

CINNABAR PROVINCE  
Kuskokwim Region

Long known and widespread cinnabar occurrences in the Kuskokwim Region are generally referred to as an area 250 miles long and 150 miles wide. Deposits that have received special attention are widely separated. However, with fine cinnabar, and in some cases "nuggets" of good <sup>size</sup> ~~size~~, being sufficiently abundant in number of gold placers to be a "clean-up" nuisance, and with "fair" prospects of fine cinnabar and some native quicksilver being found in panning gravels in small stream and in soil cover of low lying slopes and hills over considerable areas surrounding known lode occurrences (especially those having a production record), the term Cinnabar Province is justified.

Using a N52E reference line drawn between Bethel and McGrath, a distance of 250 miles, the better known deposits are shown on both sides of the one on the recently released U. S. Geological Survey Resources Map MR-11. 1/ On northwest side 11 occurrences are shown; one of these, the Decoursey Mt. deposit at head of Crooked Creek, has had a small production record. On southeast side of the line 11 occurrences are also shown; 5 of these have production records. The promising White Mts., prospect, situated 60 miles S25E of McGrath and located in 1958, was not shown as it was staked after Map MR-11 was published. 2/

21 The deposits range from 50 miles northwest to 60 miles southeast of McGrath, and 150 miles south of Bethel.

Of the 22 single and groups of occurrences (in 3 mile radius) only those examined by Territorial Department of Mines and State Division of Mines during past 9 years will be reviewed, plus the White Mts. prospect.

1/ Refer to attached section of USGS Map MR-11

2/ Area 4 on Map MR-11

Kolmakof Prospect. Area 1

This old prospect is situated on the bluff on north side of the Kuskokwim river at east limit of the Russian Mission Quadrangle, 18 miles upstream from Aniak. Elevation of river is about 175 feet above sea level and the bluff edge above about 475 feet. It is accessible by river boats run on regular summer and fall schedules, and by float or ski equipped aircraft the year around. 2/

It is of historical interest as indirect mention of it in 1870 by W. H. Dall, and again in 1884 by Ivan Petrof, states it was known to the Russians and is first cinnabar occurrence known to the white man in Alaska. 3/

J. E. Spurr of the USGS referred to it in 1898, reporting trader named Lind had found a vein several years earlier, staked some claims, and made small ore shipment to the States. In 1914 A. G. Maddren reported others had done some work on the property but could not find evidence of it. 3/ A Mr. Rabideau was next known locator, holding the property for many years, and produced 2 flasks of mercury in homemade retort. In 1908 or 1909 Gordon Bettles of Nome optioned or relocated (?) the Kolmakof prospect, drove an adit an undetermined distance, and abandoned it the following year. Prior to 1953 Willie Rabideau, son of the oldtimer and raised in native village four or five miles upstream, held the property for number of years.

The U. S. Bureau of Mines carried on a trenching and sampling program in 1944 on a persistent narrow stringer believed to be the one mentioned by Lind. This showing is about 500 feet down stream from Bettles caved adit portal. Their 12 trenches, spaced at irregular intervals,

2/ Refer to Map MR-11

3/ Refer to USGS Bul. 622, pgs 272-74

4/ Refer to USBM R. I. 4065. Pg 49



A narrow high-grade stringer of  $\frac{1}{2}$  to 1 inch width (at sampled point, widened to 3 inches) was uncovered for 30 foot length. Its strike is N62W and dip 50° north; it is largely confined to a highly weathered arkosic sandstone along a narrow fracture. The stringer intersects the 24 foot ore-shoot at its east end; its total length was not determined as it runs under an isolated permafrost area along its northwest strike. 5/ No appreciable cinnabar mineralization was found in stripping this rhyolite sill and shale structure for 130 feet east of the small oreshoot.

A deep trench, 300 feet in length and 350 feet east of the small oreshoot, cross-cutting the formation, uncovered nothing of special interest. This location was selected to "follow down" an old timbered shaft of unknown depth to determine what justification there may have been for that work, as no cinnabar was noted in their dump. The shaft, located 80 feet from bluff edge was carried on east side of the trench to about 20 foot depth; and its bottom was not reached; no cinnabar was noted in shaft area in bottom of the trench. Near bluff edge in west bank about 25 feet below surface 3 small pieces of good ore were found, but were not in place.

None of the other 6 trenches uncovered anything of interest. During course of this work all old and new work was tied-in by Brunton-tape traverse and mapped. Although dump of the old inclined shaft (reputed to be of 80 foot depth) showed no visible cinnabar, a grab sample of it ran 3.2 pounds per ton.

Mineralization is confined to cinnabar. It occurs as more or less continuous narrow veins, as in vein trenched by the USBM, and the one found by stripping in 1954; as short stringers and veinlets, small lenses, and pods as found in the rhyolite sill in the former, the 24 foot ore-shoot in shale, and the 30 foot narrow vein in sandstone. No stibnite was noted on the property.5/

5/ Refer to 1954 report by MWJ

Although nothing of especial economic interest has been found on the property to date, the two stringers plus the small oreshoot uncovered in 1954 would possibly be profitable for an experienced miner to work. Unconfirmed reports of other occurrences within a 4 mile radius suggests a further prospecting of the area has "chance" of finding something of economic interest.

