MINERAGRAPHIC REPORT

ON

THREE SAMPLES OF ABCO ORE

N. L. King,

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INTRODUCTION

The properties operated by Abco Mines Limited are situated near the head of Herbert Arm on the west coast of Vancouver Island, Clayoquot Mining Division, B.C. A very rugged topography prevails, with a maximum elevation of over 7000 feet in the ranges behind Clayoquot Sound. Sketch Map, Plate 1, indicates the location in more detail, while inset photograph, taken from the Abco property, shows the approach via Herbert Arm. The property is reached by Canadian Pacific steamer from Victoria to Ahousat and from there by launch for 12 miles to the head of Herbert Arm.

GENERAL GEOLOGY

The central and highest portion of the Vancouver Island rock formations are late Palaeozoic in age, striking north west, and representing an axis of uplift. Overlying, and spreading outwards to the coasts are great thicknesses of fossiliferous members of the Vancouver Group, of early Mesozoic age.

In the Herbert Arm and Moyeha River sections, erosion has cut deeply into these folded Mesozoic formations of the western watershed and exposed an extensive area of deep seated plutonic intrusives of Jurassic age, associated with the intrusion of the Coast Range batholith, and forming the granitic core of the mountains.

The best gold showings on the Moyeha River and at the head of Herbert Arm are obtained from shear zones and fissure veins located on the south west side of a narrow syncline. This syncline, striking north west, and with a width of two to three miles across the strike, consists of extrusive and intrusive greenstones, members of the Vancouver Group that have been folded and deformed by intrusions of the Coast Range batholith. The central part of this belt of gold-containing volcanics goes deeply into the flanking granodiorite, while it is cut off to the south east by granodiorite intrusions towards Bedwell River, and similarly bounded on the north east in the vicinity of the Moyeha River.

Strong shearing action roughly parallel to the granodiorite contacts is the principal type of pre-mineral fracturing, and it is evident from the strike of dykes that fracturing at right angles to the main contacts assumed importance as furnishing channels for minor intrusions. It is considered probable that veins of the

several systems of fracturing intersect at depth and produce better ore shoots than have yet been found.

MARY MCQUILTON GROUP

The Mary McQuilton group of 12 claims comprises a shear zone containing parallel veins separated by shattered andesite which is also mineralized and assays for gold. The shear zone has a width of 12 feet and strikes north 45 degrees east, and dips 50 to 60 degrees north west. The Mary McQuilton vein is at an altitude of 2525 feet. Assays taken by Dr. M.F. Bancroft, Canadian Geological Survey, in 1935, gave returns as follows:-

Weight of sample	2 lbs. 3 oz.	1 lb. 13 oz.
Silver	6.21 oz./ton	2.53 oz./ton
Gold	13.09 oz./ton	4.31 oz/ton

MINERAGRAPHIC ANALYSIS OF HIGH GRADE SAMPLE

Minerals Identified:

Pyrite
Chalcopyrite
Galena
Gold
Quartz

PYRITE AND QUARTZ

About 25% euhedral pyrite crystals, ranging roughly from 600 microns to 2 mm. in diameter, heavily fractured and in places shattered. Surrounding massive quartz comprised about 70% of the surfaces observed. Earlier, vitreous quartz surrounded the pyrite crystals and cemented fractures. In the massive areas of secondary, milky quartz were included small, well-defined, isolated pyrite grains showing heavy boundaries against the quartz. These boundaries are regular, the pyrite grains being euhedral or rounded. Interstitial early quartz, smooth quartz-pyrite boundaries, and euhedral

pyrite crystals suggest a continuity in deposition between the two minerals, with pyrite crystallizing first and fracturing, before the quartz crystallized.

CHALCOPYRITE

Minor in quantity, bordering and included in pyrite. Borders are irregular and crenulated against the pyrite and quartz, and inclusions are ragged. Refer Plate 2. Also occurs cementing the fractures in pyrite, as shown in Plate 3. Or isolated in quartz, showing smooth, curving boundaries, as in Plate 2.

GALENA

Very infrequent. Occurs as very small, rounded blebs in or against chalcopyrite, with boundaries between the two smooth and extremely fine. Refer Plate 3.

GOLD

As large irregular patches, up to 2 mm. in diameter, as isolated inclusions in quartz. Also as much smaller areas bordering and included in pyrite. Refer Plate 4. The gold-pyrite boundaries are irregular and rather indefinite, though this latter may be due to the similarly rough surface of both minerals in the sections observed.

