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GEOLOGICAL SURVEY OFFICE,
MINES DEPARTMENT,
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INTRODUCTION. The Big Ben mine is situated in the North Zeehan district about four miles to the north-west of the Zeehan township. Access is gained by means of the Granville Harbour tramway of two foot gauge, a short track connecting the mine with the tramway.

The Big Ben lode was discovered some years ago by Messrs. Clark & Blacklow who carried out the first portion of the developmental work on it. Later the West Coast Silver Lead Company was formed and further developmental and mining work was performed. After this company ceased operations the mine again passed into the hands of Messrs. Clark & Blacklow who have continued the developmental and mining work.

GEOLOGY. The countryin the vicinityof the mine is occupied by a series of quartzites and black slates of Lower Palaeozoic age (either Silurian or Cambro-Ordovician).

The lower ground to the east of the mine is occupied by a dark gray tillite of Permo-Carboniferous age. This rock contains numerous pebbles some of which are facetted and polished in the manner typical of glacial pebbles.

Narrow tracts of recent alluvium occupy the stream beds.

MINING WORKS. The mine openings comprise -

1. A main shaft sunk to 37 ft. through tillite.
2. An underlay shaft sunk to a vertical depth of 47 ft.
3. A north-north-easterly drive for a distance of 200 ft. from the 47 ft. level of the underlay shaft.
4. Hanlon's adit driven west-north-west for approximately 100 ft, with short north and south drives on the lode.

Hanlon's adit level is some 20 feet above the 47 foot level, and is connected therewith by a winze and stopes.

The collar of the main shaft is 10 feet lower than that of the underlay shaft. The main shaft is not connected with the other workings.

THE LODE. Only one main lode has beenopened up in the mine, although of course it may break up into two or more veins at certain places and other subsidiary veins may branch off from either the footwall or hanging wall. The lode has a general trend from north-north-east to south-south-west, and a dip to the east at 60 degrees. At the northern end on the surface the lode appears to give place to a number of small veins in the quartzites. At the bottom of the underlay shaft at the southern end, it appears to trend more to the west.

At the southern end the lode is confined to a channel ranging up tothree feet in width. Towards the north, especially from the vicinity of Hanlon's Adit,

it consists of two series of veins - the footwall and hangingwall - at distances from one another ranging up to 10 feet.

Of the subsidiary veins the following are the most prominent. One trends into the footwall in a general westerly direction just north of the underlay shaft, and can be seen in both the top and bottom thereof.

About 70 feet north of the underlay shaft an easterly crosscut has exposed a two-inch vein 20 ft. east of the main lode.

North of the winze from the adit level a vein makes into the footwall in a general northerly direction. It has also been cut in a westerly crosscut further north where it eventually turns along a wall coinciding with the bedding with a northerly strike and a high easterly dip.

THE ORE-SHOOTS.

The drive at the 47-foot level has exposed the lode along a length of approximately 200 feet. The stoping, however, has revealed that the whole of the lode is not of the same grade, but occurs in shoots (regulated of course by the existing mining and treatment methods).

Two shoots have been proved to occur and have been termed the Southern shoot and the northern or Hanlon shoot. The southern shoot is about 60 feet in length and extends from the underlay shaft northwards. There is then a length of 60 to 70 feet composed of lower grade ore with small patches of good ore which have been mined by small irregular stopes. This is succeeded by the Hanlon shoot which is 60 to 70 feet in length.

Judging from the shape of the stopes and the statements of Messrs. Clark & Blacklow the two shoots have northerly pitches.

THE ORE. The ore consists essentially of galena and a small amount of sphalerite together with the gangue minerals quartz and siderite. The galena is of course the mineral of economic value for which the ore is mined. The mine is not equipped with a treatment plant, and the objective in the mining operations is to obtain as much first-class ore i.e. galena suitable for sale as possible. The second-class ore which would ordinarily be treated in a milling plant, is not mined but is left in the mine.

It is stated that the hand-picked ore gives an assay result of 70% of lead and 105 to 110 ozs. of silver per ton.

CONCLUSIONS.

It will be seen from the above that the Big Ben Lode has been exposed along a length of 200 feet at the 47 foot level. Further the present owners have sunk a winze to a depth of 6 to 7 feet below this level at a point 17 feet from the underlay shaft. This winze is stated to have exposed a good body or ore containing an average width of 8 to 12 inches of first-class galena and two feet of milling ore. Unfortunately the pumping plant was not working at the time of the writer's visit, and the winze being full of water the ore in it could not be inspected. The ore bagged on the level at the top of the winze was almost clean galena and appeared to confirm the statements made.

The object of the owners is to sink the main shaft to a depth of 100 feet, and then crosscut to the lode a distance of 25 to 50 feet. This will intersect the lode at Hanlon shoot, and a southerly drive of at least ? feet would be necessary to fully expose the southern shoot. It is understood that financial assistance is being sought under the Aid to Mining Act.

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