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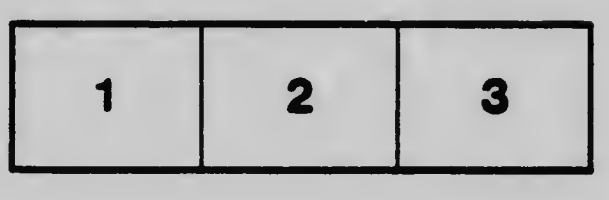

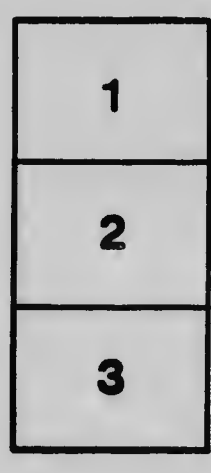

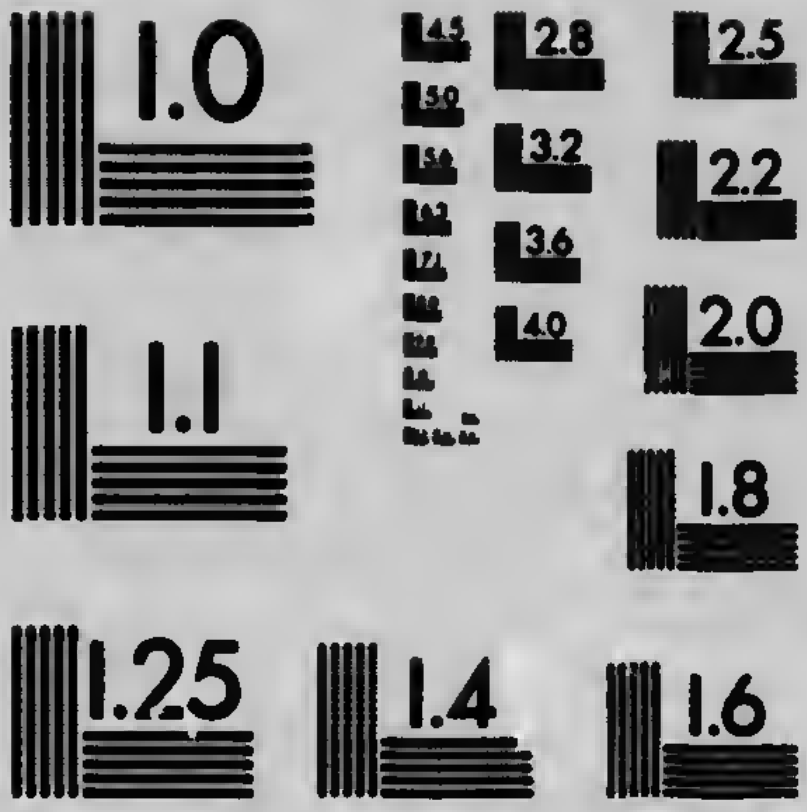

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PROVINCIAL BUREAU OF MINES.

BULLETIN No. 1. 1905

WINDY ARM MINERAL LOCATIONS

—IN THE—

ATLIN MINING DIVISION,

—BY—

WILLIAM FLEET ROBERTSON,
Provincial Mineralogist.

WINDY ARM MINERAL LOCATIONS.

—o—

NOTES BY W. F. ROBERTSON, PROVINCIAL MINERALOGIST.

The attention of the Provincial Government was drawn during the past summer to the reports of very successful prospecting on Windy Arm, a branch of Tagish lake, the claims being situated very near the boundary line between British Columbia and Yukon Territory, the 60th parallel of north latitude. In consequence, the Provincial Mineralogist, on his return from the Bulkley valley on October 10th, was requested to proceed to investigate these reports and to determine as to the location of the claims. He, therefore, left Victoria by the next boat, sailing on October 16th, arriving at Skagway on the 22nd and at Conrad City on the 24th.

Routes of Access.

The district in question is reached from southern British Columbia by steamer to Skagway, Alaska, thence over the White Pass and Yukon Railway to Carcross—formerly called Caribou Crossing or Narrows. S[illegible] m Victoria and Vancouver to Skagway run every week, with additional steamers [illegible] Sound ports, on which the first-class fare is $30. From Skagway to Carcross the [illegible] Railway runs a passenger train every day, except Sunday, the year round. The railway fare is $12.25. From Carcross to Conrad City, the terminus on Windy Arm of the aerial tramway from the Conrad Consolidated Mines, is a distance of about 14 miles by navigable water. During the summer season transportation is provided here by the steamer "Gleaner," which makes two trips a week, or by row-boat, while after the ice forms travel is by sleigh over the ice.

