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SUPPLEMENT TO PAMPHLET NO. 1 -

STRATEGIC MINERAL OCCURRENCES IN INTERIOR ALASKA

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C O N T E N T S

ILLUSTRATION

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INTRODUCTION

This pamphlet supplements Department of Mines Pamphlet No. 1, 1942, entitled "Strategic Mineral Occurrences in Interior Alaska." It contains information gathered during the past year on occurrences of strategic mineral deposits, and on prospecting and development work done on them. It also describes briefly the various ways in which government agencies are now assisting in the development of prospects.

Most of the information on strategic mineral occurrences was collected by the writer and by Eskil Anderson during field trips in the summer and fall of 1942. Specific acknowledgment is made of information collected from other sources. The section describing Reconstruction Finance Corporation development and mining loans was condensed from circulars released at various times by that agency. It was read and approved by L. C. Doheny, RFC Supervising Engineer for Alaska. The section discussing purchase of Alaskan strategic materials by the Metals Reserve Company is based on an MRC information circular issued January 15, 1943. It also incorporates several suggestions made by A. E. Glover, Deputy Purchasing Agent for the Fairbanks Purchase Depot of the MRC. Quantitative analyses of ore samples were made by A. E. Glover and L. H. Saarela, Territorial Assayers.

GOVERNMENT AID IN DEVELOPING PROSPECTS AND MINES

Several government agencies are now engaged in the search for and development of strategic mineral deposits in Alaska. They are: The Territorial Department of Mines, the U. S. Geological Survey, the U. S. Bureau of Mines, and the Reconstruction Finance Corporation and its subsidiary the Metals Reserve Company. For the sake of brevity, they will be referred to here as the Dept. of Mines, the Geological Survey, the Bureau of Mines, the RFC and the MRC.

Outlined briefly, the functions of these agencies, so far as the strategic mineral development program is concerned, are as follows: The Dept. of Mines and the Geological Survey make preliminary investigations of prospects and of promising mineralized areas. Their reports are made available to the

Bureau of Mines, which then tests and samples those deposits that appear to be worth a more detailed examination. The RFC makes several types of loans to private organizations for the purpose of aiding in developing or mining strategic mineral deposits. Finally, through arrangements made by the Dept. of Mines with the MRC, certain of the higher priced strategic materials are purchased in Alaska, in either small or large lots.

RFC Loans

Three types of loans are made by the RFC. They are (1) preliminary development loans, (2) development loans, and (3) general mining loans.

Preliminary development loans, limited to $5,000, are made to reopen old mine workings, or to facilitate sampling, if in the opinion of RFC engineers such operations are likely to make the property eligible for a development loan. The principal requirement is that mineral showings warrant development.

Development loans, limited to $30,000, are made for the purpose of developing ore known or presumed on good evidence to exist.

General mining loans, the size of which depends on conditions, are made to aid in mining or milling deposits of established worth, by providing working capital or by financing construction of facilities.

No loans are granted for promotion purposes, for acquiring land, or for prospecting. All properties must be examined and approved by an RFC engineer before a loan is made. Detailed information may be obtained from L. C. Doheny, RFC Supervising Engineer for Alaska, Fairbanks, Alaska.

Ore Purchase Depots for Strategic Minerals

In order to stimulate production from Alaskan deposits, the Metals Reserve Company arranged in July, 1942 to purchase small or large lots of metallic mercury, and of ores and concentrates of antimony, tin and tungsten. In January, 1943 the arrangement was renewed for another year, and presumably it will continue in force throughout the present war.

Purchases of ore are made by the Territorial Commissioner of Mines as Purchasing Agent, at Purchase Depots established at Fairbanks, Anchorage, Ketchikan and Nome. Territorial Assayers at each depot act as Deputy Purchasing Agent, and weigh, sample and analyze all ore received.

The chief benefits of this arrangement to the Alaskan miner are: (1) he is guaranteed an immediate sale of and payment for all ore and concentrates that meet specifications, (2) he receives essentially the same prices as are paid in the continental United States; that is, freight charges from Alaska are absorbed by MRC, and (3) he can sell ore and concentrates in small lots.

Following are discussions of specifications and prices. Additional information may be obtained at Territorial Assay Offices, or at the office of the Commissioner of Mines, Juneau, Alaska.

Antimony Ore and Concentrates

Antimony ore and concentrates containing a minimum of 20% antimony are purchased in lots of 10 tons or more. Prices for various grades of ore are shown in the following table.

