NAME

SUBJECT SPECIAL REPORTS - 1937 FILE NO. LIBRARY

# DEPARTMENT OF MINES AND PETROLEUM RESOURCES

VICTORIA, BRITISH COLUMBIA

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6M-1066-5100 (2)

No. 1 map

ANNUAL REPORT OF THE MINISTER OF MINES

FOR 1937

Part B -- Special Report by Dr. J. T. Manéy.

Last Chance Group:

This group comprises the Last Chance, Last Chance Nol 1 and Last Chance No. 2 mineral claims, owned by Neil Forbes and associates of Atlin. The property is situated between about 3700 and 4500 feet elevation on the southerly slope of "Boulder" Mountain to Pine Creek, amd about 11 miles north 62 degrees east from the town of Atlin.

It is reached by motor road for 16 miles from Atlin at 2200 feet elevation, to the foot of Surprise Lake at 3160 feet elevation. From this point, a line of least resistance is followed for about 1½ miles in a northwesterly direction through moderately timbered terrain up the southerly slop of "Boulder" Mountain to the lower adit at 3725 feet elevation.

This group is a restaking of ground which comprises some of the earliest known lode mineral claims in the Atlin area and which were formerly known as the Lakeview group. Reference to the Lakeview group will be found in the Annual Reports of the Minister of Mines for the years 1904 and 1933, and also in Memoir 37, Geological Survey of Canada. For many years subsequent to the early s staking and exploratory work, the property has been inactive. It has been restaked by various people but very little additional work has been done.

The Gold Commissiomer reports that the old showings were staked as the Ruth and Donald claims, on October 10th, 1933, by Frank Henderson of Vancouver, but no work was done and the claims lapsed on October 10th, 1934. The ground was staked as the Last Chance group by Neil Forbes and associates of Atlin on March 9th, 1935. On March 16th, 1935, the same ground was staked as the Ruth and Donald by Frank Henderson of Vancouver, but no work was done by him and the Ruth and Donald lapsed on March 16th, 1936.

"Boulder" Mountain is a domed ridge bearing north-south between the Birch and Boulder Creek tributaries of Pine Creek and forming a south shoulder of Leonard Mountain. Its southerly slope to Pine Creek rises to a domed crest of 5625 feet elevation, 2.4 miles north of and about 2525 feet above Pine Creek. The lower elevations of the south slope are covered with an appreciable thickness

of glacial over-burden and are sparsely timbered to about 3500 feet elevation. Above this, the south slope is a rolling, grassy terrain generally covered with glacial moraine of varying thickness through which some low rock-ridges outcrop.

The locality of theclaims is underlain by a complex of metamorphosed igneous rocks of the "Gold Series" of probablylower Mesozoic age in an acute angled embayment in a stock of Coast Range batholithic rocks of probably upper Jurassic age. In the area of the claims, the "Gold Series" is composed mainly of chloritic schistose rocks with some amphibolite and diorite. In some sections, the rocks, are considerably altered by carbonatization. The granitic contact surrounds the locality on the west, north-west and north at distances of from 2 to 3.6 miles. To the north-east a belt of "Gold Series" rock, 2.4 to 4.5 miles wide, between subjacent granitic rocks, extends north-easterly across the lower section of Boulder Creek, through the upper section of Ruby Creek and across Barham Mountain to the upper northerly slope of this mountain.

The mineral deposit consists of white quartz veins, generally barren of mineralization but locally very sparsely mineralized with small blebs of pyrite and some galena. Intermittent outcrops of quartz along two fracture-structures from 300 to 400 feet apart, have been uncovered in a series of strippings, open-cuts, two shallow shafts and two adits.

The westerly outcrops extend along a distance of 850 feet between 4150 feet and 4435 feet elevation. Along this stretch, the strike of the quartz varies from north 8 degrees east to north 27 degrees east and the dip is from 80 degrees eastward to 85 degrees westward. The southerly three open-cuts of the westerly outcrops expose barren white quartz 1 to 2 feet in width striking north 15 degrees east and dipping from 80 degrees eastward to 85 degrees westward, along a distance of 100 feet. At 4270 feet elevation, 280 feet north-easterly from this, white quartz 2.4 feet in width, very sparsely mineralized with pyrite, striking north 27 degrees east and dipping 80 degrees westward, is exposed at the portal of a caved adit. In two open-cuts along a distance of 170 feet north-easterly of this, barren white quartz 1 inch to 2 feet in width is exposed, striking north 27 degrees east and dipping 80 degrees westward. In the northerly of these two cuts, the quartz is distinctly lenticular and varies from 1 inch in width at the top of the cut, to 18 inches in width at the bottom. About 70 feet north-easterly of this, some quartz is seen on the dump of a small caved open-cut. At 4375 feet elevation and 60 feet north-easterly of this, a small open-cut exposes rock. In an open-cut 80 feet north-easterly from this, a barren quartz stringer 2 inches in width is exposed. Offset 110 feet north-

westerly from this, two shallow strippings 20 feet apart at 4435 feet elevation, expose barren white quartz 8 inches to 1.5 feet in width, striking north 8 degrees east. A lenticular deposition of quartz is indicated in these westerly exposures between 4150 and 4435 feet elevation.

The easterly quartz outcrops extend along a distance of 1150 feet between 3725 and 4155 feet elevation. Along this stretch the strike of the quartz varies from north 13 degrees east to north 32 degrees, east and the dip is about 80 degrees westward. The exposures also indicate a lenticular deposition of quartz, but in three places the quartz is probably offset short distances by cross-faults. In the westerly exposures, the quartz vein-material varies from a few widely-spaced stringers to a compact quartz vein 8.4 feet in width. In one large open-cut at 3955 feet elevation, closely-spaced narrow quartz veins and stringers are distributed across a width of 15 feet. In places the structure shows shearing with some gouge and the walls of the quartz are generally free. The vein-material is generally barren, but locally sparse blebs of pyrite and some galena occur. The adit at 3725 feet elevation at the southerly extremity of the west workings is caved and was not examined. At the portal, the vein is appreciably sheared and is overlain by glacial clay 10 feet in thickness. The exposures are described in detail on the accompanying map. The following assays are from samples taken from those sections of the exposures which showed some mineralization:

(1) Selected specimen with sparse blebs of pyrite and galena, from a small dump at the collar of a shallow shaft (caved at 20 feet in depth) at 3775 feet elevation: Gold, 1.10 oz. per ton; silver, 15.0 oz. per ton.

(2) Across 3 feet of ribboned quartz at collar of shaft at 3775 feet elevation, 100 feet north-easterly of adit: Gold, 0.05 oz. per ton; silver, 1.0 oz. per ton.

(3) Across 4 feet of best mineralization in open-cut at 3955 feet elevation exposing veins and stringers across 15 feet, 555 feet north-easterly from the adit: Gold, 0.10 oz. per ton; silver, 0.4 oz. per ton.

(4) Across 5.5 feet of oxidized and sheared material with 2 quartz stringers 2 inches in width, on the hanging-wall of a structure exposed in a shaft 6 feet deep, at an elevation of 3995 feet, 650 feet north-easterly from the adit: Gold, nil; silver, nil.

BRUNTON COMPASS & PACE SURVEY

# SKETCH-PLAN OF SHOWINGS & WORKINGS

# LAST CHANCE GROUP

## (OLD LAKEVIEW)

## BOULDER MOUNTAIN

## ATLIN

SCALE

0 100 200 300 400 500 Feet

### LEGEND.

- Quartz vein
- Open cut
- Stripping
- Adit
- Shaft
- Probable fault.
- Altered & metamorphosed igneous rocks: amphibolite, chloritic schist, some diorite.

With Report by Joseph T. Mandy, 1937.
Resident Mining Engineer, Prince Rupert, B.C.

N8°E Strike

El. 4435
1.5' barren quartz

8" barren quartz

caved cut.
2" barren quartz

El. 4345'
No vein

El. 4330'
Caved. No vein.
Quartz on dump

El. 4325'
Barren quartz lens;
1" at top; 18" at bottom.

El. 4135'
Open cut 25' long
3 quartz stringers

Strike N12°E

80° El. 4305'
24" barren quartz,
in diorite

80° El. 4270'
Caved adit.
2.4' quartz with
very sparse pyrite

5.5' decomposed & oxidized
+2 quartz stringers 2" wide —

| | Au oz per ton | Ag oz per ton |
|---|---|---|
| | Nil | Nil |

N13°E Strike

70° El. 3975'
Shaft 6' caved
Snow in bottom.

4' of best mineralization - 0.10 0.4

El. 3955'
Quartz veins & stringers
across 15' width. Very sparse galena.

Strike N13°E

18" barren quartz.

85° El. 4145'
12" barren quartz

80° El. 4150
2' barren quartz

4.5' crushed barren quartz

Barren quartz stringers

Width | Au oz per ton | Ag oz per ton
5.5 — Nil — Nil

Sketch of vein at El. 3975'

H.W. — Decomposed & oxidized material with 3 quartz stringers 3" wide. — 4.3' Barren quartz. — Decomposed & oxidized material. — F.W.

32°30' MAGNETIC

NORTH

Knoll.

3' ribboned quartz at shaft collar — Au oz per ton 0.05 — Ag oz per ton 1.0

Selected from dump of 20 lbs — 1.10 — 15.0

80° El. 3745'

El. 3740' Vein at face 8.4' wide:
2.5' quartz + 18" gouge in center + 4.4' quartz.

El. 3725' Shaft caved at 20', reported 30' deep
3' quartz vein, free walls. Ribbon structure across 1' on H.W.
Parallel stringers across 1' in F.W.
Vein strike at shaft = N32°E.

El. 3725' Adit caved at portal.
Glacial clay 10' thick on vein at portal.
Vein strikes N26°E at portal.

Sketch of vein at El. 3490'

H.W. — Quartz — Gouge — Quartz — F.W. — 4.4' — 2.5'

El. 3640 Cabin.

SKETCH OF CLAIMS
(BASED ON OWNERS SKETCH)
Scale 1500
0 450 1350 feet

LAST CHANCE No 2

LAST CHANCE No 1

LAST CHANCE

El. 4435'
El. 4155' Fr.
El. 4150'
El. 3725' Cabin El. 3640'

Spec Rpt 1937.

# THE ANNUAL REPORT OF THE MINISTER OF MINES

# FOR 1937

Special Report by J. T. Mandy

Atlin Area

## Snake Creek

Snake Creek is a small tributary flowing into the south side of Pine Creek, about 15 miles easterly from the town of Atlin. It is reached by motor-road from Atlin for 15 miles up Pine Creek valley to the mouth of the creek, from where a trail extends up the west side of the creek.

Snake Creek was first prospected to some degree in 1899, the year following the first discovery of placer-gold in the Atlin area, but was soon abandoned. In 1903 and 1904 some leases were staked, but very little work was done beyond preliminary prospecting and the creek remained dormant for a number of years. For about the last eight years, Angus Cameron has been prospecting on the Bluestone lease (# 739) about 2½ miles up the creek from its mouth. In January, 1937, indentures mailed for signature covering twelve leases applied for by Frank Henderson, Vancouver, were not returned and these leases have not been completed and no work has been done on them. Two leases, the Last Chance (890) and Glasgow (898) have been completed in the name of Albert Norman, but at the time of examination by the writer in June, no work was proceeding on them and there was no evidence of any recent work having been done.

Fine gold in small quantities is known to occur in the crevices of bed-rock on the Bluestone lease, but there is no recorded production of gold in former years from this creek.

For the season of 1937, the Gold Commissioner reports a recovery by Angus Cameron of 3 ounces of gold, valued at $28.00 per ounce, from 3000 cubic yards of gravel handled, equivalent to 2.8 cents per cubic yard.

The formation underlying the locality consists of a complex of metamorphosed basic igneous rocks of the "Gold Series" of probably Mesozoic age, in the lower stretch of the creek for a mile and a half from its mouth. Above this, the upper section of the creek is underlain by schist, black slate and cherty quartzite of probably Carboniferous age. At the workings on the Bluestone lease, the bed-rock is black slate and quartzite which strike north, obliquely across the creek, and dip at 60 to 65 degrees towards east or up-stream.

Snake Creek is about 4 miles in length, and in June, which could be taken as the best water period, contained about 2 sluice-heads of water. In the upper section, where the creek is confined it is about 10 feet wide. It has its source at 4600 feet elevation on the south-easterly slope of the south shoulder of Bald Mountain (Spruce Mountain) and flows in a north-easterly, northerly and north-westerly direction into Pine Creek at 3120 feet elevation, about one mile below the foot of Surprise Lake. It occupies a comparatively shallow trough on the moraine-covered, knolled and ridged lower easterly slopes of Bald Mountain, from half a mile to one and alhalf miles west of Otter Creek. At its Source, it is about 600 feet elevation above the trough of Otter Creek from which it is separated by "roche mountonnees" and moraine-covered ridges. On the west side of Snake Creek trough, the slopes

of Bald Mountain are covered by glacial moraine through which the glaciated surfaces of "roche mountonnees" ridges outcrop in places.

Locally the creek has cut through the rock-ridges which, in these sections form low canyon-walls overlain by glacial moraine. The trough is generally filled with glacial moraine and in places the stream has cut-down through this, to and slightly into bed-rock.

It is in one such stretch, about 300 feet long in the upper section of thecreek between 4170 feet and 4195 feet elevation on the Bluestone lease, about 3 miles from the mouth, that work has been done in recent years by Angus Cameron. This consists of ground-sluicing by a boomer spilling every 15 minutes. The boomer-dam is at 4195 feet elevation and cutting-down has been effected along a stretch of 300 feet in length to 4170 feet elevation. In the upper 225 feet of this, the cut is about 25 feet wide and is bordered on the west by a bank of glacial debris 8 to 12 feet in height. In the upper 75 feet, adjacent to the boomer, fresh, slate rim-rock sloping easterly is exposed in two places on the west side overlain by glacial debris. No rim-rock is exposed in this section, the stream has cut-down to slate rim-rock, sloping easterly and in this section a defined shear filled with yellow gouge strikes north, obliquely across the creek. The rock formation exposed in this cut is black slate, striking north, obliquely across the

creek and dipping at 60 degrees westerly up-stream. Where exposed, the rock-formation is fresh and overlain by glacial debris containing sub-angular boulders up to a maximum average of 18 inches in diameter and a few up to 2 feet in diameter. The glacial debris is generally barren of gold values but in places contains a sparse distribution of fine colors of gold. Colors of fine gold also occur in some crevices of the rim-rock exposed in the locality of the cut. The following pans were taken from this working:

(1) 1 pan of glacial gravel on fresh rim-rock exposed in the west bank, 60 feet down-stream from the boomer-dam: 1 speck of fine gold.

(2) ¾ pan of creek-gravel and rim-rock in bed of creek, 160 feet down-stream from the boomer-dam; fine gold colors, estimated about ½ cent.

(3) ¾ pan of creek-gravel and rim-rock in bed of creek 176 feet down-stream from the boomer-dam: No gold.

(4) ¾ pan of creviced, quartzose-schist rim-rock on east side of cut 213 feet down-stream from the boomer-dam: fine gold colors, estimated about ¼ cent.

(5) ¾ pan of creviced quartzose-schist rim-rock on east side of cut, 221 feet down-stream from the boomer-dam: no gold.

At about 20 feet above the creek-bed and about 100 feet west of the ground-sluice cut, an old shaft 25 feet in depth exposes glacial debris. At about 1125 feet down-stream from the boomer-dam, an old cut has been excavated in the west bank in glacial debris. About 97 feet down-stream from this, on the east bank, the dump from an old caved adit

SPECIAL REPORT 1937

By J. T. Mandy

Bird No. 1 and No. 2 Mineral Claims.

The Bird No. 1 and No. 2 mineral claims are owned by D. Wing of McDame Creek and Wrangell, Alaska. They are located on the south-westerly slope of Table mountain and adjoin the Homestake group on the north and the Comfort No. 2 on the east. During the 1937 season, the property was under option to the Consolidated Mining and Smelting Company of Canada, which carried out exploration of the showings by stripping and open-cutting under the direction of McLeod White, and then dropped its option.

The property is reached by a good trail extending for 7 miles from the Consolidated Company camp at 3070 feet elevation on the south shore of McDame Lake (3054 feet elevation) to the Consolidated Company "Vollaug" camp at 4418 feet elevation, at timberline on the south-westerly slope of Table mountain.

The showings are located at around 4600 feet elevation, about a quarter of a mile north-easterly from the camp, in the swampy meadow of a creek-depression at the fringe of timberline. The locality slopes gently and is covered with soil and talus material for a depth of from 6 to over 8 feet.

The property is situated about 4½ miles north-easterly from the main eastern contact of the Cassiar granodiorite batholith which, in this area strikes north across the Cottonwood River about one mile west of Petefowler Mountain (Needle Point). The locality of the claims is underlain by carbonatized and locally pyritized tuffa with rusty outcrops.

The mineral deposit consists of two contiguous bodies of dense rusty-white quartz in carbonatized and pyritized tuff. In places the quartz contains streaks and narrow bands of tuff. The two quartz exposures are aligned about east-west, 40 feet apart, and with the work completed in July, could not be correlated with each other. In the westerly exposure, the quartz appears to strike north 73 degrees east and to dip 37 degrees north-westerly. The quartz in the easterly exposure appears to strike north 66 degrees east and to dip 69 degrees south-easterly. Appreciable trenching had, up to the time of examination, not established any continuity beyond these exposures. Large blocks of quartz float are scattered in the creek-bed adjacent to the westerly from the east exposure.

The west working is at an elevation of 4600 feet about 40 feet westerly from the creek. At this point a winding trench 6 to 7 feet deep for 37 feet in a northerly direction, uncovers an irregular body of rusty, barren quartz up to 4 feet in width. The quartz outcrops in oxidized, carbonatized and pyritized tuff. Streaks and bands of oxidized tuff are contained in the quartz and a few quartz stringers branch from the main body. No sulphide mineralization was observed in the quartz. In this working the quartz appears to strike north 73 degrees east and to dip 37 degrees north-westerly. About 12 feet north-easterly from this, a cross-trench in talus and clay, 34 feet in length and 3 feet in depth, uncovers oxidized, carbonatized tuff. At a distance

of 12 feet north-easterly of this, but offset about 8 feet to the north from the presumed strike of the quartz, a trench 4.5 feet deep, bearing west for 21 feet does not uncover bed-rock.

At 4600 feet elevation, on the east side of a creek and 40 feet south 57 degrees east from the westerly quartz exposure, trenching, stripping and open-cutting uncovers a rusty quartz outcrop in oxidized, pyritized and carbonatized tuff. A fairly well-defined hanging-wall to this body is intersected on its south-easterly side and followed by a trench towards the north-east for a length of 15 feet. This strikes north 66 degrees east and dips 69 degrees south-easterly. Cross-trenching, open-cutting and stripping from the hanging-wall uncovers a length of 15 feet of quartz, 9 feet in width at the northerly end and 16 feet in width at the southerly extremity of the workings. On the foot-wall-side the quartz appears to grade into siliceous tuff.

A sample across 14 feet of rusty quartz at the southerly end of the working, assayed: Gold, trace; silver, trace. At 4630 feet elevation and 75 feet north-easterly, a cross-trench in talus for a length of 30 feet and a depth of 6 to 8 feet does not reach bed-rock. Some quartz float is seen in the talus at this trench. At 4600 feet elevation and 30 feet south-westerly from the east quartz exposure, a cross-trench in soil and talus, 3 feet deep and 10 feet long exposes oxidized, carbonatized tuff and two blocks of white quartz float.

No. 4

# RED REEF GROUP

Special Report by J.T. Mandy - 1937

Red Reef No.1, No.2, No.3, No.4 and the Red Reef Fraction Crown-granted claims, owned by H.E. Newton of Victoria, B.C. The claims were staked in 1910 and Crown-granted in 1911 and 1912. They are located southerly of the Gold Axe group and westerly of the Silverado group, on the westerly slope of Mount Rainey, east of the mouth of Bear River and about half a mile south-easterly from the village of Stewart.

The property is reached by boat from the Stewart dock to a location on the tide-flats on the east bank of Bear River, a distance of about 1 mile. At low water in the Bear River, the stream can be crossed to its east bank by pack-horse from Stewart to the commencement of the trail at the foot of the hill in the gulch of Portland ("Silverado") Creek. If a row-boat is used from Stewart dock, the tide-flat and its margin is traversed for about two hundred yards to the mouth of the gulch. From this point, the bouldery gulch-bottom is ascended for about 300 yards to 350 feet elevation, where an old branch-trail from the "Silverado trail" crosses the gulch from its mouth to its north side. This trail, with fair grade, is followed for about half a mile to the tent-camp at 910 feet elevation on a knolled bench at the brink of the precipitous bluff of Portland Creek canyon.

In the lower elevations, the hill slopes at a general angle of about 30 degrees with interesting longitudinal rock banches and bluffy knolls. Glacial debris covers the hill-slope, and is of appreciable depth in the depression and flat areas.

In the higher elevations, in the locality of the showings, the hill-slope steepens and the topography becomes more rugged. In this section, the deeply-incised canyon of Portland Creek is a conspicuous feature. The area is densely timbered with cedar, hemlock and spruce trees of appreciable size. In this section, the forest-growth is open, with no appreciable underbrush. In the higher elevations, in the locality of the showings, there is a dense growth of underbrush with a carpet of metted bracken on the slopes.

The locality is adjacent to the southerly contact of an embayment in the intrusive rocks of the Coast Range batholith. Granitic rocks outcrop at the foot of the hill in the creek-gulch, and the contact strikes south-easterly, approximately along the creek-gulch, to about 850 feet elevation and dips steeply north-easterly adjacent to and slightly south of the main showings. At this point, the contact veers abruptly south in conformity to the project location and line of strike of a probably major fault extending north along the Bear River trough. In the locality of the showings, which are adjacent to the granitic contact, the rocks consist of argillite, and probably, in part, tuffs of the Lower Hazelton group. The rocks are intruded by granitic tongues and dykes, also felsite, pegmatite and lamprophyre dykes. The sediments strike north 50 to 56 degrees west and dip 70 to 78 degrees south-westerly. They are generally silicified, epidotized and garnetized adjacent to the granitic contact, and on account of this alteration, present a banded appearance in places. In contrast to the wide belt

of marginal alteration along the northerly contact of this granitic embayment in the locality of the Oral M and Gold Axe groups, the belt of marginal alteration along the southerly contact in the locality of the Red Reef is comparatively narrow. Northerly of the contact in this section, the altered phase is rapidly transitional into a limy, sandy argillite possessing some schistose phases. This suggests a steeper plunge of the southerly granitic contact in the locality of the Red Reef.

The mineral deposit consists of erratic siliceous replacement in altered argillite along irregular fractures conformable to the attitude of the formation and also associated with cross-fractures and joints. In these localities the argillite is siliceous, and bands, patches and stringers of quartz are sparingly distributed with pyrrhotite, pyrite and some chalcopyrite mineralization. In sections of silicification, the altered argillite is generally mineralized with finely-disseminated pyrrhotite. Where quartz bands, patches and stringers are present, massive pyrrhotite in patches, blebs and stringers with some blebs and stringers of chalcopyrite, occur in erratic distribution.

About 1910, and 1912, some surface exploration and appreciable underground work was carried out. Subsequently, no work was done on the property for many years. During the last three or four years, a limited amount of underground exploration has been carried out under the direction of H.E. Newton. During the 1937 season, this consisted of the continuation of No.1 adit

at 880 feet elevation, with a crew of 2 men.