Anticipating the necessity for direct railway connection into this new camp, the White Pass Railway has caused two surveys to be made for a branch from its main line. One line starts from Carcross and follows the shore line of Windy Arm to Conrad City, while a second survey leaves the main line at Log Cabin, following down the watershed to Tutshi lake; thence over a very low divide, only a few hundred feet high, to the south end of Windy Arm, the west shore of which it follows up to Conrad City. This latter route, although much longer, is said to be favoured by the railway, as it approaches the summit of the Pass by an easier grade and is reported to admit of cheap construction, while from the southern end of Windy Arm a spur could be run along the east side of the Arm to Conrad mountain, should the mineral claims there located, upon development, fulfil the promise of the present surface showings.

The Lewes river, the most important tributary of the Yukon river, has its source immediately to the north of the Chilkoot and White Passes, which mark the dividing line between Alaska on the south and the British possessions on the north. Through these passes and by this water way has been the course of travel to the Yukon gold-fields. The river may be said to begin in Tagish lake, which receives the waters of Bennett, Atlin and a number of smaller lakes of the district. These lakes are all cut by the 60th parallel of north latitude—the boundary line between British Columbia and the Yukon Territory—and are, consequently, partly in each territory. In longitude they lie between the 134th and 135th west of Greenwich. Windy Arm is an arm of Tagish lake extending in a southerly direction for nearly ten miles from a point about five miles east of the Caribou narrows where Bennett lake flows in. About one and a half miles of the southern portion of the Arm is in British Columbia.

The general course of the Arm is parallel with that of Bennett lake—the two bodies of water being separated by a mountain ridge which attains an elevation of some 4,500 feet above the lakes, which are themselves 2,200 feet above sea level. The separating ridge is about six to seven miles across in a direct east and west line.

The first of the mineral discoveries, already referred to, were made on the Windy Arm slope of this mountain ridge about two to three miles north of the 60th parallel, and in this vicinity only has there been any extensive development of the surface prospects. Such development, however, as time has permitted to be made at this point, proved so eminently satisfactory as to stimulate prospecting over the entire district, with the result that, during the past summer and autumn, a large number of claims have been recorded along the range and on a parallel range lying to the east of Windy Arm. As most of these newer prospects were discovered only late in the season, no very definite information as to them is obtainable, further than that the samples from surface croppings brought in by the prospectors give very encouraging assays and seem to indicate that from the vicinity of the more developed claims there is a mineral belt perhaps three miles broad and extending southward into British Columbia for some distance.

Mineral Development.

As has already been noted, the older, and, in fact, the majority of the mineral locations, together with all the material development at present accomplished, is in the Yukon Territory, and, consequently, outside the jurisdiction of the Province of British Columbia. It was, therefore, by the courtesy of the owners—particularly of Mr. J. H. Conrad—that the Provincial Mineralogist was permitted to inspect the workings and see the results so far obtained.

From the shores of Windy Arm the hills rise rapidly, their lower levels being so covered with wash and slide as to have confined all prospecting to the upper levels—that is from 1,500 to 4,000 feet above lake level. Timber line in this part of the country is found to be at an altitude of from 4,500 to 5,000 feet above sea level, or about 2,500 feet above the lake.

When the Provincial Mineralogist visited the camp in the last week of October, snow completely covered the hills down to 1,500 feet above the lake, so that none of the surface workings were visible, and as work in winter could only be carried on underground, only those properties sufficiently far advanced to permit of this were found in operation.

The property upon which the most important development has been done is that held by the Conrad Consolidated Mines, an organisation of which Mr. J. H. Conrad is president. This company holds a group of 8 or 10 claims, situated at an elevation of from 3,000 to 4,000 feet above the lake, in a comparatively level basin among the higher peaks some four miles in a direct line back from the Arm. The surface here is covered with heavy wash or slide, in which rich float was found in such a well-defined line as to induce pits and cross-trenches to be dug until the vein was eventually struck in the solid formation upon the *Montana*, one of the central claims of the group. On this lead a drift had been driven for from 200 to 300 feet, attaining a depth estimated at about 100 feet. From this level stoping had been carried up in places for about 30 feet.

As seen in these workings, the vein was found to be a clearly-defined quartz fissure vein between two distinct walls. The hanging wall is the general country rock of the vicinity—a fine-grained, basic, volcanic rock, too much altered to admit of closer determination—while the foot-wall is a very much decomposed, rusty, coarsely crystalline, igneous rock, probably a diabase. The vein, as exposed, had a thickness of from 2 to 5 feet, averaging about 3 feet. The strike of the vein was found to be N.W. and S.E., with a dip to the S.W., into the hill, averaging about 25°. On the foot-wall was found a layer from 3 to 12 inches thick of

galena embedded in "carbonates," or iron oxides, from which some astonishingly high assays have been reported, not infrequently running as high as 800 ounces in silver, with $20 in gold, to the ton.

