

## NOTES AND NEWS

### MINERAL OCCURRENCES IN WESTERN CANADA

R. M. THOMPSON

*University of British Columbia, Vancouver, B. C.*

These notes reporting some of the less common minerals from Western Canada continue the series of notes the last of which appeared in *Am. Mineral.*, **34**, 458, 1949. All identifications were established or confirmed by *x*-ray powder photographs. The writer wishes to thank Dr. H. V. Warren for his assistance in many ways during the course of this work. The following students at the University of British Columbia also assisted in collecting and examining ores: A. C. Taplin, A. E. Aho, A. M. Patterson, A. N. Bahan, W. L. Brown, M. M. Menzies, J. A. Roddick, and P. W. Richardson.

*Bismuth.* Hight Creek, Mayo District, Y. T. Small rounded yellow oxide coated nuggets with the characteristic pink tinge on a freshly broken surface were found in the heavy minerals from a placer operation on this creek.

Haggart Creek, Mayo District, Y. T. Nuggets similar to the above and up to 10 mm. were found in the heavy sands from the placer operations of Mr. E. Barker.

*Bismuthinite.* Divided Mineral Claim, extreme head of the Klaza River, near Carmacks, Y. T. Samples of white vein quartz submitted by Mr. G. Dickson show only sparse amounts of a massive gray metallic mineral which proved to be bismuthinite.

Dividend Lakeview Mine, Osoyoos, M. D., B. C. This property is located one mile north of the International Boundary and two miles southwest of the town of Osoyoos. Bismuthinite was noted as a minor constituent of the ore which consists of massive pyrite, pyrrhotite, arsenopyrite, and accessory chalcopyrite, magnetite, tetrahedrite, and gold. Erratic high gold values suggest that tellurides may be present but as yet none has been identified.

*Boulangerite.* Great Britain Property, Lardeau M. D., B. C. This is one of a number of claims located about 1894 on Sable Creek in the remote Trout Lake district. A specimen donated by Mr. J. M. Turnbull consists of a fine grained somewhat feathery solid compact mass of a silvery gray metallic mineral which gave the combined *x*-ray patterns of boulangerite and galena.

Erickson-Ashby Property, Atlin M. D., B. C. These claims are situated on the north end of Erickson Mountain about 3 miles from the settlement of Tulsequah. Mr. C. S. Ney donated massive sulphides consisting of

galena, pyrite, sphalerite, pyrrhotite, arsenopyrite, tetrahedrite, and silvery-gray fibrous masses of boulangerite.

*Bournonite.* Allco Silver Mines Limited, Revelstoke M. D., B. C. This property is situated at the head of Silver Creek, 20 miles northwest of Revelstoke. Specimens of white quartz with tetrahedrite were examined and bournonite was found to occur as thin selvages on tetrahedrite and galena.

Pelly Creek, Cassiar District, Omineca M. D., B. C. A sample collected by Mr. E. Bronlund from a vuggy quartz vein in the Ingenika Group quartzite on a ridge on the northeast side of Pelly Creek about 5 miles northwest of Pelly Lake, contains disseminated grains of a black metallic mineral which gave the  $x$ -ray powder pattern of bournonite. Mr. Bronlund believes that there are other occurrences of bournonite in this area.

*Galenobismutite.* Dublin Gulch, Mayo District, Y. T. This rare mineral was found surrounding a small nugget of gold from the placer workings of Mr. F. Taylor.

*Hessite.* Hebson Property, Surel Lake, Tweedsmuir Park, Omineca M. D., B. C. Vuggy limonite stained quartz veins up to 14 inches in width occur in greenstone close to a granite contact near the southeast end of Surel Lake. Altaite, hessite, and galena were identified in the field and subsequently confirmed by  $x$ -ray powder photographs. The above show mutual boundary relationships in polished sections. This property is about 10 miles southeast of the Harrison Group described earlier in these studies and is similar geologically and mineralogically, both being on the eastern contact of the coast range batholith.

*Jamesonite.* Polaris Taku Mine, Atlin M. D., B. C. This mine is located between elevations of 100 and 1000 feet on the west bank of the Tulsequah River about 6 miles from its confluence with the Taku River. Specimens of milky white quartz calcite vein material show radiating needles of a silvery gray mineral up to 20 mm., in length. Both on these needles and in more compact areas a cleavage perpendicular to the elongation was noticed. This feature suggested jamesonite and the identity of this mineral was confirmed by an  $x$ -ray powder photograph.