At an elevation of 880 feet, a slightly sheared and appreciably oxidized series of fractures across 3 feet, outcrops in altered sediments in the face of a bluff at the portal of No. 1 adit. This strikes north 50 degrees west and dips 75 degrees south-westerly. Some pyrrhotite and pyrite blebs and streaks occur in this structure on its hanging-wall at the north side of the open-cut extending to the adit-portal.

At 1075 feet elevation, 400 feet south-westerly from the adit-portal, and old open-cut 6 feet high and 8 feet wide in a creek-bed exposes a silicified zone 4.6 feet wide in altered argillite. This strikes north 56 degrees west across the creek and dips 73 to 76 degrees south-westerly. At the face of the cut, a cross-fracture strikes north-easterly and dips 45 degrees north-westerly. The exposure is generally well-mineralized with pyrrhotite and pyrite, and contains some chalcopyrite. On the hanging-wall side massive patches and streaks of pyrrhotite with some disseminated chalcopyrite extend across 22 inches. A chip-sample across 4.6 inches of this structure, reporsenting the average mineralization, assayed: Gold, trace; silver, 0.2 oz. per ton; copper, trace; lead, nil; zinc, nil.

Between an elevation of 800 and 900 feet, about 450 feet south of the adit-portal, a wide area erratically mineralized with mainly pyrrhotite occurs in silicified argillite. Barren bands of crystalline limestone also occur intercalated in the argillite. The outcrops occur on a comparatively flat rock-bench on the north side of Portland ("Silverado") Creek canyon, and from 100 to 200

feet northerly of instrusive granitic rocks. The altered sediments are folded and strike north 54 to 64 degrees west and dip 75 degrees south-westerly. The formation is intruded by pegmatite and felsite dykes which are especially numerous in the south wall of the canyon and its bottom. Silicification, with the development of garnet and epidote characterize the sediment. In places quartz bands, streaks and stringers are erratically distributed in cross-fractures and joints and also along the bedding-planes of the sediments. The formation is generally mineralized with finely-disseminated pyrrhotite, and in some parts of the more siliceous sections with patches and blebs of massive pyrrhotite and pyrite with an occasional bleb of chalcopyrite.

At the brink of the canyon at 850 feet elevation, a siliceous band 8 feet wide is exposed striking north 54 degrees west and dipping 75 degrees south-westerly. This is more appreciably mineralized than the surrounding formation and contains massive blebs and patches of pyrrhotite and pyrite. It is inaccessible for examination down the face of the canyon-bluff, but can be traced by two old open-cuts and natural exposures from the edge of the canyon in a north-westerly direction across a rock-knoll for 75 feet at which point continuity is obscured by talus. A chip-sample representative of the best sulphide and siliceous mineralization in this exposure for a length of 50 feet, and a width of 8 feet, assayed: Gold, trace; silver, trace.

At 850 feet elevation, and about 75 feet northerly of this, an adit 22 feet in length has been driven on a cross-stringer, a few inches wide, striking north-easterly and dipping 60 degrees south-easterly.

At 880 feet elevation, 375 feet north of this and 175 feet southerly of the camp, the main or No. 1 adit is driven along a bearing of south 56 degrees east, angling very slightly across the strike of the formation. On August 28th. work was proceeding in the extension of this adit which had reached a distance of 357 feet from the portal. At the portal, the sheared fractures 3 feet wide already referred to, are exposed by an open-cut for tem feet to the adit-portal. The adit angles slightly across this structure from its hanging wall to its foot wall-side and the structure strikes into the south wall of the adit at about 50 feet from the portal. Although this structure is parallel and conformable in dip to that exposed in the creek-bed at 1075 feet elevation, the two exposures cannot be definitely correlated.

The adit continues in argillaceous sediments displaying varying degrees of alteration, with occasional stringers, isolated bands and patches of quartz. In places the formation is intersected by narrow, slightly sheared and generally, barren quartz filled cross-fractures. In some sections of silicification the formation is mineralized with finely-disseminated pyrrhotite, more rarely with small stringers and patches of massive pyrrhotite and some sparse chalcopyrite. Two short cross-cuts northerly and southerly across the formation exposed altered argillite and a few barren quartz-stringers and small patches. At 200 feet from the portal, two sections of silicified argillite with parallel cross-fracturing, are intersected. These are 20 feet apart, 4 to 6 feet wide, and sparingly mineralized with

blebs and disseminated pyrrhotite, some pyrite and chalcopyrite. At 55 feet from the face, a basic dyke 5 feet wide, striking north 50 degrees west and dipping vertically, comes in on the north wall. At the time of examination the adit had continued through the dyke to its north wall at the face. The face on its north side showed banded, silicified and epidotized argillite, and on the south side a section of the dyke. The dyke contains appreciable biotite mica and is schistose in places. It is sparingly and erratically mineralized with some blebs, patches and strings of massive pyrrhotite with some pyrite and chalcopyrite. A chip-sample taken transversely across the dyke from its north to its south wall for a length of 12 feet along the south side of the adit and across a width of 2 feet, representing the best mineralized section, assayed: Gold, trace; silver, 4.2 oz. per ton; copper, trace.

# ANNUAL REPORT OF THE MINISTER OF MINES FOR 1937

## Part B, Special Report by Dr. J. T. Mandy

### Stewart Canal Gold Mines, Limited, N.P.L.

This company was incorporated on the 14th of December, 1928, under the name of FinnSilver Mines, Limited (N.P.L.). This name was changed to Stewart Bridge River Gold Mines Limited (N.P.L.) on June 28th, 1934, and to the present name on May 13th, 1937. The registered office is at 603 Central Building, Victoria, and the president is John Haahti, Stewart, B.C. The capitalization is 3,000,000 shares of 50 cents par value, of which the Company reports 1,000,000 shares given for the property, and 26,510 shares sold for cash.

The property comprises the Gold Axe No. 1, No. 2, No. 3, Big Bell No. 1, No. 2, No. 3, No. 4 and Big Bell Fraction mineral claims. The Company reports that it also owns the Gold Boulder No. 1 to No. 6 inclusive, and the Nickel No. 1 and No. 2 located near the mouth of the Marmot River. The claims which have not been surveyed are situated on the westerly slope of Mount Rainey, "Silverado Mountain" from nearly sea-level to about 3200 feet elevation. They are located on the east side of the mouth of the Bear River and about half a mile to a mile east of the village of Stewart. The claims have at various times been restaked under different names, and it is understood from the president that the Big Bell group comprises a restaking of what was the Eagle group ground, reference to which will be found in the Annual Report of the Minister of Mines, British Columbia, 1925, on page 83 under the heading of Gold Ore Mining Company, Limited. The claims are located northerly from the Silverado and Red Reef groups and southerly from the Coral M group, and Indian Reservation No. 19.

The property is reached by boat from the Stewart dock, to a location on the tide-flats on the east bank of Bear River, determined by the stage of the tide, a distance of about 1 mile. At low-water in the Bear River, this stream can be crossed to its east bank by pack-horse from the village of Stewart to the commencement of the trail at the foot of the hill, about 30 feet above sea-level. If a row-boat is used from Stewart dock, the tide-flat and its margin is traversed for about a quarter of a mile to the commencement of the trail. From this point, a pack-trail ascends the mountain-slope by a series of switch-backs to the tent-camp at 500 feet elevation, and about a quarter of a mile from the foot of the hill. There are no trails extending to the various showings, and to reach these, a line of least resistance is followed through the thick timber.

From its foot, the hill slopes upward to a general angle of the about 30 degrees to 500 feet elevation, above which the slope steepens. Longitudinal benched and knolled areas of general "roche moutonnee" form fronted by rock-bluffs, and transversely cut by creek-gulches, are typical topographical features. Glacial overburden of varying thicknesses covers the hill-slope which is thickly timbered to about 2200 feet elevation.

As the president had reported that no appreciable work had been done on the Big Bell showings since the reference to that property in the Annual Report of the Minister of Mines of 1925, they were not examined.

The rock formation, embracing the Gold Axe group, consists of silicified epidote being argillite of the Lower Hazelton group, adjacent to the contact of granitic rocks of the Coast Range batholith. The argillite strikes south-easterly and dips 60 - 70 degrees south-westerly. In this locality, the altered argillite formation lies in an embayment of the batholith, the contact of which plunges easterly under the sediments. The argillite frequently contains finely-disseminated pyrrhotite, and on account of the silicification and the development of epidote in alternating layers parallel to the bedding, it is often banded in appearance. Granitic dykes and tongues intrude the altered argillite. The formation and structure closely resemble that on the adjoining Oral M.

The mineral deposit consists of irregular and generally weakly-developed patches and bands of silicification, conformable in attitude to the formation. In places, this is associated with weak shearing and cross-fracturing or jointing, striking northerly and dipping 50 degrees westerly. The best developed, although erractic and generally weak structures of silification and shearing, are adjacent to and on the north side of a deep and rugged creek-canyon about a quarter of a mile northerly from Portland Creek ("Silverado"). Only a small amount of prospecting by means of open-cuts, "pop-holes" and some stripping has as yet been done on the Gold Axe group, and no definitely correlated and continuously mineralized structure can be determined from the various showings.

In the areas of silicification, mineralization is mainly a sparse distribution of pyrrhotite in scattered blebs, streaks and fine dissemination, with some pyrite. At 400 feet elevation in a creek-bed in the extreme westerly section of the area, contiguous to the Oral M workings and adjacent to Indian Reservation No. 19, and claimed by the president to be on the Gold Axe property, there is an erratic occurrence of quartz stringers, bands and patches, mineralized with massive pyrrhotite and chalcopyrite. In the following text, the various showings are described, starting at this locality and proceeding easterly.

At 400 feet elevation, about 500 feet northerly from the tent, and claimed by the president to be on the Gold Axe No. 1, irregular bands and stringers of quartz, mineralized in places with chalcopyrite and pyrrhotite, outcrop in a creek-bed in epidotized and silicified argillite. The quartz is conformable to the formation, which strikes north 54 degrees west and dips 75 degrees south-westerly. An open-cut, 10 feet long, and an adit 6 feet long have been driven on the hanging-wall, and expose some quartz patches and stringers with a few bands of quartz and chalcopyrite in the face. A sample from a small dump, of selected quartz bands with chalcopyrite, which would compose about 10 per cent. of the adit-face, assayed: Gold, 0.30 oz. per ton; silver, 5.0 oz. per ton. A selected sample of

quartz, pyrrhotite and chalcopyrite from the creek-bed, assayed: Gold, 0.08 oz. per ton; silver, 1.2 oz. per ton.

In the same creek-bed at 525 feet elevation and about 120 feet south-easterly, an open-cut exposes quartz stringers in silicified epidotized argillite, sparsely mineralized with pyrrhotite, striking north 54 degrees west and dipping 75 degrees south-westerly.

Adjacent to the tent at 500 feet elevation and about 500 feet southerly of these showings, stripping and 2 small open-cuts expose some patches of quartz in altered argillite, mineralized with sparsely disseminated pyrrhotite and some pyrite.

At 300 feet elevation, about 1500 feet southerly from the tent, a sheared and fractured zone in altered argillite is exposed in the north wall of a rugged creek-canyon, and about 60 feet above the creek-bed. This point is the approximate location of the projection of a probably major fault which strikes north along the Bear River trough. The shear strikes north 59 degrees west, slightly transverse to the canyon, and dips 75 degrees south-westerly, conformable to the formation. An open-cut for 12 feet across this exposes epidotized, garnetized and silicified argillite mineralized with blebs and finely-disseminated pyrrhotite. At 35 feet higher elevation, an open-cut 20 feet wide on the same structure in the face of a steep bluff exposes similar material. At 375 feet elevation about 75 feet south-easterly from the last cut, a felsite dyke, 20 feet wide strikes north 11 degrees east across the formation.

At 925 feet elevation on the Gold Axe No. 2 about 1500 feet south-easterly from these showings, two open-cuts 60 feet apart, and 200 feet north-westerly of a creek canyon, expose silicified argillite mineralized with disseminated pyrrhotite.

At 925 feet elevation, 80 feet north-easterly of this, and 150 feet north-westerly of the creek-canyon an open-cut exposes 2 feet of quartz in altered argillite, striking north 51 degrees west and dipping vertically. The quartz and argillite are sparsely mineralized with pyrrhotite and an occasional bleb of chalcopyrite. A sample of the face of this cut for a height of 7 feet and a width of 2 feet, assayed: Gold, trace, silver, 0.6 oz. per ton; copper, 0.2 per cent.

At 1275 feet elevation, about 600 feet south-easterly from the last showing, and 120 feet northerly from a branch creek-canyon, parallel fracturing is exposed in the face of a bluff of epidotized rock. The fracturing strikes south 54 degrees east and dips steeply south-westerly, and is intersected at the base of the bluff by a lamprophyre dyke. An open-cut 10 feet wide in the face of the bluff shows some quartz stringers, blebs and patches of sphalerite and chalcopyrite. A sample of the face of the open-cut across 10 feet, assayed: Gold, trace; silver, 16.0 oz. per ton. About 120 feet south of this, and at 25 feet higher elevation, silicified argillite striking north 54 degrees west and dipping 75 degrees south-westerly is exposed by shallow stripping at the brink of the deep canyon. The argillite is mineralized with sparsely disseminated pyrrhotite and is weakly fractured conformable to the bedding-planes with narrow cross-fractures dipping north-westerly.

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# ANNUAL REPORT OF THE MINISTER OF MINES

## FOR 1937

## Part B -- Special Report

J. T. Mandy

Cornucopia Group -- This group of seven claims is owned by J. C. Simpson and associates of Telegraph Creek. It is situated in the headwaters basin area of McDame Creek, about one mile north of "Quartz City" and adjoins the Klondike Fraction on the west, and the Mac group on the north-east. A branch trail extends for about one and a half miles from "Wing's Camp" at 3475 feet elevation on the main trail, to the showings around 3700 feet elevation. The claims are located on the east side and within about half a mile of Quartz Creek on the lower, south-westerly slope of Sheep Mountain. They were staked in 1933, and the initial exposures are referred to in the Annual Report for that year.

The claims cover a gently-sloping knolled and ridged locality which is sparingly timbered and thinly covered with glacial overburden.

The area is about 7 miles north-easterly of the main eastern contact of the Cassiar granodiorite batholith which strikes north across the Cottonwood River from about one mile west of Petefowler Mountain (Needle Point) to Twin Peaks. The formation of the locality consists of a complex of altered bedded tuffs and andesitic flows with possibly some porphyritic intrusives, of the McLeod Series, and in one section, a small isolated area of argillite. The tuffs are generally carbonatized and locally pyritized, and exhibit rusty outcrops. They strike generally north-westerly and dip steeply north-easterly, with intervening bands and irregular areas of greenstone and altered augite porphyry. One dyke of porphyritic diorite was observed cutting all rocks of the complex.

A series of thirteen practically parallel quartz veins strike north-easterly to easterly and dip steeply southerly. These veins vary from 6 to 49 inches in width and are generally barren of sulphide mineralization. In a few places the quartz is sparingly mineralized with small patches and blebs of pyrite, in one vein with sparse blebs of sphalerite and some arsenopyrite, and is locally "vuggy" and cellular. Native gold is reported by J. Simpson to have been found in four veins, and specks of native gold were observed by the writer in vuggy quartz in two veins, and also in numerous specimens on the dump from them, occurring loosely attached in the vugs associated with limonite, and also in the quartz. The veins occur generally in the tuffs adjacent or close to the contact of these rocks with the greenstones and intrusives.

The veins outcrop in a belt about 1100 feet wide on the opposing slopes of two ridges which strike northerly, separated by a swampy gully about 250 feet wide.

At 3660 feet elevation on the southerly end of the westerly ridge, a quartz vein 12 to 18 inches wide outcrops in rusty, carbonatized tuff. The vein strikes north 83 degrees east and dips 85 degrees south, and has been stripped along the edge of the ridge for 150 feet. For the last 50 feet of the westerly exposure, the vein disperses into three stringers 6 inches wide. Further continuity of the vein at both ends of this exposure is obscured by overburden. About 25 feet south-westerly of the westerly end is an outcrop of quartz 24 inches wide. The quartz in these exposures contains limonite and is barren of sulphide mineralization.

At 3670 feet elevation, 350 feet north-westerly from this exposure, a quartz vein 12 inches wide has been stripped for a length of 50 feet down the westerly slope of the westerly ridge. It occurs in rusty carbonatized tuff, strikes north 83 degrees east and dips steeply towards the south. About 25 feet north-westerly of this, a similar and parallel quartz vein 12 to 16 inches wide has been stripped at intervals in shallow overburden for 60 feet. These veins contain some limonite, but are barren of metallic mineralization.

At 3690 feet elevation on the crest of the ridge, and 125 feet north-westerly from the last-mentioned showing, a quartz vein 12 to 16 inches wide is exposed by stripping and open-cutting for a length of 54 feet. The vein strikes north 78 degrees east and dips 85 degrees south-easterly. The continuity of the vein to the east is obscured by overburden. An open-cut 39 feet south-westerly of the stripping exposes a barren quartz vein 7 inches wide. On the westerly slope of the ridge, 33 feet south-westerly of this and on the strike of the vein, an open-cut exposes rusty carbonatized tuff.

About 140 feet northerly of this, a dense crystalline rock that is possibly an altered intrusive, is naturally exposed for a width of 60 feet. At 3670 feet elevation, on the easterly slope of the westerly ridge, 215 feet northerly of this, an oxidized quartz vein 6 to 10 inches wide, striking north 83 degrees east and dipping steeply south, outcrops in oxidized and pyritized tuff and has been traced for a length of 40 feet by stripping. Specks of native gold are reported by the owners to have been found in this vein, but no native gold was seen by the writer. Further definite continuity beyond this exposure is obscured by overburden. In approximate alignment and 280 feet easterly, across the draw and at 3670

feet elevation at the foot of theeasterly ridge, an open-cut 20 feet long and 2.5 feet deep ending in a shaft 8 feet deep, exposes an oxidized quartz vein 4.1 feet wide striking north 83 degrees east and dipping 70 degrees south.

The vein in the east face of the shaft shows decomposed and quartzose vein-material for a width of 4.1 feet with gossaned fractures parallel to the strike, and branching quartz stringers on the hanging and foot-wall. The west face of the shaft shows 3 feet of quartz with gossaned fractures parallel to the strike, and quartz stringers on the hanging- and foot-wall. In this face the quartz is vuggy and honeycombed and mineralized with some blebs and patches of pyrite mainly in the form of small crystals, and some finely divided arsenopyrite. A few specks of native gold were observed in some of the vugs in the quartz in this face. A selected sample of the pyrite from the bottom and east face of the pit, assayed: Gold, 1.06 oz. per ton; silver, 0.4 oz. per ton; arsenic, 2.2 per cent. Native gold occurring in gossaned honeycomb quartz and rarely, also contained in the quartz, was observed in numerous specimens on the dump at this working. At 3690 feet elevation and 40 feet easterly along the projection of this vein, an open-cut 25 feet long ending in a pit 3 feet deep exposes a width of 30 inches of very decomposed and oxidized vein-matter.

At 3710 feet elevation on the west slope of the east ridge and 60 feet northerly of the last showing, a parallel, rusty and glassy quartz vein in greenston is stripped and open-cut for a length of 30 feet up the 15 degree hill-slope. It is slightly gossaned and vuggy and sparsely mineralized with small blebs of pyrite and some blebs of honey-coloured sphalerite, about the size of a pea. Some specks of native gold were observed in the vugs associated with limonite. A sample across a width of 1.2 feet of this vein with no vugs or gossan, taken at 10 feet from the southerly end of the cut, assayed: Gold 2.3- oz. per ton; silver, 0.2 oz. per ton.

At about 3720 feet elevation on the east ridge and 80 feet northerly of the preceding vein, cross-stripping for 100 feet in a northerly direction, exposes bands of greenstone and tuff and three parallel quartz veins in mixed carbonatized tuff and greenstone. The most southerly of these is 12 to 18 inches wide, and composed of barren, rusty quartz. Fifteen feet northerly is a similar quartz vein 6 inches in width. Forty feet north of this, a rusty, glassy quartz vein 12 to 24 inches in width is uncovered in a band of carbonatized tuff 45 feet wide, flanked by greenstone. This vein strikes north 71 degrees east and dips 85 degrees south-easterly, and has been stripped for 40 feet south-westerly down the hill-slope to its intersection by a fault striking south 82 degrees east and dipping vertically. The continuity of the vein at the north-easterly extremity of the stripping is obscured by overburden.

The quartz of the vein proper is vuggy and streaked with limonite, and no metallic mineralization was observed, but sparse blebs of pyrite occur in quartz stringers on the hanging-wall. Specks of native gold are reported by the owners to have been found in this vein.

The extreme southerly working on the easterly ridge is located about 380 feet southerly from this working and extends for a distance of 230 feet betwen 3680 feet and 3720 feet elevation on the westerly slope of the ridge. This is a series of trenches 2 feet deep, which expose quartz veins in an involved complex of argillite, tuff and greenstone, intersected by a porphyritic diorite dyke 15 feet wide which strikes easterly to south-easterly and dips 70 degrees southerly. The dyke is epidotized and contains segregation patches of pegmatite.

At 3680 feet elevation, a trench in a north-easterly direction up the ridge-slope for 160 feet, adjacent to the foot-wall of the dyke at its southerly end, exposes highly oxidized argillite for the first 100 feet. At this point the dyke swings south-easterly and the trench enters greenstone which continues for 60 feet to its end. At the commencement of the greenstone, a rusty quartz vein 12 to 24 inches in width, striking north 80 degrees east and dipping vertically, is exposed on the north side of the trench. It continues for 55 feet to the east end of the trench where it enters mixed greenstone and carbonatized tuff and continues as a series of quartz stringers and patches up to 24 inches in width, across a total width of 6 feet. In alignment with the strike of this vein and 80 feet easterly, at 3720 feet elevation, a cross-trench and open-cut for 80 feet in a northerly direction exposes oxidized argillite.

At 3680 feet elevation, a trench in oxidized argillite on the footwall-side of the dyke follows a quartz vein 8 to 10 inches wide for a distance of 60 feet in an easterly direction on the contact of the dyke and argillite. This vein strikes north 80 degrees east and dips 70 degrees southerly. At the easterly end of the trench the dyke swings southerly across the face, but the vein may continue along the hanging-wall of the dyke. About 100 feet easterly of the easterly end of the trench, on the footwall-side of, and 25 feet from the dyke, which at this point intersects the greenstone, shallow stripping exposes a lenticular and barren, white quartz vein 10 inches wide striking east and dipping 70 degrees south.

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Part B -- Special Report
by J. T. Mandy

HOMESTAKE GROUP. This group of four claims comprising the Homestake No. 1 to No. 4 inclusive, is owned by P. McNamara of "Quartz City", McDames Creek, and is located on the south-westerly slope of Table Mountain. The claims were staked in 1936 and 1937, subsequent to the Vollaug discovery on Table Mountain, and adjoin the Comfort and Bird groups on the south and the King George claim on the east. During the 1937 season, the property was under option to the Consolidated Mining and Smelting Company of Canada, which carried out appreciable exploration of the showings by stripping, open-cutting and pitting before dropping their option.