Antimony Content of Dry Ore	Price per Dry Short Ton* Unit of Antimony Metal	Price per Dry Short Ton of Ore
20%	$1.15	$ 23.00
25%	1.40	35.00
30%	1.65	49.50
40%	1.75	70.00
50%	1.85	92.50
60%	2.00	120.00
70%	2.15	150.50

*A short ton unit - also called a ton unit - of antimony ore contains 20 pounds of metallic antimony. A ton of 1% ore thus contains 1 ton unit or 20 pounds of metallic antimony; similarly, a ton of 60% ore contains 60 ton units or 1200 pounds of metallic antimony.

For ores containing between 20 and 30% antimony, the prices may be computed by subtracting 5 cents per unit from the quoted price for 30% ore, for each 1% decrease below 30%. For ores containing between 30 and 50% antimony, prices may be computed by adding 1 cent per unit to the quoted price for 30% ore, for each 1% increase above 30%, up to and including 50% ore. For ores containing over 50% antimony, a price increase of 1½ cents per unit is made for each 1% increase above 50%.

It will be noted that no penalties are charged for ore containing excessive amounts of undesirable impurities such as arsenic, copper, lead or zinc. The only requirement is that the ore must contain at least 20% antimony.

Mercury

Mercury is purchased in lots as small as one flask of 76 pounds, at a rate of $192 per flask, less $4.00 per flask for shipping and handling.

All mercury must be pure, bright, virgin mercury and must be mined and produced in Alaska. Specifications call for a minimum mercury content of 99.5%, and not more than 0.3% antimony and 0.1% arsenic. Flasks must be of wrought iron or steel of standard quality and design, must be securely stoppered, and each must contain at least 76 pounds of mercury. In accordance with commercial practice, the seller is not paid for mercury in excess of 76 pounds in any flask.

Tin Concentrates - Alluvial Only

Alaskan tin concentrates containing a minimum of 50% tin are purchased in lots of one long ton (2240 pounds) or more. A price of 60 cents per pound of contained tin is paid, less a charge to cover cost of treatment and metal losses. Prices and deductions for various grades of concentrates are shown in the following table. It will be seen that the deduction decreases $1.00 per ton for each 1% increase in tin content.

Insoluble Tin Content	Gross Price per Dry Long Ton	Deduction per Dry Long Ton	Net Price per Dry Long Ton
50%	$ 672.00	$63.00	$609.00
51%	685.44	62.00	623.44
52%	698.88	61.00	637.88
53%	712.32	60.00	652.32
54%	725.76	59.00	666.76
55%	739.20	58.00	681.20
60%	806.40	53.00	753.40
65%	873.60	48.00	825.60
70%	940.80	43.00	897.80
75%	1,008.00	38.00	970.00

Tungsten - High Grade Concentrates

Tungsten concentrates containing a minimum of 60% WO_3 (tungsten trioxide) for scheelite concentrates and 65% WO_3 for wolframite concentrates are purchased in lots of one ton or more. A price of $30 per dry short ton unit of WO_3 is paid, less a charge of 50 cents per unit for shipping and handling; thus, the net price is $29.50 per unit. A short ton unit contains 20 pounds of WO_3, and a ton of 1% ore thus contains one ton unit of WO_3. To calculate the price per ton, the price per ton unit is multiplied by the percentage of WO_3. For example, a ton of 60% concentrates would be worth $29.50 x 60, or $1,770.

Specifications fixed by the MRC call for a minimum WO_3 content of 60% for scheelite concentrates and 65% for wolframite concentrates. In addition the presence of certain impurities in amounts greater than listed in the following table will incur penalties.

Scheelite Concentrates (60% minimum WO_3 content)	Impurity	Wolframite Concentrates (65% minimum WO_3 content)
0.05%	Copper	0.03%
0.05	Phosphorus	0.03
0.10	Arsenic	0.25
0.10	Antimony	0.50
0.50	Bismuth	0.50
0.40	Molybdenum	0.40
0.10	Tin	1.50
0.50	Sulfur	0.50
0.10	Lead	0.10
1.00	Manganese	--

A deduction of 10 cents per short ton unit of WO_3 is made from the base price of $30 per unit for each 0.01% excess of copper and phosphorus; for each 0.10% excess of arsenic, antimony, molybdenum, tin, sulfur, and lead; and for each 0.50% excess of bismuth. For scheelite concentrates only a similar deduction is made for each 1.00% excess of manganese.

