GOLDEN EAGLE

82E/1W

1979 SUMMARY 672614

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197: **1979 SUMMARY**

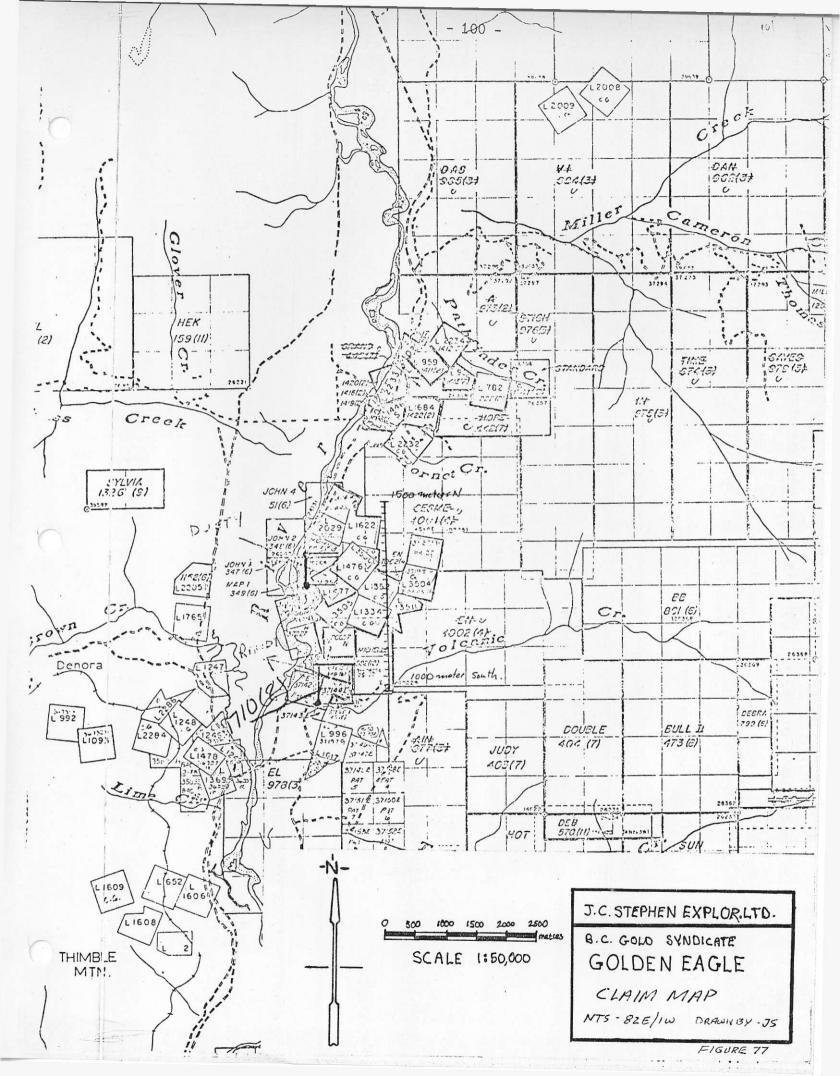
GOLDEN EAGLE (82E/1W)