Giant Mine, Yellowknife, N. W. T. Samples donated by Mr. G. Pinsky from the 306 stope of this mine consist of quartz calcite vein material with large compact areas of jamesonite in contact with brown sphalerite and minor amounts of pyrite. Here again the cleavage perpendicular to the elongation of the mineral is well developed.

*Joseite A.* Highet Creek, Mayo District, Y. T. An examination of the heavy minerals from a placer operation on this creek showed a few small flexible plates of a bismuth telluride ( $2 \times 2$  mm.) which an  $x$ -ray powder

photograph proved to be joseite A (*Am. Mineral.*, 34, 365, 1949).

Clear Creek, McQuesten District, Y. T. An examination of the heavy minerals from a dredge operating on this creek showed an occasional plate of a bismuth telluride which also proved to be joseite A.

*Linnaeite*. Shell Property, near Aiken Lake, Omineca M. D., B. C. This property is located in north central British Columbia, about 13 miles north of Aiken Lake. Polished sections from a chalcopyrite vein in andesitic tuffs show corroded crystals of magnetite and pyrite in a ground-mass of chalcopyrite which contains small areas (up to 1 mm.) of a pinkish-cream mineral with no relief against chalcopyrite. The mineral is very weakly anisotropic in gray to mauve and negative to all reagents. An x-ray powder photograph places this mineral in the linnaeite group.

*Owyheite*. Sherwood Mine, Della Lake, Alberni M. D., Vancouver Island. This property is located on the headwaters of Drinkwater Creek approximately 9 miles by road and trail northwest of the upper end of Great Central Lake. Samples submitted by Dr. D. F. Kidd show somewhat vuggy quartz with bands of dark sphalerite and minor amounts of disseminated galena, tetrahedrite, and needles of arsenopyrite. The vugs are occupied by a capillary mineral which looks like a keg of nails under the binocular microscope. These extremely fine hairs were carefully selected and ground with difficulty. An x-ray powder photograph identified them as owyheite (*Am. Mineral.*, 34, 398, 1949), thus making a fourth occurrence of this rare mineral in British Columbia.

*Polybasite*. Silver Horde Mine, Vernon M.D., B. C. This is one of a number of claims situated on Bromide Mountain between the north and south forks of Cherry Creek some 47 miles east of Vernon. Polished sections of ore show polybasite in microscopic amounts in galena and associated with chalcopyrite, sphalerite, tetrahedrite, silver, pyrite, and magnetite.

*Skutterudite*. Hazelton View Mine, Omineca M. D., B. C. (O'Neill, *Geol. Sur. Canada*, Mem. 110, 20, 1919). This mine is on the northwest slope of Rocher Déboulé Mountain, 4 miles south of South Hazelton. The workings are between 5,100 and 6,025 feet. The main vein occupies a strong fault fissure in coarsely crystalline granodiorite and in surrounding sediments (greywacke and garnetiferous argillite) and is reported to contain arsenopyrite, safflorite, loellingite, molybdenite, native gold, chalcopyrite, and probably some electrum or telluride carrying silver.

Samples kindly provided by Mr. Franc Joubin and Mr. W. Holyk, show massive to euhedral crystals of arsenopyrite and skutterudite with much erythrite coating in a gangue of actinolite and quartz. Polished sections show massive to euhedral crystals of cobaltian arsenopyrite with minor amounts of irregular remnants and laths of cobaltian loellingite

which appears smooth bluish-white against the somewhat pitted pinkish-white of the former. Skutterudite was determined on the basis of a specific gravity of 6.71, microchemical tests for Co, Fe, and As, and a cell edge of 8.19 kX which is in exact agreement with skutterudite from the Agaunico Mine, Cobalt, Ontario. Skutterudite shows cubic outlines or massive areas with a good polish and a distinct cleavage. It appears to replace both arsenopyrite and loellingite. Chalcopyrite, molybdenite and gold are accessory although locally abundant.

