A Report On the Williams Creek Gold Quartz Property

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Location

THE claims of this property are situated immediately south of the town of Barkerville in the Cariboo mining division, north-central British Columbia. They are bounded by the claims of other mining companies as follows: on the west by Cariboo Gold Quartz Mining Co. Ltd.; on the north and south by Island Mountain Mines, Ltd.; and on the east by Barkerville Mining Company Ltd.

Communication

Barkerville is at the end of sixty miles of provincial highway from Quesnel, which is the present terminus of the Pacific Great Eastern Railway. The town of Wells is on the highway four miles from Barkerville.

Most sections of the property are readily accessible by means of gravel roads and trails.

Topography

The elevation varies from 4,200 ft. on Williams Creek to approximately 5,500 ft. on Barkerville Mountain.

The gradient on the slopes is generally moderate, except where hydraulic placer mining has left steep gravel banks up to 100 ft. high on Williams Creek and Stouts Gulch.

The whole area is drained by the northeast flowing Williams Creek and its tributaries in Stouts, Conklin and Black Jack Gulches.

Mineral Claims

There are 28 Crown-granted mineral claims and fractions comprising 712.4 acres, for which the company has a clear title. The complete list of claims is as follows:

Lot No.	Name
1.B	Black Jack
4.B	Homestake
1.F	Cornish
9442	Roosevelt
10467	Snowden
10468	Westport
10469	Black Jack Extension
10470	Blackbird
10471	Royal Oak
10472	Mammoth
10473	Pilot
10475	Canadian
10476	Armistice
10477	Hoover
10478	Tyee Fraction
10479	Nan Fraction
10480	Meter Fraction
10481	Leeds Fraction
10482	Babs Fraction
10483	Pat Fraction
10484	Tabu Fraction
10503	Diller
10504	Morning Star
10505	Evening Star
10506	Sirius
10510	Orion
10516	Venus Fraction

History

The first four claims listed above were staked in the days of the Cariboo gold rush, in the early 1860's, but the limited amount of surface and underground exploration on the quartz veins failed to disclose enough ore for a profitable mine to be established. The Bonanza (or B. C.) and Steadman veins in the immediately adjacent ground were tested in 1877 and a mill brought in to treat the ore but the operations were closed down before any ore was milled. About the same time the Black Jack and Burns Co. sank a shaft on the Black Jack vein on William Creek. Several hundred tons of ore from this work were treated in a small stamp mill.

In 1933 the Britannia Mining & Smelting Co. had an option on some of the present claims. They drove five short adits totalling 790 ft. and carried out a limited amount of diamond drilling. The option was dropped in 193[illegible] and according to that company's officials, the records are no longer available.

In 1938 the claims now comprising the company's holdings were purchased by The Cariboo Gold Quartz Mining Company for a little over $100,000.00. No work was done on the claims except the surveying necessary for Crown granting.

In 1946 the Williams Creek Gold Quartz Mining Co. was formed to develop the claims and a diamond drilling campaign was started on September 13 of that year, continuing until August 16 of 1947. At the same time geological mapping was carried out in conjunction with a topographic survey. The field work was done by Messrs. G. F. Warning and R. Davis, under the direction of the writer.

This exploratory work has shown that favourable auriferous veins are present in three sections of the claim.

Both because of the location of the Williams Creek Gold Quartz Mining Company's property adjoining two important producing lode mines in an area long famous for its placer and lode gold deposits, and because of the valuable information contained in Dr. Skerl's report, "Western Miner" is pleased to have this opportunity of presenting to its readers this comprehensive and interesting description of a well-known Cariboo district property. It is of further interest to note that plans for an extensive programme of exploration and development to be initiated during 1948 on the Williams Creek property are now being prepared.

Geology

Introduction: Numerous reports have been published on the geology of the Cariboo District, beginning with those of Dr. G. M. Dawson in 1876-77.

The outstanding account of the area was made by Amos Bowman in 1888, as a result of field work in 1885-6, although his untimely death in 1894 prevented the writing up of the details of the individual placer creeks. His field sheets have proved invaluable to miners in the district ever since. He laid the groundwork for all subsequent geo-

logical surveys in the area; thus his mapping of a large scale anticlinorium has not been challenged. The overfolding of the Cariboo schists, depicted in his main cross-section, was ignored in subsequent publications until 1945 when Benedict described the overfold in the Island Mountain mine. Bowman accurately described with assay values the veins on which the present producing mines were started over forty years later. He also pointed out that the auriferous veins were confined to the 'Cariboo series.'

