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LODE PROSPECTS IN THE RUSSIAN MOUNTAINS  
KUSKOKWIM RIVER REGION, ALASKA

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LODE PROSPECTS IN THE RUSSIAN MOUNTAINS, KUSKOKWIM  
RIVER REGION, ALASKA.

TERRITORY OF ALASKA, DEPARTMENT OF MINES,  
— JUNEAU, ALASKA.

LOCATION AND ACCESSIBILITY

The Russian Mountains stand out prominently in the topography of the region north of the Kuskokwim River about twenty five miles northwest of Napamite. The lode prospects are located at the extreme heads of Mission Creek and Ohwat River. <sup>which</sup> ~~Mission Creek and Ohwat River~~ are separated at their source by a narrow steep divide. They flow south into the Kuskokwim River in the vicinity of the native village of Russian Mission. A good trail leads from Russian Mission to the prospects, a distance of twelve miles.



Russian Mountains from Kuskokwim  
River.

The nearest settlement is Napamite. Russian Mission is occupied in the winter by natives. The old settlement at Kolmakofsky has been abandoned. Russian Mission is located one hundred seventy five miles above Bethel. This locality has no regular mail or freight service between the time of the freeze up of the Kuskokwim, around the first part of November, and the break up in the early spring; with the

exception of two trips of the Steamer Tana. The Tana is operated by the Santa Ana Steamship Company and connects at Bethel with their steamer from Seattle. Sailings are made from Seattle twice yearly, usually during the months of May and August. The freight rate from Seattle to Napamute is \$55.00 per ton, ship's option 2000 pounds or cubic measurement. Napamute and Russian Mission are on the winter mail trail from Iditarod to Bethel.

The trail from Russian Mission can be used by pack horses without difficulty. A wagon road could (be easily) constructed from Russian Mission along the present trail. Another route might be followed by wagon road from the mouth of Ohwat River along the valley of the river. Dog teams are used in winter for transportation.

#### TOPOGRAPHY

The marked topographical features of the Russian Mountains are their prominence in the relief of the surrounding country, and the erosional feature of sharp jagged points and ridges. As seen from a distance the Russian Mountains give the impression of a group of pyramids. The Russian Mountains range in altitude from 4,000 to 4,500 feet above sea level\* and have an areal extent of 10 miles square.

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\* "Copper in the Russian Mountains," by A. G. Maddren, U. S. Geological Survey Bulletin 622, pp. 358-359, 1914.

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The immediate surrounding country is rolling with an elevation of

1,000 to 2,000 feet above sea level. The Ohwat River rises in the Russian Mountains and encircles the north and western base, emptying into the Kuskokwim River about 5 miles below Russian Mission. The head of Mission Creek is separated from the head of Ohwat River by a narrow sharp divide. The lode prospects of the Russian Mountains are located at the head of Mission Creek, and Ohwat River. Mission Creek



Looking down Mission Creek from  
Ohwat divide.

flows south and empties into the Kuskokwim River near Russian Mission.

#### TIMBER

There is no timber available nearer than 5 miles to the lode prospects. In the vicinity of the prospects moss and small patches of brush form the greater part of the vegetation.

#### WATER POWER

No large water power sites were noticed. The creeks, <sup>h</sup> however, might be utilized for a small power development, by the construction of ditches.

