Omenica

600264

Harrison Property

Deer Horn Mines Ltd

Location

The properties is located on the eastern margin of the coast range mountains just east of Tweedsmuir Park. It lies just north of Lindquist lake at an elevation of 4000 ft. (Map 1)

Previous Work

In 1943 scheelite was found in slide material on the north shore of Lindquist lake by the Harrison brothers. In 1944 Frank Toubin discovered gold bearing quartz veins in the same area. Pioneer Gold Mines B.C optioned the property in 1944 and worked on it until 1946.

Deer Horn Mines Ltd was incorporated in 1950 and bought the Harrison claims in 1950. They worked on the property in 1954 & 56.

Property

The property consists of thirty crown granted claims and fractional claims, and 8 claims held by record. (Map 2)

General Geology

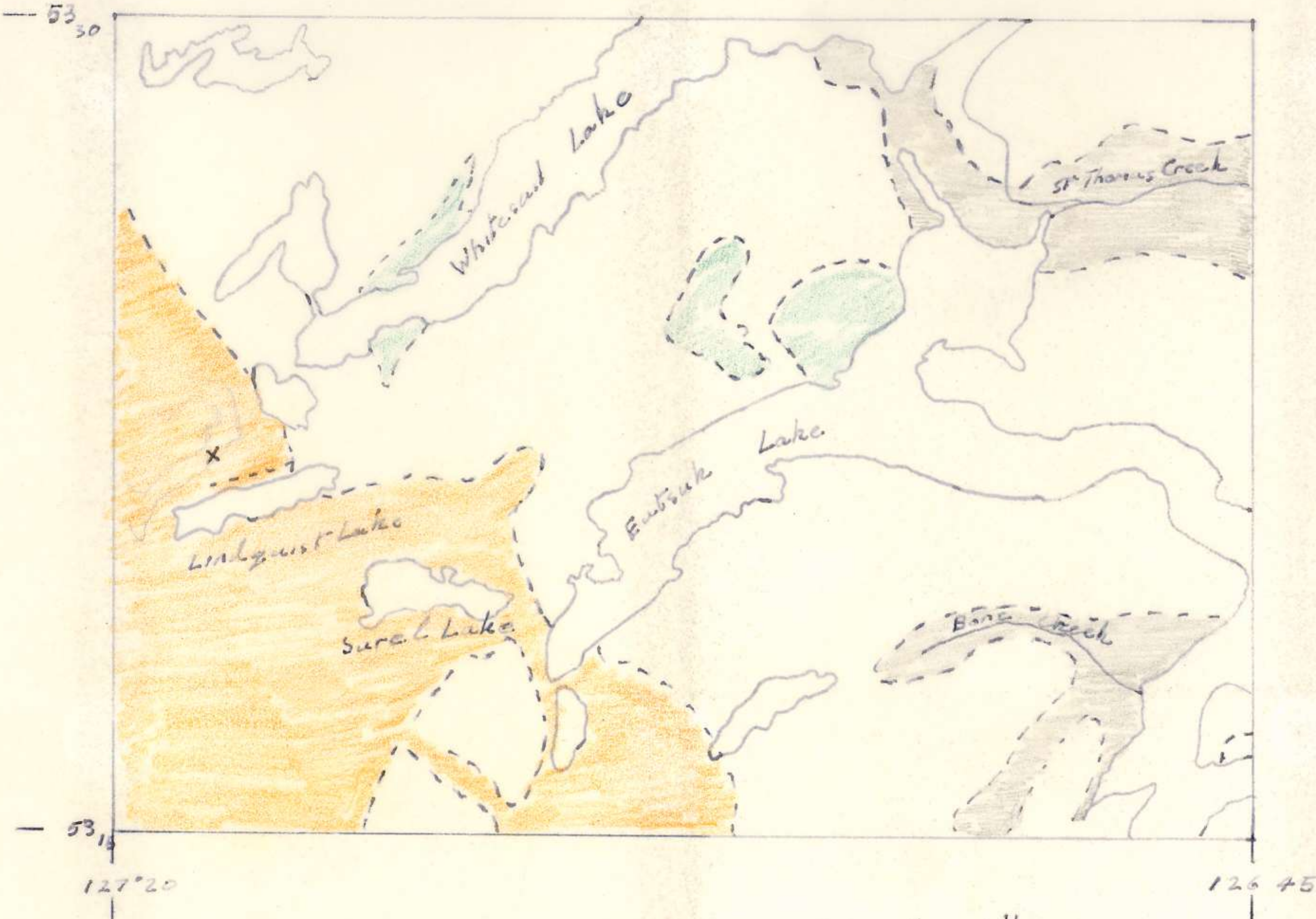
The property is on the eastern ~~range~~ border of the coast range mountains and ~~at~~ the eastern edge of the coast range batholithic complex. Granitic rocks underlie the southern half of the property while the northern half is underlain by sediments of the Hazelton Group.

The Granitic rocks intrusive into the sediments consist mostly, of, a pinkish weathering granite and minor amounts of medium grained quartz diorite.

The Hazelton sediments locally consist of slates sandy and silty greywackes argillite and tuff. Near the intrusive contact with the granitic rocks the sediments have been converted into andalusite schists. Intense shearing and alteration has occurred in the vicinity of the contact. In places silicification extends 400ft into the sediments from the contact.

Mineralization occurs in quartz veins and in stringers associated with the silicification. The quartz veins appear to represent ~~one~~ faulted segments of one vein, or branches of a single vein structure. The apparent length of this main vein is 2600ft of which 1220ft has been explored; it dips at 30° to the north with a dip length of less than 300ft. Scheelite slides also occur on the property; the scheelite is apparently derived from otherwise barren quartz veins and stringers in rocks of the Hazelton group.