The property is reached by a good trail extending for 7 miles from the Consolidated Company camp on the south shore of McDame Lake. From McDame Lake (3054 feet elevation) this trail extends south-westerly for about 2 miles along a comparatively level gravel-bench, lightly timbered with jack-pine, with one intervening swamp, and skirts the north-westerly shore of Callison Lake at 3259 feet elevation. At this point it turns south for about 1½ miles and ascends the draw of "Aeroplane Pass" to 3670 feet elevation, from where a branch-trail descends the west slope of Table Mountain to the aeroplane landing at Cook Lake in Machita Pass. From 3670 feet elevation, the main trail continues southerly for about 2 miles up "Aeroplane Pass" to 4100 feet elevation on the slope of Cottonwood River, from which point it extends easterly and northeasterly for

1½ miles to the Consolidated Company Vellaug group camp at 4418 feet elevation on the south-westerly slope of Table Mountain.

The showings are located around 4230 feet elevation, about a quarter of a mile southerly from the camp, in a gently sloping, open-timbered, meadowed, knolled and ridged area covered with a light overburden of soil and products of nivation, with some clay. In the depressions the overburden is of similar type and moderately thick.

The locality is situated about 4 miles north-easterly from the main eastern contact of the Cassiar granodiorite batholith which, in this area strikes north across the Cottonwood River about one mile west of Petefowler Mountain (Needle Point). The rock-formation of the locality of the claims consists mainly of carbonatized tuffs, some bands of quartzite and some irregular outcrops of altered, fine-textured, crystalline igneous rocks of probably intrusive origin, of the McLeod series of possibly Jurassic age. The intrusive rocks are also altered by carbonatization, but the main alteration in them is by development of epidote, chlorite, sericite and kaolin. They may have originally possessed the composition of dacite. The tuff outcrops are rusty and locally, adjacent to the veins, sparsely disseminated pyrite occurs in them. The veins occur in the altered tuffs.

The main showing is a white quartz replacement vein 3.2 to 11.3 feet in width, striking north 87 degrees west and dipping 60 to 80 degrees northerly. Irregular

quartz bodies also out-crop and probably represent, in part, blocks of float from contiguous veins and lenses. Definite, superficial quartz float commonly occurs. The quartz is generally barren of sulphide mineralization, but sparsely distributed blebs of pyrite occur locally on the walls of the main vein. Stringers and blebs of ankerite occur in the quartz. The walls of the vein are not well-defined and the lateral boundaries are indicated by diminishing silicification. Locally, the adjacent wall-rock contains sparsely disseminated pyrite.

The main vein is exposed along the 15-degree slope of a low ridge, about 40 feet northerly of the trail. It had been traced a distance of 102 feet by two shallow pits and two open-cuts, between 4230 feet and 4255 feet elevation.

At the east end of the workings at 4230 feet elevation, the vein, barren of sulphide mineralization, is 6.2 feet wide and is exposed in a pit 6 feet deep and 12 feet long, excavated in 5 feet of light overburden. It is enclosed by carbonatized tuffs.

At 4235 feet elevation and 60 feet westerly, a pit 4 feet in depth and 6 feet long exposes the vein, 3.4 feet in width in similar rock. Some stringers of oxidized ankerite occur in the quartz which is very sparsely mineralized with blebs and patches of pyrite, more especially on the hanging-wall side.

At 4250 feet elevation and 48 feet westerly, an open-cut and stripping exposes similar conditions, the vein being 11.3 feet wide and vertical. The quartz is rusty and

and contains some ankerite stringers but no sulphide mineralization.

At 4255 feet elevation and 24 feet westerly, the vein outcrops and is also exposed by shallow stripping for a width of 7 feet. The dip is 60 degrees north. At this working the hanging-wall rock is silicified and mineralized with disseminated pyrite. About 30 feet westerly from this point a crystallineigneous rock outcrops with quartzite adjacent to it on its east side. At 4265 feet elevation and 72 feet westerly from the last working, trenching for the establishment of further continuity of the vein was proceeding on July 30th.

About 400 feet north 53 degrees east from the most easterly-described working and southerly from the trail, white and barren quartz float is irregularly scattered on the surface, or partially buried in soil and talus material, in a flat depression sloping at about 10 degrees. Some of this float is several feet in width, and in part could readily be mistaken for vein outcrops. In this locality at 4235 feet elevation, a pit 2.5 feet in depth exposes two blocks of barren quartz float 1 and 2 feet in width, in soil and talus material. At 4225 feet elevation and 60 feet south 73 degrees east from this, quartz 2 feet in width is exposed in an opencut. This appears to strike north-westerly and dips 30 degrees south-westerly, and may possibly be float. At 4225 feet elevation and 70 feet westerly from this, an irregular body of barren white quartz 5.7 feet in width is

exposed in a trench and open-cut. The attitude of this is not clear, and it is possibly also float. Around 4210 feet elevation, and about 50 feet southerly of these exposures, argillite and bedded carbonatized tuff are exposed striking easterly and dipping steeply northerly.

On the south side of the trail, about 350 feet southerly of these showings at 4275 feet elevation, trenching in soil 1 to 5 feet deep exposes a body of rusty barren quartz in oxidized carbonatized tuff. The attitude of this is not clear, but it appears to strike north 12 degrees west and to dip vertically. In a cross-trench there is a width of 21 feet of quartz with a fairly well-defined wall on the west side. At the east end of this trench the quartz is still continuous and is exposed in a connecting-trench to the south, for a length of 19 feet.

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FOR 1937

Special Report by J. T. Mandy

Hunter Group. This group of 8 mineral claims is owned by John Vollaug, Hans Erickson and associates of McDame Creek. The property is situated at 129° 32' 21" west longitude and 59° 10' 48" north latitude, 5¾ miles east of the Consolidated Company Table Mountain camp and 4½ miles south 64 degrees east from the crest of Table Mountain. The showings are located between elevations of 4600 and 4800 feet on the east slop of Ellamadge ("Greenstone") Mountain, on the west side of the headwaters of Hunter Creek and at from 300 to 500 feet above the creek.

Hunter Creek heads at the low divide between it and the first south fork of McDame Creek and flows south for about 7 miles into the Dease River. The locality of the claims is about 5½ miles from the confluence of Hunter Creek and Dease River.

The property was staked on August 23rd, 1936, and recorded on September 7th. During the 1937 season, exploration was carried out by the owners by means of stripping and open cutting.

The locality is reached from the Table Mountain "Vollaug" camp by following the "Vollaug" trail in a northeasterly direction for about 1½ miles to the depression bordering the south scarp of the mountain. From this point, a route of least resistance, avoiding swamps, is followed in an easterly direction through open country above timberline, to the headwaters of Friendlison Creek at about 4800 feet elevation, about 3 miles from the "Vollaug" Table Mountain camp. At this point, Friendlison Creek is crossed and the route continues east for about three-quarters of a mile to 5250 feet elevation on the prominent pass in the north shoulder of Ellamadge Mountain (2.46 miles south 74 degrees east from cut V1 on the Viking claim of the Vollaug group.) From this point approximately the 5000 foot contour on the south side of the third or headwaters west fork of Hunter Creek, is followed in a south-easterlydirection for about 2½ miles to the tent camp at an elevation of 4720 feet on a block-step on the west side of the main trough of Hunter Creek. The camp-site is located close to patches of scrub timber about 200 feet above timberline.

Ellamadge Mountan is a prominent and rugged coronet-shaped mountain which, on its west and north sides is crowned with 5 sharp peaks, each rising to 6500 feet elevation. The concave or east side faces the trough of Hunter Creek. The higher elevations of the mountain facing Hunter Creek, slope precipitously from the crest to a ridged and knolled block-step bearing northerly at 4800 feet elevation.

Below this, the step slopes precipitously to the trough of Hunter Creek. In the locality of the claims, two main transverse gullies, occupied by faults striking north-westerly, intersect the block-step at its northerly and southerly ends. The block-step and transverse gully topography is also prominently repeated in the mountain range confining Hunter Creek, on its east side. The faults occurring in the Hunter group, together with the lithological and general topographical aspects, indicate the possible regional structural involvement of a fault complex, with Hunter Creek trough possibly occupying a graben or trough-fault.

Ellamadge Mountain on both its east and west sides is composed of mainly altered igneous rocks of the McLeod series. Some irregular areas of argillaceous sediments also occur along the slopes of the east shoulder, in the locality of the claims, but the structural position of these was not definitely interpreted and correlated. They appear, however, to strike northerly and dip easterly and to underly the tuffaceous component of theigneous series and may possibly be correlated with the Dease series. The sediments consist of black to greyish-black, thinly-bedded argillite and sandy argillite, altered locally. In the region of the showing, they are appreciably crushed and decomposed and where they are adjacent to the crystalline igneous rocks, are altered.

The igneous rocks comprise a band, 100 to 200 feet in width, of highly carbonatized and crushed tuffaceous beds lying between argillite on the west side and altered crystalline rocks on the east side. The altered crystalline rocks are composed of greenstone with marginal bands of appreciable width of serpentine transitional into talcose soapstone. Greenstone underlies the bulk of the block-step of the east slope of Ellamadge Mountain up to its west rim at the foot of the steep slopes to the crest.

At this point, a defined, longitudinal, shallow depression, offset in two sections, marks its contact with serpentine, soapstone and carbonatized tuffs adjacent to the sediments.

The main mineral deposit consists of a wide quartzose shear-zone occupying the margin between the sediments on the west and the tuffs on the east. This strikes northerly. The dip was not definitely determined but appears to be easterly, conformable to the underlying sediments. Although the 3 exposures on this zone are appreciable distance apart, their alignment and position at the margin of the sediments and tuffs with easterly subjacent greenstone, indicates a probable correlation and horizontal extension of the zone for

about 3500 feet. At its southerly extremity, near the southerly boundary of the Hunter No. 2 claim, the continuity is interrupted by a transverse fault which superimposes greenstone across the projection of the strike in this direction and probably offsets the zone about 1000 feet to the northwest where the sequence of sediments and tuffs again outcrop. At the northerly extremity of the strike-projection, the zone is again intersected by a transverse fault and is offset about 800 feet to the east. The extreme northerly working is on the offset-block northerly of this fault.

In the 3 workings, the quartz is exposed across a horizontal width of from 10 to 26 feet. Because of the unknown factor of the dip, this does not represent the true width. The quartz is white, dense in texture and somewhat glassy. In small sections it is slightly ribboned and contains rusty streaks and patches of probably included carbonatized tuff or ankerite. Under the magnifying-glass, veinings of glassy quartz can be seen cutting the white quartz, indicating different ages of quartz deposition. The quartz is generally barren of sulphide mineralization but is locally very sparsely mineralized with specks of pyrite, chalcopyrite and some tetrahedrite. The quartz in the zone shows sheeting and defined jointing parallel to the strike. Locally, these joints are pronouncedly slicken-sided.

Several stringers and compact, lenticular quartz veins up to about 3 feet in width occur in the greenstone easterly of the shear-zone. These are similar to the quartz veins occurring in the McLeod series of the McDame Creek basin area and are generally barren of sulphide mineralization or locally very sparingly mineralized with blebs of pyrite and some arsenopyrite.

On the Hunter No. 4 claim, at 4730 feet elevation on the knolled block-step, about 1000 feet north-easterly of the camp-site, a compact, irregular quartz vein, 1.5 to 3.1 feet in width, outcrops in impure greenstone showing some patches of assimilated chert and quartzite. The vein is traced by intermittent outcrops for about 150 feet. It strikes north 58 to 73 degrees east and dips at 85 degrees towards south. At the easterly extremity it disperses in stringers. At the westerly extremity it is covered by shallow overburden. In a small open-cut at the westerly end, the vein is 3.1 feet in width with 8 inches of glassy quartz on the hanging-wall sparsely mineralized with pyrite and arsenopyrite. A sample of the mineralized streak, 8 inches in width on the hanging-wall, assayed: Gold, trace; silver, trace.

About 150 feet north-easterly of this, a similar quartz vein 2.5 feet in width outcrops in impure greenstone. This strikes north 76 degrees east and dips vertically. It is not mineralized and is traced by natural outcrop for 35 feet. At both extremities the vein is obscured by shallow overburden.

The south exposure on the strike of the shearing is at 4670 feet elevation on the east side of a defined gully at the south-west corner of the Hunter No. 2 claim. In this locality, shallow stripping in soil exposes compact white quartz for a length of 37.8 feet and a horizontal width of 10 feet. The quartz strikes north 23 degrees east and appears to dip easterly. In the low bluffs forming the east rim of the depression, 80 feet from the hanging-wall, greenstone is exposed. The contacts are not exposed, but argillite outcrops 200 feet to the west. The quartz is sheeted by longitudinal major jointing striking north 23 degrees east and dipping at 42 to 52 degrees south-easterly. A staggered, chip-sample over this exposure, assayed: Gold, trace; silver, trace. At 4600 feet elegation in a transverse gully, 200 feet south 70 degrees west from this exposure, two trenches across the strike of the zone expose greenstone. This extends about 1000 feet north-westerly to subjacent tuff and argillite, indicating the offsetting of the formation for this distance to the north-west by a fault.

The central exposure on the strike of the shear-zone is at 4800 feet elevation on the west side of a shallow depression in the south-easterly corner of Hunter No. 4 claim, about 1600 feet northerly from the south cut. At this point, an open-cut for a length of 26 feet in a westerly direction across the face of a low ridge on the south side of a small transverse gully exposes quartz in bands and stringers inter-layered with crushed argillite, across the entire face of the cut. Several defined longitudinal slip-planes with gouge and slickensided walls indicate movement on the zone subsequent to the quartz deposition. The quartz is locally sparsely mineralized with specks of pyrite, chalcopyrite and tetrahedrite. The attitude of the zone is not clear in this exposure. On the west side is badly crushed and decomposed argillite. Adjacent to the east side is carbonatized tuff bordered by soapstone, serpentine and greenstone. A sample across 3.6 feet of quartz with some mineralization on the east side of the cut, assayed: Gold, 0.20 oz. per ton; silver, 0.4 oz. per ton.

On the north side of the transverse draw appreciable quartz float occurs. At 30 feet north-easterly an open-cut 15 feet long, bearing north 42 degrees west, exposes quartz stringers and 3 feet of brecciated quartz in crushed slate.

On the Hunter No. 7 claim, at 4520 feet elevation and about 1900 feet north-easterly from the Hunter No. 4 cut, stripping and ground-sluicing in 1 to 3 feet of soil and clay in the bed of a small creek, exposes an areaof dense, white quartz 27 feet long and 12 feet wide. In places the

quartz is glassy and also contains some rusty patches and streaks. The quartz is generally barren, but locally pyrite occurs in very sparse blebs. The attitude of this quartz body is not clear, but on the east side a poorly-defined wall indicates a north-easterly strike and a south-easterly dip. The wall-rocks adjacent to the quartz are not exposed. Contiguous on the east, greenstone, serpentine and soapstone outcrop. On the south side of a transverse gully, about 200 feet south of the working the formation is offset to the west. The quartz exposure is on the north side of this fault and offset about 800 feet to the east from the strike of the zone in the Hunter No. 4 cuts. A selected sample of the best, though sparsely, mineralized sections of quartz in the exposure, assayed: Gold, trace; silver, 0.6 oz. per ton.

SPECIAL REPORT BY
Douglas Lay and J. T. Mandy - 1937

COPPER-SILVER DEPOSITS

USK AREA

SILVER MITTS (Formerly Mitts). This group of 9 claims, owned by E. Mitts, O. Berg, A. Oswald, and A. Lopez of Usk, at the time of examination in May was under option to E.M. Angell of Prince Rupert. The property is situated on the south side of the North fork of Chimdemash Creek, and is distant about 8½ miles from Usk. It is reached by a good pack-trail 6½ miles in length, which leaves the highway at a point about 2 miles north of the ferry landing at Usk on the east side of the Skeena River, and follows Chimdemash Creek, crossing to the right bank of the latter about 6¼ miles from Usk, and ascending the right bank of the North fork to the cabin of the owners at elevation 1975 feet.

The property was discovered by E. Mitts in 1926 and staked during that year. In 1929 it was optioned to R. E. Doan by whom certain adits were driven, which have no relation to the chief mineral showing described in this report. This option was abandoned in 1931, and in 1936 an option on the property was acquired by E. M. Angell of Prince Rupert. (Refer to Annual Reports of the Minister of Mines for the years 1929 and 1930 under "Mitts", and to Memoir 212, 1937, Geological Survey of Canada.

The showings examined are situated between elevations 2275 feet and 3200 feet on the steep heavily-timbered mountain-slope, which rises sharply from the creek on a

slope of about 40 degrees.

Owing to snow conditions apart from a few showings of no commercial significance, it was only possible to examine the mineral showings, which the owners consider of chief importance. This mineralization consists of mainly bornite and chalcopyrite, with subordinate amounts of cuprite and specularite, and prevalent malachite staining. A noticeable abount of ferromagnesian silicate, presumably biotite, is also present. The mineralization follows fractures, jointing, and quartz veinlets in a silicified section in red andesite, in the near vicinity of an intrusive tongue of porphyritic diorite with which it is quite possibly genetically associated. The mineralization is exposed in a rock-bluff at elevation 3200 feet over a maximum length of somewhat over 40 feet and a maximum height of 16 feet, but is mainly confined to an area 23.4 feet in length by 16 feet in height. Though there is some evidence that the silicification exhibits a general strike in a direction north 15 degrees west, the mineralization is heaviest in a system of fracturing striking north 75 degrees west and dipping 67 degrees north eastward. The strike of this conforms approximately with that of the rock-bluff and the dip with that of the mountain slppe. These fractures are more pronouncedly developed at the east part of the exposure, and are crossed by jointing striking north and south and dipping west at 65 degrees. The region above the bluff was obscured by snow at the time of examination, but the owners state that exposures of rock in this vicinity

do not show any mineralization. It is possible, however, that the out-crop of a silicified zone striking as indicated might be covered with vegetation, and glacial debris, nevertheless any positive evidence of major structural conditions, appertaining to a mineralized zone likely to persist, is lacking. Quartz veinlets occur within the exposed section of silicification and there is also a considerable development of calcite. Snow obscured rock-exposures east of the mineralization, and also in the region between the latter and the intrusive porphyritic diorite. The open-cut at the eastern extremity of the exposure is from 3 to 16 feet in height and 12.4 feet long. Its bearing is due south and it well exposes the fracturing and jointing mentioned. A sample, taken in this open-cut aeross a width of 6.7 feet, being a fair sample taken at right angles to the strike of the best mineralized fractures mentioned, assayed: Gold, 0.005 oz. per ton; silver, 1.4 oz. per ton; copper, 2.9 per cent. The open-cut distant 18 feet west of that described is only about 5 feet in length by 4.5 feet in height, and width, and mineralization exposed by it is less. The formation in the region of the open-cuts is traversed by small veinlets of quartz, and there is a development of a considerable amount of calcite. Silicification is more marked in the western part, but it should be understood that there is no pronounced evidence of any major structure, in the form, for example, of a definite zone of shearing within which mineralization might be expected to persist for some distance.

The estimated volume of the more easterly open-cut is 256 cubic feet. From this open-cut the owners, by hand-

sorting, obtained one small pile of first-grade vein-material of an estimated volume of 27 cubic feet, equivalent to 2.25 tons, and another pile of second grade having an estimated volume of 45 cubic feet, equivalent to 3 tons. A chip-sample of the former assayed: Gold, 0.005 oz. per ton; silver, 9.0 oz. per ton; copper, 10.7 per cent. A chip-sample of the latter assayed: Gold, 0.005 oz. per ton; silver, 3.0 oz. per ton; copper, 3.4 per cent.

Distant about 60 feet in a northerly direction from the east open-cut, porphyritic diorite, with phenocrysts of feldspar, is exposed. Other exposures of the same rock occur at lower points on the mountain slope.

Distant in a north-westerly direction from the exposure above described at elevation 2275 feet on the same mountain-slope, there is exposed a silicified shear-zone in green andesite. This strikes north 40 degrees east, and dips south-east at 35 degrees. At this point only the hanging-wall side of this shear-zone is exposed. The owners state that it can be traced for a great distance, and at some points reached a width of upwards of 50 feet. The filling at this point examined consists of silicified and brecciated andesite showing a very sparse mineralization of pyrite. A sample of the best, although still sparsely pyritized parts of this shear-zone, assayed: Gold, trace; silver, trace.

The green andesite formation in the more immediate vicinity of the hanging-wall of this shear-zone shows occasional widely separated patches or blebs of bornite and chalcopyrite in

the contact-planes and jointing. This condition is exposed in two open-cuts on the steep mountain slope, about 125 feet apart at elevations of 50 feet and 75 feet respectively above the point of exposure of the shear-zone. These open-cuts do not expose any mineralization of commercial significance.

The Annual Report of the Minister
of Mines for the year 1937

Special Report
by
Douglas Lay.

TOULON GROUP. This property consists of the Toulon, Montezuma, Bulldog, Portland, and Mona Crown-granted mineral claims. Title to the property under surface rights is registered in the name of the Copper River Exploration Company, Limited, N.P.L., with offices at Vancouver Block, Vancouver, the present status of which is not known to the writers.

The property is located on the north slope of Bornite mountain to Chimdemash creek which flows into the Skeena river on its easterly side about 2½ miles north-easterly of Usk station on the Canadian National railway. The showings are situated between elevations 1175 and 1310 feet on the thickly timbered, 30 to 37-degree hill-slope. Underbrush and thick glacial clay and boulder overburden covers the slope, along which an occasional bluff-ridge protrudes.

The Chimdemash creek pack-trail, (which leaves the highway at a point about 2 miles north of Usk), is followed for about 1½ miles to elevation 400 feet. At this point a steep foot trail ascends the mountain to the upper adit at elevation 1310 feet.

The area comprises a roof-pendant of altered andesitic volcanic rocks in the vicinity of the easterly plunging contact of the Coast Range granodiorite batholith. In the locality of the claims the rocks are mainly epidotized greenstone intruded by granitic differentiates from the batholith. The mineral deposit occurs in altered greenstone, and is in the close vicinity of an intrusive granitic rock.

The mineral deposit is a high-temperature lenticular, white quartz vein in which feldspar patches and blebs are characteristic. Where exposed it is irregularly mineralized in places with patches, blebs and streaks of chalcocite, bornite, some specularite and an occasional speck of chalcopyrite. The aggregate of sulphide mineral distribution in the total vein exposures is very irregular and generally sparse. Where oxidized, the migration of malachite stain may tend to exaggerate a casual conception of the sulphide mineral distribution. No section was observed with sufficient sulphide concentration to constitute a lens or shoot. Electrum is reported by the former owner to sometimes occur in the mineralization. Although none was observed in the vein-material at the property, an excellent sample of electrum was seen in a specimen typical of the Toulon mineral deposit. The average vein-strike is north 48 degrees east and the maximum dip 42 degrees north westerly.

The host-rock is highly altered greenstone. At the upper adit, elevation 1310 feet, the outcrop is 40 feet west of a granitic rock-exposure. In the face of this adit, which is 158 feet south-westerly of the portal, and for about 60 feet back from the face, granitic and hybrid-granitic rock is exposed. This indicates a north-easterly striking granitic intrusive-contact in this locality, with the vein lying about 30 feet north-westerly from the contact and striking approximately parallel to it.

