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(Ed) Emily Tiger

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EHLINGER GROUP

by
R. J. Maconachie.

The Ehlinger group includes sixteen claims as shown on the accompanying plan, held by right of location by John J. Ehlinger of Spokane, Washington. The property is 7 miles eastward from Wasa, a station on the Canadian Pacific Railway, and is reached from that point by a reasonably good truck-road. Topographic relief is marked and elevations vary from 3800 feet at the camp to approximately 6000 feet at the highest points on the claims. Glaciation, later erosive action and a consequent general, heavy cover of overburden has reduced surface irregularities amd permits of easy access to all parts of the property; various trails lead from the cabin to the scattered showings. Until recently the claims in this group were held by several owners as smaller individual holdings and, as a result, development-work has been undertaken at widely separated locations.

The camp, which consists of one cabin adequate for two men, is beside the road, on the Emily claim. Domestic water is obtained from a small, year-round spring. A considerable water-supply is available from Lewis Creek which flows westerly across the property and falls in the course of this creek, on the Frances claim, provides opportunity for small power-development. Timber on the claims is plentiful and suitable for all mining or construction needs.

The surface is generally underlain by quartzites and argillites placed tentatively as members of the Fort Steele series of Precambrian age. The quartzites are characteristically white to grey or pale-brown in colour and massive, with bedding displayed at only isolated locations. The argillites are dark-grey to black in colour, typically veined with narrow stringers of quartz and calcite. These two members apparently represent phases of continuous deposition as, in at least one instance, a definitely transitionary margin was noted between them. Outcrops of argillite are marked conspicuously by black staining at the surface which is the result of decomposition and disintegration. At one location, in the Wanda B workings, another metamorphic rock type was noted. This is greenstone, probably tuffaceous in origin, but so highly altered that positive identification is impossible from the hand specimen. This rock is Chloritized,

even-grained, massive though heavily sheared in places, and displays no evidence of bedding. Exposures of igneous rocks are rare in the present development and those seen were syenite dykes. The age of these dykes is from late Cretaceous to early Tertiary, according to H.M.A. Rice of the Geological Survey of Canada in his report on the Cranbrook Map Area, Memoir 207. As exposed on this property these intrusives, typically pale-green, pink or grey in colour, carry a small amount of disseminated pyrite and pyrrhotite and seldom exceed a few feet in width. The occurrences under investigation consist principally of sulphide mineralization in irregular quartz veins and concentrations of quartz stringers at, or near, the quartzite-argillite contact. Commonly on the argillite side of the contact, the quartz may be disseminated as stringers along the bedding-planes and shearing of this member for several feet from the main quartz body. Sulphide mineralization consists principally of pyrite, galena and chalcopyrite. From the small amount of development-work it is not possible to draw definite conclusions but, from various exposures where galena is predominant and others where chalcopyrite and pyrite occur almost exclusively, there are suggestions of two broad periods of mineralization, one essentially of galena--silver association, the other chalcopyrite--gold, with an overlapping of pyritic deposition.

Description of Workings.

Detailed examination was made of each of the exposures. On the Golden Fleece claim the workings consist of two adits driven to explore an irregular shearing, in quartzite, which strikes north 50 degrees west, and dips 50 degrees south-westward. This rock is typically fine-grained, white to light-brown in colour and massive. The maximum width of the shearing, 86 inches, is exposed at the face of the upper adit, 64 feet from the portal, at an elevation of 5100 feet. Characteristically the shearing is well silicified but mineralized with only sparse disseminations and irregular bunchy concentrations of chalcopyrite, malachite and azurite. The best concentration of such mineralization is 33 feet from the portal where a small side-swipe exposes a 4- to 6-inch width on the foot-wall of the shearing. A sample taken here across 7 inches assayed: Gold, trace; silver, 0.4 oz. per ton; copper, 5.7 per cent. Two samples taken at the face returned the following assays:

Across 36 inches of quartzite, slightly silicified and slightly mineralized with chalcopyrite, on footwall-side of the shear: Gold, nil; silver, nil; copper, 0.4 per cent.

Across 50 inches of quartzite, slightly silicified, no visible sulphide mineralization, remainder of width of shearing to hanging-wall: Gold, nil; silver, nil; copper, trace.