In 1926 the Geological Survey of Canada published Memoir 149 by Johnston and Uglow, in which the authors describe numerous auriferous vein outcrops and placer workings in the Cariboo district.

In 1935 Hanson gave a detailed account of the geology of the Barkerville Gold Belt as Memoir 181. He made a study of the newly opened Cariboo Gold Quartz and Island Mountain mines and produced a map of the surface geology. This work was extended by Davis in 1937 in the Island Mountain section as paper 37-15 and by Lang in 1938 in the Keithley area as paper 38-16.

In 1945 and '46 Mr. Gordon Brown made a detailed study of the gold belt with a view to locating favourable auriferous areas for the Barkerville Mining Company in their extensive holdings.

However, the first paper to elucidate the structural control of the orebodies was that of P. C. Benedict in his excellent account "Structure at Island Mountain Mines, Wells, B. C." (Trans. C.I.M.M. 1945).

He described the control exercised by the Aurum fault on the vein deposits and by the overfolded sediments on the replacement deposits.

During 1945 and 1946 Mr. Brown made a detailed study of the gold belt with a view to locating favourable auriferous areas for the Barkerville Mining Company in their extensive holdings.

From June 1946 to July 1947 the geology of much of the 18 miles of underground workings at the Cariboo Gold Quartz Mine was remapped as a basis for studying the various orebodies.

In the fall of 1946 a start was made on the geological mapping of the central portion of the Williams Creek claims and extended to the rest of the ground in the summer of 1947.

At the same time a diamond drilling campaign was begun in an attempt to locate auriferous veins.

The following account is based on information derived from all the sources mentioned above. Opinions of earlier workers are modified to harmonize with those of later geologists, whilst retaining, of course, their basic objective facts.

Regional Geology—(Modified after Hanson): The oldest rocks of the district are known as the Cariboo series. They are not fossiliferous, but from their structural position, degree of metamorphism and similarity to assumed Pre-Cambrian rocks farther south, they are believed by Hanson to be of Pre-Cambrian age. They may, however, as thought by Bowman, represent highly metamorphosed early Palaeozoic sediments in which all fossil evidence has been destroyed. They consist of quartzites, argillites and limestones folded into an anticlinorium trending northwesterly for over fifty miles and exposed over a width of fifteen miles.

In some areas the Cariboo series is intruded by a few sills and dykes of quartz porphyry known as the Proserpine intrusives. Overlying the northeastern limb of the anticlinorium in mild unconformity is the Slide Mountain series of Upper Palaeozoic age, consisting from bottom to top of conglomerate, crinoidal limestone, banded chert, argillite and basaltic lavas. The southwestern limb of the anticlinorium is overlain unconformably by Jurassic argillites and basalts called the Quesnel River group.

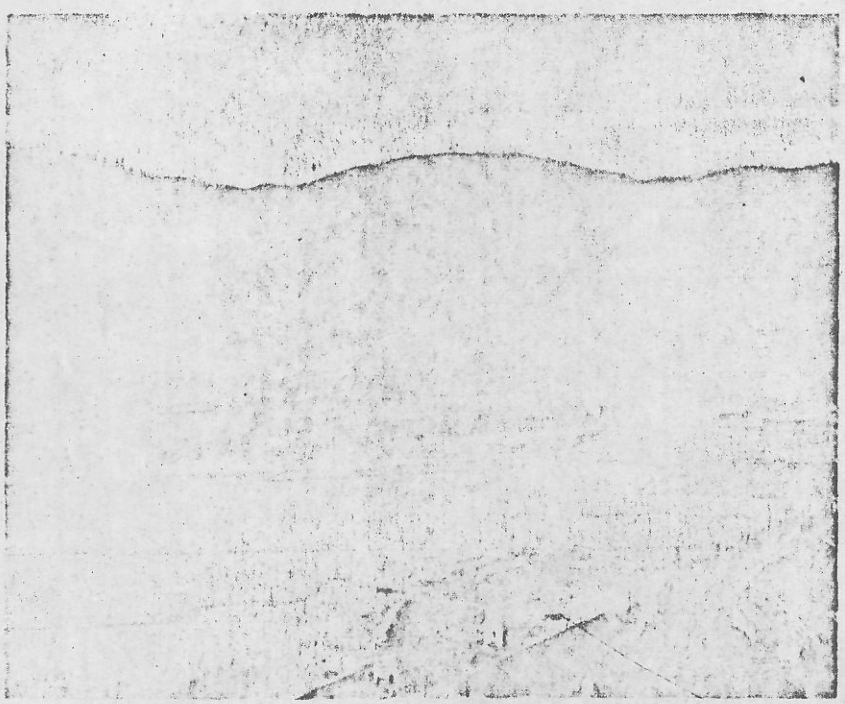
Cariboo Series: In the Barkerville area Johnston and Uglow divided the Cariboo series into three formations: Pleasant Valley, Barkerville, and Richfield. Of these the Richfield, which contains all the known lode gold deposits of the district, was considered the lowest and has been further subdivided by Hanson into five members, namely, Baker, B. C., Rainbow, Lowhee, Basal.