Location Map



Scale 3 miles to 1"

Recent Alluvium

Diorite

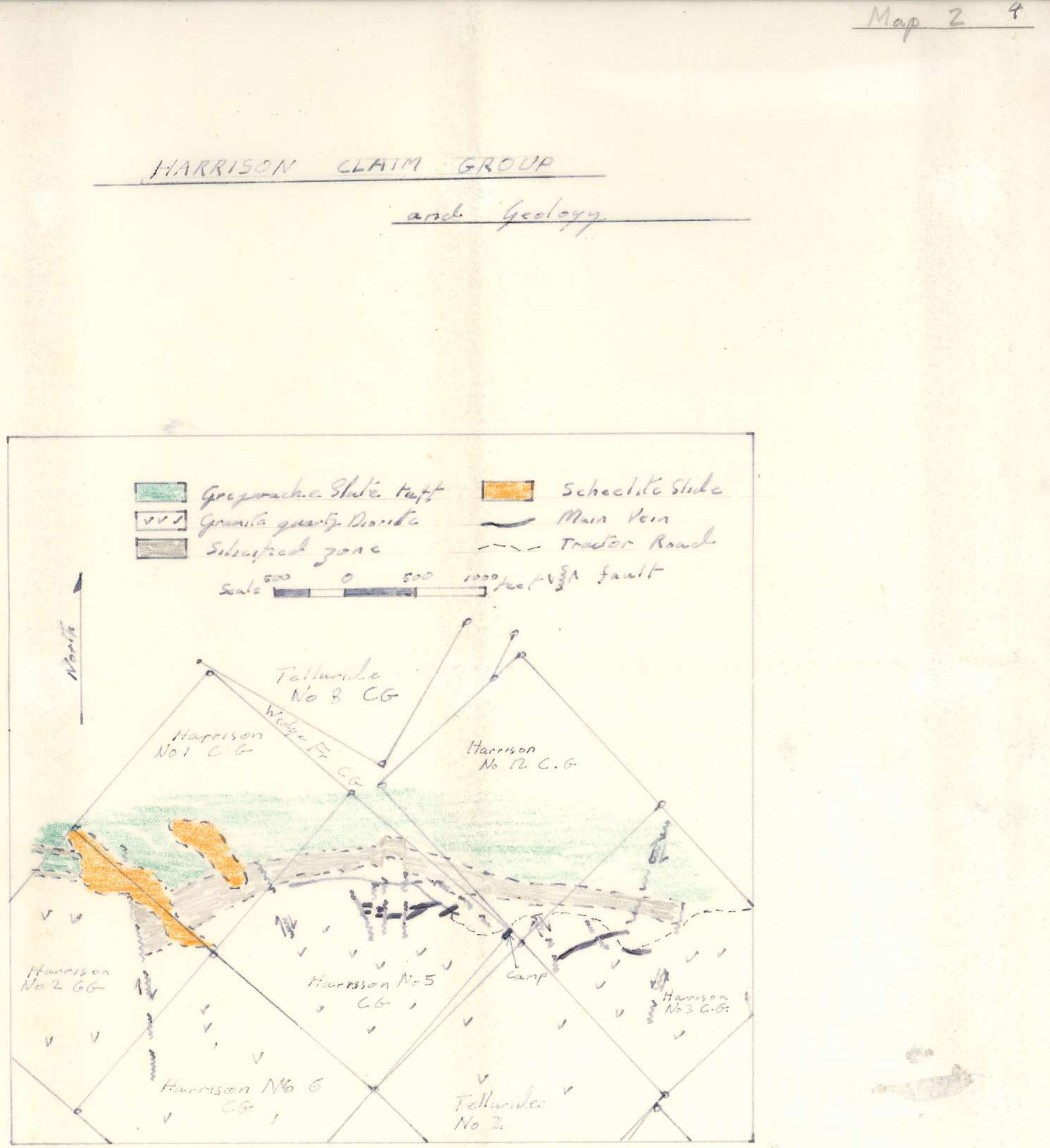
Coast range Batholith Granite diorite e granodiorite

Jurassic — Hazelton group fragmental volcanics and sediments

x Location of property

HARRISON CLAIM GROUP

and Geology



Macroscopic Description

Hand Samples

Hand samples consist of sulphides to the ~~e~~ extent of about 20% scattered through a milky massive vein quartz matrix. Scheelite occurs sparsely through the quartz matrix. The only gangue mineral apparent is quartz. Sulphides identifiable consist of pyrite chalcopyrite sphalerite ~~and~~ tellurides and galena. The sulphides occurs as small masses scattered through the quartz matrix; pyrite with associated chalcopyrite and sphalerite occurs as masses up to 3cm in diameter in the quartz vein while the tellurides fill small hair fractures or occur as pockets generally less than 1cm in diameter. vugs do occur in the quartz but it is not clear wether these represent unmineralized spaces or places where tellurides have been weathered out

Aproximate Relative proportions of sulphides

Pyrite	50%
Chalcopyrite	10%
sphalerite	5%
Galena	5%
Tellurides	30%

Microscopic Description

Minerals identified with %s

	Pyrite	40%	
	Chalcopyrite	20%	
	Sphalerite	15%	
	Arsenopyrite	< 3%	
	Galena	< 5%	
	Chalcocite	< 3%	
	Scheelite	< 3%	
	Pyrrhotite	< 3%	
Tellurides	Tellurobismuth	) Together < 15%	
	Tetradymite	with Wehrlite	
	Altaite	< 5%	
	Petzite	) Together < 10%	
	Hessite		
	Wehrlite		
Tentatively identified		Cosalite	< 1%
		Stannite	< 1%
		Gold	< 1%
Unnamed probably Tellurides			
		Mineral A	< 1%
		Mineral B	< 1%

Mineral %s are approximate as it is unrealistic to give specific figures when dealing with over 20 polished sections.
The Bi tellurides are considered together as are Petzite and Hessite as it is difficult to estimate their relative proportions.