Parks Property, Area 2.

This property is about 9 airline miles northwest of Sleitmute in the Sleitmute Quadrangle, and is located on northeast side of the Kuskokwim River. The Red Devil Airport is on southwest side of the river, a distance of about one mile. The property, being on the river bank, is well situated for river freighting service from Bethel of equipment and bulk supplies, and by prop-jet airtservice direct from Anchorage. K.S.2-1-

E. W. Parks learned of cinnabar occuring in that area through a Tulikuk native in 1905, and following short period of prospecting made a discovery and staked the <sup>Alice</sup>~~Alice~~ and Bessie claims in 1906; these were the first claims staked in the Sleitmute area. Later he staked 6 additional claims, held them for several years and then dropped them.

During the next 18 years the property was prospected largely by trenching and test-pitting; one short and shallow adit below bluff edge and a 200 foot cross-cut, about 30 feet above river level, were driven. From the shallow surface diggings 120 flasks of quicksilver was produced first by use of a steel drum; a few years later that was replaced by a Scott furnace, which in turn, was shortly replaced by a 12 tube Johnson-Scott retort. His production was made for and limited to district placer miners. 5/

5/ Refer USBM RI 4065. Pgs 19-23.

In 1936, following death of Parks, the property was leased by E. A. Dunkle, who extended the 200 foot adit to total length of 525 feet. Strongest mineralization encountered was at 450 feet from portal, and was drifted on for 240 feet to the southeast. Values were discouraging and lease was dropped in 1937.

During 1942 an extensive trenching and sampling program was undertaken by the USBM on the Parks property. Results of their work indicated three separate orebodies. Subsequent work since then has neither proved nor disproved the occurrence of ore bodies having tonnages of economic importance. 5/

In 1954 the Alice and Bessie claims were acquired by George F. Willis and Robt. F. Lyman, and 8 additional claims were staked. Two claims wide, they filled in the area between the Parks and Oswald Willis property. In 1955 Willis and Lyman installed a 6 inch diesel powered pump on a river raft. Water was pumped to top of bluff, and during August and first half of September numerous ground sluice cuts exposed bedrock down the slope to the river. No mineralization of special interest was uncovered.

From mid-September to October 6th an area 225 feet wide at northwest end and 100 feet wide at southeast end had been stripped by dozer for 350 foot length. At time of visit to the property on October 6th an interesting showing on northeast side of the stripping was exposed at intervals for length of the cut, and at several points in the wide sill. Mapping of the area was not done due to steady rainfall obscuring the showings with mud flows as rapidly as exposed. The northwest end of the open-cut was approximately over the long Parks-Dunkle cross-cut, and the mineralized zone on northeast side was considered to be same as that followed in Dunkles drift southeast from the cross-cut. By mid-October this open-cut was extended to 500 foot length. 6/

5/ Refer to 1954 report by MWJ.

6/ Refer to 1956 report by MWJ.

Surficial work was continued during the 1956 season, and late that fall the property was optioned by Cordero Mining Company, a Nevada quicksilver producer. In 1957 that company drilled 27 "long-holes" from the Dunkle drift ranging from 14 to 45 feet in length at 7° to 16° plus slopes. The holes were oriented to cut the sill at about 45° angles, and more or less due south and due east. In addition one hole was drilled 50 feet to northeast, cross-cutting the hanging-wall, and one drilled same length to southeast from face of drift. At cross-cut and drift intersection 2 holes, each 42 feet long and one of 26 feet were "fanned" and drilled more or less along the formation. Another hole, 390 feet from portal, was drilled 20 feet to the north. Results from the drilling program were not especially encouraging nor were they conclusive.

The property was re-visited July 13 to 18, 1957. During that period  
Geology                the stripped area's showings and structural details were mapped  
and  
Mineralization    on 1 inch to 10 foot scale with assistance of Ed Hager, Cordero  
Mining Company mining engineer. This work showed a predominately  
N30° to 50°E cross fracturing system in the sill, along which the principal  
cinnabar-stibnite deposition occurred in this area. Repeated post-mineral movement  
developed "slickensiding" to marked degree along these fractures; horizontal dis-  
placements of numerous block segments varied from 5 to 20 feet. With half the  
long-hole foot-wall drilling more or less paralleling general strike of this  
cross fracturing system in the same sill as that in the open-cut, few of the  
holes are considered to have intersected them; <sup>CONSISTENT INTERSECTION</sup> ~~consistent intersecting~~ of them  
could possibly have shown appreciably higher values.

Later that season a mine slusher-scraper was used in stripped area to  
trench certain sections to 4 and 5 foot depths; no well defined ore-shoots were  
discovered.

uncovered in them. At southeast end of this area a 55 foot winze was sunk on a shear zone of N10E strike and 30 to 35 N slope; good values were reported first 25 feet in sandstone, low values <sup>for</sup> 30 foot rhyolite section.