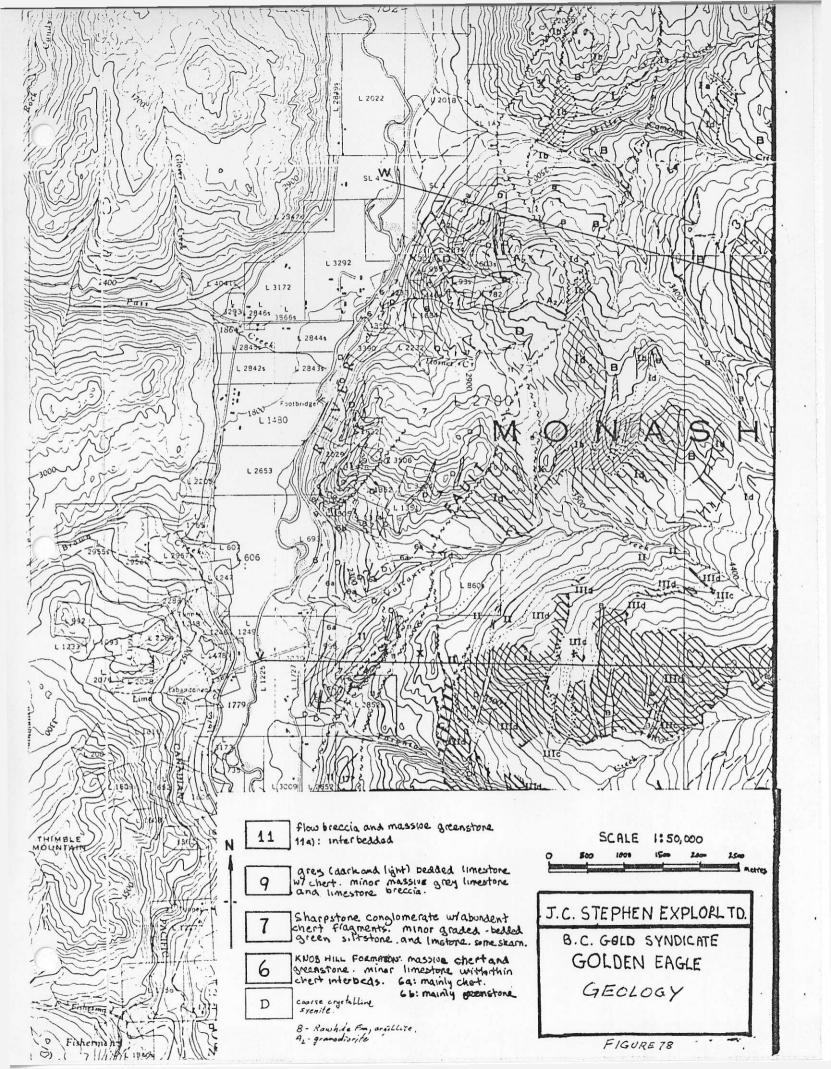
(a) INTRODUCTION

After a brief examination in 1978, a more comprehensive look at the Golden Eagle Group was undertaken in 1979. The property is mostly crown grants in good standing owned by John Stoochnow, as shown on Figure 77. Mr. Stoochnow is mainly interested in a transported gossan which he markets as fertilizer under the name Sumagro. The 1979 examination was done under the understanding that any deal made on the Sumagro would exclude hard rock rights so that Stoochnow would be free to make an option agreement with the Syndicate. However, at recent meetings with Stoochnow on September 14, 1979 he indicated that any exemption was unacceptable to his prospective buyer and that he has given until October 1, 1979 for an agreement to be signed on the Sumagro. Jim Merkir, a partner in the Sumagro business feels this is just a ploy on the part of the buyer and the deal will not go ahead. At subsequent meetings, the unfortunate fact emerged that claim ownership is more complicated than originally anticipated and no satisfactory option agreement can be formulated until ownership is simplified.

(b) GEOLOGY

Regional geology is illustrated on Figure 78. This was produced as a study of the high grade metamorphic terrain and was only incidentaly concerned with the younger less deformed rocks, consequently, there are some major discrepancies when compared to detail mapping.





A coloured geological map is shown on Figure 20 (in pocket). The eastern portion of the claims is underlain by sharpstone conglomerate cut by small dykes and masses of syenite. This is the host for most of the older showings including the Golden Eagle vein. To the west a large area of coarse to fine crystalline marble is in fault contact with sharpstone and chloritized basalts and andesites. Granodiorite has intruded all rock types along one of the major fault splays (Granby River Fault, a part of the eastern boundary of the Republic Graben) on the Junction City Claim and has formed extensive zones of garnet-calcite-diopside skarn.

The sequence has been affected by a major metamorphic event that formed a Shuswap-like gneiss complex immediately to the east and has experienced intense deformation related to large faults on both east and west sides.

(c) SOIL GEOCHEMISTRY

Soil results are plotted on Figure 80 (in pocket). Several samples are greater than 10,000 ppb but come from old workings and oxidized sulfides. There are two large areas of anomalous soils in the 100 - 200 ppb range that deserve follow up work. These are (a) 1000 N Line and (b) 200 N 00W to 200 N 600 W. The 1000 N line is underlain by sharpstone with interbedded chert and greenstone. A faulted contact between granodiorite and marble characterize the 200 N area.

Soil samples were taken on lines 200 m apart and the first priority would be to fill in the $100\ m$ lines that have

already been flagged for geological control.

CONCLUSIONS AND RECOMMENDATIONS

This property warrants detail follow up work, in particular detail geological mapping, soil sampling and trenching.

This has never been attempted in the past due to diverse ownership.

The present claim ownership is still too complicated to justify any major expenditures. Hopefully, in the near future this difficulty will be resolved.