The property is one of the oldest locations in the Usk area and in 1928, after being escheated to the Crown, was leased from the Government by Lee Bethurem and John Willman of Usk, who in 1930 optioned the property to the Copper River Exploration Company for 50,000 shares supposedly deposited in escrow with the Registrar of Companies in Victoria. No work was done by the company mentioned, and the property has lain inoperative for many years.

The workings consist of three adits, at elevations 1310, 1210 and 1175 feet respectively, and two main open-cuts at elevations 1190 and 1100 feet respectively.

The upper adit at elevation 1310 feet is driven in a winding south-westerly direction for a distance of 158 feet. At the portal the vein outcrops diagonally across a rock-bluff 20 feet high. At this point quartz is exposed along its dip in the form of a lens 10 feet high above the portal, where the quartz is cut off by a joint-plane, the hanging-wall fracture continuing up the hill-slope. The vein dips 42 degrees north-westerly across the adit-portal showing a width of 4.5 feet of quartz in the portal-roof and floor. Sparse patches of mineralization occur at the portal. The drift continues along a bearing of south 54 degrees west for 37 feet exposing a width of 2 to 3 feet of barren quartz with sparse patches of sulphide mineralization. At 33 feet from the portal the vein is stepped up about 2 feet by a fault striking north 45 degrees west and dipping 70 degrees north-easterly across the adit. The adit continues for 45 feet along a bearing of north 78 degrees west showing 2 to 3 feet of barren or sparsely mineralized quartz. At a point 18 feet along this stretch, and 55 feet from the portal, a winze has been sunk on the north side of the adit and another excavation in the floor of the adit on its south side. These were filled with water. At the collar of the winze on the north side and for about 20 feet along the side of the drift some scattered patches of sulphide mineralization occur in a quartz-width of 1.5 to 2.5 feet. In the south wall of the adit at this point the vein consists of a barren, quartzose, sheared fracture 8 inches wide.

At 27 feet beyond the winze the vein consists of a sheared quartzose fracture 12 inches wide, which dips into the floor at the north side of the adit. At this point a barren, flat, sheared fracture 8 inches wide, is followed for 28 feet along a bearing of south 35 degrees west. Along this stretch the formation shows increasing silicification and the adit continues for 48 feet along a bearing of south 12 degrees west to the face which is in granodiorite.

At the portal of this adit a dump of vein-material having a volume of 1440 cubic feet has been accumulated. Calculated at 16 cubic feet to the ton, this represents about 90 tons. The lower section of this dump appears to contain mainly quartz with a very little sulphide mineralization. The upper section of the dump, comprising a volume of about 135 c. feet, equivalent to about 8 tons contains more sulphide mineralization. A sample of this upper section of the dump assayed: Gold, trace, silver, trace; copper 2.5 per cent. A sample of selected mineralization from the upper section of the dump assayed: Gold, trace; silver, 3.0 oz. per ton; copper, 16.1 per cent.

At elevation 1210 feet, about 300 feet north 60 degrees west of the upper adit, an adit has been driven 138 feet, bearing south 15 degrees east, in greenstone. At the face a crosscut extends 33 feet bearing south 70 degrees west. No vein or mineralization occurs in this adit and it is evidently above the vein.

At elevation 1190 feet and 60 feet north 20 degrees west from this adit, an open-cut exposes quartz 18 inches wide slightly mineralized with chalcocite and bornite and showing appreciable malachite stain. A dump of about 2 tons of low-grade vein material has been accumulated at this cut.

At elevation 1175 feet and about 20 feet south 80 degrees west from the cut a cross-cut-adit bearing south 10 degrees east for 30 feet and then turning to south 48 degrees west for 10 feet to the face, follows the flat, barren quartz vein, 8 to 12 inches wide for 20 feet. This vein strikes north 35 degrees west across the adit, and dips 20 degrees south-westerly. The last 10 feet of the adit to the face follows two irregular and very sparsely mineralized quartz seams 3 inches to 12 inches wide. The formation in this adit and in the vicinity is tuffaceous andesite. At elevation 1100 feet and about 200 feet north 45 degrees west from this adit an open-cut in tuffaceous andesite exposes a barren and irrgular quartz lens 13 inches wide, and some barren quartz stringers.

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# ANNUAL REPORT OF THE MINISTER OF MINES FOR 1937

## Part C - Special Report by Douglas Lay

MAPLE LEAF GROUP. This group consists of 8 claims owned by L. Kylling of Topley, and is situated immediately east of the Golden Eagle group. A wagon-road 1/2 mile in length leads from the camp of the latter group to a cabin on the Maple Leaf. The distance from Topley is about 7-1/2 miles.

The ground in the vicinity of the showings examined is gently-sloping, overlain by glacial drift, and covered with sparse green timber at the base of the northern slopes of Huckleberry mountain.

Two parallel shear-zones in andesite breccia containing small mineralized quartz stringers striking north 86 degrees west, dipping 55 degrees north-east have been discovered. These are heavily stained on the foot-wall with manganese dioxide due to the oxidation of rhodochrosite which is present in the quartz stringers. The quartz stringers contain some sphalerite, pyrite and a small amount of galena in places, and also some freibergite. Certain other mineral showings on which no work is taking place were not examined.

The property was discovered by the owner in 1928, since when he has carried out a considerable amount of prospecting.

At 4045 elevation, an open-cut 9 feet long, 5 feet wide, and 10 feet deep discloses a shear-zone in andesite breccia,

2.5 feet in width striking north 86 degrees west and dipping 65 degrees north. On the foot-wall a stringer of quartz 3 inches in width is mineralized with sphalerite, pyrite and some freibergite. A sample of selected mineral assayed: Gold, 0.02 oz. per ton; silver, 24.2 oz. per ton; lead, nil; zinc, 5.0 per cent. Distant 63 feet from this open-cut in a direction south 89 degrees west a shaft, filled with water at the time of examination, is said to have been sunk to a depth of 12 feet and to have exposed the continuation of this shear-zone. Distant from this shaft 285 feet in a direction south 61 degrees west at approximately the same elevation, an opencut 10 feet long, 10 feet wide, and 5 feet deep discloses another shear-zone with similar strike and dip.

Prospecting in this region is greatly impeded by constant inflow of seepage water into all surface workings, due to flat topography. Silver values present in the mineralization are, however, encouraging.

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Part C -- Special Report by Douglas Lay.

Three Star Group:

This group consists of 5 claims owned by Lawrence Kylling of Topley. It is situated mainly on the right bank of Finlay Creek, and covers the ground formerly occupied by the lapsed Sheila m.c., extending eastwards from the Snowshoe mc.

The property is at present reached by a foot-trail from the Golden Eagle camp about ¾ mile in length, Finlay Creek being crossed by a foot bridge. A wagon-road about 1½ miles long is now being constructed to this property from the end of the motor-road from Topley to the Topley and Richfield groups, which will be a more convenient means of access.

The group is on the southern slopes of Tachak mountain which rise from Finlay creek at about 30 degrees flattening somewhat at higher points. Although outcrops of the epidotized andesite formation are not infrequent, the intervening region is overlain by glacial debris and covered with standing dead timber, windfalls, and second-growth timber.

Within a width of 50 feet, 3 shear-zones are exposed in the epidotized andesite. Of chief importance is one from 6 to 8 feet in width, which strikes north 86 degrees east and dips north-west. On the hanging-wall and on the foot-wall occur mineralized bands of quartz. The hanging-wall band is from 10 to 15 inches in width and is sparsely mineralized, the foot-wall band is from 9 to 18 inches in width and is

well-mineralized, intensely oxidized, and heavily stained with manganese dioxide. Mineralization consists of quartz sphalerite, pyrite, chalcopyrite, specularite, azurite and malachite, and manganese dioxide. Between the quartz bands the filling consists of silicified and bleached formation.

The showings now under investigation by the owner were discovered by him during the present year.

The surface showings lie in a direction north 26 degrees west of the Golden Eagle No. 2 shaft. At elevation 3750 feet. 90 feet above Finlay creek, on the north slope of the creek valley, an open-cut 21 feet long, 4.5 feet deep, and 9 feet wide, exposes a shear-zone from 6 to 8 feet in width striking north 86 degrees east. The foot-wall dips from 25 to 34 degrees, and the hanging-wall from 46 to 56 degrees to the north-west. The occurrence may, therefore, be that of two intersecting closely-adjacent shears, rather than one shear. On the hanging-wall is a somewhat oxidized sparsely mineralized band of quartz from 10 to 15 inches in width, and on the foot-wall a quartz band from 9 to 18 inches in width intensely oxidized and heavily stained with manganese dioxide. The mineralization is as described. Between the quartz bands the filling consists of silicified and bleached formation. Distant 29 feet in a direction south 36 degrees west another shear-zone with a small band of quartz is exposed by an open-cut at a somewhat lower elevation. This shear-zone strikes due east and west and dips north at a steep angle. Distant 20 feet from the first-mentioned open-cut in a direction north 24 degrees east, and 20 feet higher in elevation, open-cutting discloses another shear-zone with a small quartz band, striking north 66 degrees west and dipping north-east.

The following samples were taken in the large open-cut disclosing the shear-zone of chief importance;- a sample taken at the west end across 9 inches of heavily oxidized material on the foot-wall assayed: Gold, 0.08 oz. per ton; silver, 2.4 oz. per ton. A sample taken across 18 inches on the foot-wall at a point 8 feet east of the above sample, assayed: Gold, 0.06 oz. per ton; silver, 16.0 oz. per ton; copper, 0.2 per cent; lead, nil; zinc, 5.0 per cent. A sample taken across 18 inches 5 feet east of the last-mentioned sample, assayed: Gold, 0.02 oz. per ton, silver, 1.8 oz. per ton; copper, trace; lead, nil; zinc, 4.0 per cent. A sample taken across the best part of the hanging-wall seam assayed: Gold, 0.03 oz. per ton; silver, trace.

The intention of the owner is to endeavour to find the point of intersection of this shear-zone and the one exposed somewhat to the north.

A small dump of vein-material has been accumulated beside the large open-cut, in weight about ½ ton. A grab sample of this assayed: Gold, 0.22 oz. per ton; silver, 4.4 oz. per ton; copper, trace; lead, nil; zinc, 3.0 per cent.

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ORIOLE. This mineral claim adjoins the Golden Eagle claim on the north-east, and is owned by Chris Wold of Topley. The property is reached by a wagon-road ¾ mile in length from the Golden Eagle camp. The distance from Topley is about 7¾ miles.

The area covered by the claim comprises gently-sloping ground overlain with glacial debris and covered with sparse green timber. Rock-outcrops save in the vicinity of the mineral showings are infrequent.

A band of quartz occurs in a shear-zone in porphyritic andesite. The width of the quartz could not be ascertained owing to caving of the open-cut, and to filling of an inclined adit with water. A sample of a small pile of mineralized quartz beside the open-cut assayed: Gold, 0.03 oz. per ton; silver, 48.2 oz. per ton; lead, 7.0 per cent; zinc, 8.0 per cent.

At the base of a rock-bluff 40 feet high, an open-cut at 3980 feet elevation, 24 feet in length, followed by an inclined adit about 42 feet in length, full of water when examined, exposes a shear-zone from 4 to 5 feet in width in porphyritic andesite. This strikes south 44 degrees west and dips north-west at 56 degrees. Distant from this open-cut 120 feet in a direction south 44 degrees west at elevation 4020 feet another open-cut exposes presumably the continuation of the same shear-zone at its apex on gently-sloping ground. At this point of exposure the shear-zone is 5 feet in width, and on the foot-wall and on the hanging wall is a quartzose seam, 3 inches in width, heavily stained with manganese dioxide.

The silver values indicated by the sample given seem to warrant further investigation of this shear-zone. Investigation is possible by adit-drift at the horizon of the lower open-cut, but below this point sinking cannot be avoided owing to flat topography.

The work described was carried out by the owner who discovered the property in 1934.

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Part C -- Special Report by Douglas Lay.

SILVER KING AND NO. I FRACTION. These claims are owned by E. Strimbold of Topley, and immediately adjoin the Gold Group on the east, and the Golden Crown and Golden Eagle mineral claims on the north-west. They cover the ground formerly occupied by the Padre mineral claim, and are situated almost entirely south of Finlay Creek.

The property is reached by a pack-trail ½ mile in length from the end of the motor-road from Topley to the Gold group. The distance from Topley is about 7½ miles.

The area embraces the steep south slope of the valley of Finlay Creek which merges at the top in the Nechako plateau. The ground is covered with dead standing timber, windfalls, and second-growth timber. Save near the creek outcrops of the prevailing andesite breccia formation are infrequent.

On the steep south slope of the valley of Finlay Creek, at 3630 feet elevation, and about 70 feet above the creek, three well-defined shear-zones are exposed within a width of 225 feet. Two of these are only 20 feet apart. These shear-zones are exposed by open-cuts, two of which were caved at the time of examination. The two latter are situated at 3630 feet elevation, are 26 feet apart, and expose shear-zones several feet in width striking south 9 degrees west and dipping north-west at steep angles. The third open-cut is at a somewhat higher elevation, distant in a westerly direction about 200 feet and exposes a shear-zone striking south 51 degrees east, and dipping at 58 degrees

north-east. This last mentioned open-cut lies in a direction north 26 degrees west from No. 2 shaft of the Golden Eagle group. On the foot-wall is exposed a width of 9 inches of quartz containing sphalerite, a sample of which assayed: Gold, trace; silver, 0.2 oz. per ton; lead, nil; zinc, 0.4 per cent. It is understood that mineralized quartz seams were found on the foot-wall of all these shear zones. The foot-wall of all the shear-zones is stained with manganese dioxide. In view of the good silver values encountered at the adjoining Golden Eagle group, and as these shear-zones can be developed to great advantage by adit-drifts, some further investigation seems merited.

The property was discovered by the owner in 1935.

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PART D -- Special Report by M. S. Hedley

Britton: William Britton owns a claim on Tulameen River opposite and 300 yards below the mouth of Bear Creek. The showing is just above river level on a steep face of argillite in contact with andesite; the bedded contact is steep and strikes across the river. In the argillite at the contact is an obscure zone of shearing 10 to 15 feet wide and containing a little irregular quartz and calcite. The showing is now largely covered by slide material, but from it free gold may be panned. The gold is apparently associated with small stringers both of quartz and calcite. No work has been done on this showing.

Two claims are owned on Bear Creek, 1,000 feet above the bridge, where soft, sericitic and chloritic schists dip from 30 to 35 degrees southerly. In these schists are siliceous ribs from an inch to 2 to 3 feet wide, containing sparse pyrite and chalcopyrite and rarely galena and sphalerite. The total thickness of schists represented may be 200 feet and these are exposed only in and close to the creek canyon. A little stripping has here been done.

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Part D--Special Report by
M.S. Hedley

Britton Mountain: William Britton owns two claims on Britton Mountain, between Eagle and Siwash creeks on the north side of Tulameen river. The mountain is dome-shaped and rises steeply to the summit 1,300 feet above the river. A steep trail is largely overgrown. A band of the Tulameen series, 1/2 mile in width, crosses the mountain between Eagle granodiorite on the west and pyroxenite on the east. It is on the contact of the latter rock that copper mineralization is found. The mineralization consists of chalcopyrite which occurs irregularly with pyrite and magnetite in a breccia-zone of pyroxenite and highly altered sediments; this zone is of irregular width and development and is seen on the mountain side but not at river level.

The claims were staked in 1899 and work was done on them, including the driving of 3 adits, many years ago, and most of the workings are now caved in. The ground was restaked in 1937. Scattered strippings and exposures and small open-cuts are seen on the steep, timbered slope and on the crest of the ridge -- it is not possible from these to judge the actual width of the contact-zone or its regularity or average intensity of mineralization. In some of the breccia there is an inter-fragmental filling of calcite and quartz which contains the mineralization, and in other cases scattered grains of pyrite and chalcopyrite are seen in fragments or matrix or both, regardless of the nature of the material.

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M. S. Hedley.

## Grasshopper Mountain.

Grasshopper mountain extends between the mouths of Bear and Eagle creeks on the north side of Tulameen river. It is a steep-sided and heavily timbered mass with an elongated, rounded summit almost 5,000 feet in elevation. The sides are broken by bluffs and covered by many small areas of talus.

The western half of the mountain is underlain by pyroxenite and peridotite and the eastern part by rocks of the Tulameen series (see Camsell's map, Geological Survey, Canada, Memoir 26). The pyroxenite extends at river-level immediately south as far east as Hines creek, a mile west of which it crosses up over the mountain along a comparatively straight line. The Tulameen series has a regional strike a little west of north, and steep dips, but with local variations; it is composed predominantly of andesitic rocks, both greenstone and porphyry, intercalated with which is a minor amount of argillite and limestone.

Quartz veins were found on the southern side many years ago, and recently on the northern and north-eastern slopes. The veins are all in the rocks of the Tulameen series and attain widths as great as 8 feet. They are characteristically composed of white, semi-vitreous to vitreous quartz containing spots and patches of an iron-bearing carbonate, and

are mineralized with pyrite and chalcopyrite that occur in many instances as small blebs or rounded granular aggregates; in addition, small amounts of galena, sphalerite, hematite, petzite and free gold have locally been observed.

Hamilton Brothers: Hamilton brothers and associates of Tulameen own five claims on the north slope of Grasshopper mountain, between the summit and the small creek tributary to Bear creek. The ground can be reached by car over the Murphy Lakes logging road which leaves the Tulameen River road 5½ miles from Tulameen, and is 4 miles in length to the old logging camp in the small valley, elevation 3,875 feet.

The ground lies just east of the pyroxenite contact. The rocks are poorly exposed and badly weathered, and on the claims are strongly altered. They appear to be predominantly sediments, although including igneous material; considerable serpentine and limy rock is seen besides schistose sediments, and quartz porphyry is seen east of the main showings. The wall-rock of the mineral deposits is predominantly serpentine. The mineral deposits are narrow quartz veins which strike north 20 to 35 degrees west, parallel to the pyroxenite contact, and dip steeply westward. The quartz is vitreous and contains considerable rusty-weathering carbonate and also local pockets of talc; a bright-green chlorite

is sometimes seen in the walls. The quartz occurs as fissure-fillings, with locally a little replacement of the walls, although stripping has not been well enough done to make this latter point clear. The metallic content is everywhere low and in many sections very little is to be seen. The principal mineral is pyrite, besides which are chalcopyrite and rarely hematite, the silver-bearing telluride petzite, and free gold; some pyrite, pyrrhotite and chalcopyrite are locally present in the wall-rocks.

There are five nearly parallel veins in an interval of 200 feet. An open-cut, 195 feet in length, which extends between the outermost veins, cuts No. 2 85 feet from the eastern-most end, crosses the line of No. 3 at 105 feet, that of No. 4 at 160 feet and ends on No. 5 at 195 feet. No. 1 vein is 16 to 30 inches wide in this open-cut and is up to 40 inches wide in cuts to north and south. No. 2 vein is up to 3 feet wide at the main open-cut, and 8 to 10 inches wide 30 feet to the south. No. 3 vein is not seen in the main open-cut, but is stripped a short distance to the south and is 12 to 24 inches wide 20 feet to the north, where it apparently terminates. No. 5 vein is 16 inches wide, and is seen as a 2- to 3-foot zone of bleaching and irregular quartz 35 feet to the north. Stripping and open-cutting has been done at odd intervals over a vertical range of

300 feet northerly down the 30-degree hillside; similar quartz has been uncovered in many places, but not at sufficiently close intervals to prove continuity on all or any of the veins.

No. 4 vein has been stripped continuously for 45 feet, which stripping ends 25 feet south of the main open-cut; the vein is again seen 30 and 60 feet north of the main open-cut. In the principal stripping No. 4 vein is 16 to 54 inches wide, pinching out to the north and fading into a 4-foot zone of alteration at the south end. Petzite and free gold have been found in a stringer a few inches wide near the center of the stripping. Some mineralization for several feet in the east wall contains a little sulphide and a very little quartz. Stripping farther to the south shows some mineralization, but not definitely the continuation of this vein-zone.

Six samples were taken of average-looking material; four of these were from No. 4 vein-zone and including one sample of selected sulphides from the dump of No. 4 stripping. Each of these samples returned a trace in gold. No attempt was made, however, to include material containing telluride or free gold, and it is likely that most of the values are contained in either or both of these forms. A shaft has since been sunk on the best section of No. 4 vein-zone.

Marcotte: Louis Marcotte, Al Price and N. Macdonald

own two claims on the crest and high southern slope of the mountain, immediately south of Hamilton ground. A quartz vein 100 feet east of a band of peridotite is, at an an elevation of 4,820 feet traced by numerous open-cuts for a distance of 125 feet. The vein strikes north 20 degrees west and dips steeply; the wall-rock is horn-blende-schist. A maximum width of 7 feet is seen, including 2 feet of mixed rock and quartz, and apparently the vein pinches out to the north; the average width appears to be close to 3 feet. Mineralization is not heavy and consists of chalcopyrite, pyrite and hematite. Some 300 feet to the west a 5-foot vein of barren-looking quartz is exposed, strike north 40 degrees west, in calcareous schists a short distance east of the main pyroxenite contact.

Rabbitt Brothers: Rabbitt brothers hold eight claims on Grasshopper Mountain, and they and associates also own the Nevada and Bonanza Queen Crown-granted claims. The Crown-granted claims are on the south side of the mountain east of the pyroxenite, and the located claims extend north and east across the eastern spur of the mountain and down to Bear creek.

A trail leaves the Murphy Lakes logging road nearly a mile from the river and traverses the southern slope of the mountain, at an easy grade, a distance of two miles to a cabin at an elevation of 4,330 feet. An old, steep trail from the Tulameen road to the Bonanza Queen is now largely overgrown.

The quartz veins are commonly clean-cut fissure-fillings but tend also to be irregular and in a few instances form part of shear- and breccia-zones. The quartz is semi-vitreous to glassy and crystalline, and sulphide mineralization is in no instance heavy. The veins occur at a number of scattered localities.

On the steep north-east slope of the mountain, about 600 feet from the logging road, at an elevation of about 4,200 feet are 3 cuts on a quartz-vein with a strike of north 55 degrees east and with steep dip. This vein, between greenstone walls, is irregular, and varies in width from a few inches to 5 feet, averaging more nearly the greater width. Chalcopyrite, a little pyrite and a trace of galena, all in scattered grains, make up a very low percentage of the vein matter. A sample chipped across 60 inches in the lower cut returned; Gold, 0.10 oz. per ton. A sample selected sulphide (10 per cent. of sample) returned: Gold, 0.70 oz. per ton; silver, 0.4 oz. per ton; copper, 0.3 per cent.

On the Tulameen Treasure, south of the summit, at an elevation of about 4,900 feet is a 12-foot pit on a quartz vein 4½ feet wide, strike north 60 degrees east, dip steeply to the south-east. The crushed, semi-vitreous quartz contains small inclusions and carbonate masses, and is speckled finely with sulphides, chiefly pyrite. A sample chipped across 54 inches in the bottom of the pit returned nil in gold. On the Lindy, to the east and south at an elevation of 4,580 feet, are two open-cuts on quartz in schistose sediments; in one, irregular quartz to a maximum width of 24 inches

has a general strike of north 35 degrees east and a dip of 40 degrees south-east; in the other, 20 feet distant, up to 24 inches of more solid quartz strikes north 10 degrees west and dips 40 degrees east. On the Crescent, above the cabin, elevation 4,830 feet, is an open-cut on a vein-zone 4 feet wide containing glassy quartz, strike north 5 degrees west, dip vertical. Five hundred feet easterly from the camp at the same elevation, is a zone of shearing 7 feet wide, containing 18 inches to 4½ feet of quartz, strike north 50 degrees west, dip vertical. On the Tulameen King on the edge of the bluffs near the cabin, elevation 4, 180 feet, is a narrow, steep zone striking north 30 degrees east and containing 3 to 10 inches of quartz; a sample across 14 inches returned: Gold, nil. There are a few more generally similar occurrences of quartz on the property, in the upper section just described.