The exposed bedrock on the bluff shows numerous thin sills between thin beds of shale, graywacke, and sandstone; some of the sills show appreciable mineralization.

The ore minerals on this property are limited to cinnabar and stibnite, with small amount of arsenic reported in some composite sample analyses made by the USBM. Cinnabar is the more abundant mineral in this property. 5/

The future potential of this property from present knowledge is considered to be limited to a lower grade and larger tonnage per day operation than has been undertaken to date in that region. The higher grade cinnabar cropping reported visible in shales in river bed below the Dunkle-Parks adit, during periods of extreme low water level, should be investigated; a higher grade ore zone in that area would greatly improve the future prospects for this property.

#### Willis Property. Area 2.

The Willis property now adjoins the Parks, and lies 1 mile to north-

Location	west of the Parks Creek campsite; it is 1½ miles down river	J 452-14
and		
Accessibility	from there, and about 1½ miles from the river landing to the Willis campsite. The same transportation facilities used by others in that area are available.	

Ozward Willis and partner Jack Fuller discovered and staked 15 claims

History	on the property in 1909, following two years of tracing minerali-
and	
Development	zation northwesterly from the Parks property. During the prospecting period Willis reported shallow test pits and trenches were dug in a staggered pattern spaced 150 to 200 feet apart, with most of the prospect holes showing "fair" prospects on panning. The original claims staked were held until 1951 when 9 of them were dropped. In 1943 George H. Willis,

6/ Refer to 1956 Report by MWJ.



nephew of Oswald, acquired half interest and was largely responsible for performance of assessment work thereafter. In 1953 the remaining 6 claims were amended and relocated to conform with new findings considered more encouraging. 7/ Ownership of the Willis interests was continuous from original staking until the Alaska Mines and Minerals company (formerly Decoursey Mt. Mining Company) acquired the property about 1957.

Up to 1953 prospecting and development work was on west slope of the ridge. It consisted of numerous trenches and eight adits along both walls as well as adits cross-cutting the 30 to 70 foot dike width. Four of the adits were less than 50 foot length. One at the 605 elevation was driven 100 feet, and another 200 feet with 180 feet of that working reported to follow one wall of a sill. During the earlier years, a few flasks of quicksilver were produced in a home made retort.

During 1943 the USBM conducted a trenching and sampling program  
Recent Work largely along the wide, northerly striking and steep dipping dike, where Willis and Fuller concentrated most of their early work. Results of the Bureau's work were not encouraging. 8/

In 1953 and 1954 an extensive stripping program with dozer equipment was done by George Willis. Location of this work was along the low rounded ridge crest to east of previous area prospected. In mid-July Territorial Department of Mines mining engineer spent 5 days on the property; a <sup>BRUNTON-TAPE</sup> ~~Benton-tape~~ traverse was run and all workings were tied-in, mapped, and recent stripped areas sampled. 8/ Only two old adits were open for inspection.

7/ MWJ's Report of 1954.

8/ USBM R. I. 4065. Pg 28-29

An area of low relief, the formation is the northeast limb of the  
Geology Sleitmute anticline (as is the case at the Parks property).  
and  
Mineralization Locally, the sedimentary beds are "overturned" and dip 50°

to 75° southwest. Their strike varies from N32° to 62°W. 9/

Formations exposed by the dozer stripping were generally limited to thin bedded shales, sandstones, argillites, and <sup>andesite (?)</sup> rhyolite sills and dikes. At northeast and southwest limits of this area, however, sandstones have widths of several hundred feet. 7/

In central section of the 1953-54 work a small "plug" or "stock-like" intrusive was uncovered, with at least 2 dikes (tongues?) and one sill-like segment extending from it. Considerably weathered and kaolinized, it has been called <sup>(rhyolite?)</sup> andesite. Small disseminated grains of graphite were noted in it. The dike on the east side strikes N47° to 57°E and dips 45° to 50° west; along a 400 foot length, exposed in 4 cross-cut trenches, its width varied from 35 to 60 feet, and cut the thin bedded sediments at 45° angle. The three easterly trenches show two parallel faults 150 feet apart, with dike segments displaced 30 and 50 feet. The dike on north side has a 40 foot width, strikes N37 to 47E and dips to northeast at steep angle. In both cases dike contacts with the sediments are well defined.