Tungsten Ores and Low Grade Concentrates

Tungsten ores and low-grade concentrates are purchased in lots of 10 short tons or more. The price per ton unit is $30 - the same as that paid for high-grade concentrates - but shipping, handling and treatment charges are necessarily made and these reduce the net price paid for the ore. No penalties are charged, however, for the presence of undesirable impurities.

For material containing between 3% and 15% WO_3, payment is made for 90% of the contained WO_3 at $30 per ton unit, dry weight, less a charge of $3 per ton unit, dry weight, for shipping and handling; and less treatment charges which vary according to the tenor of the material, as follows:

WO_3 Content	Treatment Charge per Short Ton
More than 3% and less than 4%	$30.00
More than 4% and less than 6%	35.00
More than 6% and less than 15%	40.00

In the following table, gross prices, deductions and net prices per short ton are given for various grades of ore or low-grade concentrates.

WO_3 Content	Gross Price (90% of price based on $30 per unit)	Shipping and Handling Charges	Treatment Charges	Net Price
3.5%	$ 94.50	$3.00	$30.00	$ 61.50
5.0%	135.00	3.00	35.00	97.00
10.0%	270.00	3.00	40.00	227.00

For ore or low-grade concentrates containing more than 15% WO_3, payment is made at $30 per ton unit, dry weight, for 90% of the contained WO_3 up to 15% and for 100% of the contained WO_3 above 15%; less a charge of $3 per ton unit, dry weight, for shipping and handling. Treatment and handling charges total $34 per ton for material containing 16% WO_3, and they increase 10 cents for each 0.1% increase in WO_3 content above 16%.

When a considerable tonnage of relatively low-grade ore is available, it is usually worth-while to concentrate in order to avoid treatment and handling charges and to save on freight costs.

For example, ore containing 3.5% WO_3 nets $61.50 per ton after treatment and handling charges are deducted. If the ore were concentrated to 60% WO_3 - assuming a rather low recovery of 65% - the concentrates from each ton of ore would bring $67.11, if no penalties were exacted for excessive impurities. Concentrating costs are not taken into account here, but in any event they would be more or less balanced by the additional cost of hauling the crude ore. In addition, the tailings remaining after concentration are of potential value.

The advantages of concentrating decrease with increasing WO_3 content, unless other factors enter, such as high transportation costs or high recovery during concentration. Material containing 5% WO_3, for example, nets $97.50 per ton at the Depot, whereas if sold as 60% concentrates it would net only $95.87; again assuming a 65% recovery. If the material contains 10% WO_3, a recovery of nearly 77% during concentration would be necessary before the high-grade concentrates would bring as much as the untreated material.

ANTIMONY DEPOSITS

Fairbanks District

Willow Creek Prospect[1]

In the summer of 1942 a deposit of high-grade stibnite was discovered in a placer cut on Willow Creek, tributary of Cleary Creek. The ground is owned by the Tolovana Mining Company. Placer mining rights are leased to Hjalmer Johnson, and lode mining rights are leased to Joseph Martin.

Stibnite occurs in several parts of a wide quartz zone, which crosses Willow Creek and which has been exposed for 200 feet in the cut. The largest occurrence of ore appears to be continuous for about 75 feet. Neither its width nor its relation to the enclosing quartz zone could be determined, because the bedrock in the cut is deeply weathered.

A relatively small amount of work would determine if there is sufficient ore to make mining worth-while. The prospect is favorably situated with respect to transportation; it is close to the Steese Highway and only about 24 miles from Fairbanks.

Hi Yu Prospect, Fairbanks Creek[2]

An occurrence of high-grade stibnite was found in 1941 about a quarter mile northwest of the Hi Yu mill on Fairbanks Creek. Some intermittent prospecting was done during the fall of 1942, but only about 15 tons of ore was found up to that time.

Because of the high quality of the ore and because of the convenient location of the prospect close to the Fairbanks Creek road, additional surface prospecting along the strike of the deposit is warranted. Overburden, which consists chiefly of residual soil and schist fragments, is about 6 feet deep and is thawed during the summer.

McCarty Mine, Fairbanks Creek[3]

Lenses and kidneys of stibnite have been encountered in all levels of the McCarty mine. During 1942 about 15 tons of stibnite was hand sorted and stacked on the surface. A considerable additional amount of stibnite-bearing ore was milled with

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[1]Joesting, H. R., Report on an Antimony Prospect on Willow Creek, Fairbanks District, Alaska, Oct. 29, 1942. Unpublished report on file at Territorial Dept. of Mines, Juneau.