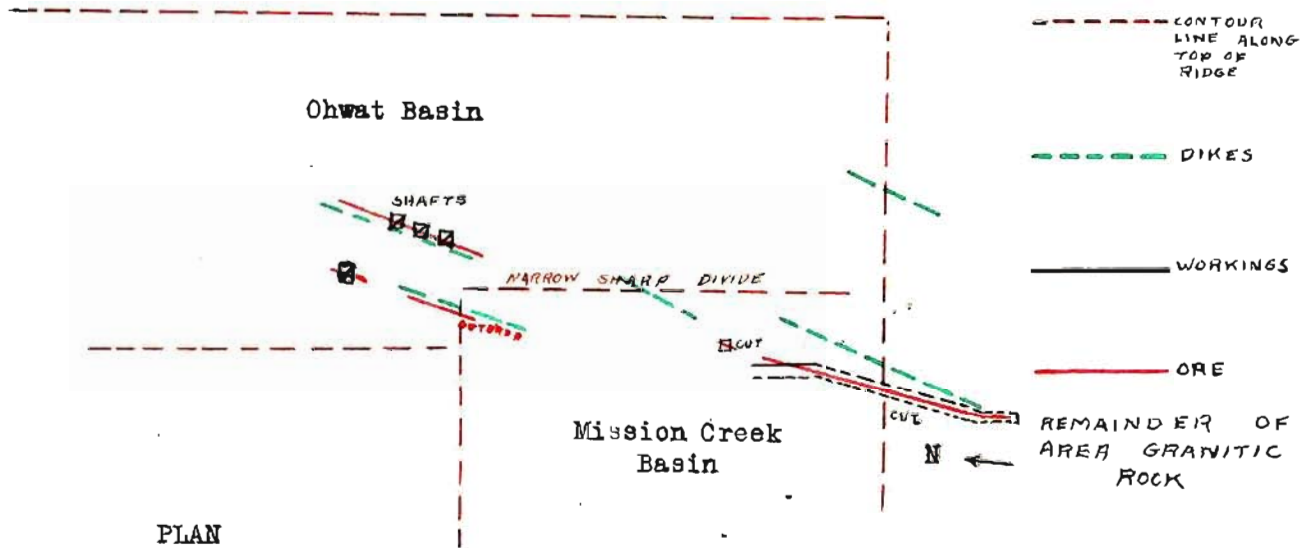
## GEOLOGY

The predominating rock of the Russian Mountains is coarse-grained, porphyritic and granitic. Little quartz is present except as phenocrysts. The rock has the appearance of a quartz monzonite. Dikes of a fine grained greenish rock, porphyritic in texture are found in the area of mineralization. This dike rock contains little or no feldspar and may be latite, trachyte, or andesite. (Identification verified by Mr. Paul Hopkins, U. S. Bureau of Mines, Fairbanks). The granitic rock, in erosion, breaks in sharp angular fragments and is fairly resistant to weathering. The characteristic pyramid and sharp ridge structure is developed. Large pieces of magnetite float were found. On Mission Creek there is an occurrence of transparent crystalline quartz. The granitic rock suggests a batholithic intrusion, though there is no apparent trace of pre-existing intruded sediments.

The mineralization occurs in well defined fissures and usually parallels the greenish dikes. The walls are well defined. The sulphides occur as stringers in the vein. Chalcopyrite, pyrite, and malachite are found at the head of Mission Creek. They occur in a highly altered iron-stained gangue with some quartz fragments. At the head of Ohwat River the ore minerals are arsenopyrite, ~~arsenopyrite~~, giving way to chalcopyrite at depth. The granitic rock, in the vicinity of the workings, is finer grained and weathers to a yellow sandy rock.

Prospecting has not been extensive in the Russian Mountains. It is possible that evidence of further mineralization may be found. The contact between the intrusive mass that forms the Russian Mountains and the sediments, though no known outcrops are reported, warrants the

investigation of the prospector.



PLAN

Sketch showing relationships at the head of Mission Creek and Ohwat River.

MISSION CREEK PROSPECT

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The Mission Creek Prospect comprises a group of 9 claims located at the head of Mission Creek and extending across the narrow sharp divide between Mission Creek and the small stream that marks the extreme head of the Ohwat River. The claims were located in June, 1921, and July, 1924. The recording office is Napamute. Location was made by Joe Konechney, and Charlie Warden (deceased). Mr. Konechney remains owner at the present time. The assessment work has been kept up by Mr. Konechney since Mr. Warden's death and, though he might have restaked the prospect in his own name, he is trying to establish the joint ownership with the heirs of Charlie Warden.

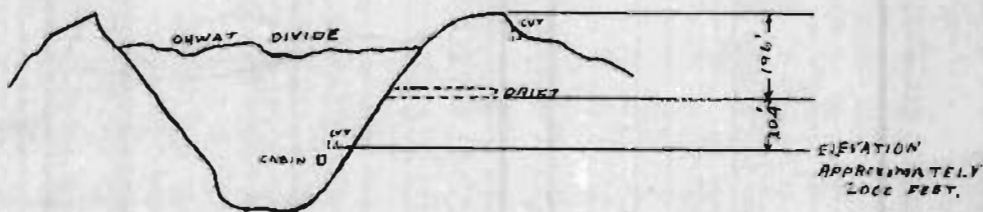
The first discovery of ore was made in the Ohwat Basin. Mr. Gordon Bettles did some work on an outcrop many years ago. Later Messrs. Warden and Konechney staked their claims and sank 3 shafts along the ore in

the Ohwat Basin. A discovery of ore on the ridge at the head of Mission Creek led them to abandon their shaft undertaking and confine their efforts to driving a drift on the Mission Creek discovery. This decision resulted from the difference between driving a drift and sinking a shaft.