Minerals — Characteristic Microscope Properties

Pyrite — yellow, hard with a poor polish
Isotropic in crossed nicols.

Chalcopyrite — yellow moderate polish and
moderately hard, isotropic.
see Etch tests — -ve to KCN

Sphalerite — grey low reflectivity
medium hardness isotropic
but with red internal reflection

Arsenopyrite — whiter than pyrite and
anisotropic.
Etch tests $HgCl_2$ stains brown
stain washes off

Tellurbismuth — PPL, white and soft
with high reflectivity. CN good
anisotropism
Etch tests
NHO_3 +ve effervesces and quickly
stains black
$FeCl_3$ +ve quickly stains iridescent
to black.
KOH weak +ve
KCN -ve
$HgCl_2$ +ve positive stains brown

Tetradymite - PPL very pale pink high reflectivity greater than 50%
CN anisotropic. Hardness low

Etch Tests

NHO_3 weak positive or negative
$FeCl_3$ positive but not as strong as for Tellurobismuth
KCN negative
$HgCl_2$ negative
KOH negative

Galena - PPL white soft with high reflectivity
CN isotropic complete extinction

Etch tests

$FeCl_3$ stains green and iridescent
KOH negative
KCN negative
$HgCl_2$ negative
HNO_3 stains brown ~~and~~ no effervescence
HCl stains brown to iridescent slowly.

Hessite - PPL grey moderate to low reflectivity hardness low
CN. strong anisotropic blues and browns.

Etch tests

$FeCl_3$ positive
$HgCl_2$ positive
NHO_3 positive weak
KCN positive
KOH negative

Scheelite - identified mainly on the basis of flourescence. Optical properties - low reflectivity high internal reflection, softer than quartz.

Wehrlite - White to pale grey next to Tellurbismuth, high reflectivity moderate anisotropism

Etch tests

NHO_3 +ve stains brown

$FeCl_3$ stains brown quickly

KOH negative

$HgCl_2$ negative

HCl negative

KCN negative

Altaite - white isotropic but does not show complete extinction reflectivity high, hardness low.

Etch tests

NHO_3 positive and effervesces

$FeCl_3$ positive

HCl positive

KCN negative

$HgCl_2$ "

KOH "

Chalcocite - Grey blue with low reflectivity and hardness
Isotropic

Stannite ? ~~Bl~~ Browner than pyrrhotite same reflectivity and hardness
anisotropic occurred as a small grain associated with pyrrotite etch tests could not be performed

Mineral B Grey with low reflectivity and hardness
isotropic
NHO_3 positive no effervesence
KCN negative
$FeCl_3$ negative
$HgCl_2$ negative
KOH negative

Mineral A Very pale grey pink slighty darker than Tellurbismuth ~~as~~ hardness and reflectivity similar to tellurbismuth.
Isotropic to weakly anisotropic
Etch tests
HNO_3 stains brown
$FeCl_3$ positive not as strong as for other tellurides
KCN positive irridescent stain
KOH negative
HCl negative
$HgCl_2$ negative or weakly positive with a brown stain

Scheelite

Scheelite mineralization is characterized ustiadly associated with acid intrusions as it is in this case. Tungsten probably contained in a late fluid phase differentiated from the magma permeates the surrounding country rock usually being deposited as scheelite. Generally the calcium required for this is derived from the sediments thus many deposits of ~~calcium~~ scheelite are found in calcium rich rocks. In this area it is not clear where the necessary calcium came from, the tuffs could be a likely source.

Contact metamorphism of the sediments adjoining the intrusion is of the hornblende hornfels facies, this indicates a temperature of 500-450° C fairly high for this type of intrusion. Thus if the scheelite is restricted to rocks of this grade of metamorphism the extent of scheelite mineralization is probably minor.

The relationships of scheelite to sulphides is not clear. The BC Minister of Mines report 55. mentions that scheelite is in otherwise barren quartz veins. This suggests that the sulphides were carried past the area of scheelite deposition to a place where a lower geothermal gradient allowed them to crystalize. This of course supposes that the Tungsten sulphide and Telluride mineralizations are all associated with the one intrusion.

Textures of the early Sulphides

Included under under this heading are pyrite, sphalerite, chalcopyrite, galena and pyrrhotite, also arsenopyrite and stannite?.

Much of the pyrite, sphalerite and chalcopyrite seen in the polished sections occurred seperately from the tellurides. Pyrite generally occurred as corroded fractured grains with pitted surface. In some places the pyrite was anisotropic but yellow colour and hardness were still sufficiently characteristic. Associated with the pyrite some grains of equal hardness but much lighter colour may represent arsenopyrite. Generally the corroded appearance of the pyrite was directly attributable to replacement by sphalerite which formed a ground mass for the fractured pyrite crystals. In other places the corroded pyrite crystals were enclosed in the quartz matrix. Occasional inclusions of chalcopyrite were seen in the pyrite but not as frequently as the replacing sphalerite. Evidence for replacement of pyrite by sphalerite was considered to be atoll texture and non matching vein walls of sphalerite in pyrite.

Where chalcopyrite formed the ground mass to the pyrite ~~(Fig 11)~~ there was considerably less evidence for replacement (Figure 12). and generally the chalcopyrite seems to have filled fractures in the pyrite crystals by displacing the broken parts. Occasional anhedral blebs of sphalerite do occur in the chalcopyrite; these blebs often have emulsion texture. Small blebs of galena also occurred associated with the chalcopyrite.