The four dikes of northerly strike, reported in area where O. Willis concentrated most of his work, are considered faulted segments of the same dike and were mapped as such. 8/

In this area of warped sediments block faulting of considerable magnitude developed. Using a dark brown sandstone measure over one hundred feet thick as a "marker" on east side of stripped area, an 800 foot horizontal displacement

7/ MWJ's 1954 Report

8/ USBM R. I. 4065. Pg 28-29

9/ USGS Prof. Paper 268. Pg. 111

of northeasterly strike, is inferred. In the 1600 feet west of this to the Willis dike, six additional fault lines were mapped; their dips varied from 75° west to 75° north, and strikes from N21°E to N33°E, and measurable horizontal displacements in 5 of them from 10 to 50 feet with one inferred to be 200 to 250 feet. 7/

Two open fissures were noted in old adits along the Willis dike. One was at face of 20 foot cross-cut at the dike hanging-wall, where a 1 to 2 inch wide fissure cuts the thin bedded shale and sandstone at 45° angle striking easterly and dipping 75° south. The other is along hanging-wall of the dike-sandstone contact at drift face of 100 foot adit; here the fissure is 2 to 3 inches wide with a strong water course washing-in sand and some cinnabar. 7/

The mineralization is limited to cinnabar and stibnite, with stibnite Mineralization } the more abundant. It occurs as thin, short discontinuous vein- and Sampling } lets and stringers, in small lenses or "pods", and scattered "blebs" along fractures and shears within the dikes and sills, usually favoring the hanging-wall side.

The best mineral concentrations found to date, however, are in the sheared shales of the 1953-54 stripped and trenched area. Another favored section is along an 8 to 10 foot wide shear zone in a sill paralleling its contact with shale and sandstone; three samples totaling 25.5 feet across the zone had a weighted average of 13.7 pounds per ton, and scattered "blebs" of cinnabar were noted beyond the 10 foot width. In a large cut 400 feet northeast of that sampled section, a 57 foot width across the <sup>(hyalite?)</sup> andesite gave a weighted average of 5 pounds per foot of width. 7/

7/ MWJ/s 1954 Report

In dump of a caved adit 1000 feet to northwest of last mentioned sample, some pieces of high-grade cinnabar-stibnite ore in brecciated shale were noted. Eighteen hundred feet to northeast of same reference point, a few small pieces of high-grade in sandstone were noted in dump of an old trench and caved adit; that work was done by Nick Mellick on claims he located in 1910 and held for a few years. 7/

The USBM sampling results in area of the northerly striking Willis dike on west slope of the ridge were not encouraging. The caved adits prevented an appraisal and better understanding of sub-surface mineralization "habits" encountered in those old workings. 8/

Results of the 1953-54 stripping were the most encouraging found on the property to date. They indicate a reasonable expectation that a more intensive exploration program holds possibility of developing a substantial large tonnage, low grade operation.

Barometer Property, Area 2

*1/8 2-9*

This property is located about 2 miles southeasterly from the Parks Location and Accessability campsite, and a half mile from southwest bank of the Kuskokwim river in the Sleitmute quadrangle. An area of low relief, it is situated near base of the Barometer Mountain foothills at elevations of 300 to 500 feet above sealevel. The showings are about 3/4 mile northwest of the Red Devil Mine camp, and one mile south of the airport; the Red Devil and Barometer properties adjoin and are on the same mineralized structure.

Transportation facilities serving the property are the same as those used for the local mining properties and settlements.

7/ MWJ's 1954 Report

8/ USBM R. I. 4065 Pgs 24-26

Hans Halvorson discovered and located the property in 1921. Two  
History ore occurrences were found at the 370 and 440 to 470 eleva-  
and tions, and 6 claims were staked. Test pits and trenches were  
Development dug on both showings, and in 1922 Halvorson drove an adit 122  
feet to intersect the upper showing ore-shoot at 46 foot depth. E. W. Parks  
bought the property in 1923 and did additional work on both showings. A one  
tube Johnson-McKay retort was set up at lower showing, and some quicksilver  
production was made, largely from residual surface material. 8/

In 1931 the property was leased to Otto Rohlphs, Seattle mining  
engineer, after his examination of the property. A cross-cut was driven from  
Halvorson's adit to pick up oreshoot exposed at the upper surface showing.  
Mr. Rolphs dropped his lease the following year. In 1938, A. C. Skidmore leased  
the property from the Parks estate, and produced 10 flasks from surface "float"  
and from the pit on the lower occurrence. The lease was dropped in the fall of  
that year. In 1939 and 1940 a few flasks were produced in performance of Annual  
Assessment work.

From 1941 to the mid-50's work<sup>was</sup> limited to Annual Assessment require-  
ments. The DeCoursey Mountain Mining Company (now known as the Alaska Mines  
and Minerals Company) then leased the property, and have carried on an exten-  
sive stripping and sampling program from the Red Devil Mine to the Barometer  
adit area. For sampling, both hand and power driven augurs have been used.

During performance of Assessment Work in 1961, John Murphy and George  
Willis mined 50 to 75 tons of good surface ore exposed in the 1959 stripping.  
Amount of quicksilver recovered from that tonnage is not known.