Ore outcrops on the southern ridge above Mission Creek. The mineralization lies in a fissure between a greenish dike and the granitic rock. The granitic rock at this point is coarse-grained. The vein matter was highly altered and consisted of fine iron-stained material with chalcopryrite, malachite as an alteration product, quartz fragments, a small amount of pyrite, and a little free gold. The ore had been exposed in an open-cut which was partly filled at the time of visit. A drift was started in the hillside 196 feet below the outcrop.



Portal of drift, Mission Creek.



Section across Mission Creek from drift.





Sample No. 35.  
 10" sample from  
 floor, (Konechney)  
 Gold...0.62 oz.  
 Silver-9.30 oz.  
 Copper-5.38 %.

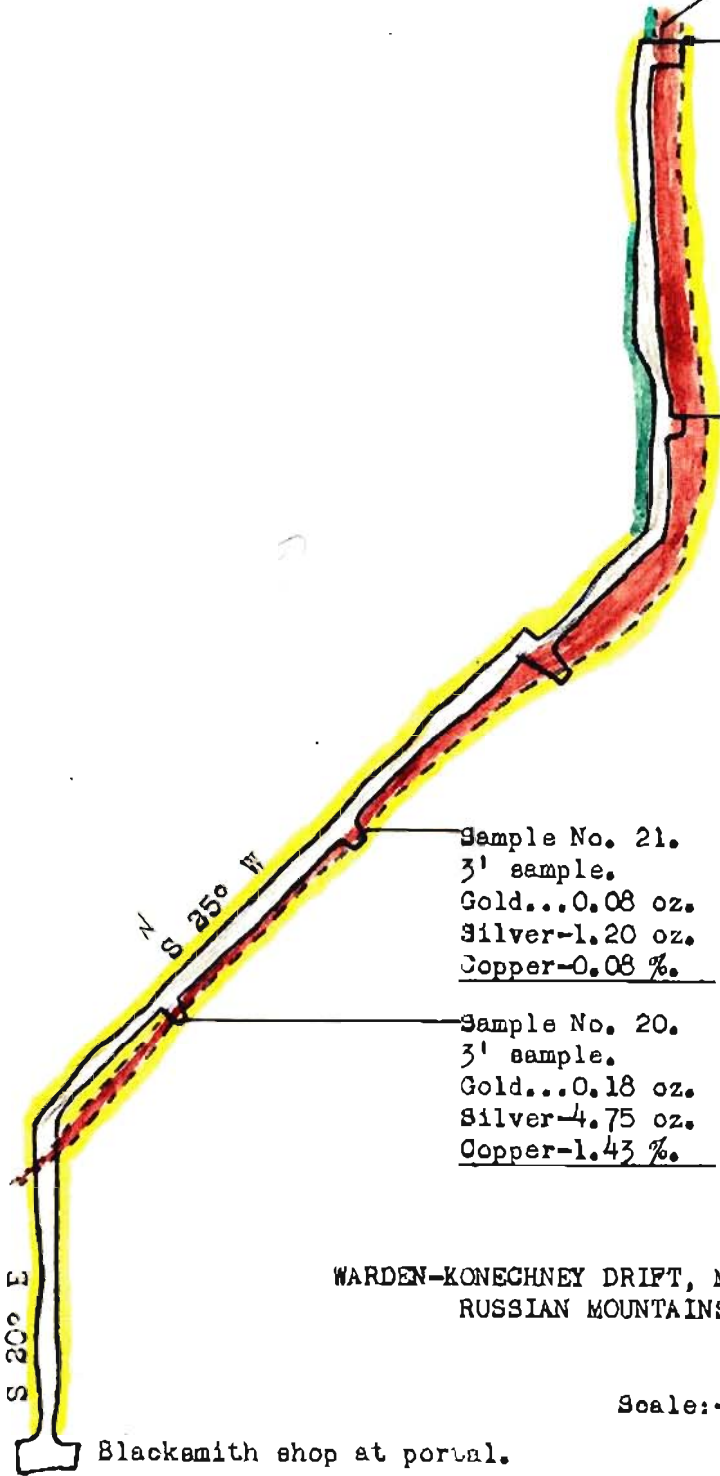
Sample No. 23.  
 8' sample.  
 Gold...Trace.  
 Silver-Trace.  
 Copper-0.14 %.

Sample No. 22.  
 9' sample.  
 Gold...0.04 oz.  
 Silver-1.30 oz.  
 Copper-1.65 %.

Sample No. 21.  
 3' sample.  
 Gold...0.08 oz.  
 Silver-1.20 oz.  
 Copper-0.08 %.

Sample No. 20.  
 3' sample.  
 Gold...0.18 oz.  
 Silver-4.75 oz.  
 Copper-1.43 %.