*Stannite.* Rose Pass Prospect, Ainsworth M. D., B. C. (Rice, *Geol. Surv. Canada*, Mem. **228**, 73, 1941). This prospect and the nearby Humbolt Claim are situated near the summit of Rose Pass close to the Crawford Bay-Rose Pass trail, 5 miles from the end of the Crawford Bay (on Kootenay Lake) road. The deposits consist of quartz veins in closely folded black slates. The principal minerals reported are galena, sphalerite, chalcopyrite, pyrite, and probably stannite or a mineral closely resembling it.

Polished sections of material from the Rose Pass prospect kindly supplied by Dr. H. M. A. Rice show the suspected stannite with its usual microscopic properties, intergrown with sphalerite, chalcopyrite, pyrite and galena. The identity of the stannite was confirmed by comparing the x-ray powder photograph with that of stannite from type localities.

*Tellurbismuth.* Jeep Mine, Bissett, Manitoba. A small hand specimen kindly supplied by Dr. M. H. Froberg shows somewhat smoky quartz contacting greenstone, with gold embedded in the quartz and along the quartz-greenstone contact in grains up to 3 mm. Gold is also present as a film on one flat surface of the greenstone. A bismuth telluride which proved to be tellurbismuth occurs in the quartz as plates up to 10 mm. and is closely intergrown with gold. Gold is also visible as very fine films parallel to the eminent cleavage of the tellurbismuth.

*Tetradymite.* Reno Placer Property, Canadian Creek, Y. T. Mr. A. J. Hadden kindly supplied a number of solid compact nuggets of tetradymite up to  $1 \times 1 \times \frac{1}{4}$  inch which were thought to contain values in precious metals. Polished sections show clean areas of tetradymite with much secondary alteration along the cleavage planes. The mineral contains a few small inclusions of a pinkish gray isotropic mineral which proved to be coloradoite. Minor amounts of gold were observed along the cleavage planes of the tetradymite.

*Wehrlite.* Ajax Claim, Wavell Group, Clinton M. D., B. C. (*Am. Mineral.*, **34**, 458, 1949). Superpanning of limonitic carbonate vein material containing scant sulphides revealed small amounts of a brilliant metallic mineral in the tip which gave the x-ray powder pattern of wehrlite (*Am. Mineral.*, **34**, 369, 1949).

*Wittichenite*. Best Chance, Carlisle, Copper Cliff, and Rabbit's Foot Claims, near Whitehorse, Y.T. Microscopic examination of polished sections from these pyrometasomatic deposits in the Whitehorse Copper Belt show minute stringers and blebs of wittichenite in intimate association with bornite, chalcocite, and chalcopyrite. The occurrence here is similar to that described by Watson from the Maid of Erin Claim in the Rainy Hollow area some 90 miles to the southwest. Very small grains of a mineral tentatively identified as linnaeite by its  $x$ -ray powder pattern were observed as inclusions in bornite from both the above mentioned areas.

*Wurtzite*. Fairview Mine, Osoyoos M.D., B.C. (Cockfield, *Geol. Surv. Canada*, Mem. 179). This mine is situated about 5 miles northwest of Oliver, B.C. A highway connecting with Similkameen valley and joining the transprovincial highway at Oliver, passes through the camp.

The veins, which occur in partly silicified schist and in granitic rocks, are mainly quartz mineralized with small amounts of pyrite, galena, and sphalerite. The small gold content of these ores is largely associated with the galena and sphalerite and not with the pyrite. The veins are mined for use as a flux at the Trail smelter.

Samples submitted by Mr. G. E. Clayton show galena, pyrite, chalcopyrite, pyrrhotite, dark brown sphalerite and minor amounts of a translucent cinnamon-brown mineral with a resinous lustre, occupying small fractures in milky-white quartz. The galena, pyrite, chalcopyrite, sphalerite, and pyrrhotite are readily visible by eye and occur in veinlets and patches up to 10 mm. and sometimes larger. The cinnamon-brown mineral occurs as very thin films and anhedral grains which occasionally reach 1 mm. in size.

In polished section this mineral is grey in colour with strong reddish-brown internal reflection. It fills minute fractures in quartz and is rarely seen in contact with other sulphides. An insufficient number of sections were examined to determine its paragenetic relationships. No evidence was found to indicate that sphalerite was altering to wurtzite. An  $x$ -ray powder photograph identified this mineral as wurtzite whose cell dimensions,  $a=3.91$ ,  $c=6.39$  kX, differ somewhat from those of Fuller in Dana (1944, 227). This is believed to be the first authenticated occurrence of this mineral in British Columbia.