

thousand feet high, on which rests a snow cap, terminating in peaks which are 2,000 feet above the lake below. Practically, this entire face, some 4,000 feet wide by 1,000 feet high, shows the strong red colour due to iron stain, while at the base there are thousands of tons of the same rock which have been mined by the action of the elements. A closer examination shows this cliff to be a granitoid rock,\* mineralised with copper pyrites, pyrrhotite and pyrite in varying proportions, some zones showing strong mineralisation, while in others it is more sparse. To the west the rock assumes a brecciated structure and has been cemented together by a filling of calcite, with a considerable impregnation of copper carbonates and into this zone a tunnel has been driven a distance of 31 feet. The ascent of the bluff is somewhat dangerous, owing to the rather precarious foothold and the absence of vegetation, the top being reached at an elevation of 1,375 feet above the small lake. From the top of the bluff a snowslide was followed until a further elevation of 500 feet was reached, at which point the ore is uncovered and shows the strongly mineralised granitic mass which is seen to penetrate a nearly horizontal strata of limestone, alternate bands of which continue to the top of the mountain 500 feet still higher. This sharp ridge, with an altitude of 5,700 feet, may be considered as the backbone of Vancouver island, shedding the water to the south down the Alberni canal, to the north-east down Buttle lake and the Campbell river, and to the west by Bear river into Clayoquot sound.

**SUMMARY.**—The mineralised zone, showing in the face of the cliff to the north of the basin and forming the great mass of low grade mineral on the property, is so large, so inaccessible, and the mineralisation so scattered, that it would be impossible to obtain anything approximating an average general sample of the exposure without the expenditure of an amount of time and money not justifiable under the circumstances. However, at the foot of the cliff, and as illustrated in the accompanying sketch, there is a talus extending the whole length or width of the mineralised zone, made up of material broken away from the whole face of the zone in question. While this talus may to a certain extent have been affected by weathering, it still may be considered a very approximate sample of the inaccessible cliff. Samples were taken from this talus, from which it is judged that approximately the central portion of the mineralised zone will assay from  $\frac{1}{2}$  to 1 % copper, with from  $1\frac{1}{2}$  to 2 oz. silver per ton, and a trace of gold. These values extend over a width of about 1,500 feet, while to the right the mineralisation gradually fades off into the country rock.

To the left of the mineralised zone is what has been called, for purposes of designation, the "brecciated zone," and which is merely a continuation, to the left, of the mineralised zone which has here been subjected to a crushing due to movement, and in which the interstices between the fragments of the rock have been filled with secondary minerals, chiefly calcite, with some carbonate of copper, forming a secondary enrichment. This secondary enrichment has taken place, as would be expected, along defined channels, producing streaks of higher grade mineralisation often forming commercial ore. Here, again, no general sampling was possible; although a tunnel has been driven for some 31 feet into the bluff, it was found impossible to examine the face of the cliff for 10 feet on either side of the tunnel mouth.

\* The following is a report of Dr. J. A. Dresser, of Montreal, of a microscopic examination made on two samples, the light and the dark-coloured varieties, of this rock:—

"No. 4,069.—*Light variety.*—This is a holocrystalline, a fine-textured rock having a light grey colour, and is flecked with small needles of green hornblende. In the slide it is found to consist of feldspar, hornblende and quartz. The feldspar is principally orthoclase, although small amount of plagioclase is also present. The hornblende is much altered, chiefly to chlorite. Quartz is present, both in large crystals and also filling smaller interstitial spaces. This rock is a granite porphyry.

"No. 4,070.—*Dark variety.*—This is a porphyritic rock. The larger crystals or phenocrysts consist of hornblende and feldspar; the former is green and occasionally somewhat chloritized. Feldspar crystals are well formed and belong to the lime soda series. One crystal showed symmetrical extinction parallel to its line of twinning, which was according to the albite law, at an angle of thirty degrees on either side, thus indicating that its composition is that of an acid labradorite. The groundmass is a finely crystalline aggregate of feldspar and biotite. Angular grains of magnetite are scattered somewhat sparingly through the rock. It is a porphyrite."