8/ USBM R. I. 4065. Pgs 24-26

The formation crossing the Barometer ground is the same as that on  
Geology the adjoining Red Devil property. Predominantly shale, gray-  
and  
Mineralization wacke and sandstone are reported increasingly evident westerly  
beyond the lower deposit. Mineralization in the Barometer  
area is considered dependent upon and associated with andesite dikes and/or  
sills, as elsewhere in the district. 8/

Faulting in area of the upper deposit is responsible for the forma-  
tions strike variations of N20° to 60°W, as beyond that point it is N10°W. 8/

Mineralization in the two oreshoots consists of cinnabar, stibnite,  
and realgar; the latter mineral is not commonly found in this district. The  
ratio of mercury, antimony, and arsenic is given by the USBM as 4.6 : 9.7 :  
5.4, respectively. The USBM 1943 trenching program found visible cinnabar  
mineralization in the upper ore-shoot to be 165 feet in length. Extent of the  
lower ore-shoot along its projected northerly strike was not determined as it  
runs into swampy ground. 8/

More intensive exploration is planned for the Barometer property, as  
geological conditions are considered favorable for finding ore-shoots of economic  
interest.

#### Red Devil Property. Area 2.

The Red Devil mine is located in gulch and on west side of Red  
Location Devil Creek, about 1000 feet from the southwest bank of the  
and  
Accessibility Kuskokwim River. It is 8 miles downriver from Sleitmute, in  
the Quadrangle of same name. Like the Barometer property,  
which it adjoins on the northwest, it is situated near base of Barometer Mountain  
foothills in a local area of low relief. Elevation at the shaft collar is about  
300 feet and at river level 180 feet above sealevel.

8/ USBM R. I. 4065. Pgs 24-26

With completion of a 4000 foot airstrip by the State several years ago, near the river bank 2 miles downstream, it has twice weekly prop-jet air service direct from Anchorage, except for the several weeks "break-up" period in the spring and when bad weather conditions cancel flights. Bulk supplies and heavy equipment are freighted up the river during the four or five months navigation season from Bethel by company owned barge.

The property was discovered and located by Hans Halvorson in 1933.

History	Several years later Nick Mellick, trader near Sleitmute, ac-
Development	quired a half interest and additional ground was staked, making
And	a group of 9 claims. The property covers the area northwesterly
Production	from Red Devil creek to the southeast boundary of the Barometer claim group, a
	distance of about 1 mile, with both covering the same geological structure.

Mercury production from cinnabar pebbles and boulders found in the creek bed and "float" found in the residually weathered west side gulch slopes was started with several old Johnson-McKay retort tubes, and 11 flasks were recovered from that set-up. In 1940 two "D" retorts were installed, and 158 flasks were produced that year, 135 flasks in 1941, and 117 flasks in early 1942. Ore source for those years was obtained by "ground sluicing" overburden covering the ore zone in the same area.

The 311 (elevation above sealevel) Adit was started in 1940 in face of the sluiced open-cut and driven 90 feet, where an ore-shoot was found that supplied the ore for the balance of 1942. The 325 Adit, located 70 feet north of the 311 portal, was started and driven 130 feet in 1941 along strike of formation but found no ore. Two cross-cuts, 40 and 50 feet in length, were driven to the southwest from the 325 Level with negative results. In late 1942 a shaft was started 55 feet southeast of the 311 portal, and sunk to 30 foot depth on a 62° slope, where the ore being followed swung into the hanging-wall.

Harold Schmidt and E. J. Stampe of Fairbanks acquired lease on the property in late 1942, and interested the New Idria Mining Company of California in the venture. The New Idria-Alaska Quicksilver Company was then formed to develop and operate the mine. Mining equipment and reduction plant were shipped from California and installed in 1943, and 500 feet of drifting and cross-cutting was completed that year. Production at the property on a larger scale was started and continued until spring of 1944, when the low quicksilver prices discouraged the operators. During this period of activity the total footage of development headings, including deepening the shaft 45 feet, was 1418 feet. The company subleased the property to the Kuskokwim Mining Company, the latter composed of Harold Schmidt, E. J. Stampe, Glen Franklin, and Earl Ellingen of Fairbanks.

The 1944 production was 1090 flasks from 2,652 tons of ore. During the 127 days of the April to September, 1945 operation, 962 flasks were produced from 1,514 tons. The steady decline in quicksilver market prices was responsible for suspension of the Kuskokwim Mining Company operation in September 1945. 8/

The USBM carried on a surface exploration program in 1942, which resulted in the finding of seven ore-shoots through their trenching. During the winter of 1942-43 they continued sinking the shaft to 55 foot depth, where pump failure suspended their work. No ore was found below the 30 foot level. A station was then cut at the 41 foot level, and a cross-cut driven into hanging-wall and an ore-shoot, found on the surface, was intersected. This was then driven upon for 20 feet with good ore in both faces of the drift. 8/

8/ USBM R. I. 4065. Pg 10





Lateral development in the mine has been limited to an over-all horizontal length of 1450 feet. Future plans call for an expanded exploration program to known and indicated ~~favorable~~<sup>7</sup> structurally favorable areas to the north toward the Barometer and westerly to the adjoining Fairview properties, and easterly toward the river.

Ore minerals are largely limited to cinnabar and stibnite; realgar is found occasionally in one of the ore zones and minor amounts of pyrite and arsenopyrite have been noted. The USBM reported the mercury-antimony in 17 determinations had a ratio of approximately 1 : 1. 8/ In recent years the amount of stibnite appears to be greater. Native quicksilver has not been reported in Red Devil ore, but ~~old timers~~<sup>old timers</sup> report it is found in appreciable amounts in panning along McCaully Creek for several miles.