A suspicion that Hanson entertained in his discussion and then dismissed appears to be true, that the Rainbow and Lowhee members are one and the same and similarly the B. C. and Lowhee, on opposite sides of intense folds, although all four were mapped as different horizons.

Benedict has demonstrated that the rocks in the Island Mountain mine are all on the lower limb of an overturned anticline, thus inverting the succession set up by Hanson. The dragfolding observed in the Cariboo Gold Quartz mine leads to a similar conclusion. This inversion of the succession may affect the accepted order of all the strata of the Cariboo series.

Rock Types: The rocks encountered in the field consist of a well-cleaved series of metamorphosed sediments varying in composition according to the percentage present of the following main ingredients: quartzite, argillite, dolomite, limestone, talc, tuff, porphyroblastic ankerite, and dolomite.

Minor amounts of graphite, pyrite,



Dump, surface plant, and mill of Island Mountain Mines Co., Ltd., at Wells, B. C. Lowhee tailings and some of the Cariboo Gold Quartz camp appear in the foreground.
—Courtesy, B. C. Dept. of Mines

magnetite, mariposite and secondary quartz may be present.

The dominant rock types are: dark grey quartzite, black argillaceous quartzite, interbedded argillite and quartzite or dolomite, black argillite, black and white limestones, dolomite, dolomitic argillaceous quartzite, porphyroblastic talcose quartzite, dolomitic quartzite, and tuff.

The recent detailed mapping has brought out the fact that the various rock types have a very lenticular habit and that individual contacts often cross the cleavage at all angles. Dragfolding is often observed and it is suspected that the lenticular nature of the rocks is due to the attenuation and slicing off of drag-folds owing to the intense pressure that produced the cleavage.

Hanson noted the variation of the rock types along the 'bedding' (often cleavage only) and attributed it to the original sedimentary processes.

Dynamic metamorphism of the rocks along certain dolomitic horizons, which may be limbs of folds, has produced the light-coloured porphyroblastic talcose quartzites. The occurrence of light-coloured highly-siliceous rocks with these talcose horizons suggests that bleaching has taken place by oxidation of the graphitic material in an original dark dolomitic quartzite. A source of the necessary oxygen might have been the conversion of ferric iron to the ferrous state as in the ankerite dolomite that now occurs as porphyroblasts.

A rock that is regarded as volcanic tuff, although it is frequently contaminated with normal sedimentary material, has been mapped near the Baker contact and occasionally elsewhere in the series. At the Island Mountain mine it is known as 'altered chlorite' although with considerable doubt. Metamorphism has made it difficult to distinguish from dolomitic argillaceous quartzite when contaminated.

Fold Structures: The structural history of these rocks is difficult to reconstruct, especially as they can only be correlated by their lithology. It is usually necessary for the sediments to be fossiliferous or for good marker horizons to be present before intricate folding can be unravelled.

In the present case there are no fossils but a fair marker has been determined by the mapping at the Cariboo Gold Quartz mine, where what is regarded as a volcanic tuff has been recognized, as described above. The normal position for this rock is immediately north of the limestone horizon at the so-called Baker contact. The combination of the two rocks provides a fair marker for disentangling the folding and for directing the search for the closely associated rich replacement ore. The tuff frequently contains scattered flakes of the bright green chloritic mineral mariposite, which may well be volcanic in origin and a definite indicator of original tuffaceous material wherever found.

The following sequence of events appears to account for the present arrangement of the rocks:

1. Formation of a normal sedimentary series with calcareous and dolomitic rocks associated with volcanic tuffs at the bottom and passing up through dolomitic and muddy sandstones with muds predominating at the top.
2. Uplift producing a large elongated dome.
3. Compression from the northeast and southwest throwing the simple dome into an anticlinorium.
4. Increased compression producing overfolds.
5. Continued pressure forming cleavage which in the mining area dips 40° to 45° N.E.
6. Consequent heat from compression metamorphosing the rocks to quartzites, slates, etc., with porphyroblastic dolomite and ankerite in the horizons containing the necessary ingredients.
7. Folds become greatly attenuated and the drag-folds sliced off.
8. Increasing metamorphism along certain dolomitic horizons produced highly talcose zones.

