W.A. NO. .....

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82 FNW155 Ottawa



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## NORTHERN LIGHT CLAIM

The Northern Light Crown-granted claim was located in 1902 and has recently reverted to the Crown. It is at the extreme headwaters of Scorpion (Robinson) creek at an elevation of about 4,300 feet and is accessible by road and trail from Slocan City.

The country rock is typical, coarse-grained, porphyritic Nelson granite. The workings include two adits both of which in 1927 were caved and, judged from the size of the dumps, are short.

No information could be obtained as to the character of the mineralization, if any, discovered on this property which, presumably, includes the northeasterly extension of the Republic-Slocan Bob lode system.

82 F/NW - 155

## OTTAWA GROUP

*References:* Ann. Repts., Minister of Mines, B.C., 1904, p. 164; 1921, pp. 137-139; and other years.

The Ottawa group of some twenty-one claims and fractions, most of which are Crown-granted, lies on the northern slope of the valley of Springer creek about 1,000 feet above the creek bed, and is accessible by road 6 miles long, from Slocan. The property is owned by Consolidated Mining and Smelting Company, Trail B.C.

The Ottawa claim was located in 1900 and in 1902 was acquired by a Pittsburgh syndicate. This company bought a number of adjoining claims and obtained bonds on others. In 1913 the property was acquired by the present owners and worked by them until 1918. Subsequently it has been worked under lease.

Production commenced in 1904 with the extraction of 152 tons of ore averaging nearly 200 ounces in silver a ton. From this year onwards shipments have been recorded each year up to and including 1926. The most profitable year was 1904 when 1,331 tons were shipped. This ore assayed, on an average, 185 ounces in silver to the ton and 20 per cent lead. Shipments of 545 tons in the following year carried 204 ounces in silver to the ton and 20 per cent lead. These, however, are the only years in which any lead is recorded. In 1921, 1,440 tons of mill feed averaging less than 5 ounces in silver were extracted. Production of all other years has been of higher grade material and has, exclusive of 1921, amounted to 4,758 tons of ore with an average content of 159 ounces in silver a ton.

The property is developed by five adits driven at vertical intervals of about 100 feet. Below the lowest adit is a sixth level. When visited in 1927 the upper three adits were inaccessible from the surface and the other levels were partly caved.

The workings explore a wide, sheared, and brecciated zone in coarse-grained, porphyritic, Nelson granite. The zone trends nearly north and dips easterly at angles varying from 25 degrees to 45 degrees. It comprises two rather well-defined lodes known as the West or Noble and the East or Ottawa veins, respectively. Mining work at the surface and underground indicates that these lodes are not exactly parallel, but approach each other towards the south and may join in that direction. On No. 5 level they are about 30 feet apart.

Most of the work has been done on the East lode and most of the production has come from it. The lode varies from 2 to at least 20 feet wide and is composed of gouge, crushed and broken granite, and, locally, vein matter—the latter having been stoped in places across a width of as much as 8 feet. Most of the ore has been extracted above No. 5 level, but possibilities at greater depth are believed to be good, inasmuch as there has been no evidence of deterioration in values or shrinkage of the lode in this direction.

The West lode is very wide in the lower two adits. It is reported to have produced some very good ore in the uppermost workings and has been stoped on a little from the second lowest adit level. Crosscuts connect the two lodes in the two lower adit levels and from the lowest crosscut a drift extends northerly along the foot-wall of the West lode for about 300 feet without, apparently, encountering important mineralization, although some quartz lenses as much as 2 feet thick were observed. A winze south of the crosscut was full of water. In the crosscut the sheared and brecciated zone representing the West lode was about 50 feet wide.

The gangue of the discovered ore-bodies was chiefly quartz and the valuable constituents high-grade, silver-bearing minerals such as argentite, native silver, and, probably, grey copper. In part, the quartz formed veins or lenses up to several feet in width and, in part, it occurred as a cement to fragments of country rock. The ore minerals were mostly disseminated through such materials, but also formed veins and irregular-shaped concentrations. Besides the high-grade ore minerals, more or less galena, pyrite, and a rather resiny zinc blende were present. In places barite was a predominant gangue mineral and is stated to have been associated with good ore. In general the ore was somewhat difficult to sort, as unattractive looking ledge matter might carry much silver.

The property has prospective merit in view of possibilities at depth, further developments of the West lode, and possibilities for ore concentration where and if the two lodes come together. The large dumps are reported to carry appreciable silver and zinc values and, in addition, there are quantities of low-grade vein matter in the old workings which, under favourable conditions, might be mined at a profit.

## PARA CLAIM

*Reference:* Ann. Rept., Minister of Mines, B.C., 1919, p. 131 "Royal Group."

