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REPORT ON ESPIE'S PROSPECT, RAGLAN RANGE

Location and Access

This prospect is situated on the northern slopes of the Raglan Range about one mile east of Bubb Hill and one mile south of the West Coast road.

Access is gained by the West Coast road the mine being situated some 18 miles by road from Queenstown. The road is not completed on the Hobart side and access cannot therefore be gained except by foot or on horse-back.

History

It is stated by Mr. Espie that he found specimens shed from the lode about 30 years ago but that he made no serious attempt to locate the lode. However he attempted this in recent years and was successful and applied for a reward claim in 1929 and has carried out prospecting work at intervals since.

Topography

The Raglan Range rises steeply above the south side of the Collingwood River valley. The numerous small tributaries of the latter which drain the Raglan Range have cut extremely steep-sided valleys in the range.

Geology

The Raglan Range is composed of Proterozoic schists, the main types being mica and quartz schists. Between the prospect and the West Coast road more slatey types occur.

Near the prospect the schists, particularly the quartz types, are greatly contorted, the contortions ranging in size up to small anticlines and synclines.

The strikes and dips have therefore a considerable range and no general figures can be given.

North of the prospect and within a short distance of the road Silurian rocks occur. This point appears to be the eastern limit of the Silurian rocks in this locality but they extend westerly along the road to Mt. Lyell. The rocks consist mainly of white friable sandstones, but further west the remaining rock types, viz. conglomerates, quartzites, slates and limestones are exposed. The relationship between the Proterozoic and the Silurian rocks is a faulted one, the Silurian rocks occurring in a block faulted down against the Proterozoic schists.

Gravels of Recent to Pleistocene age occur in the flat ground at the foot of the Raglan Range.

The Mine Workings

The workings are entirely of a prospecting nature and consist of three shallow shafts, two long trenches one of which approaches a shallow open cut, and numerous small pits and irregular excavations.

The Ore Deposits

The above workings have revealed two lodes which,

though consisting of similar minerals, have entirely different structures and form and will be described separately as the "tabular" lode and the "trough" lode.

Tabular lode.

This lode has a general tabular form with an east-west strike and a dip of 20° - 30° to the north. The lode conforms to the bedding of the schists and is overlain and underlain by mica schists several feet in thickness. The mica schists above the lode are overlain by highly contorted quartz schists.

The dip of the lode is less than the slope of the hillside, so that the lode exists up the dip from its outcrop and upwards into the hill. The downward extension of the lode from its outcrop has been removed during the erosion of the valley of the creek which occurs north and west of the lode.

The outcrop or northern boundary of the lode is generally determined by a wall sometimes representing a low cliff. This wall may either represent the result of a crack and landslip which has developed on the steep hillside, or an older fault. There is also the possibility that the landslip or crack coincides with an older fault.

Much of the workings consists of irregular excavations along the outcrop of the lode in the low cliff. These have removed the lode for a distance of 3 to 4 feet up the dip along a length of 10 - 12 feet. At the outcrop it was stated that the lode was mainly galena, but in the face of the excavation it was seen to be pyrite and magnetite. The lode is 2 feet wide opposite No. 1 shaft, but to the west it decreases to a few inches. However around the corner of the cliff, it again increases and two to three feet of magnetite and arsenopyrite together with pyrite, limonite and quartz are exposed. Further south (up hill and also up the dip) a similar thickness of arseopyrite and pyrite occurs. Still further south it decreases in thickness and when last exposed one chain from the cliff it consists of a few inches of quartz and limonite.

The lode has only been exposed in one place north of the wall near which the galena was stated to occur, this exposure being in the No. 1 shaft. This shaft was sunk north of and againstthe wall to a depth of 6 feet. The lode is visible at the top of the southern end of the shaft and consists of 18 inches of pyritic and oxidised material the galena having been removed. The lode is underlain by mica schists (garnetiferous?) and quartz schists. Against this wall and between it and another wall to the north, there occurs 3 feet of rubble, apparently representing infillings from the surface. In the north end of the shaft, pyritic and oxidised material occurs below mica schists but at a level some three feet lower than that at the south end of shaft, suggesting a downthrow to the north. These walls may therefore represent a fault plane or else cracks due to land slips giving the same effect.

From No. 1 shaft the wall or low cliff trends to the east and is said to have cut the lode off as at No. 1 shaft. The lode has been excavated back into the cliff while an adit was also driven in a general easterly direction for about 20 feet to connect with No. 2 shaft. The adit was filled in but the No. 2 shaft was available for inspection.

The lode is exposed on the bottom of the south side and consists of magnetite which it is stated was three feet thick. The lode does not occur on the northern side, but ends abruptly against a wall. This wall has an east and west strike with a northerly dip, and has pug under it. This, in conjunction with the fact that different schists appear on opposite sides of it, suggests that the wall is a fault plane and that the lode to the north has been faulted. It was probably for this reason that a long trench some 10 feet further east did not cut the lode, as the trench was wholly on the northern side of the fault plane.

No. 3 shaft was south-west of No. 2 and was filled with water. However it was south of the fault and it was only necessary to sink to intersect the lode.

The lode will continue some distance east of the No. 2 shaft, but it has not been prospected for. Any prospecting operations should be carried out south of the fault.

Trough lode.

About a chain east of the above workings a long open cut has been dug with a general bearing of 123°. On the south-west side of the cut there appears highly contorted quartz schists with a strike parallel to the excavation, with no lode showing. Judging by the descriptions of the occurrence of the lode in the cut, it occurs in the form of a tilted "trough" or "inverted saddle" reef.

The axis of the syncline or trough dips west at an angle of 30° - 50°. The upper limb should intersect the surface a short distance east of the cut but it has not been sought except on the edge of the cut. The lower limb has not been prospected to any extent, a shallow shaft in the bottom of the cut being the only work. This could not be examined and it is by no means sure as to what is the dip of the lower limb. The lode consists of magnetite and arsenopyrite while some galena was said to have been exposed in the shaft.

The lode has not been opened up sufficiently far to the south to reach the fault plane which cuts off the "tabular" lode. If this were done it might be found that there was a direct connection between the two lodes. In any case they are composed of similar ore and have been derived from the one source.

Conclusions

The two lodes have been described above as regards their shape and characteristics. While they have only been prospected over a small area, the results are not sufficiently encouraging to warrant further work. The greatest disadvantage is that the materials of the lode have no commercial value. They comprise magnetite, arsenopyrite, pyrite, and quartz. The magnetite would be marketable as an iron ore only if present in large quantities which it is not in this lode. Arsenopyrite would be difficult to market at present and in any case the width of the seam present is too small for cheap production.

The galena found would have been marketable but it was apparently confined to a few points along the fault plane. The ore has been tested for gold by the interested party and it was stated that assays were always low and so the ore has no value as a gold ore.

The tabular lode could be traced to the east, but there is no indication that its nature will alter. The portion north of the fault has been almost entirely removed by denudation and it is almost useless endeavouring to find the lode on the opposite side of the valley.

The trough lode could be traced to the south and the lower limb explored at depth, but once again there is no indication to suggest a change in the nature of the ore without which the lode is valueless.

Signed (P.B. Nye)

GOVERNMENT GEOLOGIST.

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