[2]Reported in Dept. Mines Pamphlet No. 1, 1942, p. 10.

[3]Reported in Dept. Mines Pamphlet No. 1, 1942, p. 10.

the gold quartz ore. Later about 5 tons of the stacked ore containing 45% antimony was combined with an equal amount from the Cleary Hill mine and shipped to the Purchase Depot in Fairbanks. Several lenses of stibnite remain exposed in the underground workings.

Homestake Mine, Upper Wolf Creek

Several bunches of stibnite were found in the Homestake mine during development operations several years ago. Plans to mine this ore in 1942 were abandoned when it was found that the lead content was excessive. It is unlikely that any considerable amount of stibnite could be taken from existing workings.

Willie Claim, Head of Wolf Creek

During the summer of 1942 a small amount of hand prospecting was done on the Willie claim, at the head of Wolf Creek, a quarter mile southwest of the Homestake mine. This claim is owned by the U. S. S. R. & M. Co.

Several pits were dug through 3 to 6 feet of overburden. No ore in place was found, but about 200 pounds was collected from the overburden. From its appearance the ore mineral was jamesonite, or a similar lead-antimony sulfide. A picked specimen assayed 19.0% antimony, 46.6% lead, and 0.2 ounces of gold and 17 ounces of silver per ton.

In view of the low antimony content, additional prospecting for the source of the float is hardly worth-while at the present time. However, since several stibnite prospects are reported to have been found in the vicinity of the Willie claim a number of years ago, the area in general is considered promising. It is part of the same zone that contains the Hi Yu, McCarty, Chatham and other stibnite prospects.

Chatham Mine, Upper Chatham Creek

In 1916 stibnite was produced from the Chatham mine, from a vein that crosscuts the main gold quartz vein 850 feet from the portal of the main tunnel.[1] Left on the dump after the last war was about 20 tons of ore containing 40% antimony. Eight tons of this ore was shipped to Fairbanks in 1942.

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[1]Mertie, J. B. Jr., Lode Mining in the Fairbanks District, U. S. Geol. Survey Bull. 662, 1918, p. 415.

Davis, John A., Lode Mining in the Fairbanks District, Annual Report of the Mine Inspector to the Governor of Alaska, 1922, pp. 97-98.

Considerable stibnite is said to remain in the crosscutting vein, but this could not be substantiated because the old workings are inaccessible. To reach the ore would require reopening several hundred feet of tunnel and possibly running a new crosscut from the tunnel for about 200 feet.

Lower Chatham Creek

A considerable amount of stibnite float occurs in the old dredge tailings on Chatham Creek. In 1942, Otto Geist of College found significant amounts in two places - one close to the mouth of Chatham Creek and the other about 1,000 feet upstream - that appeared to have been dredged from bedrock. Most of the specimens submitted by Mr. Geist were nearly pure, bladed stibnite; while a few contained admixtures of schist. To find the bedrock sources of the ore would necessitate taking into account the length of the old dredge and the direction it was digging when the stibnite was turned up.

Cleary Hill Mine, Cleary Creek

As in other mines in the vicinity, bunches of stibnite are found in the Cleary Hill mine. In the summer of 1942 about 5 tons of high-grade ore was combined with an equal amount from the McCarty mine and shipped to the Purchase Depot in Fairbanks. Additional stibnite remains exposed in the workings.

Soo Mine, Dome Creek

About 8 tons of high-grade stibnite was left on the dump of the Soo mine when operations ceased several years ago. This ore was hauled to Fairbanks in the fall of 1942. Several bunches of stibnite were encountered during mining, but they are now inaccessible.

Marcovich Prospect, Head of Spruce Creek

During the summer of 1942 intermittent prospecting was done by Mike Myntti on stibnite showings on the Marcovich property at the head of Spruce Creek. About 16½ tons of ore, containing 38% antimony, was shipped to the Fairbanks Purchase Depot. Six and one half tons of this ore, containing over 50% antimony, was mined from kidneys in a raise run from an old tunnel; the remainder, containing about 30% antimony, was taken from an old dump.