LIST OF B.C. MINISTER OF MINES REFERENCES

RE: GOLDEN EAGLE

Chicago (Grand Forks) 1900, 871; 1901, 1066	Philip Sheridan (see also Phil Sheridan) (Grand Forks)
Ler: Aquake (Grand Forks)—1899, 604, 757; 1900, 871, 873, 990; 1905, 185; 1906, 163 Ler: Aquake Consolidated Gold Co., Ltd.—1899, 757; 1901, 990, 992, 1065	Phil Sheridan (see also Philip Sheridan) (Grand Forks) 1899, 757
Fantantine (formerly Iron Cap) (Grand Forks)—1894, map; 1899, 758; 1900, 990; *1903, 172; 1906, 163; *1928, 237	Summit, Lot 1007 (S.) (Grand Forks)—1909, 277
Golden Eagle, Lot 1334, Brown Camp (Grand Forks) — *1899, 758; 1900, 870,	Superior, Brown's Camp (Grand Forks) —1902, 306; 1903, 172; *1928, 238; *1931, 121
873, 991; 1901, 1064, 1065; *1904, 221; *1905, 185; 1906, 163; 1907, 109, 115; 1908, 115; 1909, 134, 273; 1910, 118, 244; *1925, 193	Volcanic (see also Volcano) (Grand Forks)—1894, map; *1895, 703; 1897, 582, *596; *1899, 758; *1900, 873; 1901, 1064, *1065; *1903, 172; *1905, 185
Highland Chief (Grand Forks) 1902.244	Volcano (see also Volcanic group) (Grand Forks)—1899, 758; 1900, 993; 1906, 163; 1928, 237 Volcano Creek (Grand Forks) 1899, 757
Hope (Grand Forks) 1900, 991	
Junction City (Grand Forks)—1899, 758; 1900, 756 Junction City (Grand Forks)————— 1900, 991	
Laskay (Grand Forks)1899, 758; 1900, 991	
Little Bertha (Grand Forks)—1899, 603; 1900, 873; *1901, 1065; *1905, 186; 1906, 163; 1908, 115; 1910, 244; 1915, 201, 446; 1916, 517; 1917, 214; *1920, 154; *1922, 169; *1924, 164; *1925, 194; 1927, 226; *1928, 238; *1932, 124	

YALE DISTRICT.

GRAND FORKS-KETTLE RIVER DIVISION.

THE BOUNDARY CREEK REGION.

Boundary Creek. This is the name now generally given to the large and important region extending from Fourth of July Creek to the main Kettle River as it flows from the north, embracing all the territory drained by Boundary Creek and its tributaries. Within this area veins and deposits of great

promise and diversity in kind have been discovered, on which a fair amount of work is being done, but this district is in this peculiar condition in that the claim owners, seeing that the best and cheapest facilities for transport and treatment of ores are demanded, are waiting for these facilities to be supplied or definitely promised before undertaking very serious development work.

Two companies have charters to build a railroad through this district, but the holders have carefully studied the situation, and if the mining men will prove up the existence, under these extensive surface showings, of ore bodies that will promise a good tonnage for transport to the smelting centres or warrant the establishment of smelters here, the building of a railroad will be much expedited. Mining men should not hesitate in doing extensive and allimportant prospecting, should not wait for the next man, as they can rest assured that they must lead the way, i.e., prove up mines and deposits of pay ore and the railroads will quickly come. Realizing this fact to a certain extent more determined work is now being done, steam mine plants are or are about to be installed on several properties by men strong financially, and some of these large but, as yet, too low grade gold-copper deposits will be thoroughly prospected and the true significance of these surface indications wrought out

Besides the Boundary Creek Region in which, so far, the most discoveries have been made, is the Grand Forks Region, or the North Fork of the Kettle River and its tributaries, where many claims have been staked off, but in this Report the different camps visited will be

described irrespective of their location in the two recording divisions.

LOCATION.

The former Kettle River Recording Division, in the Southern Yale District, extended west from the Trail Creek Division, or West Kootenay, along the International Boundary Line to the Osoyoos Division, thence north to the Vernon Division, embracing the valleys of Christina Lake, the North Fork of Kettle River, Boundary and Fourth of July Creeks, and the main Kettle River that leaves the Province at Midway to enter a few miles west of Grand Forks. All these waters finally merge in the Kettle River, which crosses the line south of Christina Lake and flows into the Columbia River at Marcus, in the State of Washington.

For greater convenience of recording, this Division was divided last summer into the Kettle River and Grand Forks Recording Divisions, with the Government offices at Midway

in the former and Grand Forks in the latter.

Topography.

This district has not the rugged, lofty, mountainous character seen in the Kootenays, at least the southern portion within the ken of the main body of prospectors, as none of the well-timbered, rounded mountains rise much above 5,000 feet, or 3,200 feet above Grand Forks. The trend of the valleys, as seen by the course of the various rivers, is north and south, and is dependent in some way upon the geological conditions, but there are low-lying connecting valleys or passes which, with the easy slopes, will greatly simplify the construction of a railroad that, to reach the chief points, will have to traverse a somewhat circuitous route.

Most of the country is well-timbered, but some slopes are quite treeless and covered with bunch grass, while most of the valley of the Kettle River is open and affords fine ranches when

irrigated for all kinds of cereals and fruits, as the rainfall is small.

ROADS AND TRAILS.