The Para Crown-granted claim was located in 1896. It has reverted to the Crown.

The workings are on the southerly slope of the ridge encircling the headwaters of the first north fork of Enterprise (Paupo) creek, and at an elevation of about 7,000 feet. They are most readily accessible by wagon road from Slocan lake for 10 miles up Enterprise creek. From this road a good trail 3½ miles long leads to the mine.

The country rock is typical, coarse-grained, porphyritic Nelson granite. Workings comprise three adits, the two lower of which are caved (1927). The upper follows a fault-fissure lode for about 260 feet and runs from one side of the ridge to the other. The lode in this tunnel varies from a few inches to 3 feet in width, strikes north 5 degrees east, and dips

N40°E and dips 35° to 40°SE. This zone is encountered in the 100-level, which is 520 feet long and is driven S73°E. In this crosscut a small pegmatite dyke, a felsic dyke, three shear zones 2 to 4 feet wide, and a number of slips of small displacement occur. At 440 feet from the portal is a 5-foot shear zone followed by a breccia zone 15 feet wide and the main shear zone. From this point there is a short drift to the north from which an inclined raise has been driven up 46 feet to the 50-level. No vein material was noted in the shear zone to this point.

On the 50-level the shear zone is developed along 86 feet of drift and on a 40-foot inclined raise from the south end. The shear zone on this level contains small, lenticular masses of quartz and some calcite. These in turn contain small pods of galena and sphalerite with a little chalcopyrite. Cairnes reports that grey copper and native silver are also present.

### *Ottawa (149)*

*References:* Minister of Mines, B.C., Ann. Repts.: 1896-1956. Cairnes, 1934, p. 88; 1935, pp. 182, 183.

The Ottawa property, consisting of thirty-one Crown-granted claims, is owned by the Ottawa Silver Mining and Milling Company Limited. It is on the northern slope of Springer Creek and is reached from Slocan City by a road 6 miles long.

The Ottawa claim was located in 1896 but development work was meagre until 1902 when it and some adjoining claims were acquired by a syndicate. Production of high-grade ore was steady until 1910. The property was purchased in 1913 by the Consolidated Mining and Smelting Company of Canada, Limited, which carried out more extensive development work until 1918. Shipments were made by the company and during some years by lessees until 1926.

In 1935 the property was obtained by the present owners who built a 100-ton flotation mill in 1937, but production never equalled that of 1904. Much of the work after 1938 was done under lease or option. Options were held in 1950 and 1951 by Violamac Mines (B.C.) Limited, and later in 1951 and in 1952 by Harrison Drilling and Exploration Company Limited, which continued the option the following year under the name Hardex Mines Limited. The owners resumed operations in 1956 and shipped 10 tons of ore.

Production of ore between 1903 and 1952 totalled 8,628 tons, containing 1,094,843 ounces silver, 755,489 pounds lead, 3,662 pounds zinc, and 15 ounces gold.

The lowest level (No. 8), which was active in 1950, was examined by A. B. Irwin of the Geological Survey in June 1950.

The property is underlain by coarse-grained, porphyritic Nelson granite cut by small dykes of felsite and lamprophyre.

The ore occurs in a broad, sheared and brecciated zone in granite. It strikes roughly north and dips 20° to 45°E. Within this zone are two lodes known as the West or Noble and the East or Ottawa veins that are 20 to 150 feet apart



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(*see* Figure 10, in pocket). According to Cairnes most of the production from the higher levels has come from the East lode. In No. 8 level the West lode is wider and more continuous than the East lode.

The gangue of the veins is chiefly quartz and contains various amounts of native silver, argentite, tetrahedrite, galena, sphalerite, pyrite, and a little chalcopyrite. Cairnes states that barite is a common gangue mineral and that it is reported to be most abundant where the silver values are the greatest.

Irwin noted that in the West vein on No. 8 level, where stoping was being done in 1950, the vein strikes N25° to 40°E and dips 20°SE and that the foot-wall is marked by a few inches of gouge. In contrast the hanging-wall is irregular. The lode there is 1 foot thick and 30 feet long, but rakes S25°E at an angle of 15°. This ore contained an average of 250 ounces silver a ton. At the face of the main drift the vein is only 1 inch to 2 inches wide but is sharply defined.

The East lode on No. 8 level is strong and is composed of 2 to 3 feet of gouge and breccia cemented by quartz. It strikes N10°W and dips 30° to 40°E.

### *Little Tim (153)*

*References:* Minister of Mines, B.C., Ann. Repts.: 1918, p. 195; 1919, p. 126; 1951, p. 177; 1952, p. 180. Cairnes, 1935, pp. 178, 179.

