficiently far to intersect the dolomite hanging-wall or the Back lode.

The north footwall was driven on the ore which has a flat dip to the west. At the point where the footwall usually meets the ankerite hanging wall the ankerite was not present, but the drive continued in ore and further north picked up the Back lode occurring to the west of and above the dolomite as usual. The reason for this (as will be seen below) is that for a distance of some 40 feet the Magnet and the Back lodes joined together to the exclusion of the ankerite. Such a feature has not occurred previously in the lower levels of the mine.

The continuation of the crosscut passed through

the apex of the Magnet lode and entered the ankerite hanging wall as usual. About 10 feet of ankerite were passed through and then its hanging wall, much water issuing from the footwall of the ankerite. The Back lode formation was passed through and then more or less altered diabase porphyrite with a few veins of ankerite to the face.

The whole of the ore on the ground floor at this level has been stoped on both the Magnet and Back lodes and stoping is now proceeding on the first floor.

No.15 level. - The south footwall drive has been extended to 150 feet. At the face the footwall is very definite with two feet of lode formation containing siderite above it. To the west vertical veins of ore are visible, but these join the footwall at the bottom of the drive. Foliated bastite (altered websterite) occurs on the east side of the drive near the face with ankeritised rock in the face. The footwall seems to be turning easterly at the face as though it would join a wall with pug which went into the footwall some 20 feet back from the face. On the west side of the drive some distance back from the face the excavation for a winze revealed a vein of ore containing up to 10 inches of galena.

The north footwall drive has altered igneous rock on the east and stopes on the west. It meets the north drive on the Back lode at 95 feet.

The Magnet lode has been stoped above No. 15 level to within a short distance of No.14 level.

Stopes between Nos. 14 and 15 levels. - These stopes are one or two sets below No.14 level. At the northern end of the stopes, the footwall ore-body is seen to trend nearly west to the ankerite hanging wall against which it ends. The dip of this portion is at a low angle to the south. From this part veins one to two feet wide trend south under the ankerite hanging wall.

At the south end of the stopes, a vein of galena 18 inches wide runs to the south in central country with ankeritised rock ("sandstone") to the west and dark unaltered rock veined with ankerite to the east.

NEW OR BACK LODE -

No.8 level. - The highest level of the mine in which the probable upward extension of the Back lode was known to occur was in a winze from the No.9 level apparently west of the main band of dolomite (ankerite.) In order to attempt to locate the upward extension of the ore in this winze, a new crosscut was driven from the No.8 level. From a point about 100 feet along the south footwall drive, this crosscut was driven westerly through upstoped ground just north of the stoped ground in the Magnet lode. At 51 feet the old hanging-wall stopes were met; at 70' a rise from No.9 level; and at 108' a drive was driven to the south on a formation two feet wide of poor grade."seconds" with bands and veins of better ore (the veins trend 30 east of south into stoped ground.

The crosscut continued to 151 feet through altered diabase porphyrite with veins corresponding to the above.

This crosscut would be some 50 to 100 feet north of the

winze at No.9 level. It might perhaps, have enabled more definite results to be obtained if the ore had been followed by rising above the winze at No.9 level. The position now at No.8 level is that one cannot be sure which, if any, of the veins or the formation correspond to the Back lode.

No.13 level. - Additional driving has been carried out on this lode since the last report. The south drive is 150 feet from the crosscut, but no stoping has been carried out above it. At the face the lode is resting directly on the hanging wall of the ankerite. Both walls of the lode are well defined, but the footwall is locally more vertical than at the two lower levels (Nos. 14 & 15). There is some good ore in the face on the hanging-wall side. At the south end of the levels the galena is generally of the coarsely cubical type.

The north drive is 250 feet in length, ore occurring along the whole length, but is only stoped for a portion of the distance. Towards the north end, the ore contains much sphalerite and would be better left intact until such time as the zinc contents of the ores can be recovered.

No.14 level. - The south drive from the main crosscut was driven 140 feet and stopes exist above the full length of the drive. At 100 feet a vein of ore went into the hanging-wall at right angles and at this point the hanging wall veins (several up to 3 inches wide) were dropped and the footwall portion of the lode followed. The face of the drive consists of altered (ankeritised) diabase porphyrite. Near the face the ankerite bulges and so displaces the footwall of the lode.

In the stopes above the south drive, the lode is generally poor on the footwall side and better on the hanging wall side. Right against the hanging wall there is a 15 inch band of red jasperoid rock which is an unusual feature in the mine, not having previously been met with.

The north drive from the main crosscut is very short. Further work to the north has, however, been carried on from the end of the north footwall drive on the Magnet lode. A short south drive, a longer north drive and a short westerly crosscut have been driven. There is nothing additional to report in the two drives. The crosscut passes through diabase porphyrite with no sign of the variolite that is exposed in the face of the main crosscut.

No.15 level. - In 1926, the Back lode had been cut in the main crosscut, but no driving has been carried out.

The north footwall drive on the Magnet lode connects with the Back lode, 95 feet from the main crosscut. The north drive extends 213 feet along the Back lode from the north footwall drive. This drive exposes solid ankerite on the east and altered diabase porphyrite on the west. The ore over the drive has been stoped up for one set along a large portion of the drive. In the stopes the lode is seen resting directly on the ankerite. Near the face the ankerite bulges to the west to the exclusion of the lode. At the face a narrow formation occurs between the ankerite and altered diabase porphyrite. A short distance back from the face a crosscut east passes through-

(1) 6' - 8' ankerite with a good footwall highly polished.