It is considered that a well planned and intensive exploration program has a reasonable expectation to greatly increase life of the operation and warrant expansion of the reduction plant.

8/ USBM R. I. 4065. Pg 13.

## White Mts. Cinnabar Prospect

The White Mountain cinnabar prospect is located near crest and  
Location on south side of a well round ridge in the McGrath Quadrangle, Kx 74-5  
60 miles S25E from McGrath. Its elevation at point of discovery is about 1800 feet above sealevel. This area of interest lies at head waters of an unnamed northeasterly tributary, paralleling and 10 to 14 miles southeast of Tatlawiksuk River, both northeasterly tributaries of Swift River, which latter is tributary to the Kuskokwim River. The shortest distance to that waterway is 42 miles northwesterly.

Pine cinnabar was observed by Jack Ignaty in the narrow valley  
History creek bed on south side of the ridge and on that mountain slope during trapping season of 1938. In late fall of 1957 Ignaty mentioned that observation to Edward Hager, Cordero Mining Company, and Robert F. Lyman at Red Devil. He was encouraged to return to the area and try to locate source of the fine "float" which he readily found, and returned with high grade samples. In May of 1958 Ignaty located 4 claims along strike of the outcrops. After examination of the occurrences, the property was optioned by K 174-7  
the Cordero Mining Company, and an extensive hand trenching program during June and July was carried on by Mr. Hager and two men. In 1959 prospecting of the area continued, resulting in staking of 3 additional claims giving a strike length of 10,000 <sup>feet</sup> along the mineralized zone. During the following year a more or less parallel mineralized zone was discovered and four claims located along its strike, to southeast 1/2 mile of the original discovery.

In 1960 the USBM undertook an exploration program limited that season to sampling with power augur, followed up with hand trenching. Results of that work were very encouraging. With accessibility the first three years limited to landings of small planes on an unimproved "air strip" on the rounded ridge

crest, a landing strip was built in 1961 ~~on the ridge~~ a few hundred yards from original discoveries, suitable for larger air craft, for which dozer equipment was driven-in overland from Farewell early last year by USBM. Balance of the season, limited to about a month, was devoted to start of a diamond drilling program by the Bureau in one area of the original discoveries, that is expected to be resumed this year.

There is no published U. S. Geological Survey coverage on this Geology region to date. In 1958, however, two of their geologists visited the property, and in 1959 this immediate area was mapped by the Survey.

The mineralization along zone of original discovery and claim locations occurs within a wide highly shattered shear zone that has been pegged as being within the wide limits of the regional Farewell fault system which in this area appears to be a strike fault. The mineralized host rock is a gray dolomite of undetermined thickness; attitude of a 30 foot, thin bedded shale outcrop within 100 feet and on southeast side of original cinnabar discovery suggests a 45° dip to the <sup>northwest (?)</sup> ~~northeast~~. Strike of the shear zone and formation is northeast. To northwest of the dolomite the formation surficially appears to be limestone of great thickness.

No dikes, sills or other type intrusives have been noted in the immediate area to date, which elsewhere in the Kuskokwim region has been a "requirement" for cinnabar deposition.

This highly fractured formation and mineralized zone is a permafrost section, and it is anticipated this condition will continue to several hundred foot depth.

The second more or less parallel mineralized shear zone does not show the shearing and fracturing to have been as intense as that along the original discovery, and at no point appeared to be as strongly mineralized. The formation in which it occurs is dolomitic limestone of undetermined thickness, with shale and pebbly conglomerate measures outcropping occasionally in the fairly steep slopes above to the southeast.

Mineralization along the two zones is limited to cinnabar; no Mineralization stibnite, realgar, orpiment, pyrite, or arsenopyrite was noted at any point examined. The cinnabar occurs as scattered small and thin plates along closely spaced fractures; as short discontinuous veinlets, and stringers up to 1/2 inch thick in a network enclosing and surrounding brecciated dolomite fragments with cinnabar "cementation"; and as small lenses and "pods".

The various natural outcrops and showings in trenches suggest ore-shoots of interesting width and length but as yet unknown vertical extent. The highly fractured and frozen ground has proven very difficult to drill; core and sludge recovery has been poor, loss of water in hole frequent, wear on drill bits excessive, and as a result little conclusive information was obtained in the few holes drilled last fall.

The absence of any other visible sulfide mineralization occurring with the cinnabar is considered unfavorable to finding of cinnabar orebodies of economic interest and importance by some mining men. However, until that has been proven to be the case, grade, width, and length of the numerous surface exposures makes this deposit the most promising prospect in the Kuskokwim region.