On the Nevada on the west side of a small creek, elevation 3,950 feet, is 6 to 30 inches of quartz, strike north 20 degrees east, dip 70 degrees south-easterly. The quartz is semi-vitreous and splintery, mineralized with chalcopyrite and pyrite. A sample of poorly mineralized quartz returned trace in gold, and one of selected sulphide returned: Gold, 0.04 oz. per ton; silver, trace; copper, 0.3 per cent. About 750 feet down the slope from this, on the Bonanza Queen, elevation 3,550 feet, is a quartz vein (perhaps the same) exposed for 100 feet in length and 10 to 42 inches wide, consisting mostly of vitreous and semi-crystalline white quartz; the strike is north 20 degrees

east and the dip 70 degrees south-east. Only about 10 per cent. of the quartz contains sulphides, which are locally quite heavy. An adit, elevation 3,500 feet, is driven for 60 feet on the vein at the lower limit of exposure; the vein, between soft greenstone walls, is nearly vertical and averages 3 feet or less wide. Scattered sulphides are not heavy. A grab sample of fines from the dump returned: Gold, nil; silver, nil. Samples of selected material from this vein are said to return occasional high assays.

On the Famous, elevation 3,150 feet, some 600 feet south-east of the above adit are two cuts in green-stone containing stringers of quartz, strike north 80 degrees east, dip 50 degrees south-easterly. This is a shattered and sheared zone, and mineralization includes chalcopyrite and galena. A sample of selected material returned: Gold, 0.04 oz. per ton; silver, 1.0 oz. per ton; copper, 0.6 per cent; lead, trace. On the road, west of the mouth of Hines creek and near the same small creek that heads near the cabin, is a vertical quartz vein about 2 feet wide which continues down to river-level.

Max Hanson: Four claims are held by Max Hanson and one by Lundquist, both of Tulameen. They are on the southern slope of Grasshopper mountain east of the Nevada and Bonanza Queen and south of the upper claims in the Rabbitt group. From a cabin below the road, a short distance west of the mouth of Hines

creek, a narrow trail leads straight up the hillside to the lower showings. The occurrences are in no important respect different from others just described.

At an elevation of 3,350 feet an open-cut in grey argillite discloses a quartz-vein, strike north 10 degrees west, dip 60 degrees west. The vein is 5 to 18 inches wide and contains some inclusions of wall-rock and patches of carbonate; it is mineralized sparingly with pyrite, chalcopyrite, a little galena, sphalerite and free gold. High values have been reported from this open-cut, and a small shipment was made in 1937. A sample 8 feet above the bottom, across 17 inches, returned: Gold, 0.04 oz. per ton: silver, trace. A sample 4 feet above the bottom, across 5 inches returned: Gold, 0.93 oz. per ton; silver, trace. A sample near the bottom, across 10 inches returned: Gold, 0.10 oz. per ton; silver, trace. This

vein intersects with a 5-foot vein, strike north 60 degrees east, dip 80 degrees north-west, which may be traced for 150 feet south-west into greenstone wall-rock. This latter vein has not been opened up.

A second open-cut on the first vein, 70 feet above, discloses a 5-foot width of quartz, including 25 per cent of wall-rock, which appears to parallel the sedimentary structure. A sample across the full width returned a trace in gold. On the same vein, an additional 200 feet higher, are two small cuts and one or two natural exposures. The topmost open-cut elevation 3,580 feet, shows a vein-zone 3 to 5 feet wide containing irregular quartz with very little mineral. The dip is here 30 to 40 degrees to the west.

From this last point about 700 feet north-west, elevation 3,700 feet, is an open-cut on an 8-foot width of quartz, strike north 65 degrees west dip 60 degrees north-easterly. The quartz contains local patches of carbonates and a few inclusions of greenstone wall-rock; much of the quartz is glassy and the sulphide content is low. Uphill from this point, elevation 4,025 feet, is an open-cut on a 6- to 8-foot zone of quartz in chist, strike north 70 degrees west, dip 70 degrees southerly. This shear-zone, in greenstone, may be 15 to 20 feet wide, but is poorly exposed. A sample of selected material (5 to 10 per cent sulphide) returned: Gold, trace; silver, trace; copper, 0.28 per cent. Down hill and west from this last point, 600 to 700

feet from the Nevada Line, elevation, 3,720 feet, is a 15-foot open-cut on a vein which strikes north 25 degrees east and dip 50 degrees north-west. Glassy quartz 2 feet wide in greenston contains chiefly chalcopyrite in small quantities. A sample across 23 inches of rather barren quartz returned: Gold, trac and a sample of selected material returned: Gold, trace; silver, 0.4 oz. per ton; copper, 3.5 per cent. Hanson options his ground late in the summer.

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PART D - SPECIAL REPORT

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Lloyd George: Harry Lowe of Tulameen owns a number of claims on Rabbitt mountain between 2 and 3 miles northwest of Tulameen. The mountain rises to a flat-topped, timbered summit about 5,000 feet in elevation and at higher levels is nowhere precipitous. The road to Law's camp traverses the southern side of the mountain and from this road the summit is easily accessible.

The rocks are all members of the Tulameen series, predominantly volcanic but with a minor amount of sediments. Mineralization includes pyrite and chalcopyrite in vague zones of shearing, sparsely disseminated chalcopyrite in metamorphosed andesite, and quartz veins. Some surface and near-surface work has been done at scattered points.

About ½ mile past Law's homestead, on the road at an elevation of 4,700 feet, there is a showing of sheared rusty greenstone, 100 feet east of which quartz stringers are seen in greenstone and in quartzose sediments. Close to the road also there is to be seen local, rather heavy pyrite mineralization in greenstone. North of this point, at 5,000 feet elevation, a little stripping shows metamorphosed greenstone containing epidote and sparsely disseminated pyrite and chalcopyrite; this rock is cut by tiny stringers of quartz and also by a narrow, pyritized shear-zone.

One half mile easterly on the summit, elevation 5,000 feet, is a shaft said to be 22 feet deep, now water-filled. This is in hornblende-schist which strikes north 70 degrees west and dips 75 degrees south-westerly and contains sparse chalcopyrite and pyrite, chiefly in a 6-inch band on which the shaft is sunk; a second shaft 200 feet south-east is sunk 12 feet on similarly sheared greenstone. In this locality is schistose and locally bleached greenstone and some sediments, in which erratic mineralization consists of pyrite, a little chalcopyrite, and rarely galena.

About 1,000 feet east of Rabbit creek, elevation about 4,450 feet, is an open-cut on a quartz vein 5 to 6 feet wide, strike north 40 degrees east, dip 65 degrees south-east in greenstone. Open-cuts 200 and 500 feet north-east in schistose sediments show rusty material and very little quartz; 50 and 125 feet south-west are open-cuts on about 3-foot widths of quartz. The quartz contains locally a very little chalcopyrite and pyrite. The rock on the south-west is greenstone, locally sheared (strike north 20 degrees west) and containing small amounts of pyrite and chalcopyrite; to the north-east are schists which are poorly exposed but appear to be of sedimentary origin.

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Sootheran: Two claims on the Tulameen river are held by Garnet Sootheran of Tulameen. The showing is 30 feet above and on the south side of the river, in the canyon, about ½ mile below the pack-horse bridge near the mouth of Eagle creek. The south side of the valley rises steeply to Olivine mountain and the river here has cut a canyon with so narrow a bottom that a small pole serves as a temporary foot-bridge.

The showing is a quartz vein-zone in peridotite, strike north 10 degrees west, dip steep westerly. It strikes right up the hill but is obscured by slide rock and is opened up in only one place. In this open-cut it is 6 feet wide, containing a total of about 2 feet of quartz, a 1-foot horse, and sheared oxidized material; the quartz is lightly mineralized with pyrite, galena, chalcopyrite and sphalerite, and in a 4-inch band on the east wall is a fair quantity of galena. Three samples chipped across sections of the main quartz and schistose material each returned traces in gold and a fraction of an ounce in silver, and a sample of the 4-inch galena-bearing seam returned: Gold, trace; silver, 0.6 oz. per ton. This mineralization is interesting in spite of these low values.

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Maple Leaf: This old claim is owned by William Kelsall of Vancouver. It is on Pass creek about 1,500 feet east of the Rock Candy Mines road, 4 miles from the main road on Granby river. The claim is between 600 and 700 feet in elevation above the road on a rocky hillside some 200 feet below the rounded ridge. The rocks are to a large extent intrusive and in part are metamorphic; considerable detailed study would be needed to work out the local geology. Intrusive rocks are dioritic and porphyritic and the older rocks are probably strongly altered sediments. A quartz vein is traceable for nearly 1,000 feet north-south along the hillside; it passes under talus on the north and fades out into stringers on the south. The dip is steep to the east and the width apparently varies between 4 and 7 feet.

An adit, driven 45 feet due east to crosscut the vein, shows at the face 7 feet of quartz of irregular attitude. A small shaft is sunk on the vein about 100 feet north-east of the adit portal. A second shaft, 275 feet to the north, is 25 feet deep. In these workings 6 to 7 feet of white to glassy quartz contains pyrite in granular masses and inter-crystal films, in addition to which there is a little arsenopyrite. Some small pockets of black powdery magnetite occur in the adit and upper shaft.

Values in platinum had been reported from these workings, and the writer consequently took 6 samples and had each assayed for platinum as well as for gold and silver. Three samples from the upper shaft, one from the lower shaft, and two from the adit were taken as representative of the better mineralized quartz and also of the magnetite-bearing pockets. One sample returned; Gold, 0.02 oz. per ton; silver 0.8 oz. per ton, and the other five samples returned each a trace in gold and trace to 0.4 oz. silver per ton. Each sample returned nil in platinum.

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SNOWSTORM:

This old property, including the Iona Group, has recently been restaked by Chris. H. Allan, and the Butalma Mining Company, 505 Stock Exchange Building, Vancouver, of which Allan is a member, are planning development. The property, consisting of some 20 claims, is on the summit of Kirkpatrick mountain 3 miles north-east of the head of Witches Brook in Highland Valley. A rough trail leads from the Highland Valley road to the Snowstorm camp with a difference in elevation of 1,000 feet. The foot of the trail is 22 miles from Ashcroft and 9 miles from the Merritt-Savona highway.

Kirkpatrick mountain is a part of the plateau surface, with a summit elevation of about 5,000 feet. It has an uneven, rocky and timbered surface on which are three small lakes, at the shore of one of which the Snowstorm camp is located. The south edge of the mountain drops off steeply in drift-covered slopes half a mile from the camp. The deposits are in a large area of intrusive rock said by Drysdale to vary from granite to quartz-diorite; in the vicinity of the property it is a grey quartz-diorite. Copper mineralization is of two sorts: as bornite and rarely chalcopyrite in strongly sericitized fractures, and as disseminated chalcopyrite in weakly sericitized and locally kaolinized quartz-diorite. Hydrothermal alteration has been extensive, and has only locally been concentrated on joint-planes.

The Snowstorm group and the Iona group were staked in 1905 and the existing development-work on the former was largely done prior to 1915. A little more work was done in 1916 and 1917 and some shipments made of high-grade copper ore. In January of 1919 the Department of Mines let a contract for diamond-drilling, and 8 holes, aggregating 5,736 feet were put down on the Snowstorm copper-bearing zone. Work on the Iona by the Department of Mines in 1919 and 1920 consisted of driving the present adit, sinking a 40 foot shaft and the sinking of numerous test-pits.

The combined property subsequently lapsed and was re-staked early in 1937 by Chris. H. Allan of Vancouver. Two cabins of the old Snowstorm camp were repaired and plans were being made, early in September, to clean out the old workings.

About 300 feet north-east of the camp and at the same elevation is a zone of alteration and mineralization about 15 feet wide. A central part of this zone strikes north 55 degrees

east, dips 60 degrees south-east and is about 40 inches wide, in the walls of which, particularly the hanging wall, are additional bands each an inch to several inches wide; 40 feet farther north-east the total width over which narrow bands occur is 6 feet, and 30 feet still farther the zone appears to play out. Study here furnishes more data on the nature of mineralization than of other similar occurrences.

The rock is quartz-diorite which has been fractured along nearly parallel south-easterly dipping planes with some reticulation; there is no evidence of shearing, very little gouge has been produced, and there is practically no evidence of alignment of the sericite grains; the fractures have the appearance of joint planes of little displacement. The rock adjacent to these planes for a width of a fraction of an inch to here a maximum of 40 inches has been strongly sericitized by hydrothermal action and converted to a soft friable mass of sericite, quartz, epidote and chlorite; epidote also occurs in bands with little if any sericite. Bornite and a very little chalcopyrite occur in these sericitized fractures as lenses and bands which are individually rarely more than an inch wide. Concentrations of such bands and lenses are productive of high-grade material.

About 200 feet south-west of the camp are old workings which are described in the Minister of Mines' report for 1915 but are now inaccessible. An adit 72 feet in length intersects the bottom of a 50-foot shaft, some 15 feet north-east of which is a second shaft. Drifts extend 40 feet north-east and 35 feet south-west and high grade copper ore has been mined out to near the surface in this section, over widths between 8 and 30 inches; a winze was sunk 50 feet on high-grade copper ore 6 to 16 inches wide. From the drifting and stoping operations 96 tons of sorted ore were shipped with an average grade of: Gold, 0.086 oz. per ton; silver, 6.4 oz. per ton; copper, 30.4 per cent. A third shaft 190 feet south-west of the first was sunk to a depth of 58 feet, from which 40.5 tons were shipped in 1916 assaying: Gold, nil; silver, 4.52 oz. per ton; copper, 23.71 per cent. This 200-foot zone strikes north 40 degrees east and dips steeply south-east; variations in strike probably represent branches as well as bands. Where now clearly seen it is 3 to 5 feet or more wide, including bands of bornite mineralization locally up to 18 inches in width. At the south-westernmost shaft a narrow zone is indicated with a strike of north 10 degrees east.

On the old Iona section of the property is a small hill about level with the Snowstorm cabin and about 3,000 feet

south-westerly from it. An adit at the base is driven 280 feet into the hill in a direction of north 69 degrees west. An almost continuous line of stripping extends to the crest of the hill from the portal, a distance of 150 feet, and pits spaced about 40 feet apart continue for an additional 700 feet, all on a line bearing north 69 degrees west. Scattered pits, 8 in number lie north-west of the adit and north and north-west of the crest of the hill. There is a 40-foot shaft, tightly lagged, 400 feet from the crest in a direction south 65 degrees west, and about the shaft and between it and the main line of pits are a number of scattered pits.

Each of the pits penetrates from 2 to 15 feet of overburden and extends a short distance into bedrock, and in all but one or two there is some copper mineralization either as malachite, chalcopyrite, or both. There is no apparent reason for the precise location of most or any of these pits and they do not outline the limits or distribution of mineralization. The rock is quartz-diorite which has been altered, perhaps by thermal metamorphism; microscopic study shows that there is, even in the freshest rock, some sericitization of the feldspars, and cases where the rock is bleached the sericitization has been more complete; kaolin is present, and albite has developed from what was originally probably a more calcic plagioclase. At the shaft, a silicification of the quartz-diorite is accompanied by considerable brown tourmaline.

Sampling of the pits is a problem, as they are now almost without exception caved in. The dumps consist largely of overburden, but the material excavated in rock is commonly piled separately. Where material was clearly representative of the pit bottom and consisted mostly of fines, liberal grab samples were taken, and while there must have been some leaching and impoverishment the writer does not believe that this has removed more than a small percentage of the original copper content. Four such samples returned traces in gold and silver and 0.2 to 0.5 per cent copper.

The Iona adit, 280 feet long, shows rust and malachite-stain throughout, specks of chalcopyrite are also seen. The inner 20 feet consists of minutely shattered and later cemented quartz-diorite; small slips occur in the adit with a general north-easterly trend, but do not appear to localize or otherwise affect mineralization. A thorough sampling of this adit would take considerable time and effort and should include dressing down of the walls. Three chip samples from the north wall taken by the writer are believed to be indicative.

(1) 235 to 240 feet from portal: Gold, trace; silver, 0.4 oz. per ton; copper, 0.3 per cent.

(2) 140 to 145 feet from portal: Gold, trace; silver, trace; copper, 0.3 per cent.

(3) 65 to 70 feet from portal: Gold, trace; silver, trace, copper, 0.3 per cent.

About ½ mile west of the line of pits are other copper showings and one of molybdenite. The latter, explored by a 20-foot shaft, consists of molybdenite in sericitized quartz-diorite and accompanied by a little chalcopyrite and pyrite; the molybdenite content varies directly with the degree of sericitization and the chalcopyrite indirectly. Two hundred feet southerly is a shaft perhaps 50 feet deep on a badly oxidized sericitic zone, strike north 55 degrees east, dip 75 degrees south-east containing chalcopyrite, hematite and bornite. This occurrence is apparently similar to the Snowstorm.

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Florence: Two Crown-granted claims, Florence and Paymaster, are owned by Dr. W. T. Hoyes and associates of Beaverdell. They are on King Solomon Ridge 2 miles north of Beaverdell, on the steep, grassy and timbered side-hill just below the crest of the ridge. A steep trail leads from the road to another property at the same level and 2,000 feet to the north. The mineralization is in quartz veins in quartz-diorite.

An old adit, elevation 3,250 feet, is driven from the end of an 18 foot open-cut 110 feet in an average direction of north 75 degrees east. Ten feet south of the portal is a 12 inch quartz vein which dips steeply to the south, on the foot-wall of which is an andesite dyke 26 inches wide. The adit is driven on the foot-wall of a quartz vein 2½ feet wide which dips 85 degrees south and is cut off by a branching cross fault 10 feet from the portal. Thirty feet from the portal a few inches of quartz is seen on the hanging wall of an irregular andesite dyke that dips steeply south and at 36 feet both swing into a gouge seam which is followed to the face. This seam contains up to several inches of crushed quartz and in the innermost 15 feet there is a widening wedge of andesite on the south wall. It is possible that a crosscut to the north would disclose the wider quartz. Mineralization consists of pyrite and small amounts of arsenopyrite and chalcopyrite. A sample

from the dump returned: Gold, 0.02 oz. per ton; silver, 11.8 oz. per ton.

About 200 feet easterly from the adit and 150 feet higher is an open-cut on a 12 inch vertical quartz vein striking north 75 degrees east. About 500 feet northerly from the adit, at the same general elevation, is a zone 1½ to 3 feet wide, strike north 45 degrees west, dip 75 degrees north-east, consisting of quartz on both sides of andesite; the quartz contains mica and a little pyrite. Two other quartz veins have been discovered 700 and 1,100 feet north of the adit; each is 8 to 12 inches wide and is mineralized with pyrite, strike north-east to east and dip 75 degrees southerly.

#2.

Part D--Special Report by
M.S. Hedley.

Hard Cash: This Crown-granted claim, owned by L.H. Evans of Beaverdell, is on the south side of Curry creek one mile above its mouth. The steep, timbered hillside is grass-covered near the ridge and is broken by small bluffs lower down near the creek, A good trail 1½ miles in length leads from the flat to a cabin, elevation 3,625 feet. The south-west corner of the claim is underlain by quartz-diorite and the remainder by Wallace formation.

On the south-west corner of the claim, near the north-west corner of the Mountain Bell is an adit, driven 26 feet in quartz-diorite, bearing south 65 degrees east. At the portal is a quartzose zone, trend north 70 degrees east, width and attitude are obscure. A sample of a pocket of cellular pyrite 2 feet across returned: Gold, 0.02 oz. per ton; silver, 0.58 oz. per ton, a sample across the white quartz containing pyrite and small amounts of sphalerite, chalcopyrite and galena returned: Gold, trace; silver, 0.16 oz. per ton. Fifty feet east of this adit is a second, driven in Wallace formation 24 feet due east; this adit follows a quartz vein 10 to 20 inches wide, dip 75 degrees south. The glassy quartz is mineralized by stringers and pockets of pyrite, pyrryotite, sphalerite, chalcopyrite and a trace of galena; a sample of fairly strong, but not the best mineralization returned traces in gold and silver. A third adit 40 feet south of the

second is driven south 43 degrees east 34 feet then south 10 degrees east 28 feet then south 80 degrees east 17 feet to the face, all in Wallace formation. In the innermost section is a quartz vein 10 to 16 inches wide, dipping steeply to the south, and containing pyrrhotite, pyrite, sphalerite, chalcopyrite and a trace of galena.

On the trail 350 feet west of the cabin is an adit driven south 20 degrees west for 70 feet parallel to thinly bedded sediments which dip 60 degrees easterly. In the outer half of the adit watery quartz a few inches to 18 inches wide occurs with extreme irregularity; sparse mineralization consists of pyrite, sphalerite and rarely galena and chalcopyrite. One hundred feet up the slope from the adit are two small open-cuts showing a slight amount of quartzose mineralization in both Wallace formation and quartz diorite. At the cabin is a 6-inch quartz vein, strike south 70 degrees east, dip 75 degrees southerly, containing galena.

One hundred feet vertically above the cabin is a quartz vein 4 inches or less wide, dip 60 degrees southwest, on the contact between sediments and a diorite dyke; mineralization consists of pyrite and rarely galena and chalcopyrite. Fifty feet still higher is an open-cut on a quartz vein 5 inches or less wide, dip 65 degrees southwest; an adit 40 feet north-west is driven 22 feet, bearing

north 80 degrees west, on the same vein which is here 1 to 10 inches wide, in diorite. A sample from the inner end of the adit returned: Gold, 0.02 oz. per ton; silver, 1.8 oz. per ton; lead, 0.8 per cent.; zinc, 2.6 per cent. One hundred feet in elevation above this adit is a 6- to 12-inch vein similar in respects to the last; a sample returned: Gold, trace; silver, 0.82 oz. per ton; lead, 8.4 per cent.; zinc, 2.6 per cent. Another similar, but poorly mineralized vein, is seen still higher on the nose of the ridge. Other, simila showings, all in Wallace formation, are seen 300, 500 and 650 feet south and southeast of the cabin.

FOR REFERENCE ONLY

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## Part D--Special Report by M.S. Hedley.

Charybdis: Three claims owned by Eric Jackson of Beaverdell lie immediately west and south-west of the Hard Cash. Near the south-west corner of the latter claim and down hill from it are a few small and isolated open-cuts in quartz-diorite. These show narrow widths of quartz, mineralized sparsely with pyrite. No attempt has been made to trace these bodies.

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Cranberry Creek: Two claims are owned by Tom Henderson on Cranberry Creek, 1¾ miles from Westkettle River, at 2,975 feet elevation. The showings are on the north side of the creek on a rocky and talus-covered hillside; there is no trail. The rock is quartz-diorite into which are intruded, immediately to the south, large dyke-like masses of coarse-grained feldspar porphyry; mineralization is in quartz veins following in part a fine-grained, grey feldspar-porphyry dyke.