In the Island Mountain mine the drag-folds have a regular pitch of 22° N.W. towards the nose of the anticlinorium. The available evidence to date in the Cariboo Gold Quartz mine is a pitch of 20° N.W.

Fault Structures: Wherever there are sufficient exposures, such as in the mine workings, it is found that a series of northerly striking and easterly dipping faults has cut the sediments into numerous segments. The displacement is always for the easterly block to have moved south and the apparent amount varies from a few feet to a thousand feet and more. These faults are spaced 500 to 1000 ft. apart and the dip in general increases from about 40° in Island Mountain for the Aurum fault to nearly vertical for the Sirius fault three miles to the east.

Another important set of faults parallels the cleavage; some of them have had considerable movement, if the amount of gouge can be taken as an indication. The larger of these so-called 'bedded' faults are spaced about 100 ft. apart horizontally and dip 45° N.E. They have numerous other minor faults between that are difficult to trace because they merge into the cleavage. It is believed that the two main sets of faults described above are complimentary and are the result of the continued pressure from the northeast.

The rocks were compressed beyond their limit and so fractured. The cleavage planes were the weakest direction and the north-south faults form an equal angle with them and the direction of compression. Thus the unit blocks of ground that moved relative to each other were a series of slabs inclined at 45° to the N.E. and each bounded on northwest and southeast by easterly dipping faults.

The overall movement was such that an easterly block always travelled farther than the next one to the west.

There are numerous minor faults with a variety of strikes and dips. The north-south and the 'bedding' faults have numerous branches and sub-parallel fractures so that the fault zone may be as much as one hundred feet wide.

Vein Deposits: As a result of the severe compression from the northeast described above, a series of vertical tension fractures were formed at right angles to the direction of pitch of the folds.

During their movement the north-south faults produced another set of tension fractures at right angles to their strike and dipping steeply north.

Continued movement opened up both groups of these fractures, enabling mineral solutions to invade the fractured zone near the faults and produce auriferous quartz pyrite veins. Some mineralization took place in the faults themselves.

Further movement along the faults dislocated some of the veins for a few feet and crushed the quartz in the faults, producing drag ore. The veins perpendicular to the pitch are known as transverse veins since they cut the strike of the formation nearly at right angles.

Those in the fractures at right angles to the north-south faults are diagonal veins since they cut the strike of the formations obliquely.

These two sets of fractures frequently intermingled giving veins of a complex pattern, although one direction usually dominates in a given vein.

Benedict states that only diagonal veins are large enough to mine at Island Mountain and that they hav

steep dip to the south whilst the transverse veins are too small and dip 50° southeast—a direction of low dip not seen in the Cariboo Gold Quartz mine or on the Williams Creek ground.

The transverse veins normally persist for about 100 ft. and the diagonal for 200 ft. from the north-south faults but the sections that can be stoped are often much shorter. Usually they do not pass into the Baker limestone horizon nor far into the so-called No. 4 dolomitic horizon in the footwall of the Rainbow rocks.

Owing to the general dip of the country rock the veins have much greater persistence in depth than in strike but eventually they are cut off by a north-south fault, unless it so happens that the apparent dip of the north-south fault in the plane of the vein coincides with that of the cleavage in that plane, as in the case of the transverse veins associated with the Rainbow and Sanders faults. Folding of the country rock may increase or decrease the length of a vein at various levels.

As is usually the case with veins formed in tension fractures they are not continuous exactly in the same plane but offsets and gaps of a few feet occur in the vein filling. However, an essential continuity of mineralization can frequently be traced from level to level through the old stopes to a degree not appreciated in the past. This fact is of great importance in the planning of development work. The use of this knowledge has recently led to the discovery of extensions to ore-bodies previously considered of limited extent in the Cariboo Gold Quartz Mine.

The "bedding" faults are often closely associated with the transverse veins.

Diagonal veins on the footwall side of the north-south faults are cut off at depth with their enclosing country rock against the faults, whilst upwards they get further away from the influence of the faults and give out.

The diagonal veins are more numerous against the large north-south faults, such as the Rainbow and Lowhee and infrequent against the weak faults, such as the Sanders.