~~Fine~~ Emulsion texture is common in the sphalerite though in places % of chalcopyrite ~~and~~ its in sphalerite and its fingering shape indicates replacement of sphalerite by chalcopyrite (Fig 3)

Running through the chalcopyrite or sphalerite ground mass at fine veins of chalcocite were observed (Fig 1) there either formed an en echelon pattern down the centre of sphalerite or chalcopyrite masses, or radiated out ~~from~~ perpendicularly from pyrite grains. The extremely fine nature made identification uncertain but they appear to represent secondary material though ~~but~~ replacement has not progressed to any extent.

Pyrite was nowhere observed in contact with the tellurides. Sphalerite and chalcopyrite where in contact with the tellurides exhibit mutual boundary texture except in one place tellurides vein into chalcopyrite without any apparent replacement.

Pyrrhotite occurs as rounded grains contained in the tellurides or along telluride chalcopyrite contacts Figure 7) In places separated grains of pyrrhotite contained in the tellurides ~~are~~ remain in optical continuity indicating that the tellurides have replaced the pyrrhotite (Fig 7). In another place a grain of pyrrhotite apparently centrally replaced by tellurides contains 2 separated parts of a grain of stannite? which are still in optical continuity; this again suggests replacement (Figure 4). The stannite could not be identified with any certainty because only one small grain was seen.

Atoll Texture in Pyrite crystals

Core replacement of pyrite by sphalerite is fairly common; chalcopyrite nor any other mineral replaces pyrite to any extent.

Cores of sphalerite are generally joined to the ground mass sphalerite by a fine vein of sphalerite. In some cases pyrite appears to contain an isolated grain of sphalerite but this is probably just an effect of the angle of the section. Replacement of pyrite also operated around the edges of the pyrite crystals, giving them their present corroded shape. Core replacement then acted as well as rim replacement and not in preference to it. As there is no way of knowing the extent of rim replacement the core replacement may have been very minor, more over emphasized by a greater amount of rim replacement.

Emulsion Texture in Sphalerite

This takes the form of fine anhedral blebs of chalcopyrite randomly distributed through sphalerite. Lathes of chalcopyrite orientated along cleavage directions in the sphalerite do not constitute emulsion texture but will be considered here.

The texture most likely originates by exsolution of chalcopyrite from sphalerite at temperatures generally above 300°C. Up to 10% chalcopyrite can be held in ~~sol~~ solution so that in instances where more than 10% chalcopyrite is found in sphalerite (Fig 3) a process other than exsolution has been involved. If the blebs originate by exsolution their size and distribution depends on ① the % of chalcopyrite in solution ② the cooling history.

As sphalerite found in pyrite (forming a replacement atol texture) contains no ~~po~~ chalcopyrite it appears that at the temperature at which replacement proceeded the solubility of chalcopyrite in sphalerite must have been very low. In the case of slow continued growth over a temperature range, 2 factors would suggest a higher % of chalcopyrite in the centre of crystals of sphalerite; that is ① it crystalized at higher temperature and therefore greater solubility of chalcopyrite in sphalerite. ② it has had more time to exsolve chalcopyrite. If on the other hand the sphalerite crystal ized and was then held at a temperature suitable for diffusion chalcopyrite would migrate to crystal boundaries, and thus blebs of chalcopyrite would be larger near the sphalerite ~~a~~ crystal boundaries. It is noticeable in this suite that in sphalerite associated with the tellurides the chalcopyrite blebs are larger near the sphalerite crystal boundaries (Fig 2) while in sphalerite associated with pyrite and chalcopyrite if any gradation is seen it is the reverse. In one case where sphalerite and chalcopyrite were associated with tellurides the sphalerite chalcopyrite contact was extremely uneven this could easily be formed by chalcopyrite blebs arriving at the boundary (Fig 2) The possibility of draining of chalcopyrite from the borders of sphalerite crystals where they adjoin chalcopyrite crystals seems unlikely, in the case where the sphalerite chalcopyrite boundary is smooth yet chalcopyrite blebs remain in the centre of the sphalerite crystal. A more plausible explaination seems to be that given for the case of smaller chalcopyrite blebs near the sphalerite crystal boundary.

The orientated laths of chalcopyrite in sphalerite ~~are~~ much larger than the emulsion ~~texture~~ chalcopyrite but occur in association with it. If these laths originated ~~for~~ by diffusion it seems unlikely that the smaller blebs would survive in their vicinity; thus it appears that most of the orientated laths of chalcopyrite are of replacement origin. This is supported by the thickening of laths where two intersect.

A reasonable explanation for these textures seems to be that sphalerite associated with pyrite has undergone ~~late~~ post crystalization diffusion. This is also suggested by the fact that smaller sphalerite grains in this association have finer emulsion textures. This is despite replacement of sphalerite by chalcopyrite. Sphalerite associated with the tellurides appears to have undergone more post crystallization diffusion possibly caused by the later crystallization of the tellurides.

Tellurides - Textures and general Description

These include Tellurobismuth Tetradymite Hessite Petzite Altaite identified with less certainty ~~was~~ wehrlite also considered here is Cosalite and the two unnamed minerals.

Tetradymite and Tellurobismuth - these two minerals like the other tellurides occupy small areas in the quartz matrix rarely exceeding 5 mm in diameter. Often the quartz telluride contact exhibits a pseudo caries texture of quartz "biting" into the tellurides nowhere are ~~are~~ euhedral quartz crystal boundaries outlined against tellurides. Replacement of tellurides by quartz at the temperatures at which the tellurides would be deposited (<200°C) is extremely unlikely conversely telluride quartz contacts do not suggest that the tellurides have replaced the quartz. Thus it appears that the tellurides filled pre-existing spaces, in which case the shape of these cavities suggests that the quartz originally crystallized as a gell which contracted to form cuspate cavities and fine fractures.