A quartz vein 8 to 12 inches wide dips 30 degrees north on the foot-wall of a feldspar porphyry dyke 8 to 9 feet wide; the diorite on the foot-wall of the dyke is altered for a width of 3 feet. On the hanging wall of the dyke a band of alteration is about 2 feet wide and in this there is 6 inches or so of quartz. Although obscured by overburden the mineralization appears to extend only for 25 feet. The quartz is crystalline and vuggy and contains light-coloured granular pyrite and a little specualr hematite. A sample across 8 to 10 inches on the foot-wall quartz returned: Gold, 0.20 oz per ton; silver, 0.52 oz. per ton; a selected sample of sulphides returned; Gold, 0.92 oz. per ton; silver, 0.92 oz. per ton.

Across slide rock, 450 feet west is a nearly flat vein, perhaps the same, cutting both quartz-diorite and medium-grained feldspar porphyry. The quartz is from

an inch to 3 feet wide and contains a little pyrite and hematite; it is again seen 300 feet farther west.

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Gachain: John Gachain of Carmi owns two claims on the west side of Westkettle River valley 2 miles south of Carmi, at an elevation of 3,900 feet. The showings are almost at the top of the valley wall where it meets the more uneven and gently-sloping surface of the plateau. A good trail leaves the railroad 1/2 mile south of Carmi. The rock is quartz-diorite on the southern contact of a large mass of Wallace formation. Mineralization occurs in narrow quartz veins.

Two adits are driven, only one of which encounters mineralization. The lower adit is driven 95 feet in an average direction of north 55 degrees west, in the course of which three north-south faults are encountered, the one nearest the portal dips 50 degrees east and the inner two dip 60 and 50 degrees west. The second adit is 45 feet north-west and 25 feet higher: it is driven north 55 degrees west 17 feet when the same westerly-dipping fault is encountered, and beyond it in two north-westerly branches 12 and 17 feet long. Close to the portal and trending diagonally across it is a quartz vein, strike north 75 degrees east, dip 40 degrees south-easterly. The vein is stripped continuously above the portal 100 feet or more over a vertical range of 50 feet; it consists of crystalline quartz up to 7 inches wide and commonly between 3 and 4 inches wide. The chief sulphide is galena, which locally forms 80 per cent of the vein-filling, as well as small amounts of pyrite, sphalerite and tetrahedrite. A sample from a pile of several hundred pounds of selected material returned: Gold, 0.07 oz. per ton; silver, 37.21 oz. per ton; lead, 56.5 per cent.

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# SIWASH CREEK AREA

## LODE-GOLD DEPOSITS

### Introduction

The prospects in this area, situated in the Yale Mining Division, surround the group of old Crown-granted claims which are shown on B. C. Department of Lands Reference Map No. 87 as being in Sections 20, 21, 28, and 29, Township 7, Range 25 W 6, a central point in this group being 2.3 miles east of the Fraser River from the mouth of Siwash Creek. The latter point is 0.6 miles northerly from the cable-crossing over the river situated 1.75 miles north 68 degrees east from Yale, a settlement on the highway and Canadian Pacific Railway. The Canadian National Railway tracks follow the eastern side of the river, adjacent to the cable-crossing which is old and of doubtful safety, but there is no station within easy reach. The main trail, from which branch trails extend to the various properties, is approximately 5 miles in length, and is shown on the above mentioned Map No. 87. It is wide and built on a fair grade for the first 1.25-mile section where it extends in a series of switch-backs along the abrupt slope to the river, but beyond this point to Roddick Creek, 4 miles from the river, it is only a rough foot-trail and contains some bad adverse grades. The last section, 1 mile in length, extending south-easterly from Roddick Creek , is a steep foot-trail.

The country is brushy and thickly wooded and slopes are steep towards Siwash Creek and its main tributaries, the North Fork and Roddick Creek. Siwash Creek, carrying a strong flow of water, has a steep gradient, its valley being deeply

incised. The creek flows through gorges and canyons with a succession of abrupt falls adjoining the Fraser River, elevations of the summits on both sides of the valley ranging from 5,000 to 6,000 feet.

The rocks underlying the general area consist of a metamorphosed sedimentary series composed mainly of slates, argillites, and schists, with occasional thin bands of impure crystalline limestone. This formation, striking north-westerly with dips generally to the south-west, possibly corresponds to the north-western extension of the Cache Creek series of Paleozoic rocks mapped on Geological Survey of Canada Publication No. 1988, "Coquihalla River Area". Adjoining the Fraser River the Siwash Creek strata are intruded by granitic rocks of the Coast Range batholith and in the developed area they are invaded by numerous dykes which conform in general to the attitude of the bedding.

The intrusive types include: Feldspar porphyry; quartz feldspar porphyry; andesite; andesite porphyry; latite porphyry; aplite; greenstone; and other highly altered varieties. While this report is not specifically concerned with the Crown-granted claims, which have been neglected for many years, accessible workings were examined in connection with the general geology and character of the deposits. In these cases the mineralization is stated to have been directly associated with acid porphyry dykes, the deposits occurring as stringers along the slate-dyke contacts or as quartz veinlets traversing the dykes and slates. (Refer to Geological Survey of Canada

The occurrences are stated to have been irregular and pockety, the gold being associated with pyrite, chalcopyrite, and small amounts of galena, the sulphides being contained in the quartz and porphyry. Values of interest are believed to have been largely attributable to local concentration of gold in oxidized, superficial showings now covered or obliterated by slides. This would appear to be borne out by the writer's examination of the accessible parts of underground workings on the Crown-granted claims for which stamp mills, now in ruins, were originally provided. For instance, no stoping or drifting was done from the old adit situated on the eastern side of Siwash creek, in the south-eastern corner of the Old Puss claim, Lot 429, at 1,730 feet elevation, or 75 feet above the creek, although it penetrates under the large surface excavation, now difficult of access and partly obliterated, which temporarily supplied an adjacent stamp-mill. This adit extends first south 70 degrees east for 120 feet and then south 67 degrees east for 180 feet to the face. Four dyke intersections, varying in width from 6 to 40 feet, were noted between areas of argillite in the inner 180-foot section. Thin sections of these dykes, examined microscopically, had the following characteristics: Highly altered porphyritic rock, penetrated for 6 feet in the face, contained andesine phenocrysts in a groundmass consisting of complex secondary minerals and feldspar pseudomorphys of original femics being marked by pale chlorite aggregates; a 6-foot feldspar porphyry dyke, 60 feet back from the

face, consisted of a very fine-grained groundmass composed largely of feldspar and containing calcite and sericite, the feldspar phenocrysts being highly altered and a few irregular masses of chlorite being present; a highly altered band, 40 feet wide, and 122 feet back from the face, which traversed by quartz veinlets and containing disseminated pyrite, consists of a very fine-grained feldspathic groundmass including abundant sericite and calcite, "ghosts" of original feldspar phenocrysts being observed; a 10-foot porphyritic dyke 170 feet back from the face, containing highly altered, probably andesine, phenocrysts in a fine-grained groundmass composed of calcite, sericite, plagioclase, and indeterminate material, a little quartz being present as irregular grains. Another adit, which was apparently intended to supply the other mill, is situated at 1,830 feet elevation, on the Grimmer claim, Lot 434, and on the western side of the North Fork about 1,600 feet upstream, roughly estimated, from the junction of the two creeks. This adit, driven approximately 460 feet to south 70 degrees west, is in poor shape for examination. It cuts argillites and slates and, in the last 160-foot section, towards the face, intersects several altered porphyritic dykes. No drifting or stoping was done from this adit, above which surface workings are apparently caved or obliterated. On the Roddick claim, Lot 78, the portals of two old adits have apparently been covered by slides. Dykes in this vicinity include greenstone and altered porphyritic andesite.

Evidently the various dykes formed the objective of the early exploration, some local concentrations of gold having been present in oxidized outcrops now largely covered. In this connection placer miners working in Siwash and Roddick Creeks, in the vicinity of the area of dykes described, have been recovering a small amount of gold adhering to quartz.

History of mining in the area, as recorded in the past reports can be briefly summarized as follows: Attention was first directed to the district in the early 'sixties of the last century by the discovery of placer gold near the mouth of Siwash Creek. Since the first period of operation placer-mining has generally been carried on in a desultory manner, present limited activities by individuals being restricted to leases adjoining the lower end of Siwash Creek and to claims in the section between its North Fork and Roddick Creek, and on the lower end of the last mentioned stream. Mineral claims were first staked around the forks in 1891, in which locality the nine Crown-granted claims, shown on Map No. 87, are still held. In this area the ruins of the two small stamp-mills previously mentioned are respectively situated on the Old Puss claim, Lot 429, and the other on the boundary between the Lou Isabelle, Lot 433, and the Little Gold Bug Fraction, Lot 430.

A renewal of interest occurred in 1934 when claims, staked for the British Gold Mining Syndicate, covered the old Emigrant group situated a short distance south-easterly from the Roddick Crown-granted claim, Lot 78. Underground

work, started early in 1935, was carried on by this syndicate in 1936 and 1937. For past references to the Emigrant group and other claims in the area the reader is referred to the Annual Reports of the Minister of Mines for the years: 1903, 1904, 1915, 1917, 1927, and 1934, also Geological Survey of Canada, Summary Report, 1911.

BRITISH GOLD MINING SYNDICATE

The property of this syndicate comprises 5 mineral claims held by location, their position being as described in the foregoing introduction to this report. The group, 5 miles by trail from the cable-crossing, is situated on the south-western side of Siwash Creek, the principal workings, at elevations ranging from 2,130 to 2,235 feet, being on wooded, brushy ground sloping north-easterly and very steeply towards this stream. The claims are underlain by slates and argillites which strike north-westerly and dip 15 to 50 degrees south-westerly. Dykes include andesite, latite porphyry, and a h altered, medium-grained rock composed essentially of orthoclase, albite, chlorite and calcite. Low gold values are associated in places with finely disseminated pyrite occurring in quartz lenses and stringers adjoining inclusions of argillite, the mineralized occurrences generally conforming with the stratification of the enclosing rocks.

The original surface showings, in a local slide area, are covered. The portal of the old Emigrant adit workings, which were extended by J. Fagan prior to the acquisition of the ground by the present syndicate, is located south-westerly from Siwash Creek, at 2,235 feet elevation, and on the steep slope about 100

feet above it. These very irregular workings are, to a large extent, very low and narrow so that inspection is difficult. They comprise two adits, one on a steeply rising grade resembling a flat raise and the other on a normal grade. Branching from a common portal they diverge going south westerly and towards the inner end they come together again, being joined by raises and a short length of drift. The measurements are as follows: From the portal the Fagan "raise-adit" is driven south 80 degrees west for 78 feet; south 77 degrees west for 84 feet; south 44 degrees west for 47 feet; and south 42 degrees west for 100 feet. At the latter point there is a 13-foot raise steeply inclined to north 45 degrees west. From the top of the latter raise the working continues on a normal grade south 55 degrees west for 31 feet to the hanging-wall of a quartz lens. Drifts extend along the trend of the foot-wall of the showing, 16 feet from the top of the 13 foot raise, for 20 feet to north 45 degrees west and 21 feet to south 45 degrees east. From the latter point a bend is made to north 65 degrees east for 33 feet to the top of a 45-foot vertical raise. From the bottom of this raise the old Emigrant edit extends north-easterly for about 270 feet to where it joins the Fagan "adit" near the portal. Beyond the bottom of the 45-foot raise the Emigrant adit continues for approximately 100 feet on a bearing of south 45 degrees west but this section is inaccessible for inspection. The workings are largely in slates and argillites, no dyke being noted near the deposits. The quartz lens, previously mentioned, is up to 15 feet wide,

where crosscut opposite the top of the 13-foot raise. Conforming with the attitude of the enclosing rocks, which locally strike north 45 degrees west and dip at 35 degrees to the south-west, the lens has a maximum length of 35 feet and is irregular, no definite vein structure being in evidence.

At the end of the north-western drift it apparently terminates against a vertical fault-zone, striking north 35 degree west, which has been driven on for a length of 10 feet beyond the end of the drift. At the end of the south-east drift, there is no quartz in a 6-foot crosscut to the south-west. Sampling of the 15-foot exposure of quartz, which contains scattered, small, pyritized inclusions of argillite, was as follows: A selected sample from the foot-wall-side assayed: Gold, 0.19 oz. per ton; silver, trace; a sample across 3.15 feet of partially oxidized quartz adjoining the foot-wall, gave: Gold, 0.06 oz. per ton; silver, trace; a sample across the adjoining 3 feet, going towards the hanging-wall, assayed: Gold, 0.06 oz. per ton; silver, trace; the next, 8.3-foot section, adjoining the hanging-wall, gave: Gold, 0.02 oz. per ton; silver, trace. A selected sample from the hanging-wall of the zone assayed; Gold, 0.02 oz. per ton; silver trace.

At 2,275 feet elevation, and 200 feet north-westerly from the portal of the above workings, there is an andesite dyke, 40 feet wide or more, which appears to conform with the bedding of the formation. At 2,130 feet elevation, the portal of a new lower adit, on the steep slope south-west of the creek and about 40 feet above it, is located 410 feet north from the portal of working
the old Fairmont tunnel. The main course of the lower crosscuts

argillites, calcareous in part, the measurements being as follows: From the portal it extends south 69 degrees west for 281 feet to station A; south 69 degrees west for 277.5 feet to B; south 75 degrees west for 29 feet to C; south 75 degrees west for 62 feet to D; north 85 degrees west for 16 feet to E; north 85 degrees west for 43.75 feet to F; south 72 degrees west for 48.25 feet to G; south 57 degrees west for 71.5 feet to H; south 52 degrees west for 100 feet to J; and south 62 degrees west for 65 feet to the face at K. Dyke intersections are as follows: A point south 69 degrees west, 70 feet from Station A, marks the centre of a highly altered, medium-grained rock, 10 to 12 feet wide, which, examined microscopically, consisted essentially of orthoclase, albite, chlorite, and calcite. This dyke, tentatively classified as altered latite, conforms to the attitude of the enclosing strata. Between C and D a similar dyke, but striking southwesterly, occupies the greater part of the main working and is exposed in the end of a short northerly branch opposite B. Just back of the face, at K, the adit intersects a latite porphyry dyke, 12 to 15 feet wide, which is intercalated between the rock strata. Drifts, at points to be specified, develop irregular streaks and stringers of quartz which generally conform in attitude to the bedding planes of the enclosing rocks. Pyrite is associated in places with argillite inclusions in the quartz. At point A, there is a drift 24.5 feet long to north 25 degrees west; at B, branches extend 24 feet to north 10 degrees east and 12 feet to south 10 degrees west; at J, drifts have been run 17 feet to north

30 degrees west and 16.5 feet to south 30 degrees east. Five samples taken in these branch workings assayed traces in gold and silver.

GOLDEN EAGLE: This group of 9 mineral claims, held by location and owned by Frank Barber and associates, adjoins the property of the British Gold Mining Syndicate to the south. The claims cover the wooded ground sloping steeply towards Siwash Creek and extending along the upper part of Golden Eagle Creek which, flowing north-easterly joins the former stream at a point about 600 feet south-easterly from the Emigrant adit location. The workings examined, at elevations ranging from 3,090 to 3,525 feet, are along the banks of this small tributary stream. General transportation conditions have been described in the introduction to the report on the Siwash Creek properties.

Golden Eagle Creek cuts across the formation, affording a fair section of the rocks. These consist mainly of argillites, calcareous in part, and slates, with occasional beds of shale. Prevailing strikes are north-westerly and dips are from 35 to 70 degrees south-westerly. No dykes were seen in the immediate vicinity of the showings, the nearest dyke exposure, at 2,575 feet elevation, being located near Golden Eagle Creek, but on the adjoining property. This is apparently the extension of the wide andesite dyke previously mentioned as being situated 200 feet north-westerly from the Emigrant adit portal.

Mineralization consists of disseminated pyrite associated with argillaceous inclusions in quartz or with silicified argillite, the occurrences conforming to the bedding of the rocks. The holdings are comparatively recent stakings and no underground work has been done.

An open-cut, at 3,090 feet elevation, exposes a wide zone of silicification, no structural boundaries being in evidence. A selected sample of the silicified rock, which contained pyrite in scattered crystals and fine disseminations, assayed traces in gold and silver. At 3,275 feet elevation, ground-sluicing exposes a wide zone of iron-stained, silicified rock, and quartz, the showing being shattered and partly decomposed. A chip sample across 16 feet, chiefly consisting of quartz with occasional pyritized rock inclusions, gave traces in gold and silver, and a selected sample, containing comparatively abundant pyrite, gave same assay. Two samples were taken in an open-cut across the creek and 40 feet along the strike from the last location. Of these a selected sample of pyritized rock from the hanging-wall of the zone, assayed: Gold, 0.04 oz. per ton; silver, 0.04 oz. per ton; and the other, across 4 feet adjoining the hanging-wall, assayed: Gold, 0.04 oz. per ton; silver, trace. At 3,525 feet elevation there is an open-cut exposing quartz with minor inclusions of pyritized rock, 1.5 feet wide, a sample across this width assaying: Gold, 0.02 oz. per ton; silver, trace. On the opposite side of the creek a shallow excavation exposes similar material but shattered

and largely decomposed.

The occurrences conform to the bedding planes of the enclosing rock, no definite structure being in evidence. The sedimentary series is reported to contact with serpentine which is intersected by the creek at a point about 600 or 700 feet upstream or south-westerly from the last sample location.

CORONATION: This group of 6 claims, held by location and owned by Frank Barber and associates, adjoins the Roddick, Lot 78, Crown-granted claim to the north-west and extends along the north-western side of Roddick creek and both sides of Siwash Creek, the wooded slopes to these streams being steep. General transportation conditions have been described in the introduction to the report on the Siwash Creek properties, Roddick Creek being about 4 miles by trail from the cable-crossing over the Fraser River.

The formation includes slates, shales, and argillaceous, schistose rocks, which frequently contain irregular and discontinuous quartz stringers or lenses of quartz conforming to the stratification. Pyrite is associated in places with inclusions of argillite in quarts or with silicified argillite.

The holdings constitute comparatively recent stakings, no underground work having been done. Prospecting has been done at scattered points, as adjoining the Roddick claim, with generally indefinite results. There is a large open-cut on the

southern side of Siwash Creek about 1,950 feet downstream or westerly from its North Fork. At 1,650 feet elevation, it is on the steep to precipitous slope about 70 feet above the creek. The argillite is locally silicified and contains lenses and stringers of quartz associated with indefinite fracturing in a zone up to 8 feet wide. A selected sample of pyritized rock inclusions in quartz returned a nil assay in gold and silver. At a point about 300 yards downstream from the above open-cut there is a belt of serpentine striking across the creek, which probably connects with the serpentine cut by Golden Eagle Creek, near its head, as mentioned in the foregoing report on the Golden Eagle prospect.

JUBILEE: This group consists of seven claims held by location and owned by Frank Barber and associates. Referring to the B. C. Department of Lands Reference Map No. 87, the holdings are located to the east of the North Fork of Siwash Creek and adjoin the Grimmer, Lot 434, and British Queen, Lot 431, Crown-granted claims to the north-east.

The workings, at elevations, ranging from 3,230 to 4,125 feet, are on the steep, wooded ground sloping westerly or south-westerly towards the valley floor at about 1,700 feet elevation. General transportation conditions have been described in the introduction to the report on the Siwash Creek properties. The workings are reached by steep switch-back trail, obliterated at the lower end, extending from near the old stamp-mill situated on the boundary-line between the Lou Isabelle and Little Gold

Bug Fraction Crown-granted claims, and on the eastern side of the North Fork.

The rocks underlying the claims include slates, argillites, and metamorphosed, silicified rocks, the series striking north-westerly. Owing to exposures being limited formation dips were not ascertained.

Mineralization, of indefinite character, consists of quartz veinlets containing disseminated pyrite and galena, the occurrences being found on the foot-wall-side of a wide quartz feldspar porphyry dyke which strikes north-westerly with steep north-easterly dip. In other cases workings investigate irregularly disseminated sulphide mineralization in silicified phases of an altered aplite dyke.

The property includes the ground formerly known as the Dolly Varden group, briefly mentioned in Geological Survey of Canada Summary Report 1911, page 129, open-cuts referred to therein being largely caved.

The workings examined are at widely separated points, their relative positions being approximately described. The showings are on the Jubilee No. 1, Jubilee No. 2, and Jubilee claims which, in this order, are staked from north-west to south-east. The camp-site, at 3,680 feet elevation, is adjacent to the boundary between the Jubilee and Jubilee No. 2 claims. About 1,000 feet north-west of the camp, and at 4,125 feet elevation, a shallow excavation exposes a 3-inch width of quartz containing disseminated pyrite and galena which occurs in a wide zone of altered, rusty-

weathered, silicified rock, and conforms to its attitude, the strike being north-westerly and dip 60 degrees north-easterly. A sample across the narrow showing, which is only exposed for a length of a few feet, assayed, Gold, 0.01 oz. per ton; silver, 1.2 oz. per ton; lead, 0.6 per cent. In the bluffs above the showing, and 50 feet north-easterly from it, there is an outcrop of quartz feldspar porphyry dyke, which has a similar strike and dip. A sample of the dyke rock, which contains disseminated pyrite in places, gave a nil return in gold and silver. About 250 feet south 40 degrees east from the camp and at 3,780 feet elevation, there is an old adit, driven north 60 degrees east for 45 feet. It cuts a highly altered aplite dyke, silicified and pyritized in part, which strikes north-westerly with steep north-easterly dip. A thin section, examined microscopically, showed a medium-grained, equigranular rock, composed largely of albite to albite-oligoclase and calcite. At 5 feet back from the face a vertical fracture, striking north 40 degrees west, is intersected. A channel sample across 6 feet of the altered pyritized rock, adjoining the fracture to south 60 degrees west, gave traces of gold and silver. A selected sample of similar material from the dump at the portal gave the same negative result. At 3,825 feet elevation, and about 500 feet south 45 degrees east from the adit-portal, there is an open-cut in the same altered dyke rock which dips 60 degrees north-easterly. The dyke is rusty-weathered and silicified in part, as in a patch one foot square which is mineralized with lightly disseminated galena

and fine oxidized seams. A selected sample from this patch assayed: Gold, trace; silver, trace; lead, 0.6 per cent. This last location is 30 feet south-east of a small stream locally known as Jubilee creek. Other open-cuts, adjoining this creek at lower elevations, have been made to prospect the formations.