Road building is not attended with any serious difficulties. The main Government road from Penticton, where connection is made with the C.P.R. by steamer "Aberdeen," after leaving Camp McKinney and following Rock Creek enters the Kettle River Valley at the mouth of Rock Creek and continues to Midway, beautifully situated in a wide valley, then up Boundary Creek, four miles to Boundary Falls and six miles to Anaconda, where the road turns to the east, while a road runs 1.5 miles north to Greenwood, the largest, most central and only incorporated town in Boundary Creek region. The enterprising founders of this town have built miles of road to the different surrounding camps, one of which, passing the hospital, traverses "Greenwood" and "Wellington" camps, and then joins the main Government road which enters the large and fruitful valley of Grand Forks, finely located at the junction of the North Fork and main Kettle Rivers. Thence the road runs to Marcus, or to Bossberg, on the Columbia, connecting with the Spokane N.R.R. to Rossland, Nelson, etc., on the north, or Spokane, etc., to the south.

Stages run two or three times a week from Penticton to Marcus or Bossberg via the

towns mentioned, with the following scale of distances:-

Penticton to Camp McKinney	.56	miles
Camp McKinney to Midway	.32	ti
Midway to Greenwood	. 8	11
Greenwood to Grand Forks	.23	11
Grand Forks to Marcus		

Much of this road is good, but very dusty in dry weather, but much yet requires great improvement. It takes three days to travel from Penticton to Marcus, stopping over night at Camp McKinney and Grand Forks, after spending one night at Penticton.

Roads branch off at Rock Creek, Midway and Carson and cross into the United States, while roads are built from Greenwood and Grand Forks to the camps. Good pack trails run

in many directions, and the prospector has easy access to much of this country.

Railroad charters are held by two companies; (a) by the Columbia and Western from Robson, on the Columbia, to Penticton; (b) the second charter recently bought by McKenzie and Mann, of Toronto, who are buying mining properties near Greenwood, is for a line from the Coast to Penticton, thence via Midway, Greenwood and Grand Forks to the Columbia River. During the coming year (1898) it is very probable that railroad construction through this district will see its commencement, following which a very great impulse will be given to mining work.

GEOLOGY

No geological survey of this region has yet been made, but Mr. S. S. Fowler, M.E., has given a very succint account in the Minister of Mines Report for 1896, as he had been over much of this ground during the two or three seasons he spent there studying the different mining camps. The writer, passing quickly from camp to camp, was able to form only a very general idea of the geological conditions, as all available time was devoted to the ore-deposits and their immediate environment.

However, the preponderant rock formation noticed from the North Fork of the main Kettle River was seen to be very highly metamorphosed, Archean sedimentaries or gneisses, schists, quartzites, slates and perhaps some crystalline limestone, in which are found almost all the gold-bearing veins and veins of high grade silver-gold ore. Over-lying these rocks are seen the fragmentary areas of highly altered limestone, as this region has been subjected to much eruptive action along lines of fracture and eruption running northerly and southerly; and all the formations are traversed by dykes of various eruptives and overlain in part by areas of effusive rock, mostly light to dark green, partially crystalline, fine-grained, feldspathic rock, the miners "diorite," which is a very important member, as in this are all the large zones impregnated with gold, chalcopyrite, hamatite and sometimes pyrrhotite and iron pyrites. Many of these deposits lie in contact with or close proximity to very crystalline limestones, which generally show a nearly perpendicular plane of contact with the general strike of north and south. Up the valley of Boundary Creek for about eight miles, or to Long Lake, flanked on either side runs a narrow belt of light-coloured hornblende granite in which has been found small veins of high grade silver-gold ore, as on the "San Bernard" claim. There are also large bosses of highly crystalline rock breaking up through the other formations, of syenite, diorite,

etc., and dykes cutting every other formation are frequent. In Central Camp the greenial eruptive rocks have evidently been highly altered and rendered in places quite schistose.

East of Grand Forks, along the road, are schists, and up the North Fork are well bedded quartzites, and gneisses traversed by large masses of eruptive rock of various kinds To the north of this district prospectors claim there is much granite, like that seen near Cauch McKinney, and also the stratified Archæan rock.

Near Rock Creek is an area eight to ten miles long of sandstones and shales, probably of Cretaceous age, and here are found deposits of a fair grade of coal, on which practically little or no work has been done in exploration.

ORES AND ORE DEPOSITS.

Some have written of this region as being rich in copper ores, but as yet this is not proved but there are certainly large zones carrying from 1 to 3 and 4 per cent. of copper, and some gold values. About all one can say at the present stage of very scanty development is that thoughout this region are (apart from the quartz veins and veins of high grade ore) large ledges or mineralized portions of the greenish, feldspathic rock, already described, from which good gold assays are obtained and which offer every inducement to extensive exploration. If more concentrated parts or regular ore-shutes are found, there is every reason to believe that such ore would prove to be very profitable as such good, but not pay, values are already poly from a large amount of mineralized rock matter, and even some good pay ore has been found in the very limited work done.