Generally these two tellurides occur as a fine intergrowth in about equal parts. When in contact the tellurobismuth appears very slightly pinker otherwise physical properties are the same. The intergrowth though just apparent under crossed nicols can be emphasized by etching with either a diluted solution of $FeCl_3$ or HNO_3 conc between 1:1 - 1:7. Tellurobismuth and ~~tetra~~ Tetradymite are in about equal proportions; the proportions of the two minerals does not appear to vary to any great extent. Generally the laths are crystallographically controlled though in a few places a finer myrmekitic type of intergrowth was observed. As separated laths were in optical continuity and appeared to make up parts of a whole crystal the intergrowth is post crystallization. Tetradymite and tellurbismuth have the same crystal symmetry with unit cells nearly the same size thus it is possible for a compound consisting of a mixture of the two minerals to crystallize and later exsolve into the two distinct minerals. The uniformity of the intergrowth throughout the tellurides general crystallographic control of the laths and the mutual boundary relationships between the laths rules out a replacement origin for the intergrowth.

Mineral A occurred sparingly within these two tellurides it was slightly pinker and darker than the Tellurbismuth. As the laths of tellurbismuth and tetradymite stop abruptly at its against this mineral it must represent an early exsolved mineral or a mineral trapped in the tellurides during crystallization. The association etch properties and optical properties suggest that it is probably another telluride.

Petzite and hessite are closely associated with these two tellurides. Petzite in some places forms a myrmekitic intergrowth in these two tetradymite and tellurbismuth near the crystal contacts. The restriction of this intergrowth to crystal boundaries suggests replacement (Fig 8) though if this is the case the petzite has replaced both tellurides with equal vigour. If this is not the case the petzite must have been exsolved from the tetradymite tellurbismuth solid solution before they exsolved. In one polished section petzite which replaces tetradymite and tellurbismuth is itself being replaced by Hessite (Fig 6). The serrate contact of petzite with the tellurides suggests replacement rather than exsolution. Hessite appears to have replaced petzite where it fingers into the tellurides leaving small areas of petzite at the end of the fingers. This hessite shows a mottled anisotropism suggesting that it crystallized above 149°C as the disordered form.

Hessite also occurs as myrmekitic intergrowth in altaite apparently as a replacement rather than exsolution.

In one section a white bismuth telluride with optical and etch properties similar to tellurbismuth was found. The colour was whiter than that of tellurbismuth suggesting that this was wehrlite. On etching this mineral with diluted $FeCl_3$ an extremely fine pseudo eutectic intergrowth became apparent. This intergrowth could not be seen on polished surfaces as a change in colour or relief. It is not clear wether this intergrowth represents 2 phases of wehrlite or wehrlite and another mineral. Fine needles 20 microns long of tetradymite cut across this intergrowth in wehrlite as there was no thickening where two needles intersected the tetradymite is considered to have been exsolved from the wehrlite before the formation of the intergrowth. Tetradymite which crystallized seperately from the wehrlite but in contact with it appears to have been replaced by the wehrlite to a small extent. (Figure 10).

Altaite occurs scattered through the quartz as small anhedral blebs. This telluride was distinguished from galena by (1) altaite does not have complete extinction (2) altaite has stronger reaction to NHO_3 and generally effervesces. On the basis of these facts some of the white blebs scattered through the quartz represent galena; occasional occurrence of triangular cleavage pits confirmed this. Generally the altaite occurred separately from the other tellurides ~~from~~ or in contact with hessite.

Cosalite identified as such, by white colour anisotropism and positive KOH test occurred as very fine blebs in chalcopyrite (10 microns).

Gold – occasional blebs were seen in the wehrlite these were extremely small (less than 10 microns)

Mineral B a grey exsolution mineral in Tellurbismuth had etch properties which appeared to rule out Hessite or Petzite as possibilities that is mainly a negative reaction to $FeCl_3$. The mineral occurred as fine laths which ended abruptly against a tellurbismuth tellurbismuth crystal contact (Figure 5)

Paragenesis

Mineralization appears to be associated with the intrusion; it is not clear from the hand specimens and polished sections whether there was any major break in mineralization between firstly the deposition of the scheelite and sulphides and secondly ~~between~~ the deposition of sulphides and tellurides.

The importance of shearing mentioned in The BC Minister of Mines report 1955 is unknown; only the pyrite shows minor effects of stress in the form of fractures; the gangue appears to be massive and undeformed.

Scheelite represents the earliest phase of mineralization probably related to the contact metamorphism of the adjacent sediments. The silica forming the silicified zone and veins, in which the scheelite was deposited is probably mostly of igneous origin though some could have been sweated out of the sediments.

The relationship of scheelite to ~~the~~ pyrite sphalerite and chalcopyrite is unknown. But these minerals with the other sulphides were probably deposited next, though after the country rock had cooled to about 400 to 350°C, or at such a distance from the contact that the country rock was at this temperature. First of the sulphides to crystallize was pyrite; following minor fracturing sphalerite and chalcopyrite crystallized in the interstices of the surrounding the pyrite grains.

General textures suggest simultaneous crystallization of the sphalerite and chalcopyrite; thus when the sphalerite crystallized chalcopyrite was available to go into solid solution with it. As the % of exsolved chalcopyrite in the sphalerite is fairly high (near the maximum possible), the sphalerite probably crystallized in the upper part of its temperature range. The presence of chalcopyrite in solid solution in the sphalerite indicates that the chalcopyrite was not all removed from solution by crystallization, before the sphalerite started to crystallize. The presence of sphalerite grains with emulsion texture contained in the chalcopyrite and making up more than 80% of the overall volume strongly suggests that the chalcopyrite continued to crystallize after the sphalerite. The textural evidence suggesting that chalcopyrite replaces sphalerite also supports this. Thus the sphalerite and chalcopyrite form an example of overlapping deposition. The replacement of ~~sphaler~~ pyrite by sphalerite and the veining nature of chalcopyrite and sphalerite through pyrite indicates that these two minerals crystallized after the pyrite.