Treasure Creek Area

Crossing upper Eagle and Independence creeks, tributaries of Treasure Creek, is a zone of stibnite mineralization which is apparently a southwestern extension of the zone that parallels Fairbanks Creek and crosses upper Wolf, Chatham and Cleary creeks.[1]

Most of the antimony produced in the Fairbanks district during the last war came from the Scrafford mine on upper Eagle Creek, near the west end of this zone.[2] Lenses of solid stibnite up to 9 feet thick are said to have been found in the Scrafford mine, in a wide shear zone that appears to continue east across Eagle Creek.

The workings of the Scrafford mine are now inaccessible, but several hundred tons of screened waste, consisting of quartz and stibnite, remains on the dump. Vertical channel samples taken from small pits dug in this waste assayed an average of 8% antimony. A picked sample, taken to determine if a suitable jig concentrate could be obtained, assayed 29.6% antimony. Apparently this material could be concentrated to yield a marketable product, but it would hardly be worth-while to install equipment to treat the small amount that is now available.

During the last few years intermittent lode prospecting on upper Eagle and Independence creeks has been done by Al Goodwin, who, as far as is known, has found no commercial stibnite deposits. Mr. Goodwin reports that in 1918 he found kidneys of stibnite 3 to 4 feet wide at a depth of 90 feet in an inclined shaft on the east side of Eagle Creek, opposite the Scrafford mine. The shaft, which is now caved, was sunk through a zone of soft gouge and of brecciated quartz and schist. This appears to be the same zone that was encountered in the Scrafford mine. A small amount of high-grade stibnite, together with vein quartz and considerable gouge, remains on the dump of the old shaft. It is doubtful if it would be worth-while to sink a new 90-foot shaft to reach the prospect. Surface prospecting would probably be more effective, since the stibnite apparently occurs irregularly distributed in lenses and bunches in a mineralized zone.

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[1]Dept. of Mines Pamphlet No. 1, 1942, pp. 7-8.

[2]Brooks, Alfred H., Antimony Deposits of Alaska, U. S. Geol. Survey Bull. 649, 1916, pp. 28-29.

Hill, James M., Lode Deposits of the Fairbanks District, U. S. Geol. Survey Bull. 849-B, 1933, pp. 156-157.

In view of the former production of the Scrafford mine, and of the occurrence of other stibnite showings nearby, additional surface prospecting in this area is warranted. Since the whole area is covered by overburden, it is probable that electrical or magnetic geophysical exploration methods could be used advantageously to trace the Scrafford shear zone, and thereby localize surface prospecting.

Mohawk Mine, St. Patrick Creek

Several years ago during the course of gold mining operations, a wide vein or lens of stibnite was encountered in the Mohawk mine, in a raise driven from the main level to the next level above. At least 20 tons of high-grade stibnite was taken out, of which 5 tons was stacked on the dump, about 15 tons was left on the floor of a drift driven from the raise, and a considerable amount was placed behind the lagging. The ore left on the dump was shipped to Fairbanks in the fall of 1942.

According to reports of miners who worked in the Mohawk mine, some stibnite ore remains in the raise. Mining was discontinued here because the gold quartz vein had changed almost entirely to stibnite, which carried little gold and which also interfered with gold recovery from the free-milling ore. Although most of the raise is now inaccessible, the stibnite left on the floor of the drift was recently found by Eskil Anderson and Howard Sparks, and thus the report is substantiated. Stibnite is also said to have been found several years ago in a winze sunk from the main level, but the winze is now caved.

To reach the ore in place would require cleaning out and retimbering part of the old workings - a relatively inexpensive operation. The Mohawk mine is advantageously situated on a graded road only about 12 miles from Fairbanks.

Sourdough Creek Prospect

On Dempsey Pup, a northeast tributary of upper Sourdough Creek, is a quartz vein containing small lenses and stringers of stibnite. This vein was prospected about 20 years ago by means of several short tunnels. Lenses of stibnite up to a foot thick are said to have been found.

A brief examination was made by the writer in September, 1942. Two tunnels remain partly open; in them only a few thin seams of stibnite were seen. On the dumps is perhaps 50 tons of mineralized quartz, some of which contains thin, discontinuous seams of stibnite. It is doubtful if more than a few hundred pounds of marketable ore could be hand sorted from the quartz. According to the results of work already done, additional prospecting for stibnite is not worth-while.

Hope Creek

A stibnite deposit is reported to have been found in 1926 by Swan Swanson on upper Hope Creek, tributary of Faith Creek. The deposit was exposed during construction of a bedrock drain, but is now apparently covered.

