Mount Harper Molybdenum Occurrence, Eagle Quadrangle

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Eagle Q

ABSTRACT

A molybdenum occurrence in a saddle at the head of the Healy River on Mount Harper in Central Alaska was examined on August 15, 1963, as a part of the Bureau of Mines program of mineral investigations. Small quantities of molybdenite-bearing quartz float were found in granite-gneiss talus; no outcrops were observed. A composite sample of quartz float which appeared to contain the most molybdenite assayed 0.12 percent Mo. The size of the quartz float specimens indicates narrow quartz vein(s?).

Mt Harper Mo

GEOLOGY

No outcrops were observed. Granite, gneiss, and quartz float were found in the saddle. Float from the ridge east of the saddle is granite with virtually no quartz and no gneiss. On the saddle at the base of the ridge and toward the west, a small amount of very highly altered gneiss is intermixed with the granite float. Some of the gneiss is virtually indistinguishable from the granite without close inspection of specimens. With no outcrops, it is not possible to state whether the saddle is developed along a contact between two rock types or if the gneiss float originated from xenoliths. Most of the quartz float observed was found in the granite-gneiss rubble.

A description of the deposit as quoted from U.S. Geological Survey Bulletin 692, page 329, follows:

> The ore deposit is described as a quartz fissure vein inclosed in granite. It trends east and dips north. The lode has not been developed to any extent but has been traced by shallow surface openings and float for three claim lengths and is believed to be continuous for this distance. The vein is described as hard white quartz that carries bunches of molybdenite scattered sparingly through the vein and rather evenly distributed.

CONCLUSION

Too little molybdenum-bearing quartz was observed to indicate that further search of the area for molybdenum is warranted at the present time; it is assumed that the previous locators placed their discovery location notices in the vicinity of the best mineralization. Although the sample assayed for molybdenum is not representative of the quartz vein in-place, it does indicate an approximate grade of the "best" float material that was found. The size of the quartz float specimens indicates the narrow quartz vein(s).

Several days' work would be necessary to trace out the molybdenite-bearing quartz float in the area; if this were to be proposed, the field camp should be established by helicopter support at thehead of Goodpaster River north of the saddle.

INTRODUCTION

The Mount Harper molybdenite occurrence is reported in U.S. Geological Survey Bulletins 692 (1919) and 926-C (1939). Additional published reports on the deposit are not known. The deposit apparently was not examined by the Geological Survey; information given in the published reports is apparently abstracted from data given to the Geological Survey prior to 1919 by the property owners.

The deposit (Figure 1) was examined on September 15, 1963, as a part of the Bureau of Mines program of investigation of Alaskan mineral deposits.

LOCATION AND ACCESS

The Mount Harper molybdenite deposit is at latitude 64° 14' N, longitude 143°43' W at the top of a saddle between the headwaters of the Healy River and the South fork of the Goodpaster River and is in the Eagle (A-6) quadrangle, Alaska. The published reports record that the deposit is 6,000 to 6,500 feet above sea level. Elevation on the saddle at the prospect was recorded during the examination as 4,890 feet from a small pocket aneroid and as 5,000 feet from the helicopter instrument.

Access to the deposit is by overland traverse following up either the Healy or the Goodpaster River, or by helicopter. Access during the examination was by 3-place helicopter; weather during the examination was clear and cool with gusty winds. The deposit area was easily found, but turbulence prohibited immediate landing; the helicopter was able, after lightening its load at a lower elevation, to land in the saddle virtually on top of a series of discovery posts. A reconnaissance for exposures and float in the vicinity of the deposit was completed in about 90 minutes. Turbulence and increasing wind velocity prompted the helicopter pilot to ask that the examination be cut short so that a departure could be made with some degree of safety.

HISTORY AND OWNERSHIP

The Mount Harper molybdenite prospect was discovered before 1919; a few shallow test pits were reportedly sunk by the original locators. Prior to the Bureau examination additional information on the deposit was received from Bruce I. Thomas, Bureau of Mines Mining Engineer, who had compiled the information during 30 years of work in the Fairbanks area. The saddle where the prospect occurs was located on a map. He also said that the prospect had been restaked during recent years, that no known development work had been done on the deposit nor were outcrops present, and, that an aircraft had crashed nearby in 1935.