LIVESLEY VEIN

The Livesley vein, at an altitude of 2360 feet, strikes north 35 degrees east and dips 30 degrees south east. The hanging wall quartz seam varies from 2 inches to 10 inches in width. On the footwall side the widest veinlet is a parallel series of

interlocking veinlets forming a stockwork. Assays up to 6 oz. in gold per ton are obtained from narrow widths, and an assay across a width of 8.5 feet including some dense andesite and a couple of quartz stringers assayed 0.07 oz. gold per ton.

MINERALS OBSERVED:- Pyrite
Galena
Chalcopyrite
Gold
Quartz

PYRITE AND QUARTZ

About 35% euhedral pyrite crystals, from 0.5 mm. up to ¼ inch in size, much fractured, in and veined by massive quartz. Also showed rounded, small quartz inclusions.

GALENA

As irregular intrusive masses, from 0.5 to 3 mm. in length, included in quartz, usually near pyrite, as shown in Plates 5 and 7. Boundaries with quartz vary from straight to crenulated. Plate 5 illustrating shows also residual inclusions of quartz in galena.

CHALCOPYRITE

Occurs as many rather regularly spaced, rounded blebs in galena, giving the latter an amygdaloidal appearance. Also as larger irregular masses in galena and intrusive into quartz, with smooth boundaries against the galena, and corrosive structure against the quartz. Both features are illustrated in Plate 5. Irregular small intrusives of pure chalcopyrite into pyrite were also observed, here showing crenulated borders. Refer Plates 6 and 7.

GOLD

Observed as small grains completely enclosed by pyrite, as shown in Plate 6, or bordering inclusions and veinlets of quartz in pyrite. No gold observed in galena or chalcopyrite.

(3)COTTER VEIN

The Cotter Vein, at an altitude of 1770 feet, comprises a mineralized fissure area in a 12 foot dyke. The sulphides are very finely shattered, and the dyke rock itself is shattered and mineralized to some extent. Gold values from the sample observed in polished section were $2,000 per ton.

MINERALS OBSERVED:- Pyrite
Galena
Chalcopyrite
Sphalerite
Gold
Quartz.

PYRITE

Very finely shattered, about 85%.

GALENA

About 6%, with minor inclusions of chalcopyrite showing smooth fine boundaries against the pyrite. The galena veins and cements the shattered pyrite. Gold occurrences in this section were all found in galena veining pyrite. Plate 8 illustrates.

CHALCOPYRITE

Intergrown with galena as interstitial filling of pyrite

fractures, contacts and inclusions with galena very smooth. No gold observed associated with chalcopyrite.

SPHALERITE

As minute, dark blebs in galena, infrequent, and showing smooth, fine boundaries. No gold observed associated.

QUARTZ

About 5%. As irregular areas within the shattered pyrite, with marginal islands of pyrite grains, and a few crenulated inclusions of galena. No gold observed in quartz.

GOLD

Very small to submicroscopic grains in galena where galena veins pyrite.

± - ± * * * * * * * * * ± - ±

SUGGESTED PARAGENESIS

1. Pyrite and quartz, fracturing of pyrite crystals followed closely by cementation with later-crystallizing vitreous quartz.
2. Fracturing of quartz and pyrite.
3. Galena, chalcopyrite, sphalerite, gold and milky quartz.
4. Supergene alteration,- all specimens friable, and limonite observable macroscopically along fresh fractures.

CONCLUSIONS AS TO GOLD

Belonging to a late period of mineralization, mesothermal or epithermal, with associated galena, chalcopyrite, sphalerite and quartz, lying in fractured portions of an earlier period of mineralisation consisting of pyrite and quartz. Favorable locations for gold are as small grains in fracture areas in pyrite, where the fractures are cemented by galena, or else as larger gold showings in milky quartz. This latter is the only observed gangue mineral. No gold was observed associated with chalcopyrite or sphalerite.

Assays for silver, in the absence of silver minerals, and from specimens containing very little galena as a possible silver bearing mineral, indicate that the gold carries considerable silver.

References

Geological Survey of Canada - unpublished report by M.F. Bancroft, 1935.
B.C. Minister of Mines Report - 1935.