It is impossible at the present time to give a definite or really satisfactory account of the ores and ore deposits of the Kettle River-Grand Forks District, as no producing mine has vet developed; no smelter or mill returns can be referred to, and much of the workings could not be seen as work had not been resumed and water had accumulated, but the prospects of this becoming an important mining district are excellent if we can judge from surface indications and the little work done. To attempt a classification of the different forms of veins or ore deposits is difficult, as throughout this region is found a great variety of ores, but perhaps one classification might be,

(A.)—Veins with quartz gangue and different minerals.

(B.)—Deposits or country rock, impregnated with copper, gold, and iron, etc. These quartz veins are very varied and nearly every combination can Quartz Veins. be found, as-

(a.) Quartz with iron pyrites and zinc blende, with gold and silver, on the "No. ?" Central Camp.

(b.) Quartz with tetrahedrite, on the "Lincoln," Central Camp.

(c.) Quartz with chalcopyrite, pyrrhotite and gold, "Golden Crown," Wellington Camp (d.) Quartz with galena, zinc blende, and high silver values, as on the "Skylark, "Helen," "San Bernard," "D. D.," "Last Chance," etc.

(e.) Quartz with pyrrhotite and gold values, Long Lake Camp. f.) Quartz with iron pyrites and some gold, as the "Boundary Falls."

Nearly all of these veins are found in the highly altered sedimentary rocks and the eruntive granites, and, while mostly small, may become important when a railroad gives cheaper transport for ore.

The large deposits or mineralized zones may be classed as follows:-Deposits.

(a.) Greenish feldspathic rocks, impregnated with chalcopyrite, gold, traces of magnetite or hæmatite, and sometimes pyrrhotite, as "Mother Lode," "Stemwinder," "B. C.," "Vol. canic," etc.

(b.) Large masses or deposits of magnetite, as on the "Knob Hill," "Oro Denema" "Emma," etc.

(c.) Country rock, impregnated with hæmatite, with some copper, gold and silver values, as "Gold Drop," "Snowshoe," "Big Copper," etc.
(d.) Bodies of very nearly solid pyrrhotite, that with as yet, very small gold silver values,

as on Pass Creek, Christina Lake, etc.

The "surface showings" throughout this region are certainly very flattering, although it must be admitted that very little pay ore (i.e. under the best of considerations) has yet been found. The future of these camps rests greatly upon results of the development work, and at the time of going to press with this report, a much larger amount of underground work is being done or begun, with the assurance that if good bodies of pay ore are proved up, railrud and other facilities will soon follow, and that more abundant capital will flow in. Many mining districts in other countries languish because interest has never been aroused to their mining possibilities, but in British Columbia any part or region will now command instant attention if the miner by his work can show that he has discovered what may be made a

GOLDEN EAGLE

1925

This claim was leased from the Government by Grand Forks interests and the Colden Eagle. veins in the old stopes sampled. Stories of high-grade copper-gold ore having been found in this mine twenty-five years ago led those interested to explore the old workings in hopes that there might be some tonnage left. There is little doubt that some food ore was found and shipped from the grass-roots down for 50 or 60 feet, but below that the values are too low grade to ship profitably.

The mine is situated about 11 miles up the Granby river from Grand Forks, on the east side, and approximately 1½ miles from the main wagon-road, at an elevation of 2,775 feet (barometric)

above sea-level. A good wagon-road leads up to the property.

Development consists of a shaft 125 feet deep, a crosscut tunnel 383 feet long, drifting 363 feet, as well as stoping. Two veins were cut—the first, 140 feet from the mouth of the crosscut, and the other, 383 feet, which varied in width from 2 inches to 2 feet.

The country-rocks are volcanic tuffs intruded by pulaskite-porphyry dykes. To the north

about a quarter of a mile the main intrusive granodiorite outcrops.

Samples of the ore, which is made up of pyrite, marcasite, chalcopyrite, malachite, and truite, containing gold and silver in a gangue of quartz, assayed as follows: No. 1 first vein, sope, 0.20 oz. in gold, 2 oz. in silver to the ton; No. 2, second vein, tunnel, 0.06 oz. in gold, 1 oz. is allver to the ton, and 0.5 per cent. copper; No. 3, second vein, stope, 0.36 oz. in gold, 25 oz. is allver to the ton, and 5.6 per cent. copper.

1897

GRAND FORKS-BROWN'S CAMP.

At the junction of the North Fork and Main Kettle River, in a wide valley in which are several fine fruit and grain ranches where irrigated, the incorporated town of Grand Forks has grown rapidly, but at the present time everything is very quiet here pending the coming of a railroad. Quiet a number of claims had been staked off near by and some work was being done, but only some properties in Brown's Camp, about ten miles by road trail up the North Fork, were seen. Most of this country is well timbered, and the North Fork has fine water powers.