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Part E - by H. Sargent

Special Report

Hilltop and Sitka

Two located claims, Hilltop and Sitka, recorded in the name of John Bell of Nelson, adjoin the Spokane Group to the west. The owner was not present when the writer examined the property. The workings examined consist of a short adit and several surface-cuts lying on the moderate slope west of the pass mentioned in the report on the Spokane Group. The ground in the vicinity of the workings is openly timbered and overburde appears to vary from one or two feet to a depth in excess of 8 feet. The rock exposed is dark quartzite intruded by tongues of granodiorite. A considerable area of sedimentary rocks is shown on the Geological Survey maps, as lying west of the intrusive. The highest cut exposes a fracture containing 2 inches to 4 inches of quartz in which there is some galena. The fracture dips 85 degrees to the north. There is also a joint dipping to the south at 60 degrees which contains 2 inches of quartz. Sixty feet easterly down the slope, at about 6,420 feet elevation, a 12-foot adit has been driven westerly from the end of a 15-foot rock-cut, following 2 inches to 5 inches of quartz striking south 85 degrees west and dipping 85 degrees to the north. The quartz is honey-combed and rusty and contair some galena. This fracture is in a granodiorite tongue, not

far from its contact with altered quartzite to the south. Easterly 80 feet down the slope a recent stripping, with a bank 6 to 8 feet high on the western side, had not exposed bed-rock. About 300 feet farther east a trench exposes 2 inches to 3 inches of vein-matter, in a fracture striking north 85 degrees east in granodiorite. Seventy-five feet farther east a small cut exposes a fracture, 6 inches to 8 inches wide, in granodiorite, the strike is south 85 degrees east and the dip 75 degrees to the south. The fracture is filled with rusty quartz containing some galena. Eighty feet farther east there are two small test-pits about 6 feet apart on a north-south line. Some vein-matter is to be seen here. This point at about 6,225 feet elevation is about the lowest point on the westerly projection of the Spokane vein. The lower cuts were mentioned in the report on the Spokane Group. As mentioned there the writer does not know the relationship of the lower cuts to the boundary between the two properties.

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Part E. -- Special Report by H. Sargent.

Virginia Group. It is understood that the claims, Virginia, Shian, San Jose and Hollywood Fraction are owned by J. W. Mulholland and E.C. Wragge of Nelson, and that Mulholland has also located the Jack Pot and Jack Pot No. 2 claims nearby. These claims which have been located in the last two or three years, cover ground on a westerly trending spur of John Bull Mountain, and extend north-westerly toward Arkansas Lake. The approximate position is indicated on the sketch map of the area. The workings are near the south side of a rock-slide, on ground sloping about 25 degrees to the north-west. About 500 feet below the workings the slope flattens to about 10 degrees. A short distance south of the workings the slope is steep to the south-west. The ridge and the gentler slopes are timbered. The workings are reached by a switchback trail, which leaves the Bayonne road at a point roughly 21 miles from Tye Siding. The trail climbs some 600 feet in its length of about half a mile. The workings are on fracturing striking somewhat south of east and dipping steeply to the north, in granodiorite. It is reported that work was done on this prospect in the earlier days of the camp. Mulholland shipped a little less than one ton of oxidized ore to the smelter in the winter of 1936-37.

The lowest working examined is a short adit 23 feet long at approximately 6,700 feet elevation; it was timbered to the face. At the south side of the face a smooth slip strikes south 80 degrees east and dips 72 degrees to the north. Resting on this foot-wall slip was 1½ inches of soft gossan and on that 7 inches of crushed rusty granite. A sample of this material assayed a trace in gold. About 100 feet easterly up the slope there is an adit in about 8 feet. Here both walls of the fracture are well marked, and are about 30 inches apart. They strike south 75 degrees east and dip 85 degrees to the north. At the north side there is quartz 5 inches to 8 inches wide with some dark-brown gossan at the north wall. Easterly up the hill, at 50, 100 and 165 feet, from the second adit, there are 3 cuts largely filled in by talus from the rock slide. Near these cuts there was a little quartz in widths up to 6 inches, commonly frozen to granodiorite. The quartz was somewhat honey-combed and rusty. A sample of quartz from the surface assayed a trace in gold. Very little oxidized vein-matter has been left at these workings.

No. 3

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PART E

Special Report by H. Sargent

MONTANA

This claim is owned jointly by F. Aiken of Bayonne P.O. the estate of P. Casey, care of Mrs. P. Casey, E. 2711 Everett Avenue, Spokane, who also own the Summit Bell Group to the north. The claim shown on the sketch map of the area, at the head of Blue Bird Creek, tributary of Blazed (North Fork of Summit) Creek. The ground covered lies at the head of the basin drained by Blue Bird Creek and slopes steeply to the north-east. The property is about 1¼ miles southerly by trail from the cabin on the Summit Bell Group. It is also accessible from the Bayonne Mine, by a rough trail about 1¼ miles long.

The property was visited at the end of June at which time the head of the basin, lying just north of a sharp ridge, was still largely snow-covered. The rock exposed on the ridge to the south i granodiorite, but in the basin white quartzite outcrops, striking north 20 degrees west, and dipping 30 degrees westerly. The quartzite appears to extend to steep bluffs on the eastern side of the basin. Some mica is developed in the quartzite near the contac Aiken reports that the quartzite is about 50 feet thick.

The workings on the Montana claim consist of surface-cuts or trenches and a small shaft. A vein 15 inches wide is exposed in a small cut, 200 feet to the east of which a snow-filled trench could be discerned. Forty feet east of the trench at approximately 6,500 feet elevation, there is a surface-cut from which the snow had been removed. The cut goes about 20 feet southerly and from the end a winze has been sunk on a vein striking south 75 degrees east and dipping 55 degrees southerly. The water level in the shaft was 10 feet below the collar. Lying below 6 inches of sheare granodiorite there is quartz 15 inches wide, which for 8 inches from the hanging wall side is fairly well mineralized with pyrite, galena, and sphalerite, and shows some copper strain. The remainde of the section contains little mineralization. A sample across 15 inches assayed: Gold, trace; silver, 0.2 oz. per ton; lead, 1.8 per cent; zinc, 1.4 per cent. In the 1917 Report of the Minister of Mines, A.G. Langley mentions sampling across 8 inches at the shaft, which assayed, Gold, 0.16 oz. per ton; silver, 0.5 oz. per ton. He also mentioned a sample of selected ore from the dump whic assayed: Gold, 0.10 oz. per ton; silver, 4.4.oz. per ton; lead, 24.5 per cent. A specimen of selected sulphide ore from the shaft dump was studied microscopically in the laboratory of the Department of Mines by J.M. Cummings, who reported as follows:

"Metallic minerals identified in order of abundance: galena, sphalerite, pyrite, chalcopyrite, tetrahedrite.

Galena: occurs as large irregular masses.

Sphalerite: occurs as large irregular masses, surrounded and invaded by galena.

Pyrite: not common. A few small grains occur in galena

Chalcopyrite: occurs as minute blebs in sphalerite, and small irregular inclusions in galena, commonly along galena-sphalerite contacts.

Tetrahedrite: occurs as tiny rounded and elongated grains in galena. Not common and all minus 200 mesh in size."

For 8 feet north of the vein the granodiorite is cut by joints parallel with the vein. Some of these points are filled with quartz. To the east of the shaft the ground was snow-covered Aiken supplied the information that the vein had been traced for several hundred feet and that it had continued in the quartzite. The 1917 Report by Langley states, "Numerous open-cuts expose the vein for a distance of about 500 feet."

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No

ANNUAL REPORT OF THE MINISTER OF MINES

FOR THE YEAR 1937

Part F - Special Report

by

John S. Stevenson

CROWN GROUP: This group is reported to have consisted of 8 claims, the Crown and Crown Numbers 1 to 7, staked in 1930, and to have been owned by Pete Pearson of Cowichan Station and associates.

The workings are at an elevation of approximately 2000 feet on a burnt-over hillside sloping south-easterly into Long Creek. They are approximately 1/2 mile north-eastwards and upstream from the junction, at an elevation of 900 feet, of this cree with Robertson River.

The workings and old camp-site may be reached by followin the logged and burnt-off hillside upstream along Long Creek from the Alpha-Beta workings. The Alpha-Beta workings are reached by following the grade of the Victoria Milling and Lumber Company sout westward from the village of Cowichan Lake to Camp 10 (as of October, 1938), at an elevation of approximately 900 feet.

The workings consist of 3 large strippings as shown on the accompanying sketch plan. The dirt walls of these strippings have sloughed but the relatively resistant areas of mineralization outcrops quite prominently within the stripped areas.

The mineralization consists of irregular areas of abundant magnetite (iron oxide) and lesser amounts of chalcopyrite (copper pyrites) in a lime-silicate gangue that consists largely of the lime pyroxene, diopside, the iron-lime garnet, andradite, epidote and occasionally alittle rayed actinolite. The distributio

There is very little unaltered rock in the vicinity of the mineralized areas and what does occur is a dioritic greenstone containing varying amounts of diopside. This rock grades into a phase carrying abundant diopside (lime-pyroxene) towards and finally into the lime-silicate gangue of the magnetite-chalcopyrite areas.

The showings, as exposed, do not indicate any commercial bodies of ore. There does not appear to be work any more recent than that reported to have been done by the American Smelting and Refining Company, as optionees, in 1930.

ANNUAL REPORT OF THE MINISTER OF MINES
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Part F -- Special Report by J. S. Stevenson.

Alpha Beta Group - This group consists of the Alpha, Beta, and Taboga claims staked in 1904, Crown-granted in 1910. They are owned by Messrs. F. C. and Louis Terrien and are reported to be under option to Jack Long and Associates of Chemainus and Duncan.

The claims are located at the junction of Long Creek with Robertson River, a river which flows northerly into Cowichan Lake. The property may be reached by following the grade of the Victoria Milling and Lumber Company south-westward from the village of Cowichan Lake to camp 10 (as of October, 1938), at an elevation of 900 feet, and a distance of 12 miles; and then by following one of the many old grades leading out from Camp 10 north-easterly for 2½ miles to the claims and showings at the mouth of Long Creek, which flows south-westerly into a north-easterly flowing section of Robertson River, at an elevation of approximately 900 feet. Most of the showings are to be found in the north-easterly angles of the junction.

The work on these claims is quite old, apparently none having been done since 1930, and consequently most of the trenches have sloughed and only those where considerable rock work was done, or those in the rim-rock of the creek, were sufficiently open for examination.

The rocks in the vicinity of the workings constitute a metamorphosed assemblage that once comprised andesitic green-stone with intercalated limestone lenses, diorite, and feldspar porphyry. The most characteristic feature of the alteration has been the development in varying degrees of ipidote, garnet and diopside. The mineralization consists of varying amounts of chalcopyrite, pyrite, and magnetite in siliceous gangue consisting mostly of contact metamorphic silicates.

The economic feature of the deposit is as a possible copper property, but no quantity of ore has been developed and the erratic distribution and discontinuous nature of the ore lenses mitigate against economical development of such.

The rim rock of the north-east angle between the two creeks, a short gopher hole and erstwhile open-cut, exposes 2 lenses of sulphide, striking north 7 degrees east and dipping 35 degrees south-east. Of these lenses, one measures 20 feet up the dip and 4 feet thick, and the other measures 30 feet up the dip and 2 feet thick, the former lying on a porphyry

sill and the other some 10 feet above it; these lenses lens out both up the dip and along the strike. A sample taken across the first sulphide lens assayed: Gold, trace; silver, trace; copper 3.4 per cent, and one taken across the second assayed: Gold and silver, traces; copper, trace; and iron 57.1 per cent. A sample taken across the somewhat mineralized rock between the lenses assayed: Gold and silver, traces; copper, 0.2 per cent; iron, 31.7 per cent.

In the rock underlying the north-westerly bank of Robertson River and only 30 feet northward from the Long Creek junction, there are 2 other much smaller sulphide lenses these are 2 feet by 3 feet by 2 feet thick and samples taken across them assayed: traces in gold and silver; copper, 4.9 per cent and 3.8 per cent; and iron, 25.2 per cent and 41.1 per cent.

Thirty feet north-eastward from the showing last described, there is a short caved portal, presumably on another small lens of ore.

The largest showing is a cut at an elevation of 950 feet and 400 feet in a direction south 50 degrees east from the first-described showings. Here a cut has been driven south 78 degrees east for 40 feet along a 3 foot lens of sulphide, a sample across which assayed: Gold, trace; silver, 1.0 oz. per ton; copper, 2 per cent; iron, 23.6 per cent. This lens, however, pinches out before the face is reached. In the rock wall, 3 feet northward from the portal, a second smaller lens is exposed above the first; this is 3 feet thick, but is only exposed for 6 feet. A sample taken across this assayed: Gold, trace; silver, 0.1 oz. per ton; copper, 2 per cent and iron, 23.6 per cent. Except for a small outcrop of a porphyry sill immediately below the portal, the rock is a highly altered greenstone in which considerable diopside has formed.

The infrequent occurrence of these sulphide lenses and lack of continuity to any one lens render the development of commercial bodies difficult and improbable.

# ANNUAL REPORT OF THE MINISTER OF MINES FOR 1937

## Part F -- Special Report By B. T. O'Grady

GOLD RIDGE: This group, in the Lillooet Mining Division, consists of 8 mineral claims, held by location and owned by A. Simons. The owner's cabin adjoins Fergusson Creek to the north- east, at a point 1.9 miles south-easterly from Fish Lake settlement. The claims extend north-easterly from the cabin, in wooded ground at 5,325 feet elevation, to the summit at about 8,500 feet elevation. The two main groups of workings are widely separated, the showings at the head of Dry Gulch Creek being exposed in open-cuts, on rock bluffs and talus-strewn ground above timber-line, at elevations ranging from 7,650 to 7,840 feet. The lower group, including an adit, is in the edge of timber-line at 6,010 feet elevation. Other scattered cuts are along the sides of a south-westerly-trending, rocky gulch at about 6,600 feet elevation. The ground is rugged and all workings are on the steep slopes facing Fergusson Creek.

Access is from Fish Lake by the Fergusson Creek pack-trail, the distance to the cabin being between 3 and 4 miles. From the cabin a switch-back trail extends for a length of about 1.5 miles to the adit or lower workings. At the time of the writer's visit, the highest workings were reached by a rough, incompleted branch trail which leaves the main trail at a point about 2.5 miles from Fish Lake. This settlement is on the main road about 53 miles from Bridge River station on the Pacific Eastern Railway.

The uppermost workings develop a vein in quartz diorite of the Bendor batholith, the local width of this formation, which oppupies the summits and upper slopes, being about 800 feet and its general trend south-easterly towards Truax Mountain. Where exposed, this vein roughly parallels the contact of the batholith with highly altered, serpentinized rock. This contact is situated a short distance below and westerly from the vein, the nearest outcrop of serpentinized rock being 30feet away. At the lower workings the wall rocks consist of fine-grained diorite grading to greenstone. The veins are narrow and all more or less oxidized and in those above 6,500 feet elevation sulphide mineralization is present in places as streaks and disseminations in the altered gangue which is siliceous or contains quartz. In these cases the associated minerals are stibnite, sphalerite, pyrite, gray copper, with occasional spots of realgar. The presence of arsenopyrite, not definitely identified, is indicated in green-stained, weathered material. In seven samples assays were: from a trace to 0.04 oz. per ton in gold; from a trace to 16.4 oz. per ton in silver; up to 2 per cent antimony; and one sample contained 2 per cent zinc. At the adit-workings the sulphides are pyrite and arsenopyrite, no stibnite or sphalerite being noted, and quartz is more abundant.

The Gold Ridge prospect has no history of importance,

the stakings dating back a few years.

Reverting to the workings near the summit, the vein, from 1 to 3 feet wide, strikes north and dips 50 to 60 degrees east. It is developed by six open-cuts extending along the bluffs and talus slope between elevations of 7,650 and 7,840 feet, the altitude gradually increasing going southerly. These cuts will be numbered 1 to 6 with No. 1 cut at the northern end of the showings. Going southerly from No. 1 cut, the others are distant 400, 435, 555, 755, and 905 feet respectively. At No. 1 location a sample across 1 foot of partially exposed vein material assayed: Gold, 0.04oz. per ton; silver, 16.4 oz. per ton; and a selected sample gave: Gold, 0.01 oz. per ton; silver, 9.8 oz. per ton; zinc, 2 per cent; antimony, 0.2 per cent. A selected sample from the partial exposure, 1 foot wide in No. 2 cut, assayed: Gold, 0.01 oz. per ton; silver, 1.0 oz. per ton; antimony, nil. In No. 3 cut mineralization is similar over a width of 1 foot. At No. 4 location, continuity is indicated, the vein being poorly exposed. At. No. 5 cut the vein is 2.5 feet wide, a sample across this width assaying: Gold, 0.01 oz. per ton; silver, 2.0 oz. per ton. At No. 6 location the vein is from 2.5 to 3 feet wide, from which a selected sample assayed: Gold, trace; silver, trace. Between Nos. 5 and 6 open-cuts and from 10 to 15 feet stratigraphically parallel section of vein exposed at points on the bluffs. It is from 0.75 to 3 feet wide, a selected sample assaying: Gold, 0.01oz. per ton; silver, 16.6 oz. per ton; antimony, 2.0 per cent. Going south-westerly from the No. 6 open-cut down a steep, rocky gulch trending towards the cabin, and at elevations of 6,575 and 6,600 feet, shallow cuts expose a vein, from 2 to 4 feet wide, which strikes north-easterly and dips steeply south-easterly. A selected sample from the lower location assayed: Gold, trace; silver, 0.2 oz. per ton; stibnite, 1.5 per cent. Continuing down the same gulch, where the slope approximates 35 degrees, and at 6,010 feet elevation, there is the portal of a drift-adit 100 feet long. It develops a curving, westerly-striking vein from 0.5 to 2 feet wide which dips 55 to 65 degrees northerly. A sample of selected massive iron sulphide mineralization from the drift gave: Gold, 0.03 oz. per ton; silver, 0.4 oz. per ton. The same assay was obtained over a width of 1 foot of oxidized material and quartz in an open-cut 40 feet easterly from the adit portal. A selected sample of quartz, containing lightly disseminated iron sulphides, from the open-cut showing assayed: Gold, 0.03oz. per ton; silver, 1.2 oz. per ton. No other exposures were seen along this vein.

Summarizing conditions generally, values in the precious metals are extremely low, considering the narrow widths, but deeper cuts at some points, as at the higher elevation might be advisable to test the possibility of impoverishment by leaching. The antimony content in present exposures is unimportant.

ANNUAL REPORT OF THE MINISTER OF MINES
FOR 1937

Special Report.

UNITED EXPLORATION CO., LTD. In the Lillooet Mining Division, the property of this company consists of 21 mineralclaims held by location. It adjoins the ground of the Benboe Deep Mines Syndicate to the north, being situated on the western side of Tommy Creek or about 3.25 miles southerly from the confluence of t stream with Bridge River. Topographical conditions are similar to those described in the foregoing report on the Benboe property, the workings, at elevations ranging from 4,910 to 5,020 feet, being located on the steep, partially wooded, easterly slope to the creek. Access is first by means of the highway which is followed for a distance of about 23 miles from Bridge River Station on the Pacific Great Eastern Railway to the cable-crossing over the river at Swang's (formerly Beaubien's) Ranch. From the latter point a trail, about 4.5 miles in length, leads to the Benboe cabin, from which point a branch trail extends northerly along the steep side-hill for about 0.75 miles, passing the Benboe surface workings en route.

The claims are underlain by rocks of the Bridge River series which, at a distance of between 2 and 3 miles to the south, are intruded by the Bendor batholith. Local exposures consist largely of interbanded greenstone and schistose sediments, strikes being north-westerly and dips steep north-easterly. The objective of exploration is a sheared and crushed oxidized zone in altered sediments, up

to 19 feet wide, where cut underground, striking about north 25 degrees west and dipping from 50 to 60 degrees north-easterly. On the footwall-side there is a band, up to 15 feet wide, of highly altered rock containing abundant calcite and some chlorite. Adjoining this band, to the south-west there is greenstone and on the hanging-wall-side of the sheared zone there are schistose sediments. Quartz, containing disseminated pyrite, was noted at one point, a sample of which gave only traces in gold and silver. The best assay from 9 samples of the sheared, oxidized material, was gold, 0.04 oz. per ton; silver, 0.2 oz. per ton.

The comparatively recent stakings were owned by A. Stromberg, E.R. Shepherd, and D. McVicars who formed the Stromberg-Shepherd Syndicate. On January 5th, 1938, the United Exploration Company, a private concern, was incorporated to continue development.

The workings, consisting of three short adits with open rock approaches, and an open-cut 60 feet long, are closely spaced, being enclosed with a length of 200 feet and a vertical range of 110 feet. The sheared zone is best exposed in the lowest adit at 4,910 feet elevation. This working extends as follows: From the portal at A, 21 feet south 70 degrees west to B; from B, 39 feet north 18 degrees west to C; from C, 32.75 feet north 28 degrees west to D. The extension of the same course beyond D, said to be 30 feet long, is caved. Reverting to Station D, the adit extends north

67 degrees east for 19 feet to E opposite which a branch extends north 20 degrees west for 13 feet. Beyond the latter section there is a caved section said to be 10 feet long. From E the adit had been driven in a semi-circular direction to get around the caved ground as follows: From E, north 22 degrees east for 5 feet to F; from F north 16 degrees west for 7 feet to G; and from G north 60 degrees west for 15 feet to the face. The first course from A to B crosscuts the zone and the section from B to D is a drift along the foot-wall. From D to E the full width of the zone is cut. The two north-westerly branches, opposite stations D and E, are drifts along the foot-wall and hanging-wall respectively. The results of sampling in this adit are as follows: The 16-foot width going north 70 degrees west from B to a point outside the portal, sampled in two sections from foot-wall towards the hanging-wall, assayed: gold, 0.02 oz. per ton; silver, 0.1 oz. per ton across 7 feet and gold 0.04 oz. per ton; silver, 0.2 oz. per ton across 9 feet. A selected sample of altered, pyritized, foot-wall rock, just west of B, assayed: gold, 0.01 oz. per ton; silver, trace. The crosscut section between D and E was sampled in three sections, 6, 6 and 7 feet wide, from foot-wall to hanging-wall. The first two 6-foot sections assayed: gold, 0.02 oz. per ton; silver, 0.2 oz. per ton; and the 7-foot section assayed: gold, 0.01 oz. per ton; silver, trace. A selected sample of quartzose material, containing disseminated pyrite, from the 13-foot

branch drift opposite station E, assayed: gold, 0.01 oz. per ton; silver, 0.4 oz. per ton.

At a point 50 feet north-westerly from the portal of the lower adit and at 4,950 feet elevation, there is an open-cut 20 feet long leading to an adit which extends to north 50 degrees west for 10 feet then swings to north 40 degrees east for 25 feet. Adjoining the face a 5-foot section of rusty, partially decomposed, sheared rock, was sampled, the assay being gold, 0.01 oz. per ton; silver, 0.2 oz. per ton. Selected pyritized, altered, silicified rock from the foot-wall assayed: gold, trace; silver, 0.2 oz. per ton. Adjacent workings which trace the continuity of the zone north-westerly are first a caved adit, said to be 30 feet long, at 4,975 feet elevation, and a large open-cut at 5,020 feet elevation. No mineralization of importance was exposed at the time of the writer's visit late in August 1937. Since then it is reported that a considerable amount of surface work was done and more interesting showings uncovered.

ANNUAL REPORT OF THE MINISTER OF MINES
FOR 1937

Special Report:

BRIDGE RIVER UNITED MINES LTD. The property of this company, in the Lillooet Mining Division, comprises 40 mineral claims and fractions held by location. The property covers a strip of ground, about 2.3 miles in length, extending from Gun Creek north-westerly along Freiberg Creek and its easterly branch, known as Bunting Creek. The precise location of the camp and adjoining workings is shown on Map No. 348-A, "Gun Lake Area", Bureau of Economic Geology, Geological Survey of Canada, which shows the topography in contours at 100-foot intervals. The workings, at elevations ranging from 3,880 to 4,825 feet, are on the ground sloping to Bunting and Freiberg Creeks and in part towards Gun Creek. Slopes, generally moderate near the principal workings, are occasionally steep. The summits forming the background average about 7,000 feet in elevation, some peaks rising to greater heights. The developed area is open and park-like, the scattered trees including yellow pine, jackpine, poplar and spruce.