(2) 2' soft black puggy material with blebs of ankerite, probably representing material in the fault plane.

(3) Breccias of the Dundas series.

This crosscut was designed to cut any northern extension of the Magnet lode, but exposed only the extension of the hanging wall (footwall of the ankerite) with puggy material under it.

South from the main crosscut (not quite in the same position as the original) the drive was put along the hanging wall of the lode. The stopes are two sets wide along this drive to near the face. The footwall was well-defined and consisted of ankerite, while fine-grained diabase porphyrite was exposed in the hanging wall. The ore was of good grade at first but became poorer to the south. This may be merely a natural feature of the lode or the shoot may have risen to the south above the level. At the face, a vein of galena occurs on the footwall. The face consists generally of greenish ankeritised rock with another wall 3 feet above the footwall and having one foot of soft material on it.

No.16 Level. - The main crosscut passed through the Magnet lode, and then 10 feet of ankerite as at No. 15 level. The Back lode is rather poor in the crosscut, there being one to two feet of soft formation, then ankerite with some galena, more soft altered rock and then harder rock, the face being in hard diabase porphyrite slightly altered. The footwall of the ankerite yielded much water and practically drained the corresponding portions at Nos. 13 and 15 levels.

The Back lode has not been driven on to the south of the crosscut. Neither has it immediately north of the crosscut, but the wing stopes on the Magnet lode exposed the Back lode under rather exceptional circumstances. Going north from the crosscut, the ankerite can be followed for 10 to 20 feet where it ends more or less abruptly against ore which is continuous between the two lodes. In other words, along a short length the two lodes are united by a black of ore to the exclusion of the ankerite. The same feature was revealed by the north footwall drive which did not cut the ankerite wall of the Magnet lode but passed through ore until the wing stopes from it exposed the hanging wall of the Back lode. The stoping has proved that this fusion of the lodes occurs along a length of some 40 to 50 feet only.

The north drive has been driven 109 feet north from the north footwall drive and the lode has been removed by wing stoping. The first floor has also been stoped over a considerable portion of the lode. The ankerite body makes to the north as usual and separtes the two lodes with the Back lode west of the lying directly on it.

The workings reveal that in the portion where the junction of the two lodes occur the diabase porphyrite, which forms the hanging wall of the Back lode, extends into the channel of the Back lode, which in turn extends into the channel of the ankerite body to its exclusion. Where the ankerite appears again to the north the hanging wall of the Back lode turns to the west for a short distance and then resumes its normal course again.

In the stopes above the level the lode is at first narrow, but further north attains a width of 22 feet. It maintains a width of 3 sets for some distance, then decreases to 2 sets and finally to 1½ sets at face of leading stope. Going north the ankerite body gives place to altered diabase

porphyrite extremely altered and containing about 50% of ankerite chiefly in the form of veins. Some of this altered rock contains galena. The best ore is generally on the footwall side and at the northern end of the stopes is fairly low-grade although it contains manganosiderite. All along the northern workings the hanging wall is well defined.

The face of the drive is 20 feet ahead of the stopes. The footwall is not well defined and the rock behind it consists of ankeritised diabase porphyrite. The hanging wall is well defined and consists of altered diabase porphyrite. The lode consists of five feet of fine grained siderite with impregnations of galena and sphalerite.

CONCLUSION -

Since the occasion of the last visit in 1926, the greatest developments have taken place at Nos. 15 and 16 levels.

The Magnet lode has generally maintained its usual characteristics at these levels. At No. 15 level the important footwall ore-body had rather an east-west trend before coming on to the footwall. This feature has not been repeated at No.16 level, but should be met with between the two levels. At No.16, the footwall ore-body is not quite so prominent as in the levels immediately above it.

The New or Back lode at Nos. 15 and 16 levels has assumed definite characteristics slightly different to those at No. 14 and higher levels. It is separated from the hanging wall of the Magnet lode by a well-defined and massive body or lode of white ankerite, ranging in width from 7 to 10 feet. The Back lode appears to be becoming of greater dimensions and generally more important at the deeper levels and at No.16 level it forms a considerable body of ore ranging in width up to 22 feet.

One very interesting feature occurs at No.16 level where for a distance of 40 to 50 feet the Magnet and Back lodes join together to the exclusion of the ankerite. Whether this feature will continue to any great depth cannot be foretold with the evidence available at present.

The geological conditions are much the same at the lowest level. The Dundas slates and beccias from the footwall country.

Near the footwall of the Magnet lode, there is apparently a crushed zone, which at higher levels included a body of websterite porphyrite. This body appears to be getting smaller at depth, if in places it is present at all. South along the footwall a foliated bastite rock occurs, which apparently represents altered websterite as in the upper levels. The country between the footwall and hanging wall of the Magnet lode is apparently more or less altered diabase porphyrite, whereas in the upper levels the websterite porphyrite extended into the south central part of the Magnet lode. The hanging wall of the Magnet lode is a white ankerite wall often slickensided and coursing north 30° to 40° east. This wall also forms the footwall of the lode of ankerite ranging in width from 7 to 10 feet. The hanging wall of the ankerite is the footwall of the Back lode. The country west of the Back lode is a variable rock type described as a diabase porphyrite slightly ankeritised and veined with ankerite.

North along the lode the ankerite gives place to altered diabase porphyrite and either of these is separated from the Dundas rocks to the east by one to two feet soft puggy material in a fault plane.

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