Volcanic. The Volcanic and Iron Cap, located on a bold bluff east of the river, presents an enormous showing of deep red and brown decomposed iron-bearing rock, or gossany material, that can be plainly seen at the distance of several miles. On examination it proves to be a large area of this greenish feldspathic rock, impregnated with a large amount of pyrrhotite, which on decomposing has formed this gossan. often a foot deep of soft, sintery mass. Part of the band of the crystalline limestone has been involved in this eruptive rock, which in turn is crossed by several dykes, and on the face of this bluff two areas, each over 500 feet wide, run up for over 1,000 feet.

Very little work has been done in this mineralized rock, that makes a remarkable land-mark, except some shallow holes that show the solid pyrrhotite-impregnated rock, but near the foot of the bluff a tunnel has been run in 345 feet without entering this mineralized rock, so, practically, little or nothing has yet been done to prove the existence or character of the ore-bodies that might underlie this great out-crop. So far, very little copper sulphides have been found in this mass, and only very small assay values in gold are obtained. The owners, Mr. Brown et al, bonded this property to the Olive Mining and Snelting Company, but no work, other than assessment, was done during the past year. Capital stock, \$20,000,000.

VOLCANO AND FANTENTINE

Volcano and Fantentine.

These Crown-granted claims, situated about 8 miles north of Grand Forks, on the east side of the Granby river, are owned by R. A. Brown. Practically all the development was done many years ago, and with the exception of one at large open-cut on top of the bluff the property has lain idle. At the time of examination many of the open-cuts were found to be caved and rock in place could not be seen. Diamond-drill cores and logs were not available, so that a great deal of valuable information, which would have materially assisted in forming an opinion of the prospects of the property, I we take the March office of the officer's all a city has a laptice that e.g.,

Most of the development-work was done on the south and south-west slopes of the mountain and consists of numerous open-cuts, stripping, and a tunnel about 800 feet long near the base of the hill. On the south slope the ground is covered with a dark-red loam and gravel, which is eridently the result of oxidation of the pyrite and pyrrhotite. Diamond-drill holes were bored on this side, but the results, according to the owner, were disappointing, although the cores contained some copper sulphides.

At about the same elevation on the bluff to the south-west, erosion has exposed large masses of pyrite and pyrrhotite associated with garnetite, epidote, and silica. Remnants of limestone occur as a thin shell covering parts of the mineralized zone and containing segregations of chalcopyrite and pyrite. Apophyses from a porphyry dyke cut through the mineral-zone. Near the bottom of the bluff, at an elevation of 2,150 feet (aneroid), a tunnel has been driven for 800 feet in a north-easterly direction. From this tunnel flat diamond-drill holes were put in, one in a south-easterly direction 400 feet long, and another in a north-easterly direction 100 feet long. from the end of the tunnel. According to the owner, no values were found in these holes, but a soft talcose gouge was struck at the end of the holes. Whether this gouge was fault or vein material has not been recorded.

The greater part of the lower tunnel was driven in porphyry, but near the face a highly siliceous rock containing specks of pyrite was struck, which had the appearance of being the lower horizon of the ore-body. On top of the bluff an open-cut had been excavated, at an elevation of 3,240 feet (aneroid), in the massive pyrrhotite, the outer edges of which showed intense metamorphism and gave a burnt appearance to the cover-rocks. In the gravel subsoil the owner found a nodule of chalcopyrite, evidently displaced, that assayed well in gold and copper. No trace of copper was found in the pyrrhotite, although copper carbonates were seen in small quantities in the cover-rocks.

During the major development of this property a great many assays were made, and according to the owner values in gold and silver varied from a few cents up to \$14 a ton; the average being too low for commercial purposes. The theory held by the owner that the chalcopyrite is deep-seated, and consequently will be found at greater depth because it has a greater specific gravity than either the pyrite or the pyrrhotite, cannot be entertained, because it is a well-known fact that both the latter minerals are heavier than chalcopyrite, and in any case this factor would have little to do with mineral-deposition. Again, in every instance the chaicepyrite occurs in a higher ore horizon on this property, as can be distinctly seen in the limestone remnants on the bluff. On the north slope there has been less erosion and, although the limestone has been tilted at a high angle, it appears to be of considerable thickness. On this side further development may be recommended.

About a quarter of a mile to the south-east the granodiorite batholith outcrops and the volcanic tuffs on its contact have been mineralized with pyrite, chalcopyrite, and pyrrhetite. The mineralization on this side is identical with that found on the Volcano claim and it seems probable that the granodiorite is responsible for both ore-depositions. The low-grade copper ore said to have been found in some of the drill-holes is worth checking up, because metallurgical treatment has advanced to such an extent that this ore may now be commercial. The high relief of the mountain on which these claims are located and railway transportation at the foot of the hill are added attractions to any one contemplating further development.

tuessed at. An attractive characteristic lies in the fact that apparently faulting is essential to the finding of pay-ore in this camp, so that the future possibilities of the *Homestake* are consequently important. The owners intend to sink the shaft deeper and generally explore the area. A trail leads from the Franklin Camp road, about 1% miles south of the *Union*, up to the claims, a distance of about 2 miles.