The property is accessible by road to Lick Creek, of which the first section is by highway for about 33.5 miles from Bridge River Station on the Pacific Great Eastern Railway to the Tyaughton Lake road. The latter is followed for a distance of approximately 3 miles to its junction with the Gun Creek road which is followed westerly about 2.5 miles to Lick Creek. From the latter point a trail, 1.5 miles in length, leads to the camp.

The area is underlain by greenstones and sediments of the Bridge River series which are intruded by irregularly-shaped bodies of serpentine, the latter formation being invaded by small stocks and dykes of porphyritic hornblende diorite and porphyry. Small highly altered porphyritic dykes were also noted, specimens of which, examined microscopically, consisted of a somewhat obscure groundmass in which plagioclase laths are common with abundant calcite, the phenocrysts being plagioclase.

The workings trace and explore bands of altered serpentine, most of the development having been done on a "ledge", near the camp, which strikes north-westerly and dips 55 to 65 degrees north-easterly. In this locality the alteration, from 7 to 50 feet wide., follows a zone of fracturing and shearing conforming approximately to the attitude of adjacent argillaceous and cherty sediments. Here and at other points where altered serpentine occurrences have been investigated, the rock consists chiefly of ferruginous charbonate material containing streaks and stringers of chalcedonic quartz and spots of a light-green chlorite mineral. Disseminated pyrite is occasionally present in altered serpentine and adjoining rocks but no economic mineralization had been exposed at the time of the writer's examination in August 1937. Of 22 samples one gave 0.01 oz. gold per ton and the others showed only traces. Silver values in two cases were o.2 oz.

per ton, the other samples showing traces.

Claims constituting the nucleus of the property were staked in 1933, W. Bunting and J. Ferguson being the original owners. Most of the underground work was done in 1934 and 1936, and the Bridge River United Gold Mines, Ltd. was incorporated in October of the latter year.

The following description, based on a pace and compass survey, refers to the workings adjoining the camp to the south-west, and west, and located on the B. and F. Nos. 1 and 3 and B. and F. Fraction claims, towards the southern part of the property. Commencing at the north-western end of these workings, trench A, at 4,010 feet elevation, is 24 feet long and up to 7 feet deep, all in overburden.

The Bunting adit, at 3,975 feet and situated 150 feet south 10 degrees 30 minutes west from this trench, has been driven north 67 degrees east for 24 feet, the open approach being 27 feet long. The adit is in overburden for the first 15.5 feet to where a felsitic dyke, 4 feet wide, is encountered. The last 4.5 foot section cuts sheared sediments, the dyke dipping steeply north-easterly with the strata. The next working is a combined open-cut and shallow pit, at point B, situated south 49 degrees 30 minutes east from the Bunting adit and at 3,980 feet elevation. The "ledge", poorly exposed here, underlies a felsitic dyke, 5 to 6 feet wide, which dips 60 degrees north-

easterly. From this last location going south 42 degrees 30 minutes east for 295 feet there is, at point C, a similar working at 3,950 feet elevation. There is here a felsitic dyke, 4 feet wide, dipping steeply north-easterly, underlying which there is successively a width of 3 feet of siliceous sediments and then a partial exposure, 7 feet wide, of altered serpentine "ledge". At the same elevation, and 90 feet south 84 degrees 30 minutes east from C, there is, at point D, a combined open-cut and shallow shaft. Underlying quartzite, which dips 60 degrees north-easterly, there is here a width of 12 feet of altered serpentine. In this location the felsitic dyke is a narrow streak intercalated between the "ledge" and the quartzite. Continuing along the same 3,950-foot contour for 170 feet at south 65 degrees 30 minutes east there is, at point E, a deep trench where there is a width of 17 feet of altered serpentine underlying a felsitic dyke 1.1 feet wide, which dips steeply north-easterly. At the same elevation, and at point F, 345 feet south 54 degrees east from E, there is a long cross-cutting trench in greenstone.

The Bortoli adit portal, at 3,921 feet elevation, is 110 feet south 17 degrees 30 minutes west from the open-cut at C. It has been driven north 45 degrees east for 154 feet with, at the inner end of this course, a branch 20 feet long to north 44 degrees west. For the first 94 feet in from the portal the main working cuts

greenstone, serpentinized in part, with some inclusions of sediments. From 94 to 122.5 feet in, the rock is chiefly cherty quartzite. From the latter point to 132 feet in from the portal the working intersects altered serpentine. Between this "ledge" and the north-westerly branch there are sediments, chiefly cherty quartzites. The branch working, in the same rocks, parallels a felsitic dyke, up to 2 feet wide, which dips 45 to 55 degrees north-easterly.

The Anderson adit portal, at 3,880 feet elevation, is situated at a point 184 feet south 66 degrees east from the trench at F. It has been driven north 45 degrees east for approximately 600 feet to where it enters a dyke or stock of porphyritic hornblende diorite. Three branch workings, successively numbered 1, 2, and 3, leave the main adit at points 92, 184, and 220 feet in from the portal respectively. No. 1 extends to north 80 degrees west for 15 feet; No. 2 to south 70 degrees east for 40 feet; and No. 3 is driven first to north 15 degrees west for 15 feet, then west for 21 feet. The section of main working between the portal and a point 167 feet in, intersects siliceous argillites, No. 1 branch being in this formation between points 167 and 170 feet in, a felsitic dyke is intersected which, dipping 50 degrees north-easterly, forms the "foot-wall" of the "ledge". The altered serpentine is then cut to a point 235 feet in from the portal, Nos. 2

and 3 branch workings being within this zone. Beyond the 235 foot point norman serpentine is cut to near the face of the adit, the sheared rock caving in places and backing up the water.

A showing of altered silicified serpentine and quartz, up to 9 feet wide is exposed in a dry creek bed a few hundred feet easterly from the Anderson adit and at about 3,840 feet elevation. Immediately below the Anderson adit and at 3,770 feet elevation, a cross-cut has been driven north 14 degrees west for 17 feet and is just entering solid rock consisting of altered silicified greenstone. Altered serpentine, of similar composition to the occurrences described, has been exposed in an open-cut at 4,825 feet elevation adjoining Bunting Creek on the Apex Gold Fraction claim, approximately 6,000 feet north-westerly from the group of workings previously described. The cut 75 feet long, crosscuts the zone of alteration which apparently strikes hortherly with dips from vertical to 70 degrees westerly. Samples taken here are included in the summary of sampling results given in the first part of this report.

In addition to the workings mentioned a great deal of prospecting has been done on the claims, in the form of surface cuts tracing the various formations.

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FOR 1937.

Part F -- Special Report
by B. T. O'Grady.

CHILCO EXPLORATION COMPANY. This property, in the Clinton Mining Division, includes the following Crown-granted claims: Kathleen, Margaret, Sally, and Nancy, successively numbered Lots 465 to 468 inclusive. In addition there are stated to be 15 continguous mineral claims and fractions held by location, these being mainly situated between the Crown-granted claims and the Morris property described in the Report of the Minister of Mines for 1935, page , 39. The owners are A.F. Rafferty and associates, the secretary of the company being W.E. Shannon of Vancouver, The four Crown-granted claims are located 4 miles south-easterly from the southern end of Tatlayoko Lake. The claims cover the steep mountain-slopes facing the main valley occupied by the Homathko River and Tatlayoko Lake to the west and north-west respectively. Elevations on the steep, rocky, and talus-strewn ground above timber-line, range between 6,215 and 7,840 feet. The temporary camp, or tent-site, is situated at 6,080 feet elevation in an open, grassy basin containing scattered patches of small evergreens. Lower slopes are well wooded, including small areas of standing, fire-killed trees.

Access to the area is by motor-road, 169 miles from Williams Lake on the Pacific Great Eastern Railway. Of this total distance, 145 miles extend westerly from the town mentioned to the junction with the branch which is followed southerly for 24 miles to the wharf at the north end of Tatlayoko Lake. From the lat-

to reach the southern end of the lake, Rafferty's Landing being on the eastern side about half-a-mile from the southern end of the lake, or about 13.5 miles by water from the wharf at the end of the road. A recently constructed trail on a good grade and 8 miles in length, roughly estimated, connects Rafferty's Landing with the property. General communications in the area are as follows: A stage carries mail and passengers on alternate Saturdays to Moore's ranch near the northern end of Tatlayoko Lake; the nearest telephone station is at Graham's ranch and hostelry at Tatla Lake, 29.7 miles from Moore's or 151.8 miles by road west of Williams Lake.

The property is largely underlain by Triassic rocks including tuffs and greenstones. This is part of the series which, on the adjoining Morris property, includes argillites, sandstones, and conglomerates. These formations are intruded by stocks of quartz diorite and diorite probably related to the Coast Range batholith, the edge of which is situated a few miles to the south. The deposits are associated with a major fault which strikes easterly and dips southerly at angles varying from 30 to 75 degrees. To the north of the fault there are purple tuffs striking north-east by north, and south of the fault the formation is composed of light-coloured, cherty tuffs and greenstones which strike northwesterly. Near the centre of the eastern boundary of the Ict claim there is a large body of diorite intruding the rocks south of the fault. Within the fault-zone the brown-weathering, highly

from 10 to 30 feet. Mineralization occurs in either the fault-zone or in north-westerly-striking fractures lying to the south of the fault and in close proximity to it, the intersections not having been exposed. The showings are largely oxidized and frequently decomposed. The fault-zone is composed of soft, crushed rock, containing irregular blocks and ribs of hard, unfractured rock. Pyrite, arsenopyrite, and stibnite are found in small amounts as remnants in the oxidized, siliceous gangue which is frequently green-stained, and occasionally includes quartz. Similar mineralization is found over narrow widths in the north-westerly-striking fractures, some of which cut the diorite body.

The four claims, now Crown-granted, were staked by A.F. Rafferty in 1929, the other claims having been added subsequently.

No underground work has been done and the open-cuts to be described are on the Ict claim, Lot 473, The claim specified adjoins the Isaac T., Lot 701, Crown-granted claim of the Morris property, to the south-east. Adjoining a witness post on the north-eastern boundary of the Ict claim, south 33 degrees 56 minutes east from the northern angle of the claim, there is an open-cut at 7,250 feet elevation. It is situated at the top of the steep slope towards the Homathko River just below the apex of a rocky south-westerly-trending, ridge which separates two basins. The showing, enclosed within the fault-zone, consists of highly altered rock, silicified in part, the strike being easterly and the dip southerly at 65 to 70 degrees. The 6.5 foot hanging-wall section includes two oxidized, partly decomposed mineralized bands, one of which, up

selected sample of sulphide remnants, chiefly stibnite with some arsenopyrite, assayed: Gold, 0.02 oz. per ton; silver, 1.0 oz. per ton; stibnite, 16.0 per cent. Towards the foot-wall-side of the 6.5 foot section, the other band, similarly composed and up to 9 inches wide, dips flatly southerly, converging on the dip with the hanging-wall band. A selected sample of sulphide remnants from the lower showing assayed: Gold, 0.02 oz. per ton; silver o.2 oz. per ton; stibnite, 15 per cent. On the foot-wall-side of the section described there is a 4-foot width of decomposed, brown-and green-stained, silicified rock, containing some quartz and calcite. Following the fault-zone south-west by west, and about 875 feet from the witness post, there is the first of a series of five, widely spaced, open-cuts which, extending to the south-western boundary of the Ict claim, are distributed along the steep, to precipitous, face of the mountain-side sloping north-westerly towards the Morris property and beyond towards the Bonathko River Valley. The cuts were not definitely placed owing to the hazardous conditions but they are enclosed within a length of about 625 feet and gradually descend in elevation, going westerly, from 7,415 to 7,310 feet. At the easterly cut of the series there is a partial exposure 32 inches wide striking easterly with 30 degree southerly dip. It is composed of altered, iron-stained, silicified rock, containing oxidized and decomposed green-stained streaks in bands conforming to the strike and dip. A sample across 32 inches assayed: Gold, 0.08 oz. per ton; silver, 1.6 oz. per ton. No. 2 cut was full of snow but a selected sample from a small pile of green-stained, silicified rock, containing disseminated specks of

per ton. No. 3 cut exposed shatterd, decomposed material, containing a little green-stained quartz up to 2 feet wide, which has the same strike and dip. A sample across 2 feet gave traces in gold and silver. At. No. 4 cut location the showing, 6 feet wide, consists of silicified green-stained rock containing disseminated sulphide specks. A sample across the 6 feet assayed: Gold 0.03 oz. per ton; silver trace; stibnite, 0.8 per cent. The No. 5 cut, adjoining the south-western boundary of the Ict claim near its northwesterly angle, exposes a zone, up to 12 feet wide, of iron-stained, altered rock, decomposed in part.

Reverting to the witness post, previously mentioned, and going south 35 degrees west for 325 feet along the rocky ridge, there is the first of a series of closely spaced narrow fractures which are enclosed within a length of 200 feet. These fractures, striking about north 55 degrees west with approximately vertical dips, cut diorite, the outcrops being at elevati ranging from 7,405 to 7,425 feet. The siliceous filling is largely oxidized and decomposed, quartz being occasionally present. Sulphide mineralization, consisting of fine disseminations, is of sparse occurrence. Two samples from the widest and best mineralized showing at the point previously specified, or 325 feet s 35 degrees west from the witness post, were as follows: Gold, 0.015 oz. per ton; silver, trace; across 2.5 feet; and a selected sample which gave; Gold, 0.01 oz. per ton; silver, trace, In addition to the above, there are reported to be some showings, co taining chalcopyrite with low gold and silver values in the extension of the fault zone on the Mac claim, Lot 477, at a point about 3,400 feet easterly from the witness post on the Ict claim

# V I K I N G

The Viking mineral claim was located on April 20th, 1931, by Ed Johnston of Cowichan Lake Post Office, and is at present owned by him.

This claim covers a steep hillside on the east side of the Robertson river about 2½ miles due south from Cowichan Lake.

It may be reached by the Victoria Lumber and Milling Company grade that leads from near the village of Cowichan Lake to Camp 10, for some 5 miles from Cowichan Lake to near a previous site of Camp 10. From the grade a steep foot-trail leads to the showings some 1270 feet above, at an elevation of approximately 2000 feet (barometric) at the camp cabin.

The camp and workings are on the top of a knoll that slopes steeply in a series of greenstone bluffs to the logging grade and valley of Robertson River. The hillside is quite free from underbrush but carries an open growth of timber comprising trees up to 2 feet in diameter.

The cuts are nearly all in an andesitic greenstone in which nests of rayed actinolite needles and patches and veinlets of epidote are common; such mineral developments are probably remote manifestations of contact metamorphism found developed to a higher degree some 2 miles south-eastward. In a section extending from the camp cabin south-eastward toward the cuts, the greenstone has been intruded by a very irregularly-shaped band of feldspar porphyry which has an average north-westerly strike and an average width of some 40 feet. This body or dyke is probably not directly responsible for either the development of epidote and actinolite or the mineralization of the shears inasmuch as (1) it is widely cut by veinlets of epidote, trending, significantly, across the dyke and in the same general direction as the

of the cuts strike out from the greenstone and into the porphyry.

The main workings consist of 3 cuts; the most westerly of which is some 60 feet higher in elevation and 450 feet in a direction south 63 degrees east from the camp cabin. This cut has been driven in a direction north 32 degrees east for 16 feet into the steep hillside to give a face some 20 feet high. The floor and face of this cut expose a slightly shattered zone 12 inches wide containing disseminated chalcopyrite and a 3-inch wide vein of quartz; the structure strikes north 32 degrees east and dips 80 degrees south-east. A 12-inch sample taken across the full width of sheared rock and quartz vein assayed traces only in gold and silver and 3.0 per cent. copper. The rock formation in this cut is andesitic greenstone.

A second cut, 31 feet in a direction south 42 degrees east from the first, has been driven north-easterly into the hill for 8 feet. The walls of this cut show an 18-inch zone of shattered greenstone striking north 17 degrees east and dipping 30 degrees south-east. Towards the face of the cut this zone carries 4 one-quarter inch chalcopyrite veinlets; however, towards the portal these coalesce, both towards the foot and hanging-walls, and pass outwards from the andesitic greenstone of the face across and into a north-westerly trending band of feldspar porphyry close to the portal. A sample taken across the full 18-inch width of the shear zone assayed: Gold, trace; Silver, 1.0 ounces per ton; Copper, 1.0 per cent.

A third cut, 40 feet in a direction south 10 degrees east from the second, has been driven 10 feet easterly into the hill. This has been driven diagonally across a 2-foot shear zone striking north 40 degrees east and dipping 35 degrees south-east, that contains 2 irregular quartz lenses up to 6 inches in thickness towards the foot-

sample taken across the full width of the shear assayed: Gold, trace; Silver, .6 ounces per ton; Copper, 0.2 per cent. The cut is in greenstone, although the south-easterly extension of the porphyry band mentioned above lies about 8 feet to the south-west.

A small fourth cut has been made some 28 feet above in a direction north 34 degrees east from the last, and approximately on the same shear zone. The south-easterly wall of this cut shows a 5-foot width of banded mineralization and silicification apparently replacing, in part, the material of a former shear zone. The following samples were taken across the south-easterly wall across this zone, beginning from the floor and working upwards:

(1) Across 12 inches of foot-wall greenstone, containing disseminated grains and hair-like stringers of chalcopyrite, which assayed: Gold, trace; Silver, 0.4 ounces per ton; Copper, 1.4 per cent.

(2) Across a lens of heavy chalcopyrite, 10 inches thick but lensing out up the dip to mere stringers 4 feet up; the 10-inch sample assayed: Gold, trace; Silver, 1.0 ounces per ton; Copper, 596 per cent.

(3) Across a 10-inch chalcopyrite-quartz lens, which assayed: Gold, trace; Silver, trace; Copper, 0.9 per cent.

(4) Across the 8-inch hanging-wall section of quartz, rich in greenstone inclusions which have been largely replaced by chalcopyrite which assayed: Gold, trace; Silver, 0.4 ounces per ton; Copper, 4.7 per cent. This zone, in spite of its width in this cut, appears to die out just north-eastward up the hill.

In a few places at the bottom of low bluffs on the steep hillside below the shears described cuts, rock holes have been blasted

on miscellaneous tight shear zones in the greenstone; the greenstone in these shears is frequently epidotized and replaced by patchy stringers of chalcopyrite. In one shear a splash of magnetite was seen; it is probably of contact metamorphic origin; inasmuch as most material has been found associated with similar rocks in the same general area.

It is to be noted that the continuation of shears, as well developed and mineralized as they are in the four main cuts described, has not been found in scratching the ground either above or below the main cuts, although it is probable that the breaks do continue, but greatly reduced in width and mineral content.

Respectfully submitted,

Associate Mining Engineer.

April 9th, 1938

SILVER LEAF: The Silver Leaf Group consists of the Mountain Ash mineral claim, staked in 1911, and the Silver Leaf mineral claim and Hemlock fraction, staked shortly thereafter. The group is owned by T. Service and associates of Duncan.

The main working on the property, an adit, is at an elevation of approximately 2,600 feet on a very steep hillside sloping south-easterly into Jump Creek (south fork of the Nanaimo River). The property may be reached from Youbou, on Cowichan Lake, by a 10-mile trail that leads up Cottonwood Creek, and crosses both the Cottonwood-Chemainus River, and the Chemainus-Nanaimo River divides before reaching the Nanaimo watershed and Jump Creek. It has been suggested that this hilly route be eliminated by the construction of 9 miles of road up Jump Creek; the property would then be 23 miles by mountain road from Nanaimo.

The workings are on a very steep hillside, the slope averaging 45 degrees, that is covered by an open growth of green timber; steep bluffs and rock chimneys are common to the hillside both above and abng the slope from the showings.

The main mineralization, as exposed in the one adit and immediately above, is in a silicified shear-zone that consists of abundant chalcopyrite (copper pyrites), pyrrhotite (magnetic iron pyrite) and arsenopyrite (arsenical iron) in a gangue of fine-grained calcite and quartz. The rock formation is a dense, massive andesitic greenstone.

The workings consist of an adit (see accompanying plan), reported to have been driven in 1922-23, and several surface

showings on which little work has been done other than by the natural erosion of slides, etc. The distribution of these various occurrences is shown on the accompanying plan.

The adit, commencing as an open-cut on the vein, follows it to 45 feet from the portal, at which point the vein matter dies out against a compound fault consisting of 2 tight gouge slips, one of which develops into a 1-foot shear zone, as seen in the plan; two lenses of drag ore, torn from the main vein occur between these slips in the vicinity of the winze.

The ratio of silicified vein matter to the sulphides varies considerably along the strike of the vein; in places very little, if any, sulphide is present, in others, up to 25 per cent. of the vein consists of abundant sulphides; of the 3 sulphides, pyrrohitite is more abundant than chalcopyrite or arsenopyrite. The assay results shown on the plan will indicate the values to be expected along the developed portion of the vein.

The same silicified shear has been traced for some 75 feet in a cliff slope above the adit-portal. The vein matter in this surface exposure is extensively oxidized, but show lenses of heavy chalcopyrite, alternating with arsenopyrite and gangue. The vein widths range from 3 feet to 4 feet. The continuity of the vein farther up the hillside is partly obscured by rubble.

The following occurrences will be described as they are numbered on the plan:

Number 1 is a small cut that exposes 2 shear zones, ranging from 2 inches to 6 inches in width and containing a small amount of chalcopyrite and oxidized material. The coalescence of these has not been traced south-easterly.

The occurrence at Number 2 constitutes a natural exposure at the bottom of a long rock chimney. The showing exposes a southerly 4-inch silicified zone containing disseminated arsenopyrite and a northerly rusty shear zone, from a few inches to 18 inches in width, containing disseminated arsenopyrite and oxidized material. South-westward up the chimney the shear tightens to a dense, silicified zone 8 inches wide containing a small amount of arsenopyrite, chalcopyrite and pyrrhotite; this may be followed up the chimney for some 40 feet, its continuity being further obscured by the debris.

Number 3 is a zone of tight shearing only, some 18 inches wide, that disappears under the rubble downwards but seems to join the northerly zone of Number 2.

Number 4, 5 and 6, separated from each other by the rock debris in the chimney, appear to be on the same shear zone, but on one that appears to differ in vein matter and in strike with that of (3). With the exception of (5), these showings are characterized by heavy chalcopyrite lenses and disseminated sulphides; however, the sulphide material is not as abundant as that in the adit. The zone of shearing ranges from 3 to 4 feet in width, and the sulphide lenses from 1 inch to 6 inches. It is thought that these showings

may represent the faulted continuation of the adit-vein.

Of genetic interest with respect to the mineralization, is the occurrence of a 20-foot feldspar porphyry dyke, some 125 feet westerly from (6); it is bordered by fine-grained andesitic greenstone.

Mountain Ash Showing:

A showing, reported to be on the Mountain Ash claim, occurs at an elevation of approximately 3100 feet, some 1000 feet south-westerly along the hillside from the adit. The showing is at the head of a snow-filled chimney (May 27th) that is some 30 feet wide; however, the writer was able to climb to within 100 feet only of the showing.

The showing is apparently a shear zone that strikes east-west; it is reported to have a width of 25 feet, judging from the talus, the shear consists mostly of calcite lenses within sheared greenstone that contains a little disseminated chalcopyrite.

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