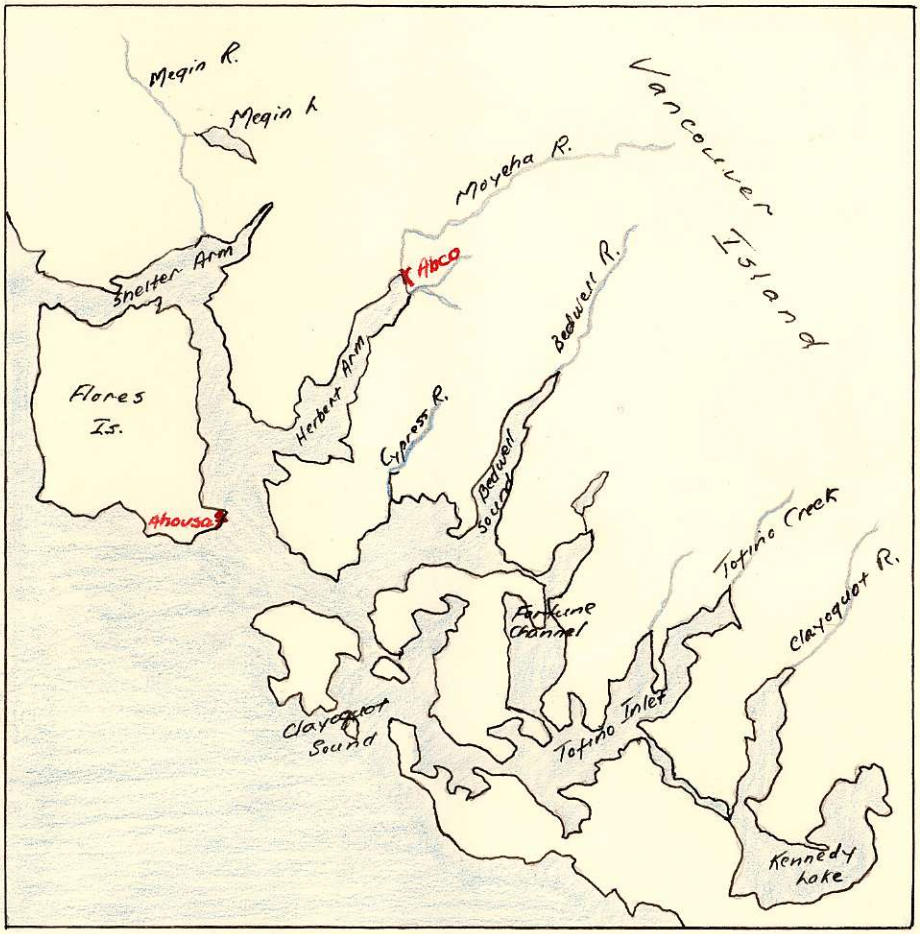
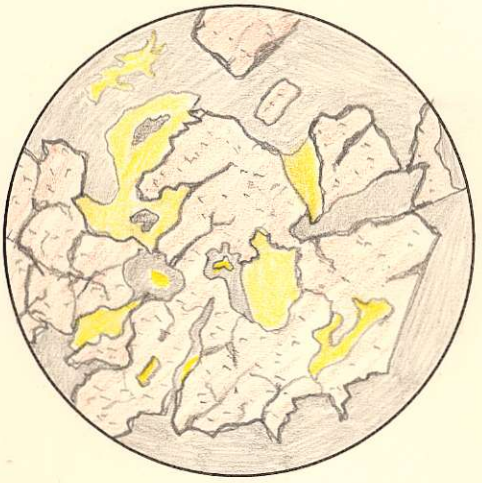


PLATE 1.

Sketch map showing location of Abco properties, on the west coast of Vancouver Island.

MARY McQUILTON
VEIN

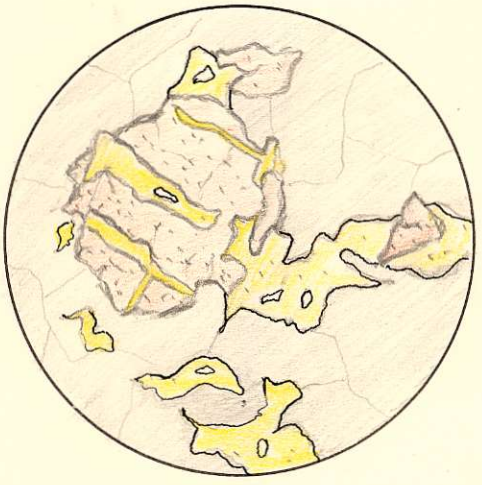
PLATE 2.



Showing chalcopyrite (yellow) and second generation quartz (gray), with smooth, curving mutual boundaries, intrusive into fractured pyrite (tan). x30.

MARY McQUILTON
VEIN

PLATE 3.