This claim is owned by Pat Byrne and associates, of Grand Forks, and adjoins Banner. the Homestake on the south-west. A considerable amount of work has been done since the claim was staked in 1898, consisting of a shaft about 25 feet deep on a fissure containing sphalerite, galena, chalcopyrite, and pyrite in a quartz gaugue. A crosscut has also been driven about 175 feet farther down the hill, but the ore exposed in the shaft was not reached. Picked samples of this ore assayed about \$18 per ton in mixed values. The country-rocks are altered tuff, quartzite, and other similar Franklin group rocks. It seems possible that the ore found in the shaft is the top faulted section of a fissure, the roots of which lie farther into the hill and to the east; in which case the crosscut was not driven far enough. More development is justified.

In former Annual Reports the Copper No. 2, McKinley, Averill group, Buffalo, Maple Leaf, Glouster, and many other properties have been mentioned. A report upon the platinum possibilities of Franklin camp was made by Wm. Thomlinson, for the Munition Resources Commission, in 1918. For those who have not access to a copy of this report, the Resident Engineer will be glad to supply information regarding gold and platinum assays contained therein.

In Bulletin No. 1, 1932, extensive areas containing similar geological formations to that of Franklin camp were mentioned, and Morrell camp and R. Simpson's claims were advised as being suitable for investigation. A lot of exploration-work has been done on the Juditta group in the former camp and some low-grade ore uncovered containing similar minerals to those found in the Union. Occasionally small high-grade pockets containing free gold occur in the quartz reins, but up to the present no large bodies have been found. Possibly structural conditions were not favourable where the work was done and a further search necessary.

On R. Simpson's group, located near the mouth of Pass creek, which includes the Exchange claim, some gold has been uncovered in quartz veins, also massive pyrite containing gold and silver values. On the Little Bertha, farther north and across the Granby river, gold associated with pyrite has been mined, and at the present time a Pullman, Wash., company is driving a long crosscut (now nearly 900 feet) into the mountain in an endeavour to intersect the downward extension of the pyrite-pyrrhotite-gold-copper deposits in limestone, located on the Pathfinder group about 800 feet above and mined in the early days. On the Superior claim on Volcanic mountain, a short distance south of the Little Bertha, gold is found in the pyrite-pyrrhotite replaced limestone-deposits. Very little work has been done upon this claim to prove its value. All these claims are near both railway and motor-road transportation and a more intensive search is warranted.

1931

The Yankee Boy and Yankee Girl claims, situated on Hardy mountain, are owned by James Hutchinson, of Montreal. These claims, mentioned in the 1924, 1925, and 1930 Annual Reports, have been worked spasmodically and some gold-bearing quartz ore shipped to the smelter. The veins, which vary from 2 inches to 2 feet, occur in the greenstones. Transportation is good.

Humming Bird bearing pyrite-pyrrhotite ore in past years. The ore occurs in lenses and Frac. Veins in the replaced limestone-beds which have been tilted along the edge of the Granby River valley. A continued search for ore is being carried on by the owners. In the vicinity of Grand Forks there are two deposits, one of silica, which is said to be commercially pure, and another of marble, which polishes well. Both these are extremely handy to railway transportation.

This claim adjoins the *Volcano* on the north and is owned by S. Evans e. al., of Grand Forks. Several open-cuts and shallow shafts have been sunk on this property. In one of the shafts near the *Volcano* line a lead of massive pyrrhotite and pyrite was struck. A sample of this ore assayed: Gold, 1.02 oz. to the ton; silver, 0.60 oz. to the ton, Another sample taken from 16 inches of pyrite and pyrrhotite assayed: Gold, 0.90 oz. to the ton; silver, 0.50 oz. to the ton; copper, 0.50 per cent. This orezone appears to be the continuation of the *Volcano* mineral-deposit and warrants more work.

Elevation, about 3,200 feet. This claim, towned by the Pathfinder Pathfinder. Mining, Reduction and Investment Company, Secretary, James I. Walker, 1897 Grand Forks, lies about 2.5 miles northerly from the "Volcanic." The country here is bare and very rocky, i.e., gneisses, granites, syenites, etc. In a boss of the greenish, eruptive rock a few open cuts trace out a zone mineralized with pyrrohotite for about 1,500 feet, and a shaft 5 x 7 feet had been sunk 30 feet, where massive pyrrhotite was found in irregular masses and stringers. This ore carries very little copper, but assays are reported of \$8 to \$56 in gold, and 2 to 12 ounces in silver per ton. Good cabins had just been erected, and development was in progress.

been erected, and development was in progress.