The Little Tim (L.T.) property, at the head of Little Tim Creek a tributary of Springer Creek, is owned by D. B. O'Neail of Slocan City. It is accessible by a road 2.7 miles long from the Ottawa mine, which is 5 miles from Slocan City. The property consists of the Victory V, V-day, Ute fraction, Radar No. 1, and Radar No. 2 claims, all held by location.

The property was staked in 1918 by the present owner who worked it intermittently until 1947. In 1951 and 1952, it was optioned by Harrison Drilling and Exploration Company Limited, later known as Hardex Mines Limited. Total production of ore from 1918 to 1952 inclusive was 136 tons, which yielded 22,838 ounces silver, 31,838 pounds lead, and 7,432 pounds zinc. The property was examined in August 1950 by A. B. Irwin of the Geological Survey.

The country rock is coarse-grained, porphyritic Nelson granite. The workings explore two veins and there is probably a third vein southeast of the main vein and parallel with it. The upper workings, comprising two adits and a shaft, explore the vein that is 300 feet northwest of the main vein. These workings are now inaccessible but were described by Cairnes.

The main vein (*see* Figure 11), called by Cairnes "the southeast lode", is developed by three adits, Nos. 1, 3, and 4, that range in elevation from 6,783 to 6,624 feet respectively. On all three levels the main vein strikes N55° to 65°E and dips 45° to 70°SE. It occupies a fissure mainly 6 inches, but in places up to 2 feet, wide. In the wider parts it contains brecciated wall-rock but elsewhere contains only gouge. The vein is largely quartz and ranges in width from 2 to 6 inches, averaging 3 inches. On No. 2 level, which is the longest, the vein has been followed for 235 feet, but it is offset about 30 feet to the left, 65 feet from the portal.

of metals. In the Buster, Hewitt, and B.N.A., sphalerite is more abundant than galena, but, conversely, the Apex, Alamo, Evening and Jennie, Jennie Lind, Mercury and Silver Bell, Redress, Madison, Reco, Grey Copper, Mountain Con, Ontario No. 2, and Baltimore have yielded little or no zinc. In the cases of the minor producers this may be because zinc exacted a penalty on the smelters, particularly in the early years of mining, and was not reported. Only in the Bismark, Ontario No. 2, Violet, and Dayton properties has sphalerite not been observed. The Utica has produced a minor amount of antimony.

The host rocks in this zone, except for the Mountain Con, Revenue, Violet, and Ontario No. 2 deposits which are in Nelson porphyritic granite, are sedimentary rocks of the Slocan group, and comprise one or more of quartzite, argillite, slate, and minor limestone, and calcareous or argillaceous facies of these. The Surprise lodes are partly in quartz porphyry. All the deposits are fault-fissure lodes except in those like the Bismark where there is a minor amount of replacement of the wall-rocks, if they are limestone. The gangue minerals in the veins vary from place to place, and comprise quartz, siderite, or calcite, or combinations of these in various orders of abundance. All four deposits in this zone that occur in granite, however, contain only quartz as the gangue. The ore minerals are galena and sphalerite with, usually, one or more of the silver minerals grey copper, ruby silver, native silver, and others that have not been identified. In the Evening and Jennie, however, only galena and oxidized products are reported. Many of the veins contain pyrite and some contain a little chalcopyrite. Those of the Hewitt mine contain some pyrrhotite.

The second major zone extends from the Hamilton westward through the Molly Gibson to the Olsen. These deposits occur in coarse-grained porphyritic granite of the Nelson batholith, crushed or mylonitized on the Hamilton, Happy Medium, and Arlington properties. All deposits in the zone are fault-fissure lodes except the Arlington where the ore is disseminated in crushed granite or granodiorite. In most of the veins quartz is the dominant gangue mineral, but in a few some calcite is also present. In the upper levels of the Enterprise mine quartz predominates, but in the lower levels siderite and calcite are more abundant. In the Ottawa mine barite is a fairly abundant gangue mineral, and is present also in the nearby Tamarac, Anna, and Little Tim properties. Some chalcedony is reported in the Bondholder vein. Ore minerals are commonly galena and sphalerite, generally with grey copper, ruby silver, native silver, and, at the Anna, stephanite. Pyrite and a little chalcopyrite are present in several of the veins, but only on the Anna has any copper been produced.

Many of the properties in the above two zones have been classified as 'dry ores', that is they are composed mainly of quartz, and contain abundant silver, but little or no lead and zinc. Among these are the Apex, Madison (in part), Violet, Ontario No. 2, Ottawa, Arlington, Slocan Prince, Alice S., and Lily B. The last five of these fit most nearly into the category of 'dry ore', and are adjacent to the truly 'dry ores' of the silver-gold mineral deposits zone.