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OF THE

MINISTER OF MINES

OF THE PROVINCE OF

BRITISH COLUMBIA

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Mother Lode (Burnt Basin). This group, situated near Paulson and owned by the Contact Consolidated Gold Mines, Limited, with an agency office address of Hamilton, Wragge & Hamilton, of Nelson, was reported upon in the 1925 Annual Report, also in 1904 by R. W. Brock, of the Geological Survey of Canada, in pamphlet form, and again by W. F. Ferrier for the Munitions Resources Commission in 1918. As well as these, private examinations and reports were made by J. E. Snelus, of Cumberland, England, and B. Cochrane, of Republic, Wash., U.S.A., at about the time the mine was being developed. Extracts from these reports can be seen at the Resident Engineer's office in Penticton.

The geology of the area is described by R. W. Brock as follows: "The claims lie in a district of considerable geological complexity, which has been the scene of numerous igneous intrusions extending from probably Palæozoic to Tertiary times, and during that period it has been subjected more than once to the throes of mountain-building. Consequently, the older rocks are much disturbed, sheared, fractured, and altered. The oldest rocks are limestones, argillites, and greenstones, the latter having the greatest areal distribution. A large part of the district is, however, composed of later igneous rocks.

"The limestones in places are sufficiently pure for use as smelter-flux, but are sometimes dolomitic. When comparatively unaltered they are dark and carbonaceous, but they are usually marmorized to a white marble. The argillites are often altered to schists and hornfels. These rocks have been invaded by the greenstone, probably an augite porphyrite, though now sheared and altered. The above rocks are cut by a coarse grey granodiorite, which sends dykes and apophyses into the older rocks. The greenstone of the *Mother Lode* is also cut by a basic gabbroidal rock, which bears some resemblance to the more basic monzonites. To the north of the property is a still more recent hornblendic granite, with accompanying acidic and basic (vogesite) dykes. To the east is a large area of syenite, of pulaskite (alkali syenite) and monzonite habits. This rock is of Tertiary age. Some dykes of it carry free gold as a primary constituent plainly visible to the naked eye. Numerous dykes of syenite porphyry, some of them no doubt from this alkali syenite, cut all the older rocks.

"The veins lie in greenstone between two large porphyry dykes. The quartz, which is somewhat milky, has small amounts of metallic sulphides scattered through it. Pyrite, galena, and blende are the commonest, but chalcopyrite and some molybdenite also occur. On the surface the sulphides have been leached out, leaving free gold and some copper carbonates in the rusty and porous quartz. A little native copper is also reported to have been found at the surface. The principal value is in gold, but a little silver is also present. In one of the neighbouring porphyry dykes a little molybdenite was detected and the dykes are reported to assay about $3 in gold. There appears to be a genetic relationship between these dykes and the ore-bodies in this part of British Columbia."

Four assays given in Brock's report show a platinum content varying from nothing to 0.1 oz. per ton. The claims of the original group now in good standing are the *Mother Lode*, *Daly*, *Mother Lode Fraction*, *Ajax*, and *Ajax Fraction*. Development consists of numerous open-cuts on various quartz-vein outcrops.

The following excerpt is from the report of E. Snelus: "A shaft (10 by 7 feet) has been put down on the dip of this ledge at an angle of 40° to the north for a distance of 65 feet. At 25 feet down the ledge is lost, shooting off into the hill towards the north-west. From the bottom of this shaft a crosscut tunnel has been driven N. 45° E. for a distance of 73 feet, cutting the upper ledge at 63 feet. This has been drifted on east and west for a total distance of 24 feet. The ledge where met by the crosscut is 6 feet wide, and the dip has increased to about 45°. In the east face of the drift the ledge is 2 feet wide and consists of white quartz carrying stringers of pyrites and copper-carbonate stains. In the west face it is not well defined, but the whole face is mineralized. An average sample taken over the entire length of the drift gave: Gold, 3 dwt. 22 gr. per ton; silver, 15 dwt. per ton.