The lower adit, a crosscut at elevation 5080 feet, driven north 65 degrees east for 80 feet in massive white quartzite, appears to lie under the foot-wall of the shearing and to be directed away from any intersection with the shear. The quartzite in this adit is fractured along planes which strike north 20 degrees west, dip almost vertically. This working is not shown on the accompanying sketch-map.

No igneous rocks are exposed in either of these workings, and the nearest outcrop is 800 feet up the 35-degree slope above the upper adit, at an elevation of 5460 feet. Here a small exposure of syenite is not sufficiently well exposed to permit accurate determination of its relation to the mineralization exposed in the adit.

On the Stanley claim, immediately to the east of the Golden Fleece claim, several small workings expose silicification and quartz mineralization. The quartz is slightly mineralized with galena and chalcopyrite. A syenite intrusion, probably a sill, follows the general plane of weakness at the contact of the two sedimentary members. The best exposure is in a short adit, No. 1, at 5200 feet elevation, which has been driven south 50 degrees west for 60 feet. At the portal a 3-foot width of quartz is exposed. This vein-structure is flat and is overlain by dark-grey argillite, heavily sheared, which is well exposed on the surface above the adit. Below the quartz the syenite sill is exposed. The adit is driven in this rock to the face where, almost on the floor, a quartz stringer is exposed. The stringer has a width of 1 to 3 inches and is mineralized with a very small amount of chalcopyrite. Below it lies typical white, massive quartzite. The syenite apparently strikes north 35 degrees west, dips 30 degrees northeastward and has a width of approximately 30 feet. It is assumed that the strike and dip of the sill at this point may be taken as those of the vein and of the original contact between the argillite and the quartzite. The evidence here suggests that the quartz mineralization was later than the intrusion of the syenite. A sample taken at the portal, across 26 inches of quartz which contained a very small amount of galena, assayed: Gold, nil; silver, nil; lead, 0.2 per cent.

Close to this adit two others have been driven and two open-cuts made in an attempt to expose further the occurrence of quartz at or near the argillite-quartzite contact. This additional

work shows that the quartz may be at the contact or within the argillite at a few feet from the quartzite or entirely lacking. In one of these two open-cuts a width of 60 inches of quartz lies entirely within heavily sheared argillite. Here the vein strikes north 55 degrees west, dips 20 degrees north-eastward. Sulphide mineralization, generally sparse, confined to minute amounts of chalcopyrite and galena. A sample taken here across 34 inches of quartz which contained a very small amount of galena, assayed: Gold, trace; silver, 0.4 oz. per ton; lead, 0.1 per cent.

Northward from these workings on the Stanley claim further exploration of a similar condition has been undertaken on the Tiger claim. Here, at an elevation of 4785 feet, an adit has been driven 206 feet easterly and, near the face, north-easterly. This working is shown on the accompanying sketch-map in dotted outline. For the first 70 feet the walls are of compact, white quartzite which strikes north 85 degrees west, dips 25 degrees northward and in which there is no indication of quartz vein or mineralization. At 70 feet a contact with argillite strikes north-east, dips 40 degrees north-westward. The argillite is heavily sheared and bedding is entirely obliterated. At 78 feet from the portal a 3-foot syenite dyke is intersected at the floor; this strikes north 15 degrees east, dips 55 degrees west-ward. This dyke is irregular in dip, and is exposed along the walls of the adit for 30 feet before it disappears in the back. In this length the most noticeable characteristic of this intrusive is its squeezed appearance which suggests that there was local movement before complete consolidation of the rock. From 155 feet to 184 feet from the portal there is exposed in argillite an irre-gular width of quartz, from 12 to 60 inches, which strikes north 65 degrees west, dips 25 degrees northeastward. In this quartz there is a slight dissemination of galena. At 184 feet another exposure of badly decomposed syenite is shown in the back of the adit. This member strikes due east, dips 50 degrees northward. From this point to the face at 206 feet the working becomes a winze as it follows the argillite and quartz occurrence as the latter assumes the dip of the syenite. The foot-wall of the syenite sill forms the back of the winze. There is less galena in the quartz at the bottom of the winze than at the top. A sample taken at the bottom across 50 inches of quartz stringers and irregular quartz dissemination in argillite, slightly mineralized with galena and sphalerite, assayed: Gold, trace; silver, 0.2 oz. per ton; lead, nil. Although at this location

there is little direct evidence as to the relative ages of the syenite and the quartz mineralization, there is a well-defined fracturing in the igneous rock at 184 feet in which there is no quartz, which suggests that the quartz deposition was prior to the syenite intrusion.