Wood River District

Kansas Creek Prospect[1,2]

In 1941 a stibnite deposit was discovered by a Department of Mines field party near the head of Kansas Creek, in the Wood River district. In 1942 the deposit was staked by Howard Sparks of Fairbanks, who did sufficient work to indicate that it is large and worth additional exploration. Several small trenches were dug through 6 feet of overburden; these showed that at least 200 tons of high-grade ore is recoverable from the overburden and that in one place, at least, the orebody is more than 6 feet wide. A picked sample contained 63% antimony, but because of the presence of included vein quartz and schist, the antimony content of the ore as a whole is considerably lower. By careful sorting, ore containing 50% antimony could probably be produced.

The deposit is favorably situated for mining, since it could be worked from a tunnel driven into the steep hillside from near the level of the creek. Additional surface prospecting should be done, however, before underground exploration is started. Conditions are also favorable for recovering the stibnite in the overburden. Using a bulldozer and water from the nearby creek, the material could be readily stripped and the coarse ore washed and screened.

A tractor trail was established by Mr. Sparks in the spring of 1943 from Birch Lake on the Richardson Highway to Kansas Creek, a distance of about 60 miles. Birch Lake is 59 miles from Fairbanks. While the route offers no unusual difficulties for winter freighting, transportation costs will be high because of the long distance.

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[1]Reported in Dept. Mines Pamphlet No. 1, 1942, p. 11.

[2]Joesting, H. R., Preliminary Report on Stibnite Prospect on Upper Kansas Creek, Wood River District, Alaska, Sept. 12, 1942. Unpublished report on file at Territorial Dept. of Mines, Juneau.

Prospects on Rock Creek and Glory Creek

A small stibnite prospect on Rock Creek, a tributary of the Wood River one mile below Kansas Creek, is reported by Bob Buzby of Fairbanks. The prospect is said to be one mile up Rock Creek.

Another stibnite prospect is reported by Hugo Stromberger to be on Glory Creek. Glory Creek is the eastern head of Dry Creek, and its junction with the other headwater tributary of Dry Creek is about 4 miles east of the head of Kansas Creek. Considerable stibnite float is found on a bench on the north side of Glory Creek 1½ miles above its mouth, according to Mr. Stromberger. Although this prospect has not been seen by the writer, other mineralized lodes are found in the immediate vicinity. One of them has been prospected by Mr. Stromberger and partners; it contains galena, sphalerite and pyrite, in addition to silver and gold. Transportation to this locality by other than dogteam or by foot would be difficult because of a narrow canyon on Dry Creek.

Bonnifield District

California-Totatlanika Creek Area

A number of occurrences of stibnite and of complex lead-antimony sulfides in the California-Totatlanika Creek area were examined by the writer and Eskil Anderson in September, 1942.

One occurrence was found by John Murphy at the head of Fourth of July Creek, a tributary of Totatlanika Creek. A small amount of fine-grained jamesonite (?) float was found in the overburden, which is about 4 feet deep. At bedrock a 6-inch zone of gouge and quartz was encountered, but no ore. A picked specimen of the float assayed 0.08 ounces of gold and 94.8 ounces of silver per ton, and 15.3% antimony.

Another prospect is on a ridge between Lynx and Eagle creeks, about 3 miles east of California Creek. It was first found by Mike Lody, but has since been staked by Strand and Diebold of Ferry. A considerable amount of float, consisting mainly of high-grade, coarse, bladed stibnite, is scattered for 100 feet along the ridge. Little prospecting has been done, however, and no ore in place has been found.

Several small antimony-bearing veins are found in the canyon of California Creek, near the mouth of Elsie Creek. The ore is complex, consisting of a lead-antimony sulfide that is probably jamesonite, together with sulfides and sulfantimonates of copper, arsenic and silver, and small amounts of

bismuthinite, arsenopyrite and pyrite. One small fissure vein, known as the Danzinger lode, was mined about 10 years ago, but the venture was unsuccessful. A sample taken from this vein in 1941 assayed 0.27 ounces gold and 259 ounces silver per ton; other samples are said to have assayed up to 600 ounces of silver.

Antimony-bearing veins are also found at the head of Spruce Creek, about 4 miles west of the California Creek Canyon and 2 miles north of the Liberty Bell mine. They are apparently small; the largest piece of vein material found in float was only 4 inches across. A picked sample contained arsenopyrite, scorodite and jamesonite, and assayed 0.44 oz. gold and 5.4 oz. silver per ton. Gold quartz veins with no jamesonite are also found in the vicinity.