Cinnabar Creek. Area 4

The Schaefer cinnabar property is located near west limits of  
Location northwest section of the Taylor Mountains Quadrangle, about 60  
and miles S23E of Aniak, with the open-pit workings at about 1250  
Accessibility feet above sealevel. It is situated in the Kuskokwim Mountains  
at head of Cinnabar Creek, a tributary to Beaver Creek which  
latter stream joins the Gemuk River, a tributary of Chikuluinuk River, that in  
turn joins the Chukowan River, a principal western drainage system of the Holitna  
River. 8/

Overland freighting to the Cinnabar Creek area is presently limited to  
winter months following a route for 65 miles southeasterly from Aniak. A second  
route due east from NYAC, a distance of 76 miles, is reported to be the best for  
freighting heavy equipment. A fair airstrip, built by Russell Schaefer, is  
adequate for small aircraft. During the summer months at normal water stages,  
outboard motor boats can be run up the Holitna River and its western tributaries  
to within 20 miles of the property. The trip requires a week to 10 days upstream,  
and about 4 days downstream.

In 1941 Russell Schaefer and Walter Winchell located several <sup>plus three</sup> ~~several~~  
History placer claims containing appreciable cinnabar "nuggets" in  
and the gravels and the detrital material at base of the slopes on  
Production each side of Cinnabar Run, and 1 claim on Cinnabar Gulch, the  
latter a short easterly tributary of Cinnabar Creek. During the same season  
they also located and sampled the Lucky Day lode in Canary Gulch, a short tribu-  
tary of Beaver Creek 6 miles to the south. The same season Herschel Landru lo-  
cated placer claims adjoining Schaefer's claims on Cinnabar Creek, and the Broken  
Shovel Lode claims at head of Broken Shovel Creek about 1 mile to northeast of

Cinnabar Run Creek; Broken Shoal Creek drains north into East Fork of the ~~Alak~~ <sup>Alut</sup> River.

During October 1941, the Bristol Bay Mining Company sampled the Cinnabar Gulch placer deposits and the Lucky Day Lode lode occurrences.

In 1942 Schaefer retorted 2300 pounds of cinnabar ore from the Lucky Day Lode residually weathered material, and recovered 15 flasks of mercury, and an additional 11 flasks from same area the following year; no ore "in place" was found of economic interest. In 1943 the New York Alaska Dredging Company, operators in the NYAC area, prospected and sampled the Cinnabar Run and Cinnabar Gulch placers; encouraging values were found but yardage available was too low to be of interest.

The short period <sup>in the area</sup> spent by the USBM in 1943 was limited to the Lucky Day Lode. The deposit examined in 1961, situated to north of Cinnabar Gulch was not located and staked for some years thereafter. Since then all the production from that area has been produced from this deposit by Schaefer, in an ingenious reduction plant built by him. His total production is reported to have been over 500 flasks up to time of his death in 1960, making that property the No. 2 producer in Alaska.

During month of August and first week of September, 1961, an exploration program was undertaken by the Schaefer estate, under direction of a consulting geologist. Initial work was limited to geological mapping and sampling in area of ~~the~~ 20 to 50 foot deep and 100 foot long trench dug with dozer "and front loader" equipment on an oreshoot ~~had since~~ <sup>had since</sup> ~~before~~ <sup>before</sup> a several year period prior to 1961. A diamond drilling program was started and may possibly be continued next year.

Geology                    The area is one of low relief and rolling hills, with a few ~~rocky~~  
and                        rocky peaks scattered through the district. Maximum elevations in  
Mineralization        the vicinity range from 1500 to 2000 feet above sealevel. At the  
deep open-cut the elevation is about 1250 and the ridge above it  
is around 1750 elevation.

The formation in the district is composed of great thickness of interbedded shales and graywackes, possibly of Paleozoic age. They are intruded by sills of interlayered lava flows, and dikes that are commonly porphyritic, and considered to be andesite. Quartz diorite dikes and sills are also reported in the district. 8/

The oreshoot mined by Schaefer in the Cinnabar Run open-cut occurs in a "wavy", crushed, shear zone along a bedding fault at the shale-andesite sill contact. Strike of the formation and the fault is N100 to 200W and dip is 75° to 80° east. The mineralization is largely in the shale with appreciable amount in first foot or two of the sill. Maximum width showing appreciable mineral distribution was 12 feet, which is located in central section of the 90 to 100 foot length of the ore zone. It occurs as discontinuous veinlets and stringers, short lenses, and "blebs". At north end of the open-cut it pinches down to 4 or 5 inch width; south end of the ore-shoot is obscured by muck in bottom of that working. Sampling results of the ore-shoot did not come up to expectations, but were encouraging ~~for~~ for width of the zone.