Since the fractures were opened up and then mineralized towards the end of the movement along the north-south faults no off-set section of a diagonal vein butting against one of these faults can be sought on the other side. Another set of veins will be found, however, in the corresponding country rock.

In the case of transverse fractures, since they are considered to have been inaugurated before faulting, it is possible that corresponding segments on each side of a fault opened up equally during movement to receive the subsequent mineralization. The actual solid vein material, however, never was continuous so that although correspondence can often be seen on each side of a fault, especially the Sanders, the tenor of the ore may be very different.

In some instances there has been movement along the transverse fractures making them "tear" faults.

Nearly all the ore found in the Cariboo Gold Quartz mine, to date, has been within 250 ft. horizontally of one of the north-south faults and probably 75 per cent has been within 100 ft. Since the faults are normally never more than 700 ft. apart, only a few small sections have been entirely unproductive.

A third class of vein that has recently become important is the so-called "A" vein type, exemplified by the B.C. vein in the Cariboo Gold Quartz claims near the west end of Williams Creek. Recent stripping with a bulldozer has exposed a vein 2000 ft. long averaging 20 ft. wide. Close sampling of the western half has disclosed 4 ore-shoots totalling 257 ft. long, of which 90 ft. averages 2.24 oz. over 7.0 ft.

This vein appears to occupy a bedding fault with a strike of N.W. and a dip 70° N.E. Generally the hanging wall rocks are dolomitic talcose argillites and the footwall consists of the black B.C. argillites.

In the old days a line of claims was staked across the present Williams Creek ground to Proserpine Mountain, covering the projected strike of this B. C. vein for 16,000 ft. At intervals along this strike there are isolated exposures of large quartz veins suggestive of the B.C. type but only slightly offset as compared with the displacement of the sediments by the north-south faults. There is the possibility that these outcrops do belong to the same vein and it was formed when most of the movement on the north-south faults had already taken place but before the period of mineralization.

A large amount of stripping will be necessary to prove the continuity between these isolated exposures, however.

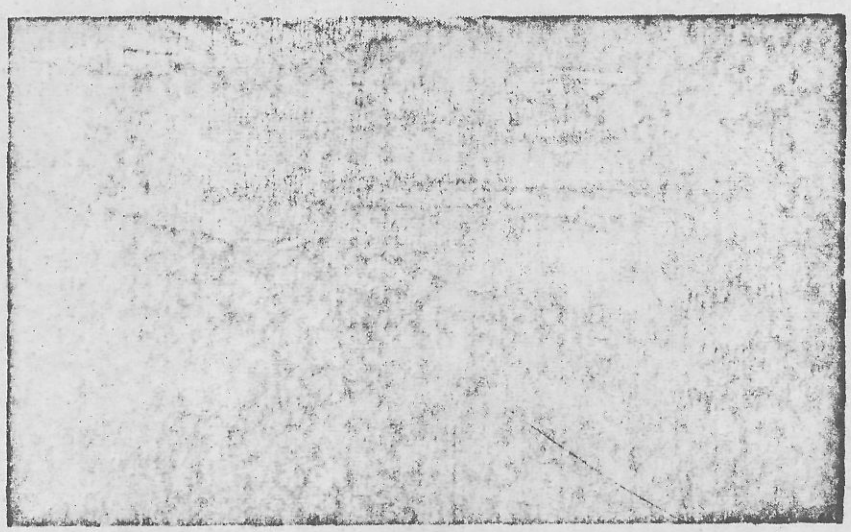
Replacement Deposits: This important type of ore is found largely in the Island Mountain mine and to a limited extent so far in the Cariboo Gold Quartz. It is usually confined to the first limestone in the Baker Horizon above the Rainbow quartzites and argillites.

Small lenses up to 3 feet long and 4 inches wide of auriferous pyrite have been found in this position in the Black Jack area. Elsewhere larger lenses of barren pyrite have been found in the so-called Lowhee member, which may be in part in folded Baker rocks.

Mineralization: The angular outlines of the veins, their branching nature, and the unaltered wall rock suggest that they were emplaced by dilatory pressure rather than replacement of the country rock.

About 1 per cent by volume of the veins consists of vugs with well terminated quartz crystals projecting into them.

The veins mined are characterized by pyrite that may occur in a variety of ways: (a) as masses up to 1 foot across and occasionally larger; (b) as scattered cubes and rare pyritchedrons of pyrite throughout the vein; and as (c) streaks of pyrite along the walls and down the centre of the vein.