"The upper ledge has been stripped along its strike for 30 feet, showing 4 feet wide of clean quartz, and on its dip for 40 feet, where it thins down to 2 feet in width. A tunnel was being driven N. 60° W. to crosscut the upper ledge at a vertical depth of 77½ feet, and upon my return to the mine on December 14th I found that it had just been cut at a distance of 232 feet, at a point immediately below the drift above, and opening up 140 feet of backs. The ledge at this point is 2½ feet wide and carries some iron pyrites and some galena. An average sample over 8 feet gave: Gold, 6 dwt. 13 gr. per ton; silver, 10 dwt. per ton."

Development since this report was made constitutes the extension of the lower tunnel for over 100 feet in a westerly direction as well as a crosscut to the south, the latter made in search of a possible parallel vein. To the east the vein was also followed for a considerable distance. The shaft was caved at a point about 35 feet below the collar, so that it was impossible to examine the work done beyond that point. It is quite evident from information obtained in the upper workings that there is only one vein, the lower one, on which the shaft was sunk, being the downward faulted section of the one above. Some enrichment has taken place against the fault in this area and much higher values, including free gold, discovered. It is possible that this faulted zone may extend into the hill to the west and that minable bodies of ore may be found in connection with it. Development only will prove or disprove this theory. The top or lower section of the vein measures about 6 feet in width, whilst the lower or top section measures about 8 feet.

Average samples across these widths assay about $7 per ton in gold and silver. A picked sample assayed $26.80 in gold and 81 cents in silver per ton. Samples taken from the face of the east drift below assayed: Gold, trace; silver, 9 cents per ton over a 20-inch width. A sample taken over 15 inches in the face of the west drift assayed: Gold, 80 cents; silver, 27 cents per ton. A picked sample taken across 20 inches of quartz 20 feet long, near the intersection of the crosscut and vein, assayed: Gold, 80 cents; silver, 21 cents per ton. A sample of heavy sulphides across 4 feet of quartz, 30 feet from the vein intersection, assayed: Gold, $1.60; silver, 22 cents per ton. The vein narrows to a few inches, flattens and dips under the drift to the west, rising again about 20 feet from the face. Very little mineralization occurs in veins found on other parts of the property and no work has been done upon them since 1917, when an examination was made and only low values found. Most of the timber has been burnt by forest fires.

It is a peculiar coincidence that platinum was found in the early days (1902) in the ores both in the upper workings as well as in the lower tunnel, and that since then, in samples carefully selected from sections supposed to carry the metal, not even a trace was found either by the Department of Mines at Victoria or at Ottawa. Some of the most reliable firms in England, Germany, and the United States found not only platinum, but iridium, osmium, and ruthenium. From the foregoing it seems likely that the Platinum group of metals occur only in isolated segregations in certain sections of the mine, and that these were missed in the recent sampling or not exposed in the workings. The wide variance in platinum values found in samples in 1902 suggests this.

An interesting feature about the locality is stressed by R. W. Brock; that is, the finding of gold values up to $3 per ton in one of the porphyry dykes and that free gold was also observed. The suggestion made by him that the porphyry may have been responsible for the ore is worth investigation. Large dykes of pulaskite invade the area.

Rock Rabbitt and Hurricane. These claims, owned by Murt. Carroll, Cascade, are situated 2 miles up Trout creek from Mile 8 on the Cascade–Rossland road. Some interesting developments, by means of a 22-foot shaft as well as several open-cuts, have uncovered a sheared and highly altered contact-zone between the granite batholith and ferromagnesian rocks (probably dunite), the latter predominating to the south. Numerous apophyses of the granite intrude the dunite (?), and along its edges a heavy mineralization occurs containing varying quantities of pyrite, magnetite, and lesser amounts of niccolite. This is an intensely interesting area where a large variety of minerals are found, such as chromite, magnesite, and nickel, in the magnesian rocks and serpentines.

Pathfinder Consolidated Co. This company, formed thirty years ago to develop the *Pathfinder*, *Little Bertha*, and other claims on the Granby river about 12 miles north of Grand 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 quartz 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