Seventy feet due east from and 38 feet above the portal of this adit is an underground working which has been driven for 15 feet on a bearing of north 40 degrees east. The first 5 feet have been driven horizontally; the last 10 as a winze so that the floor at the face of the working is 5 feet below the floor at the portal. This development exposes disseminated quartz and quartz stringers slightly mineralized with galena, in argillite. In one place, on the north-westerly wall, a 2-inch stringer of quartz widens to 7 inches and is here well-mineralized with galena. The quartz stringer-zone strikes generally north 75 degrees east, dips 40 degrees northward. A sample taken at the bottom of the winze, assayed: Gold, 0.02 oz. per ton; silver, 2.2 oz. per ton; lead, 10.5 per cent. This sample was taken across 40 inches of disseminated quartz in argillite and included bunches of strong mineralization by galena and small amounts of sphalerite.

Close to this working, in a south-easterly direction, two small opencuts expose what is taken as extension of the same types of quartz deposition in argillites proximal to the syenite intrusive. The principal point of interest in this work is an exposure where the main concentration of quartz lies in argillite at a distance of 30 inches below the foot-wall of the syenite sill. Within this 30 inches the argillite is little silicified and carries only a few bedded quartz stringers. In this case the quartz mineralization may be either earlier or later than the syenite intrusion; the principal information available is negative, namely, that the syenite is not directly responsible for the quartz mineralization.

The workings on the Wanda B claim are slightly south of east and 4200 feet from the Tye workings. A vertical shaft has been collared at an elevation of 5330 feet and sunk 67 feet on an irregular zone of silicification in greenstone. With no defined walls, the width of this zone varies from a few inches to 4 feet; mineralization with galena and chalcopyrite is rare and when present is definitely sparse. The greenstone, probably originally an andesitic tuff, is characteristically fine-grained, dense and little sheared. From the bottom of the shaft a working has been driven 28 feet on a bearing north 15 degrees east. A sample taken at the bottom of the

shaft across 8 inches, which included the only quartz seen at this horizon, assayed: Gold, 0.02 oz. per ton; silver, 0.4 oz. per ton; lead, 0.2 per cent. In this sample there was a very small amount of galena and sphalerite.

Easterly from the shaft at an elevation of 5230 feet is an adit 150 feet which has been driven 213 feet westerly to a point below the bottom of the shaft. In this working the rocks consist of thinly-bedded black argillite and quartzite and heavily-sheared greenstone. Quartz stringers are concentrated principally in greenstone. No sulphide mineralization was seen although small amounts may be present and visible on close examination.

Workings on the Larchwood claim are 1200 feet northwestward from the Wanda B workings. Here again the condition which has attracted attention is silicification and quartz concentrations at and near the contact of argillites and quartzite. Much of the "Quartz" is poorly-defined and is properly termed silicification rather than vein matter. In contrast to other occurrences on the property, quartz is confined principally to the quartzite members and disappears or is present in only small amounts when it attempts to leave that formation and enter the argillites. The development consists of three adits at elevations of 5450, 5430 and 5350 feet respectively. The upper one, No. 1, is 30 feet long, on a bearing north 70 degrees west. At the portal, argillite seamed by quartz stringers, dips flatly to the westward. Fine-grained, light-brown to grey quartzite overlies the argillite and in this rock the adit follows a 3-foot width of barren quartz which dips 50 degrees southward. At the face a winze has been sunk on this occurrence for 30 feet. Within 5 feet of the collar of the winze the contact between the quartzites and the argillite is intersected and the quartz cuts off abruptly. From this point downward in the winze there are only minor and irregular stringers of quartz. A sample taken across 36 inches of barren quartz, at 8 feet from the portal, assayed: Gold, nil; silver, nil

At 5430 feet elevation, slightly northward from the No. 1 adit, a second, No. 2, has been driven south-westward for 90 feet. Here the work has exposed quartzite similar to that in No. 1 but toward the face shearing is more pronounced than any seen in the other adit. From within this working a winze has been sunk vertically for 32 feet on a narrow width of quartz which, at the adit-level, appears to be confined within a vertical fissure which strikes south 75 degrees east. At the collar of the winze the quartz is mineralized with a small amount of galena distributed in

patches. Down the winze the quartzite lies between alternate horizontal bands of argillite and argillaceous quartzite. In the less competent bands there is no defined fracturing and neither quartz nor silicification are present; even within the quartzite-beds there is little or no definition of quartz and accurate terminology would place it as irregular silicification rather than as vein-quartz. A sample taken at the top of the winze, across 13 inches of quartz, slightly mineralized by galena, assayed: Gold, trace; silver, 0.4 oz. per ton.