Arsenopyrite appears to have crystallized with the pyrite. Pyrrhotite was probably associated with the chalcopyrite crystallization.

The tellurides represent a temperature of crystallization considerably lower than that of the sulphides. The close association of the tellurides and sulphides suggests 3 possibilities ① the tellurides were deposited some time after the sulphides when the country rock had cooled sufficiently to permit them to crystallize; ② that the country rock was already bellow the the temperature of crystallization of the tellurides and the fall in temperature and change in composition of the ore fluid caused the tellurides to deposit; (3) the tellurides represent a seperate mineralization of the core rock. The second possibility appears most plausible. If the first possibility had occurred then one would expect considerable diffusion of chalcopyrite out of sphalerite having fairly ~~coarse~~ blebs and probably a leached zone in the sphalerite near chalcopyrite sphalerite contacts. This is not seen. ~~And~~ If the tellurides represented a seperate mineralization one would expect to see more evidence of fracturing of the chalcopyrite and sphalerite caused by renewed heating; and veining of tellurides in these minerals. This is not seen.

The order of crystallization of the tellurides is not clear. The bismuth tellurides ~~probably~~ crystallized as solid solutions of two or more minerals probably at about the same time. Hessite and Petzite appear to be a little later with hessite the later of the two. Altaite probably crystallized at the same time as the Bismuth Tellurides.

Not mentioned above the Galena and cosalite probably crystallized in association with the chalcopyrite.

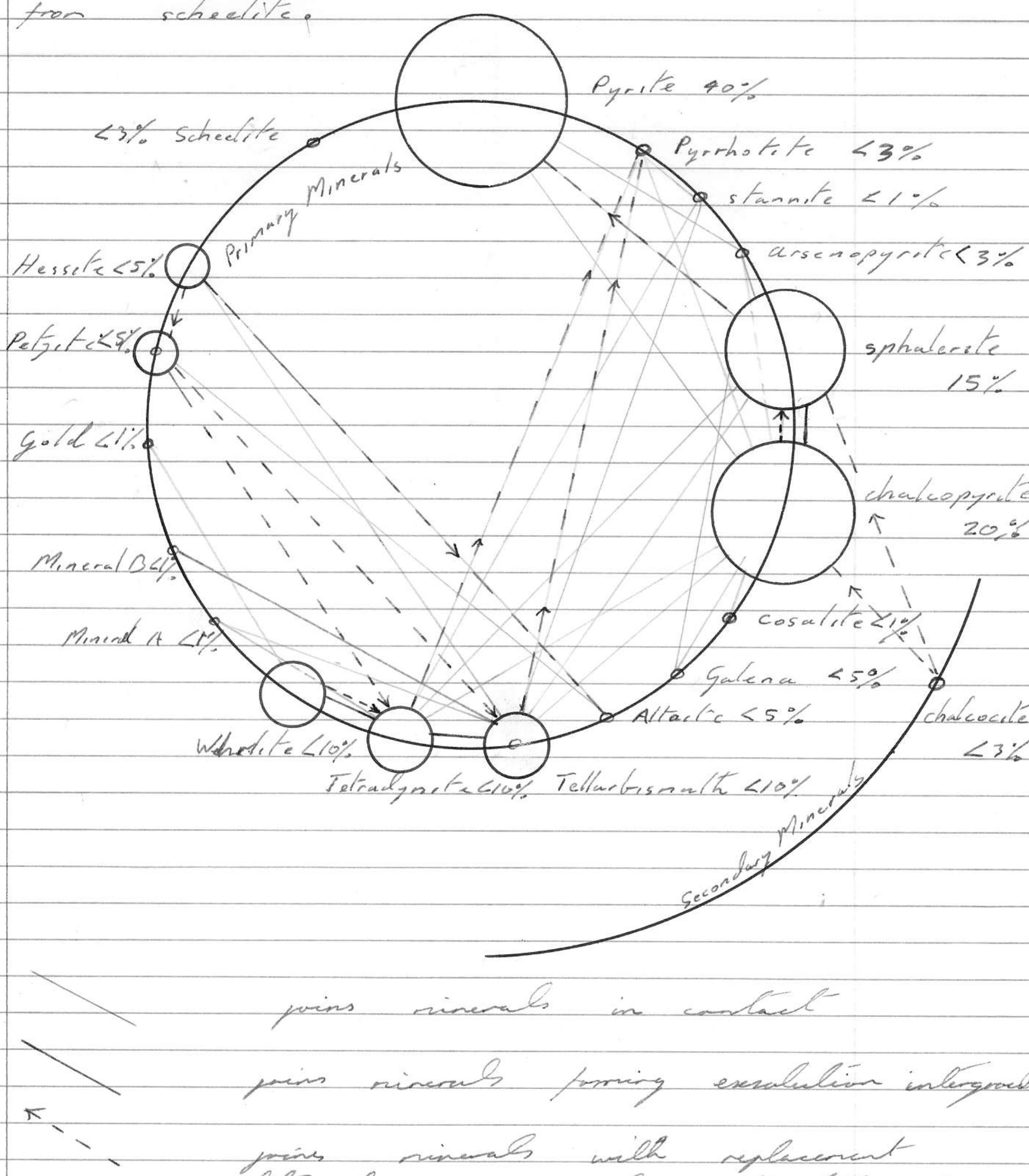
The gold ~~ore~~ is closely associated with the bismuth tellurides.

Classification of Deposit

This is a hydrothermal vein deposit. If the scheelite is included in the ore minerals, mineralization extended over the temperature range 450°C — 150°C at least.

Paragenesis

Aproximate depositional sequence clockwise from scheelite.