Above this is the quartz proper, from 12 to 30 inches thick, mineralised sometimes more and sometimes less, with iron pyrites and silver and antimony sulphides, from which the management report assays higher in gold but lower in silver, the whole, however, averaging well. The manager estimated the entire vein to run over $25 to the ton, which estimate seemed reasonable. Shipments of sorted ore were being made down the hill by the pack-train which brought up supplies, and these shipments were reported as running over $100 to the ton in gold and silver.

The Provincial Mineralogist took samples from the upper and lower portions of the vein, representing the two classes of ore rather than the average. These he brought to Victoria, where they were assayed by the Government Assayer. The results obtained were as follows:—

No. 1.—Galena from the lower portions of the vein—Gold $13.60; silver, 442 ounces to the ton.

No. 2.—The vein quartz well mineralised—Gold, $7.60; silver, 113 ounces to the ton.

No. 3.—The "fines" broken in sorting the ore from both portions of vein—Gold, $17.60; silver, 163 ounces to the ton.

On the strike of the vein as indicated by the *Montana* workings, a tunnel was driven in on the *Mountain Hero*, the adjoining claim, through wash for 80 feet, when the solid formation was struck, in which a 50-foot raise was made, when the vein was found containing similar quartz ore, seemingly proving the vein and ore body for 1,800 feet along its strike. The management reports the vein as distinctly traced through at least seven claims by float and occasional croppings, upon which some work has been done.

The Company has a Riblet aerial tramway, 3¾ miles long, almost completed from the *Montana Group* to the shore of Windy Arm at Conrad City, and has constructed at the mine a stone bunk and cook-house for the workmen, and will, consequently, be able to continue development work all winter with a small force of men.

An allied syndicate, the J. F. Conrad Bonanza, has done considerable development in the way of open cuts on the *Venus* vein, which lies about half a mile south of the *Montana*. The country here is cut by the deep canyon of Pooley creek, apparently a fault line, which has enabled the vein to be prospected at a depth of over 1,000 feet. The strike of this vein appears to be about south-west, with a dip to the west. In the same vicinity this syndicate is also developing a parallel vein on the *Uranus* claims, on which it is reported some 600 feet of work has been done, developing good ore.

From both of these properties tram lines have been surveyed and the right of way cleared down to Windy Arm, at a point some 2½ miles to the south of Conrad City.

There are probably 100 more claims located on this slope, on which, as yet, only slight surface development has been done, but in many instances most encouraging results are reported.

From the plans seen of the various properties, it would appear that there are at least two main series of veins, an east and west series and a north and south series, which latter series, to the north of Pooley Canyon, bears to the north-west, and south of the canyon to the south-west. It could not be learned that as yet any development had been done on any claims on the west side of Windy Arm south of the 60th parallel. On the east side of the Arm, on Conrad mountain, which is cut by the 60th parallel, a large number of claims were staked late this past summer, but these have not yet received much development, being difficult of access and at an elevation high above the lake.

These locations, however, indicate that the mineralised belt will be found to pass into British Columbia, and that on such extension there is a promising field for the prospector.

The shore of the Arm was followed down to its southern end and the ridge to the west was found to continue unbroken, save where cut into by a couple of creeks.

The geological conditions existing in the vicinity of the *Montana* claim, appeared to continue to the southward into British Columbia territory and past the southern end of the Arm. The only exception to this was that within half a mile of the south end of the Arm, a bed of hard, dark slate cropped out on the west shore, its contact with the overlying igneous rocks being masked by the surface soil.

A prospector reported that this same slate is cut at an elevation of several hundred feet above the lake by Boundary creek, a creek that flows into the Arm from the west almost exactly on the 60th parallel. This contact, when traced out, should prove a profitable field for prospecting and is worthy of serious investigation.

On the east side of the Arm the mountains are even more precipitous than on the west, and seem to consist for the most part of the same class of igneous rocks seen on the west side of the Arm.

In the vicinity of the British Columbia boundary, about a mile to the east of Windy Arm, a mass of limestone was noted on the mountain side, and from float seen near by, it is probable that a band of slate will also be found on this side of the Arm, although its location has not been fixed. The contact of these sedimentaries with the igneous rocks, so prominent in the district, must be looked upon as likely to contain mineral, and is a section well worthy the attention of the prospector.

On the west side of Windy Arm, just south of the British Columbia-Yukon boundary, a townsite has been laid out on a gravelly point formed in the Arm by Boundary creek. Should the railway branch be built in from Log Cabin, it would pass through or near the townsite.

Accompanying this report is a map of the Atlin district, upon which is shown in red, as accurately as possible, the location of the claims and points herein referred to.

Provincial Bureau of Mines,
Victoria, B. C., November, 1905.

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