No. 3 adit is 150 feet eastward from No. 2, at an elevation of 5350 feet, it has been driven south 60 degrees west for 250 feet. For 80 feet this working is in fine-grained, light-brown quartzite; from there onwards there is a gradual change to brittle dark-grey to black argillite, which is almost slate in some places. The strike of this latter formation is north 60 degrees east, the dip, 30 to 40 degrees north-westward. In this working there is a small amount of bunchy quartz but no vein-structure. No sulphide mineralization was seen.

The principal development on the property has been undertaken on the Emily claim. Here, faced up at an elevation of 3910 feet, a drift was started on a strong, bedded shearing in fine to medium-grained, light to dark-grey quartzites. The shearing strikes north 20 to 50 degrees west, dips 30 to 60 degrees north-eastward; the distance between the walls varies up to as much as 10 feet. Within the walls, however, silicification or replacement by quartz is not complete and there is often a considerable proportion of the width which is either unsilicified or only weakly affected. Mineralization with chalcopyrite, and very small amounts of pyrrhotite and pyrite, is disseminated irregularly in the sections best silicified. Development was carried as a drift for only 37 feet; from this point to the face at 163 feet it was continued as an incline on the shear. The elevation at the face is 3884 feet. Near the face the shear appears to narrow to less than 3 feet in width although there may be additional width not exposed by the present development. At 39 feet from the portal a winze was sunk for 10 feet on a slope of 50 degrees, and a bearing of north 80 degrees east. Better than usual concentration of mineralization on the wall of the main incline prompted this work. Fractures older than the main shear, are prominent and strike parallel with the main shear but dip at 25 to 30 degrees south-westward. Samples taken from this working were as follows:

At portal plus 7 feet, easterly wall, across 51 inches of quartzite slightly stained copper: Gold, nil; silver, nil; copper, 0.1 per cent.

At portal plus 27 feet, westerly wall, across 61 inches of quartzite slightly stained by copper; measured from hanging-wall of the shear: Gold, nil; silver, nil; copper, nil.

At portal plus 27 feet, across 42 inches of silicified quartzite which contains a small amount of chalcopyrite; below previous samples to foot-wall of the shear: Gold, nil; silver, nil; copper, 0.1 per cent.

At face of branch winze sunk from portal plus 39 feet, across 50 inches of silicified quartzite stained by copper; measured from foot-wall of the shear: Gold, nil; silver, nil; copper, 0.1 per cent.

Above previous sample, across 14 inches of quartzite to hanging-wall of shear: Gold, trace; silver, trace; copper, trace.

At portal plus 87 feet, easterly wall, across 37 inches silicified quartzite which contains a letter pyrrhotite: Gold, nil; silver, nil; copper, nil.

At portal plus 127 feet, easterly wall, across 40 inches silicified quartzite which contains a little pyrrhotite and a very little malachite: Gold, trace; silver, trace; copper, 0.5 per cent.

At portal plus 163 feet, i.e. at face, across 32 inches of silicified quartzite stained by copper: Gold, nil; silver, nil; copper, nil.

Select sample of mineralization from small ore-pile at portal, which contains chalcopyrite: Gold, 0.02 oz. per ton; silver, 0.8 oz. per ton; copper, 4.7 per cent.

In the course of examination particular attention was given to the relation between the syenite dykes and the quartz-sulphide mineralization as, locally, there has been some impression that the intrusives are directly responsible for the mineralization. By these observations, particularly on the Stanley and Tiger claims, it appears that the intrusions of syenite and the deposition of quartz were probably contemporaneous or nearly so. In all probability, both originate with the same magma and followed the same general lines of structural weakness. Under this assumption it remains possible to regard the dykes as guides to locations at which there may have been structural conditions suitable to the deposition of vein mineralization but the dykes are probably of little or no use as guides to type or quality of quartz-sulphide mineralization.