Most of the antimony-bearing lodes in this area are probably small; in addition, with the exception of the Strand-Diebold prospect, their antimony contents are relatively low. They are prospects of silver, rather than of antimony, and as silver prospects some of them may be worth developing. Excepting the Strand-Diebold and the Fourth of July Creek prospects, all of them were open for staking in 1942.

Kantishna District

The Kantishna district was not visited in 1942 by personnel of the Department of Mines. So far as is known, no new occurrences of antimony were found, but Bureau of Mines engineers working in cooperation with owners of mining properties are reported to have blocked out or to have found significant amounts of stibnite ore in previously known deposits. Exploration was done by churn drill, open cuts, and tunnels.

Broad Pass District

Antimony Creek Prospect[1]

A stibnite deposit on Antimony Creek, near Colorado in the Broad Pass district, was prospected by Howard Sparks in June, 1942 and was subsequently examined by Anderson.[2] The deposit was first prospected about 1918 by a tunnel reported to be 100 feet long, but which proved to be only 20 feet long. About 3 tons of partly sacked ore was left on the old dump. A representative sample assayed 37.5% antimony.

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[1]Reported in Dept. of Mines Pamphlet No. 1, 1942, p. 12.

[2]Anderson, Eskil, Report on a Stibnite Prospect on Antimony Creek, Broad Pass District, Alaska, Dec. 16, 1942. Unpublished report on file at Territorial Dept. of Mines, Juneau.

Prospecting by Mr. Sparks consisted principally of reopening the old tunnel, which had completely caved, and examining the stibnite remaining in the floor. An 8-inch vein of stibnite was found near the old portal, but it pinched out about 5 feet from the face. A pit dug in the floor showed that the 8-inch vein narrowed to 3 inches at a depth of 4 feet. Additional work in the tunnel is thus not worth-while, although it is possible that surface prospecting would uncover other stibnite lenses.

The prospect is on a ridge on the north side of Antimony Creek, about 3 miles from its mouth. Its altitude is about 4,000 feet, nearly 2,400 feet higher than the creek bed at its mouth. Transportation of equipment would be difficult because of the steep slopes and heavy snowfall.

Fortymile District

My Creek Prospect[1]

Some recent work has been done on a stibnite prospect on My Creek, tributary to the upper Middle Fork of the Fortymile River. The prospect is on the south ridge of My Creek valley, about 3 miles above the mouth of the creek. It is about 50 airline miles west of Chicken and 40 airline miles northeast of the Tanana River at its closest point. On foot the distances are considerably greater. At present the nearest useable landing field is at Chicken.

The prospect is said to have been discovered in 1918 by Ted Machette, who did considerable surface work. It was restaked about 1938 by Paul Glasgow, but the claims were allowed to lapse; and in 1941 it was again staked by Dan Manske of Fairbanks and Fred Purdy of Chicken. A number of pits were dug by Manske and Purdy during 1941 and 1942, and early in 1943 they took in a tractor and drill from Chicken for additional prospecting and to build a winter landing field.

The prospect was examined by Joesting and Anderson in July, 1942.[2] Because of water seeping through the 5 to 6 foot layer of overburden, it had not been possible to bedrock any of the pits; consequently, it is not known if there is any ore in place. However, stibnite float was found in all pits sunk for a distance of 275 feet along the supposed strike of the deposit and it appears likely that some high-grade ore remains in place.

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[1]Reported in Dept. of Mines Pamphlet No. 1, 1942, p. 13.

[2]Joesting, H. R. and Anderson, Eskil, Preliminary Report on My Creek Stibnite Deposit, Fortymile District, Alaska, Oct. 10, 1942. Unpublished report on file at Territorial Dept. of Mines, Juneau.

About 4 tons of float containing an estimated 50% antimony, as well as several tons of lower grade ore, was sorted from the overburden taken from the pits. One piece of solid stibnite measured 20 inches wide and 3 feet long. The ore is unusually lustrous and coarse; some of the crystals are 1 inch wide and 6 inches long.

Although relations were obscured by overburden, the stibnite apparently occurs in a zone of white, vuggy quartz. Float from this zone is traceable for over 1,500 feet and in places is found over a width of 100 feet. Many of the quartz masses are several feet thick. In places the overburden consists almost entirely of quartz with an admixture of stibnite.

This prospect is remote from roads, consequently mining and transportation costs would be high. A winter tractor trail could be made to the Tanana River, but the distance would be about 60 miles.