Chalcopyrite cementing fractures in pyrite, and containing small rounded blebs of galena (colorless). Galena-pyrite boundaries indicate contemporaneity. x30.

MARY McQUILTON VEIN

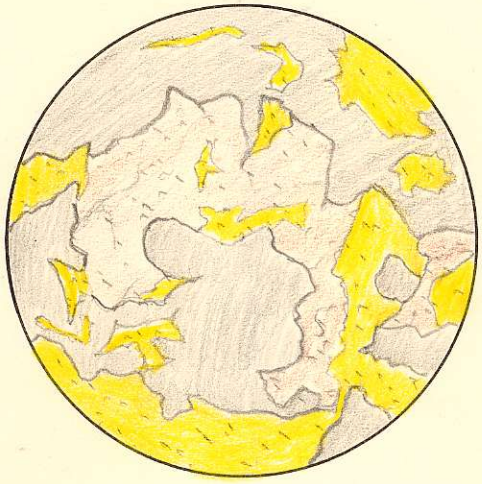


PLATE 4.

Gold (yellow) in quartz and intrusive into pyrite (tan). x30.

LIVESLEY VEIN

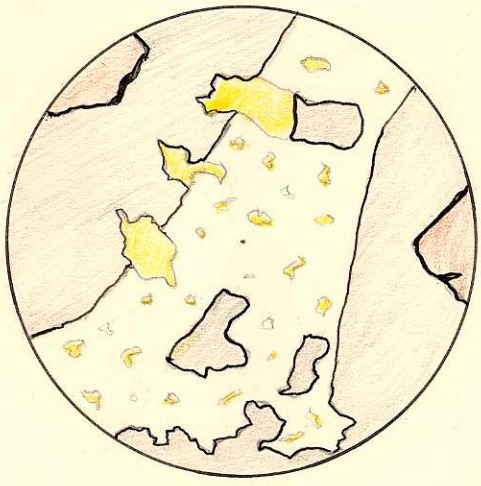


PLATE 5.

Galena (uncolored) intrusive along fractures in early quartz, showing also corrosion structure against quartz, and included cores. Chalcopyrite (yellow) contemporaneous with galena and intrusive into quartz (gray) x30.

LIVESLEY VEIN

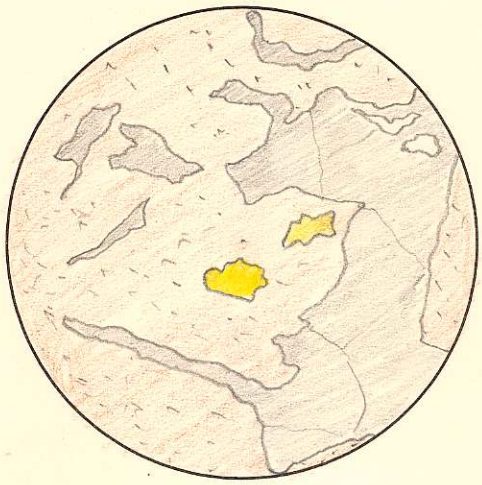


PLATE 6.

Chalcopyrite (light yellow) and gold (dark yellow) in pyrite. Irregular and well-defined boundaries indicate an age diversity, and feeders for the inclusions shown may be presumed to exist in a plane other than that of the polished section. x30.

LIVESLEY VEIN

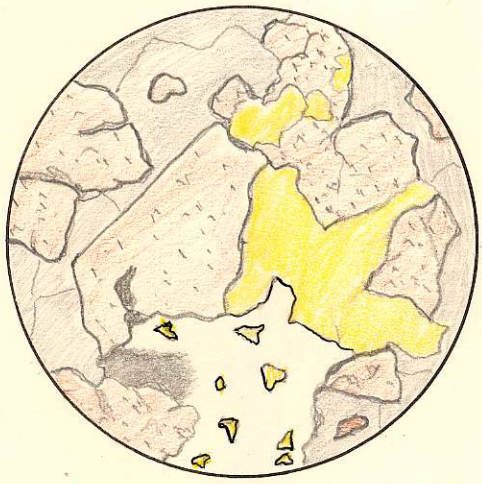


PLATE 7.

Associated galena (uncolored) and chalcopyrite (yellow) intrusive into shattered pyrite. Black - hole. x30.

COTTER VEIN

PLATE 8.

Interstitial galena (uncolored) and chalcopyrite (yellow), sphalerite (brown) and gold (red), all showing fine, smooth mutual boundaries indicating contemporaneity, and cementing shattered pyrite. Dark area - fracture crack. x120.