Tenas lake in the Bowron lakes chain; near Wells, B. C.
—Photo by H. Parliament

The veins of economic grade have at least 5% pyrite by weight and usually 15%. However, some veins have sections with 60% pyrite that is still too low grade to mine. Most of the gold is in small fractures in the pyrite but coarse "free" gold is frequently seen in the quartz and is then often associated with hair-like crystals of the lead and bismuth sulphide cosalite. ($2PbS\ Bi_2S_3$). The more massive galenobismuthinite ($PbS\ Bi_2S_3$) may also be present. In the early days of the Cariboo Gold Quartz mine the cosalite was mistakenly known as gold telluride. So far as is known neither free gold nor the lead and bismuth minerals have been recognized in the replacement type of ore.

The cosalite is sometimes found without any associated gold but normally it is a good indicator of high-grade ore. The needle-like mineral rutile has been found occasionally but so far in veins that are barren of gold.

Bunches of argentiferous galena and more rarely sphalerite and pyrrhotite occur at random in the veins. Coarse scheelite is frequently observed.

Old reports mention the presence of arsenopyrite but this appears to be a case of mistaken identity for a dense finely crystallized "steely" pyrite which incidentally appears to be a good indicator of gold values.

The wall-rock around the veins is often impregnated with numerous pyrite cubes up to a foot away and sometimes more. Usually this mineralized wall-rock is very low grade but sometimes it is as good as the vein being mined.

The replacement ore consists of massive crystalline pyrite and usually the finer the grain the better the grade, e.g. up to 5 oz. per ton. The very coarse-grained (above ¼ in.) is usually very low grade, e.g. 0.10 oz. per ton. Normally there is little or no quartz in this type of ore. Near its edges where it is partly country rock and also thinning out the minerals galena, sphalerite and scheelite are found as well. A gangue of coarse-grained grey and white carbonates is often found around the limits of this ore.

The paragenesis (order of mineralisation) appears normal and F. W. Johnson in his U.B.C. degree thesis on the "Mineralogy of the Cariboo Gold Quartz Mine," dated April 1934, gives the following succession:

Carbonate	(Sphalerite)	(Galena)	Cosalite
Quartz	(Chalcopyrite)	(Argentite)	Galeno-bismuthinite
Pyrite			Gold
			Quartz

The carbonate is usually ankerite and it is fairly common, especially where the country rock contains carbonate. Sericite is often present in small amounts and so is graphite derived from the wall-rock.

In a report by the American Cyanamid Company, dated 1941, the following analysis is given for ore from the Cariboo Gold Quartz Mine:

Gold	0.707
Silver	0.07
Insoluble	75.26
Iron	10.27
Sulphur	10.36
Lead—Less than	0.02
Carbon	0.15
Zinc	0.08
Arsenic	0.068
Bismuth	0.025
Copper	Tr.

In width the veins vary from a fraction of an inch up to zones 30 ft. wide, consisting of quartz veins and veinlets with country rock between.

Geology of the Williams Creek Area

Most of the ground of the Williams Creek Gold Quartz Mining Company is covered by glacial drift, so that outcrops are scarce, apart from the stream beds that were hydraulic mined for placer gold in the past. These operations uncovered various auriferous quartz veins and one of the first lode claims to be staked in the Cariboo was the Black Jack Claim, now held by Williams Creek Gold Quartz Mining Co.

Many of the veins were covered again by subsequent placer mine tailings, but in some cases deliberately by 'snipers' who hoped to sell the knowledge of their whereabouts.

Owing to the extraordinary richness of the Williams Creek placers, the local veins have always been considered very promising for lode mining. Several attempts have been made to exploit them, but the intractable nature of the sulphide ore with the methods of gold metallurgy known in those early days together with the water-logged nature of the ground proved too costly.

The success of the Cariboo Gold Quartz Mining Co. who have also held the Williams Creek ground for ten years, has shown that this section should be as good, since the known geology is favourable.

The general map of the Barkerville-Wells gold belt shows that the ore-bearing Rainbow rocks of the Island Mountain and Cariboo Gold Quartz mines passes through the Williams Creek gorund for 8,000 feet and th at least two and possibly four of th favourable type of north-south majo faults are present, namely the Siriu and Barkerville faults.

Wintrip Area: The veins in the vici ity of the Wintrip adit immediate west of the Sirius fault are two tho sand feet south of the main Bake Rainbow contact, as seen in the Shan rock adit. However, the rocks here a considered to be near the top of a hi den overturned anticline.