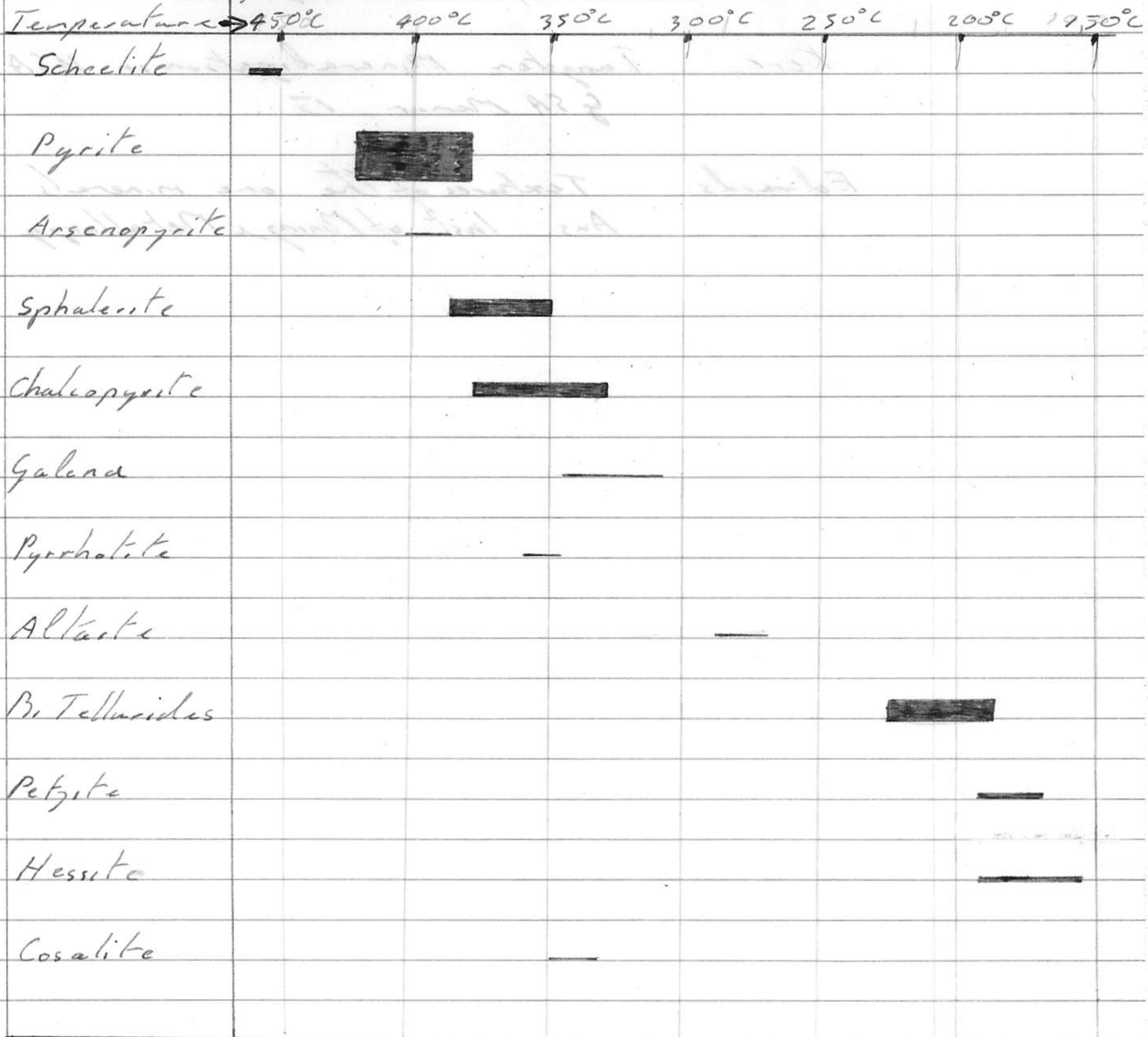


joins minerals in contact

joins minerals forming exsolution intergrowths

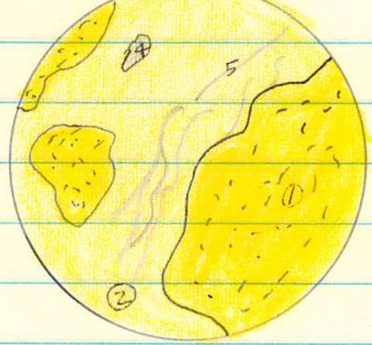
joins minerals with replacement relationships arrow shows direction of replacement

Diagramatic representation of Paragenesis of Main Minerals



Temperatures indicated are only approximate guides.

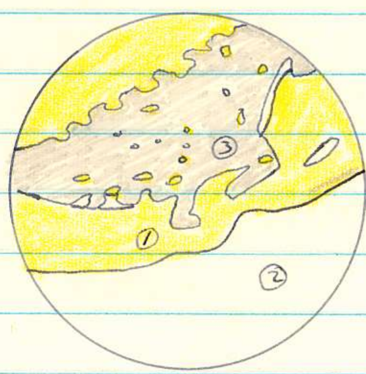
Figure 1



Pyrite ① with a ground mass of chalcopyrite ② occasion blebs of sphalerite ④ in the chalcopyrite and chalcopyrite free. Fine veins of a secondary mineral ⑤ (chalcocite?) occur in the chalcopyrite.

Section 9 High Power field of View .4mm

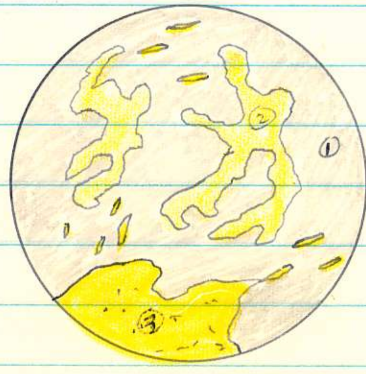
Figure 2



Chalcopyrite ① in contact with tellurides ② shows rounded boundary texture while the sphalerite ③ chalcopyrite boundary suggests replacement or diffusion of chalcopyrite to boundary by its serrate nature

Section T 3 High Power field of View .4mm

Figure 3



Matrix of sphalerite ① and chalcopyrite ② between pyrite fragments ③. chalcopyrite occurs as orientated laths and as anhedral fingering masses suggestive of replacement.