-  ORE
-  GOUGE
-  GRANITIC ROCK
-  DIKE



WARDEN-KONECHNEY DRIFT, MISSION CREEK,  
 RUSSIAN MOUNTAINS

Scale:- 1" = 40'

Blacksmith shop at portal.

Total length of drift about 360 feet.

An adit was started at the point 196 feet below the discovery of ore on the ridge. The adit cross-cut the vein at 60 feet. The strike of the vein was approximately S 25 degrees W, and the dip nearly vertical. A soft gouge from 1 to 3 feet in width paralleled the hanging wall. The adit was continued as a drift along the ore, following the gouge. The accompanying sketch shows the relationships and the result of sampling in the drift. The drift gives the impression of following the line of least resistance. The mineralization is probably related to the dike encountered near the face of the drift. Alteration of the vein has been intense. At the face of the drift, in the floor the ore was almost in powder form with larger fragments of quartz. This fact is suggestive of movement, subsequent to ore deposition, along the fissure with the resultant gouge and alteration. The vein has been leached by surface waters and a consequent downward enrichment of copper might be encountered. True relationships cannot be determined; crosscuts from the main drift terminate whenever the hard granitic rock is encountered. The sketch shows the apparent condition; the mineralization is not well defined and the values are erratic. It is believed that too much attention has been devoted to this drift as the gouge enabled ease of operation, and the length of the drift attained furnished an incentive for further work. An impression, reported to have been stated by a mining engineer who examined the property, was, "All they have is a tunnel."

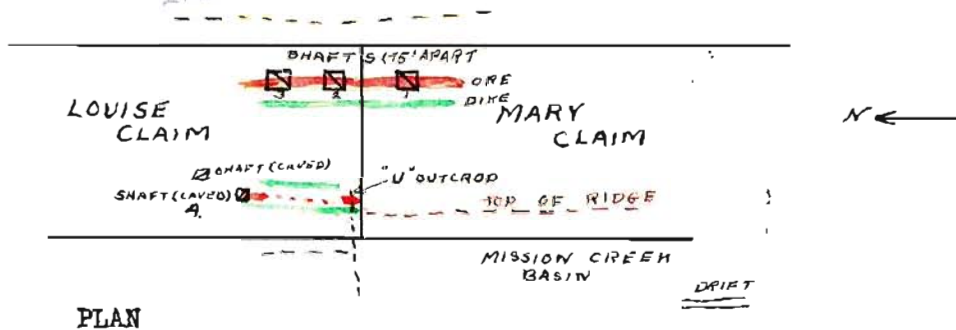
Work has been retarded by the death of Mr. Warden. The prospect represents to Mr. Konechney the total of several years' work of two partners and the total of their possessions. An outcrop has been discovered, apparently a continuation of the same ore, 204 feet below the drift. This outcrop will be the location of a drift to determine the nature of the ore at this new level. The occurrence of ore on the opposite ridge, as shown on page 5, may be a further continuation of the same mineralization. At the last named point the ore was not visible at the time of visit, August 13, 1926, due to a cover of slide rock. It's occurrence was suggested by a U-shaped break in the ridge observed from the Ohwat side.

Mr. Konechney, acting on a suggestion given, cleared away the slide rock and reported the occurrence in a letter dated September 5, 1926, (sample 34) "Is from the north side, that place I showed you where it was sluffed over the vein. Between the two walls is about 5 feet wide although there is only about 10 inches of that heavily mineralized rock (arsenopyrite and chalcopyrite). (Sample No. 41) is taken off the same lead on the other slope of that high knob (across the U-shaped ridge), the vein at that place is about 10 feet wide but to my estimation is only mineralized at the two walls. Both samples are taken near the surface." A sample of the dike from this point was taken at the time of visit. (Sample No. 28). The dike lay next to the vein. Assay returns from Mr. Paul Hopkins are as follows:

SAMPLE NO.	GOLD (oz. per ton)	SILVER	COPPER %
28	trace	trace	—
34	0.18	2.90	1.81
41	trace	trace	trace

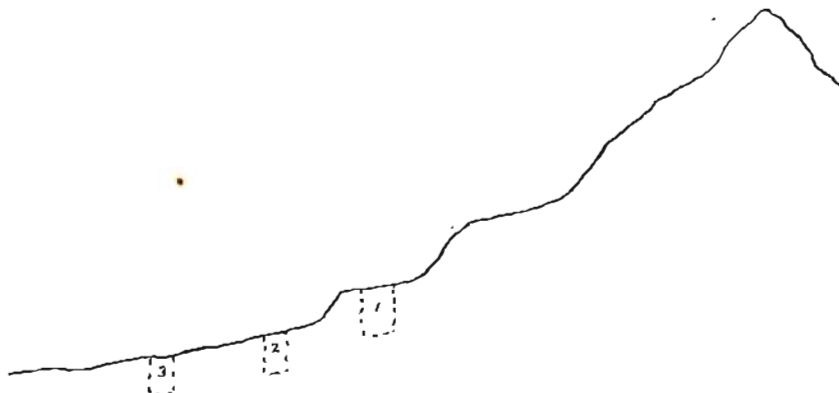
No timbering has been required. Mining has been confined to single-jack methods. The camp on Mission Creek consists of two well constructed cabins, the first being located along the trail from Russian Mission, and the second near the drift workings.