The mapping and sampling of t Wintrip adit shows that a shoot of o exists between the north drift and t outcrop, at the side of the creek for distance of 60 ft. averaging 0.25 o over 3 ft. A drill hole cut this vein 55 ft. below the surface, where it a sayed 0.16 oz. over 4.5 ft.

In another drill hole at about t same elevation and 100 ft. to the ea another vein not known at the surfa gave 2.85 oz. over 2.0 ft.

A placer miner who had worked this area divulged the location of highly pyritic quartz vein outcrop th he had covered up 200 ft. downstrea from the Wintrip adit. It contains co alite and assays 0.72 oz. gold over 3 ft it appears to have a diagonal strik The surroundings area is badly fault so that attempts to intersect this ve in two diamond drill holes were unsu cessful.

Black Jack Area: According to t old government records between 18 and 1892 at least 280 tons of ore th yielded 0.85 oz. gold per ton, with high tailing loss, were taken from t old Black Jack shaft, which was least 125 ft. deep, but is now caved.

No plan of the workings nor an ey witness account of the attitude of t vein is available today. Uglow a others assumed that a vein paralle the strike of the beds but dippi steeply N.E. occupied the present ope cut with the vertical transverse strin ers that can still be seen cutting it make an ore-body.

Four parallel drill holes put do by the present company to cut t supposed ore failed to disclose a strong vein, but drill holes at ri angles to these cut what appeared be important transverse veins giv 0.86 oz. over a true width of 6 ft. in hole at 320 ft. below the surface a 0.58 oz. over a true width of 9 ft. in another hole 100 ft. to the southwest 250 ft. below the surface. Seven mo holes were drilled in this area in an attempt to trace the continuity of t ore.

A projection to the 4000-ft. level h

...nade on the assumption that the ...ns are vertical and that the ore ...ots rake north at 40°. It then ap...rs that the ore is closely associated ...h the strong bedded-fault in the ad...ent Westport area and which is ...rallel to the Baker contact 400 ft. to ...e north. The interpretation given on ...e projection shows that in a distance ...200 ft. there are 5 veins with ore ...lues on the footwall side of the bed...d fault and 3 on the hanging wall.

At approximately 700 ft. farther ...st along its strike this bedded fault ...ould meet the strong Barkerville ...ult. This stretch along the bedded ...ult should be favourable for further ...riferous veins especially near the ...arkerville fault. Owing to the heavy ...verburden and the probable attitude ...f the oreshoots it is not feasible to ...st for them by diamond drilling. The ...sults to date, however, are sufficient ...o warrant underground work from ...hich diamond drilling can be done to ...st this ground to the east.

The grouping of auriferous veins ...long a fairly flat dipping fault is ...haracteristic of the ore-bodies at the ...ariboo Gold Quartz mine and the ...rill-hole intersections reported above ...ould be considered highly encourag...ng at that mine.

Westport Area: About halfway be...ween the Wintrip and Black Jack ...orkings are the Westport adits on ...he left bank of the canyon section of ...Williams Creek where a number of ...losely spaced pyritic quartz stringers ...ontaining gold have been developed in ...he immediate hanging wall of a strong ...bedded fault. Two of the stronger veins ...were drifted on and the one to the west ...averaged 0.37 oz. over 1.0 ft. for 36 ft.

Diamond drilling from the surface ...has disclosed that there is a persistent ...transverse vein about 160 ft. beyond the last mentioned vein and on the ...hanging wall of the Westport bedded ...fault. Five different holes gave the fol...lowing intersections over a vertical ...range from 70 to 300 ft. below the sur...face on the 'Bridge Vein': 0.2 ft., 0.10 ...oz.; 0.4 ... 0.73 oz.; 1.0 ft., 0.42 oz.; ...0.8 ft. 1.19 oz.; and 7.5 ft., Tr.

True widths are probably 75% of ...those given. At 230 ft. below the sur...face on the same strike, but below the ...bedded fault an intersection of 22 ft. of ...vein quartz averaged 0.10 oz. but this ...probably has a strike nearly parallel to ...the drill hole or is a local bulge against ...the fault.

Morning Star Area: At the west ...end of the property on the Morning ...Star claim fifteen separate quartz ...veins in old surface workings were ...mapped by P. C. Benedict in connection ...with his investigation of the neigh...bouring Myrtle group for the exten...sion ... Shamrock tunnel.