Three discovery posts were found during the examination at the head of the saddle as located on the attached sketch. The first, and oldest, was a 4 x 4 wood post probably placed by the original locators. The second, a rock cairn, was located in 1956 by John Haydukavich; other writing on the location notice was not legible. The third, also a rock cairn, was located on August 2, 1960; by J. Davis and Co. claiming a molybdenum-bearing quartz vein striking east-west. The saddle at the discovery posts is flat for about 400 to 450 feet between rises towards peaks along the east-west striking ridge line. An abrupt dropoff on the north about 35° drops 1,000 feet to the south fork of the Goodpaster River before leveling off. The saddle is flat for about 250 feet north-south and slowly steepens in grade to the south for about 1,000 feet before the headwater gulch of the Healy River develops.

A report by Mr. Carl Tweiten and John Haydukavitch that additional molybdenum mineralization occurs west of the head of the Healy River not too far south from the wrecked airplane was obtained after the examination.

MOLYBDENUM

Very little molybdenum-bearing quartz float was found during the examination; evidence of other mineralization was not observed. Pits or evidence of work were absent. The discovery posts (cairns) are located on granite with no quartz float nearby; an exception being a small amount of molybdenum-bearing quartz piled on top of the "1960" cairn. Only two pieces of quartz were found downslope toward the wrecked airplane. Most of the quartz was found along the slope north of the saddle. Across about 600 feet on the north side of the saddle the quartz is estimated to comprise about one-half of one percent of the total float. About one piece of quartz in ten contained small visible inclusions of molybdenite. The maximum size of the individual pieces of quartz do not exceed 3 inches in thickness or 8 inches in length. No well defined quartz float line was observed. Although time limitations did not permit tracing the quartz float, it is assumed that the mineralization is comprised of one or possibly several narrow quartz stringers which carry small quantities of molybdenite. Three samples taken during the examination were examined in the laboratory (table 1). Sample 700 consists of a composite of the best grade molybdenum-bearing quartz specimens; assays indicate 0.12 percent molybdenum, nil Au, and a trace Ag (table 2). Sample 701 consisted of a piece of vein quartz (containing a minor amount of molybdunum) which was still attached to a granite wall rock. Virtually no iron staining or evidence of alteration is apparent on the contact between the quartz and the granite. The petrographic analysis confirmed the presence of MoS_2 in the quartz vein and shows that the igneous rock is granite. Sample 702, another specimen of granite, was not analyzed in the laboratory, but has been cataloged and filed for possible future reference. Sample 703 represents the typical gneiss; it was broken into two fractions for laboratory examination. The petrographer interestingly reports the gneiss is of sedimentary origin because of the very high amount of quartz that is present. The only geologic map of

the area (U.S. Geogolical Survey Bulletin 872, plate 1) shows Mount Harper to be in the approximate center of a large granite batholith exposed over an area of about 800 square miles.

TABLE 1. - PETROGRAPHIC ANALYSIS[1/]

Sample No.	701	701A	703	703A
Rocks:				
Granite	C	-	-	-
Paragneiss[2/]	-	-	C	C
Vein quartz	-	C	-	-
Minerals:				
Albite-oligoclase	S	-	-	-
Apatite	-	--	T	-
Biotite	M	-	A	S
Chlorite	-	-	F	S
Hornblende	F	-	T	-
K-feldspar	A	-	A	A
Limonite	M	-	-	-
Molybdenite	-	T	-	-
Oligoclase-andesine	-	-	S	A
Powellite	-	Tf	-	-
Quartz	A	P	P	P
Sphene	+	-	-	-
Zircon	Tf	-	-	-
Fluorescence	T	T	+	+
Radioactivity	+	+	+	+

1/ P - Predominant — Over 50 percent
A - Abundant — 10 - 50 percent
S - Subordinate — 2 - 10 percent
M - Minor — .5 - 2 percent
F - Few — .1 - .5 percent
T - Trace — less than .1 percent
C - Rock classification
f - Fluoresent
~~R - Radioactive~~
+ - South but not detected.

2/ Samples 703 and 703A (703 with undulating schistosity) contain too high a content of quartz to be of igneous-plutonic origin.