OHWAT PROSPECT



PLAN

Sketch showing relationships in Ohwat Basin.



Sketch showing topography along main vein, Ohwat Basin.

The Ohwat basin is accessible from Aniak, at the mouth of the Aniak River, by dogteam over an 18-mile trail. The old cabin that marked the center of the first prospecting activity in the Russian Mountains has tumbled in. The approximate distance from the Ohwat shafts to the Mission Creek drift is one-half mile.

Ore was first discovered in the Ohwat basin on the Louise Claim by natives. Mr. Bettles is reported to have done the first work in this locality. He was discouraged by the fact that chalcopyrite replaced the arsenopyrite ~~and~~ in the bottom of his shaft. Mr. Warden, and Mr. Konechny started their operations at this point sinking the shafts marked 2, and 3, along the ore. Mr. George Hoffman, of Napamute, staked the Mary Claim and the third shaft, No. 1, was sunk along the continuation of the ore. The ore is thus exposed in these shafts over a distance of 160 feet. The walls of the vein are well defined and indicate a fissure vein. A greenish dike parallels the mineralization. The vein, as shown, has an average width of 5 feet, the mineralization favors the walls of the vein in the form of bands of ore. The granitic rock weathers to a yellow sandy rock in the vicinity of the vein. The ore in the bottom of the shafts was almost entirely chalcopyrite. Weathering has been marked near the surface. Development work has not extended further than to show the surface nature of the ore.

A shaft, No. 4, was later driven along the strike of the U-shaped outcrop. Chalcopyrite showed predominance. The vein, at this point, was 3 feet wide. Sampling in the shafts showed the following values:

<u>SAMPLE NO.</u>	<u>DESCRIPTION OF SAMPLE</u>	<u>GOLD</u> <u>(oz. per ton)</u>	<u>SILVER</u>	<u>COPPER</u> <u>%</u>
24	Mary Claim. 7-foot sample across vein taken 12 feet from top of shaft. Shaft No. 1.	0.08	3.40	0.05
25	Louise Claim. 5-foot sample across vein taken 16 feet from top of shaft. Shaft No. 2	0.06	2.20	0.42
26	Louise Claim. 5-foot sample taken across vein 40 feet from top of shaft. Shaft No. 3	0.14	0.25	0.10
27	Louise Claim, 3-foot sample across vein near top of shaft. Sample taken at point of heavy mineralization and not average. Shaft No. 4.	0.06	8.50	5.26

#### CONCLUSION

It is not believed that the extent of the development work on the lode prospects in the Russian Mountains has shown the true value of the ore deposition. The fact that the prospects warrant further development and exploration would be unquestioned if they were in a more accessible place. It remains, then, to determine the amount of further work justified under the existing conditions.

Assays have shown the values too low to warrant the present construction of a mill for concentration. The resultant freight and smelting rates would be high on the concentrate produced. However, if sufficient tonnage were developed a satisfactory arrangement with the steamship company might be obtained. There is little outgoing freight

from the Kuskokwim Region. The concentrate would be shipped twice yearly. This fact would mean a storage of concentrate through the winter months and shipment confined to the summer season. There would be, practically, one payment received from the smelter yearly.

Whether or not the relatively low values are confined to the surface zone is yet to be determined. Shaft-sinking is difficult and costly for the prospector. Drifts may be driven on the hill outcrops within reason and are thought justified. The apparent future for these lode prospects seems to be dependent on the ore shown in the drifts and the possible interest of a company prepared to prospect the ground with shaft-sinking equipment.

Conditions are good for a continuation of ore at depth and an increase in copper content may be expected. The formations of the Russian Mountains are deep seated in character. The conclusion, from the observations in the Russian Mountains, was to advise the owners to work with the end in view of interesting capital in their prospect to complete the prospecting and consequent determination of the future of the activity.

The success of mining activity in the Kuskokwim River Region is confined to placer, a small easily worked high-grade lode deposit, or a prospect large enough to warrant extensive development and large operation.