In the spring of 1947 from May 15 to ...the end of June over 9000 ft. of cuts ...12 ft. wide were made down to bed...rock in this area and in addition a ...section 300 by 100 ft. in the dark Rain...bow rocks about 800 ft. from the Baker ...contact was completely stripped to ex...pose an area well mineralized with ...quartz veins some of which were ...auriferous. Thus two bedding faults 20 ...ft. apart in 120 ft. have the following ...veins between them:

25 ft.	averaging	0.41 oz.	over	4.0 ft.
17 "	"	0.50 "	"	4.7 "
18 "	"	0.66 "	"	2.9 "
5 "	"	0.34 "	"	1.9 "
15 "	"	0.15 "	"	1.6 "

At 30 ft. to the north of the third of these veins is a shear zone parallel to the cleavage and with much limonite staining, which for 35 ft. averages 0.45 oz. over 5.3 ft. At 30 ft. beyond the east end of this shear a transverse vein extends north for 78 ft. and averages 0.14 oz. over 2.6 ft. At 30 ft. beyond the west end of the auriferous shear another transverse vein for 17 ft. averages 0.56 oz. over 1.6 ft. In line with this vein and 30 ft. to the north is another section averaging 0.11 oz. over 2.4 ft. for 45 ft. At 60 ft. west of this vein still another averages 0.24 oz. over 1.6 ft. for 32 ft. Numerous other veins were uncovered by the stripping, some of which contained gold values but most were barren.

The immediate control for the formation of the auriferous veins appears to be the bedding faults but a pronounced discontinuity between the rock exposures in Stouts Gulch to the south suggests that a strong north-south fault passes within 300 ft. of the west side of this ar... and dips under it.

Nine diam... drill holes totalling 2525 feet were put down in this area but nothing of note was found. The short length of the ore-shoots and the deviation of the holes proved to be obstacles too great to overcome when trying to cut the supposed projection of the ore at depth.

The results obtained have not been sufficiently good to warrant extensive underground exploration at this time but eventually it will be advisable to test the area of auriferous veins underground by means of a short adit.

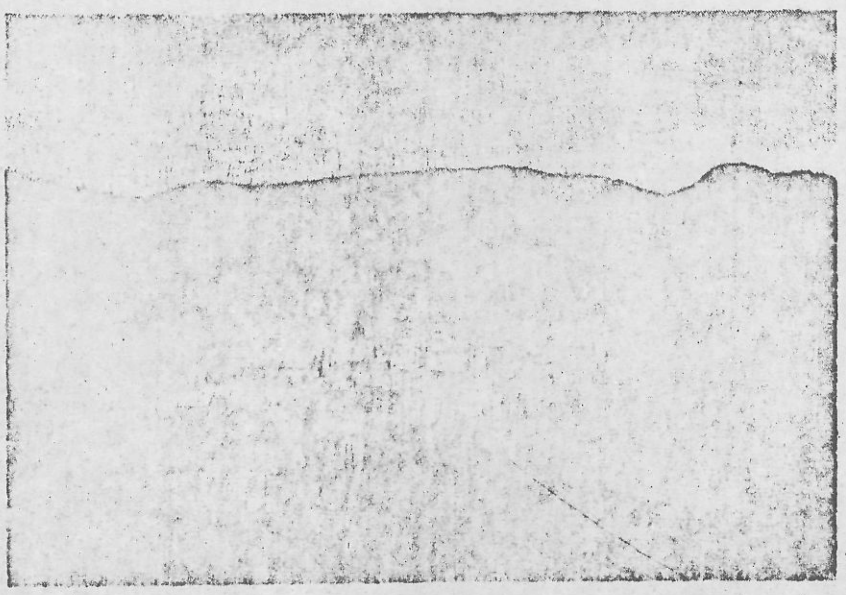
Proposed Development

To date the main ore finds in order of importance have been in the Black Jack, Wintrip and Westport areas, which extend over a total distance of 2,400 ft. with the Westport area in the middle.

A central shaft 350 ft. deep situated just above the junction of Stouts Gulch and Williams Creek and 200 ft. due north (true) from the portal of the main Westport adit would be strategically located for exploring all three areas on the 4000 ft. elevation.

The immediate objectives would be (1) the Westport area which projects near to the proposed shaft at this elevation and (2) the Black Jack veins 600 ft. to the east. Secondary objectives would be to continue east to the Barkerville fault and to the west to cut first the Bridge vein and then the Sirious fault to find the Wintrip veins at this level.

Where ore is found it can be raised on to the surface for exploration purposes, to provide ventilation and to make fill available for the subsequent stoping.



Historic Barkerville; looking up Williams creek.
—Courtesy, B.C. Dept. of Mines.