Standard, lying east of "Pathfinder," shows the iron-stained rock, but no ore as yet. A

little work was being done.

Tiger, south-east of "Standard, shows some pyrrhotite.

Hidden Treasure, east of "Tiger," shows some quartz with pyrrhotite.

Diamond Hitch, south-west of "Pathfinder," owned by F. Ralston, et al has a considerable amount of solid pyrrhotite, on which five men were working. No values of this ore could be ascertained.

NORTH FORK OF KETTLE RIVER.

1920

Little Bertha.

Between 300 and 400 feet of crosscut tunnel has been driven on this can under contract by Ab. Savage, of Grand Forks. No values have been dereise up to the present time, other than a few mineralized stringers.

GRANBY RIVER.

The development of this mine consisted of driving the long crosscut ahead to little Bertha. a point 600 feet from the portal. The tunnel was commenced two years ago and driven about 200 feet below the Little Bertha workings in the hope that rein might be cut to a greater depth. At present no sign of the lead has been discovered, and it seems probable that it was either formed nearer the surface or has faulted into the hin In any case, this method of development is to be condemned when so little is known of the condition or depth of the vein at the bottom of the old workings. A few hundred dollars spent in unwatering the old winze and generally exploring the vein would greatly assist in forming a correct plan for future development.

GRANBY RIVER.

This property, owned by the Pathfinder Consolidated Company and situated Little Bertha. about 12 miles from Grand Forks, was examined by United States Interest and two men put to work in the lower crosscut tunnel. The upper working consisting of tunnels, a winze about 60 feet deep, and several upraises, show the vein to be generally broken and crushed and in the winze dipping at a very flat angle into the hill. The construction is pyrite and galena carrying values in gold and silver in a gangue of quartz. The country roct is granodlorite intruded by porphyry dykes.

The lower crosscut tunnel, 600 feet long, was driven with the idea of cutting the leaf developed in the upper tunnel at about 130 feet in depth. The driving of this tunnel, in the fact of the fact that little or nothing was known about the vein at the bottom of the upper working except hearsny, is not in accordance with good mining methods and therefore to be condemned. To open up the old crosscut tunnel which taps the bottom of the winze, and ascertain definitely the strike, dip, and values contained in the vein, would not cost much. By doing some development at that point the company would be sure whether or no a long tunnel below would be justified. The values in the vein below the winze may not be sufficiently high to pay for mining or higher-grade ore may lie above and to the south of the winze, in which case the long crossay tunnel would be an unnecessary development. If the values were found to be favourable in the winze an upraise could be driven from the lower tunnel after a survey had been made.

Stockholders in this mine, situated about 12 miles north of Grand Forta.

Little Bertha. a contract for driving the lower crosscut tunnel ahead 200 feet. It is hope that this tunnel will either encounter a blind ore-body or intersect the days ward extension of the quartz vein mined in the levels above.

1928 Pathfinder Consolidated Mining Co. This company owns the Pathfinder, Iron Bell, Little Bertha, and Derby claims, situated on Pathfinder mountain, on the Granby river, about 14 miles north of Grand Forks. Two men have been employed during the year, extending the crosscut tunnel in a northerly direction about 46 feet from a point 750 feet from the portal. A small compressor, engine, and stoper are being used for the present no ore has been struck in this tunnel, but the management house

this work. Up to the present no ore has been struck in this tunnel, but the management hopes to find the downward extension of the vein mined in the Little Bertha above.

The Pathfinder claim lies about 1 mile east of the portal of this crosscut tunnel and was mined many years ago for copper. William Wilson is president of the company and W. Swain, of Pullman, Wash., secretary.

This company, formed thirty years ago to develop the Pathfinder, Little Pathfinder Con- Bertha, and other claims on the Granby river about 12 miles north of Grand solidated Co. . Forks, made an arrangement recently whereby G. Voshell developed the Little Bertha. The crosscut tunnel commenced several years ago has been extended and at the present time measures in the neighbourhood of 1,000 feet. The idea of driving this tunnel was to develop at depth the downward extension of the Little Bertha gold-bearing quarts vein which had been mined about 200 feet in elevation above, as well as to tap any hidden ore-bodies. In one section about 25 feet wide near the face of the tunnel fragmentary sections of quartz were found in a highly siliceous contact-zone near the granite intrusive. The remainder of the tunnel is reported to have been driven in country-rock, including porphyry dykes, etc. Of late Voshell has been working on what appears to be a narrow lead about 400 feet from the mouth of the crosscut. There are many mineralized contacts that up to the present carry only low values in gold and silver. Other work was done to the south of the Little Bertha workings, the results of which are not to hand. The owners will be well advised before doing any further development to unwater the winze in the Little Bertha and ascertain definitely what has happened to the vein at the bottom.

LEGEND