TABLE 2. SPECTROSCOPIC DATA SAMPLE 700

Spectroscopic: 1/

Fe, Mo	X
Cr, Cu, Li, Mg, Mn	T
Na, Pb, Ti, V, Zn	T
Ag, Be, Bi, In, Sn, Y, Z	+

X - Detected in sample
+ - Sought but not detected
T - Trace

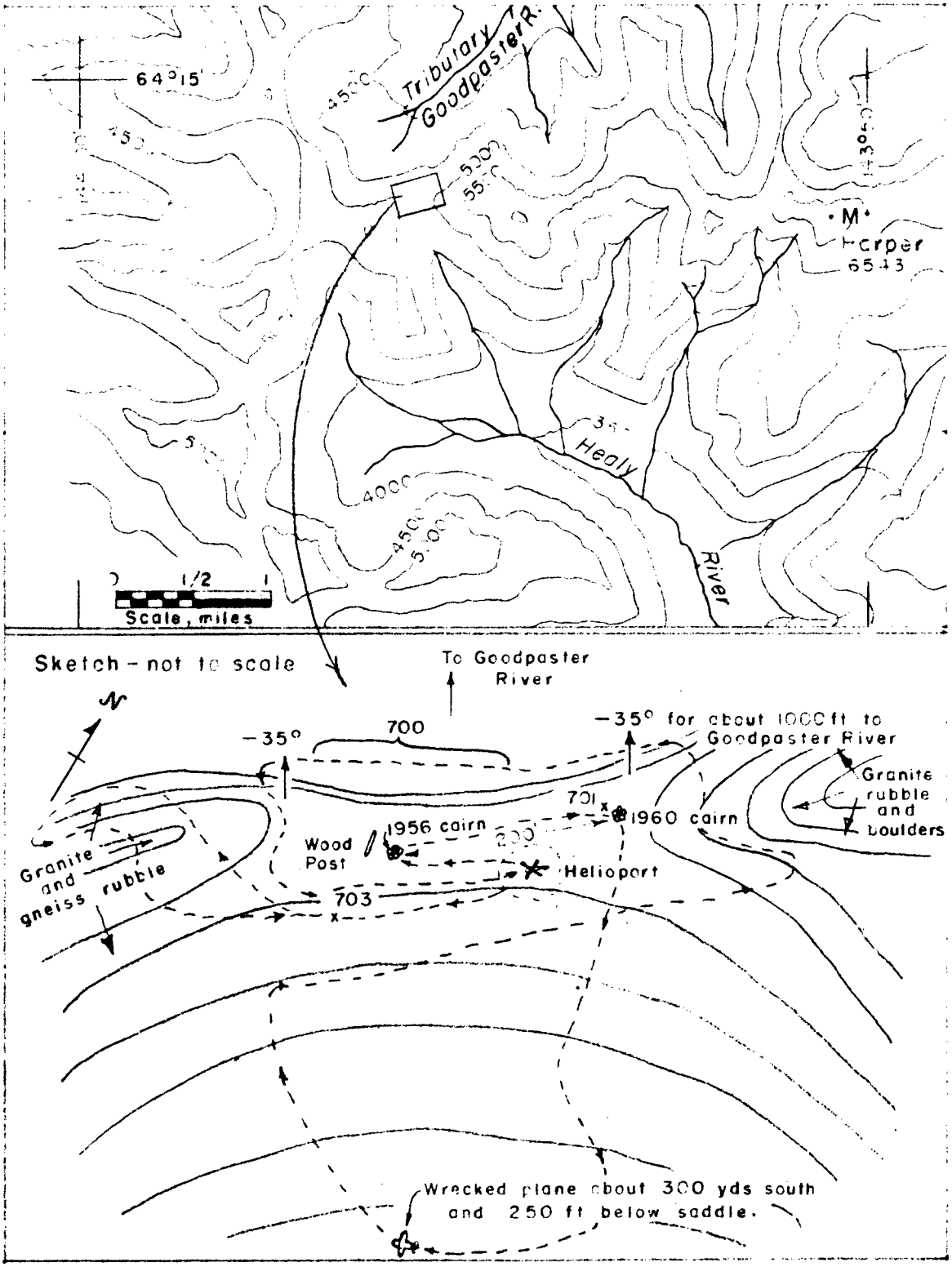

Fig. 1 Sample Locations, Mt Harper Molybdenum.