

A.D. 1908  
ALICE ARM

GEOLOGICAL NOTES  
FROM  
DR. BANCROFT'S REPORT  
RELATING TO  
THE DOLLY VARDEN AND WOLF MINES.

018629

Geologically these two mining properties have many features in common. In fact, differences are chiefly of degree rather than kind.

(1) They are both situated within a wide area underlain by fine to medium-grained, greyish-green to reddish porphyrites, of an andesitic composition which are probably intrusive into surrounding areas underlain by argillites, tuffs, etc. These porphyrites are, however, older than the vast granite intrusions of the Coast Range from which emanated the mineralizing solutions that developed the ore bodies at the Dolly Varden, the Wolf, and at many other points within these mountains.

(2) Both at the Dolly Varden and the Wolf, the quartz value developed along zones of fracturing and shearing within the porphyrites. These veins owe their dimensions chiefly to the replacement of the porphyrites immediately adjacent to the zones of fracturing. At the Wolf, shearing of the porphyrite within the zone now occupied by the vein is more in evidence than at the Dolly Varden.

(3) At both properties the quartz veins contain pyrite, ruby, silver (chiefly pyrargyrite) argentite, zinc blende, galena, specularite, occasionally a little native silver and a few grains of a pink carbonate which is probably rhodochrosite. Some of the ore at the Dolly Varden was observed to contain a few grains of barite.

(4) Within the workings of the Dolly Varden three dark intrusive dykes, approximately 2, 4 and 10 ft. in width, respectively, have been encountered and a narrow dyke was also observed cutting Vein No. 2 at the Wolf. These dykes were injected subsequent to the development of the ore bodies and had nothing to do with the origin of the latter.

(5) Glaciation has planed off the veins to such a depth that the zone of oxidation has been removed and the secondary sulphid zone has been exposed. Under such conditions, high silver values usually rapidly decline within comparatively shallow depths viz. do not exceed a few hundred feet below surface. Occurrences of native silver are confined to a few instances where thin flakes of this metal have developed on minute cracks within ore near the surface, or in the close proximity of fissures, which have permitted descending water to reduce silver-bearing minerals. With depth, the ruby silver and probably the argentite will decrease in quantity, and it seems reasonable to believe that the primary ore will be found to contain pyrite, argentite, argentiferous galena, zinc blende, specularite and a little stibnite. What the silver values of the primary ore will be found to contain is problematical.

(6) At the Dolly Varden, at least two and possibly three periods of faulting are in evidence, one of which developed prior to mineralization and another later. While at the Wolf no faulting was observed, much of the quartz has been more or less minutely fractured and brecciated, and then cemented with later quartz, and secondary silver bearing minerals; it is chiefly due to this fact that values in the quartz veins of the Wolf are higher along certain streaks or bands which lie within low grade portions of the veins. Hence, from a geological point of view the main economic features connected with these deposits are;

- (a) The extent of replacement of the porphyrites.
- (b) The important fact that the exposure of the zone of secondary sulphide enrichment gives warning of quite rapidly decreasing silver values usually within a few hundred feet of the surface.
- (c) The faulting at the Dolly Varden.

The Dolly Varden is a property which will yield a considerable tonnage of exceptionally high grade silver bearing quartz. Development will be comparatively costly but if directed with due regard to data concerning faulting it is to be expected that other ore bodies than those now known will be discovered.

From No. 1 and No. 2 veins on the Wolf a large tonnage of lower grade silver bearing quartz may after the construction of the railway be obtained at a comparatively small cost.