The extensive stripping and trenching across strike of the ore zone by Schaefer was examined, and it appeared that no appreciable mineralization was uncovered. In area to north of the open-cut the strike of the formation appeared to be swinging five to 10 degrees to the north, which could possibly account for trenches failing to intersect the ore zone structure. In the stripping done across the zones southerly projection, a similar sill was uncovered but no visible mineralization was found. With Cinnabar Run being entrenched along a fault, it is considered  
block



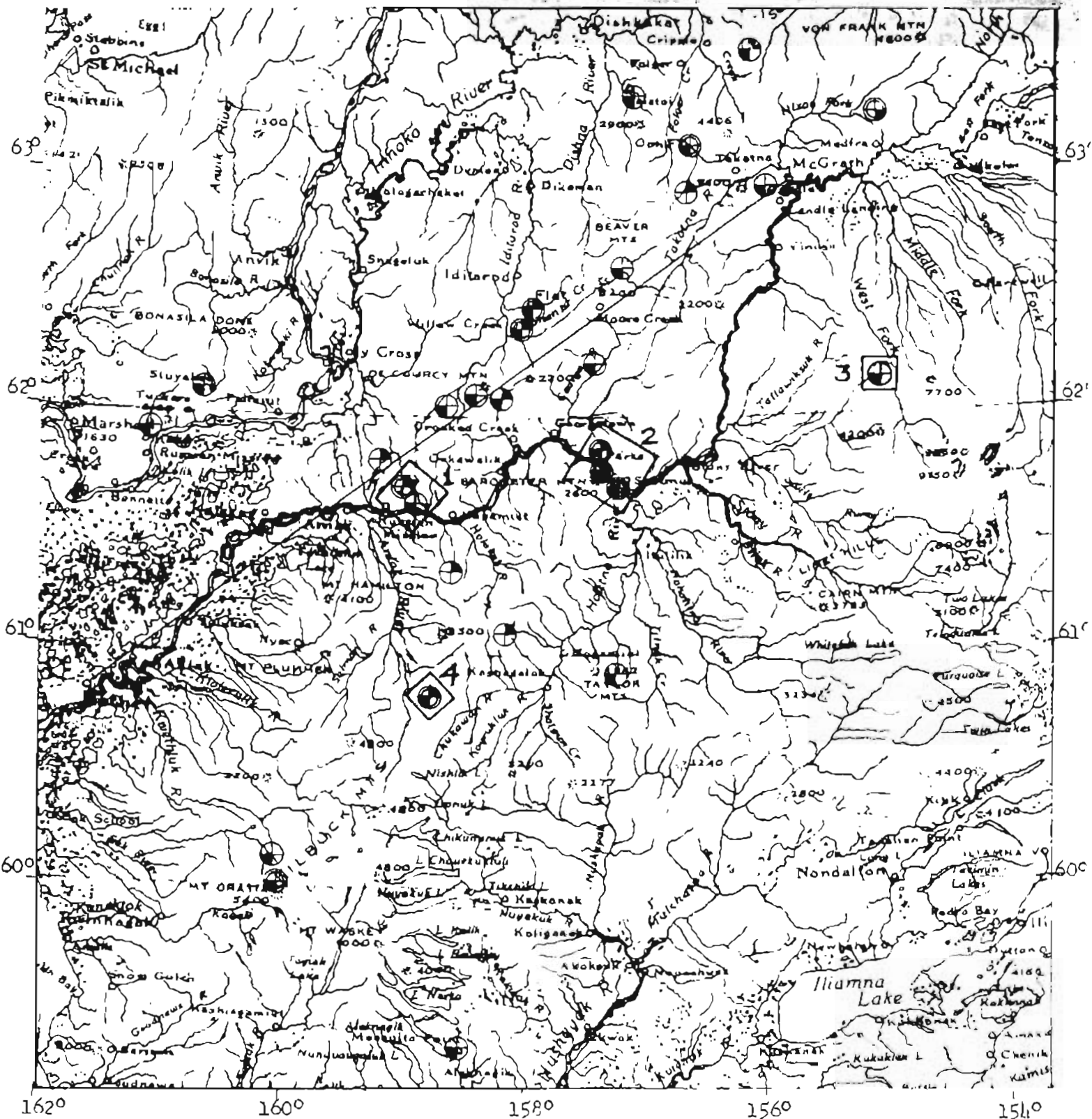
that Cinnabar Gulch represents a 75 to 100 foot horizontal displacement of the ore zone bedded fault plane, and that it is the most likely <sup>location</sup> to look for its southerly continuation.

The minerals in the open-cut ore-shoot are limited to cinnabar and native quicksilver; the latter was especially abundant along fractures across the small lenses, with fine "beads" noted in the shale <sup>along</sup> of the fault. Minor post-mineral movement was shown by "slicken-siding".

With geological conditions generally similar to those of the Sleitmute district, and numerous cinnabar occurrences known in the Cinnabar Creek district together with recent reported (but <sup>unconfirmed</sup> ~~unconfirmed~~) discoveries in that general region, it would appear there is a good chance of finding deposits of economic importance within a 5 to 10 mile radius.

M W J

Jan. 26, 1962



Section of U.S.G.S. Map MR-11  
 Showing  
 KUSKOKWIM CINNABAR REGION  
 for  
 STATE OF ALASKA  
 Division of Mines & Minerals  
 1961 ANNUAL REPORT

Scale

50 Mi. 0 50 Mi.

OCCURRENCES  
 Single Groups in  
 3-Mi. Radius

Antimony  
 Bismuth  
 Cinnabar

mw } - Jan '62