Section 7A Medium Power field of view 1.5mm

Figure 4

Pyrrholite ① occurs as one grain ~~cardo~~ whose core has been largley replaced by tellurides ② 2 parts of a Stannite ? crystal ③ still in optical unity occur in the pyrrholite. Grey is Gangue quartz.

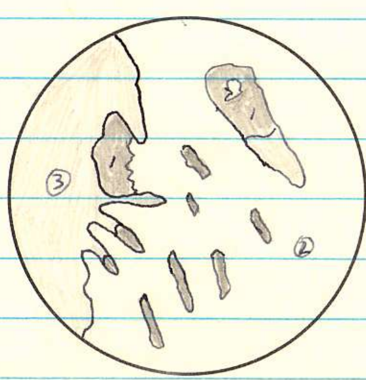
Section T 3 High Power field of view .4 mm

Figure 5

Tellurbismuth with fine needle laths of grey mineral B laths stop at crystal boundaries suggesting exsolution.
Grey is quartz gangue

Section T1 High Power field of view .4 mm

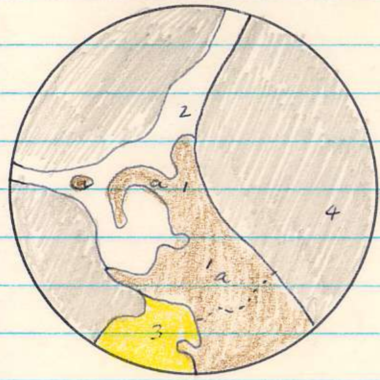
Figure 6



Petzite ① as a pseudo eutectic in 2 B. tellurides being replaced by hessite ③. B. tellurides ② are exsolution intergrowth of Tetradymite and Tellur bismuth.

Section A High Power field of view .4 mm

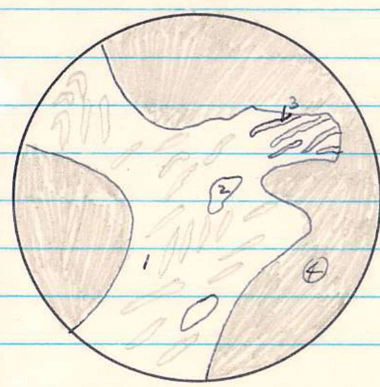
Figure 7



Pyrrhotite ① being replaced by tellurides ② all Pyrrhotite ⓐ is in optical continuity. ③ is chalcopyrite. ④ is quartz gangue

Section T3 High Power field of view .4mm

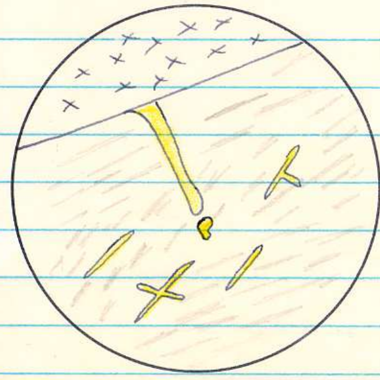
Figure 8



① Tellurides, Tetradymite with laths of Tellurbismuth
② ?s mineral A
③ is myrmekites of petzite
④ Gangue of quartz

Section T3 High Power field of view .4mm

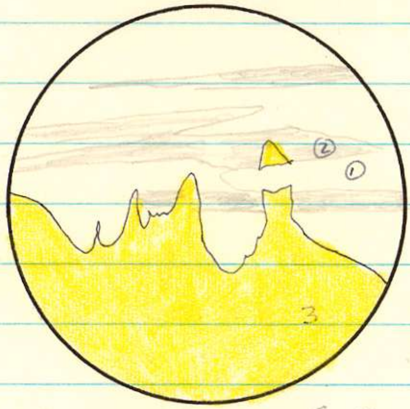
Figure 9



2 tellurides form a fine orientated intergrowth one is probably melonite.
An ~~second~~ other telluride Tetradymite forms exsolution lamellae. These lamellae show no thickening at intersections strongly suggesting exsolution rather than replacement. The laths of this mineral cross the earlier telluride laths so that it represent an earlier exsolution.

Section T2 High Power field of view .4mm

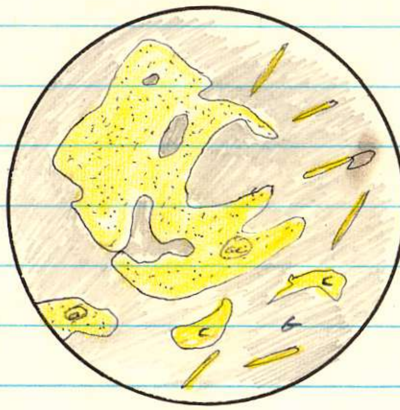
Figure 10



a pseudo eutectic of a white anisotropic mineral (1) and greyer anisotropic mineral (2) replacing a yellow mineral Telradymite (3) (1) and (2) are Bi Tellurides one or both being Weholite.

Section T R2 High Power field of view .4 mm

Figure 11



Pyrite being replaced by sphalerite with replacement working out from the centre of the pyrite crystals. Orientated lathes of chalcopyrite in the sphalerite.
(a) Pyrite (b) sphalerite
(c) chalcopyrite

Section 7A
low power Field of View 3 mm

Figure 12

Pyrite (1) fractured grains surrounded by chalcopyrite (2) apparently with little or no replacement.

Section 9 Low Power field of view 3 mm