An antimony deposit east of My Creek was reported on page 13 of Pamphlet No. 1. The information on which the report was based was from a source believed to be reliable, but when the district was visited in 1942, it was found that the prospect does not exist.

Tolovana District

Sawtooth Mountain Prospect

In the fall of 1942, Fred Wackwitz of Fairbanks reported a stibnite lode at the head of Chocolate Creek in the Sawtooth Mountains, about 35 miles WSW. of Livengood. The ore is said to outcrop on a ridge well above timber, at an altitude of over 4,000 feet. According to Mr. Wackwitz, the deposit is high-grade and about 6 feet thick. A small sample contained over 50% antimony.

Ruth Creek

A stibnite vein is reported to have been found several years ago by John Radak in a placer cut in Ruth Creek, but it is now covered by tailings. An unsuccessful search for the vein was made in 1942 by Mr. Radak and Howard Sparks. Stibnite float is found in the placer tailings.

Koyukuk District

Tributaries of Nolan Creek

Several small stibnite lodes occur on Smith and Fay creeks, tributaries of upper Nolan Creek, about 6 miles from Wiseman. The existence of at least one of them has been known since the early days of the camp.

Because of the increased demand for antimony, some prospecting was done during the summer of 1942. At the head of Fay Creek, a 6-inch vein of moderately high-grade stibnite was exposed in a pit dug by Sam Gamblin and Mark Ferguson. On upper Smith Creek, about 5 tons of stibnite float was recovered during ground-sluicing operations by Robert Jones and partners. This ore contains slightly less than 50% antimony, according to samples submitted by Mr. Jones. Its source is a small vein exposed in a placer cut a short distance upstream.

These deposits are not at present of commercial value because of their small size and because of high shipping costs.

Lake Creek, Wild River Area

Several pieces of stibnite about 2 inches long were found in placer concentrates from Lake Creek, tributary of Wild River. Native bismuth and native copper were also present, as well as a small proportion of scheelite. The concentrates were submitted by Elmer Hayes, placer miner on Lake Creek.

MERCURY DEPOSITS

Kuskokwim and Adjoining Regions

Practically all of the known high-grade cinnabar deposits in Alaska are found in the Kuskokwim region in the general vicinity of Sleitmut and in the southern part of the Iditarod district. During 1942 considerable exploration was carried out by the U. S. Geological Survey and the Bureau of Mines, working in cooperation with private interests.

Several bodies of minable cinnabar are reported to have been opened on the Red Devil property near Sleitmut and on the DeCoursey property near the head of the Iditarod River. In general, the deposits on the DeCoursey property are apparently relatively small and high grade, while those near Sleitmut are larger and of lower grade.

Mercury was produced during the past year from the DeCoursey and Red Devil mines, and from the Schaffer and Winchell property on the upper Holitna River. Production from the last named was from placers. Larger scale development of all of these properties was reported to be started in the spring of 1943.

Other Districts

A cinnabar lode and an associated placer deposit of cinnabar near Aleknagik in the Nushagak Bay area have been reported by Frank Waskey. Development is stated to be in progress.

Placer cinnabar has also been reported by Andrew Schwaesdal in Eightmile Creek, tributary of Bettles River in the upper Koyukuk region; by Frank Purdy in Franklin Creek in the Fortymile district; and by Stanley Morgan in the Canning River area, north of the Brooks Range.

MOLYBDENUM DEPOSITS

Kaiyuh Hills

A molybdenum deposit near the south end of the Kaiyuh Hills has been reported by Mertie.[1] In 1942 a sample from what may be the same deposit was submitted by Ernest McLeod. This sample, which contained approximately 4% molybdenite, was said to have come from a deposit at the south end of the Kaiyuh Hills, near Shageluk Slough and 8 miles from the Yukon River. The deposit apparently consists of a stockwork of molybdenite stringers in quartz.

TIN DEPOSITS

During 1942, investigations of placer tin deposits were carried out by the U. S. Geological Survey and the Bureau of Mines in the Gold Hill and Tofty districts. About a ton of tin concentrates was shipped from the Tofty district to the Purchase Depot in Fairbanks.

In addition to occurrences listed previously,[2] placer cassiterite was found during 1942 in samples of placer concentrates as listed below. The sample from Morelock Creek was kindly furnished by Robert Coates of the Geological Survey. The terms abundant, common, scarce and rare in the table indicate the relative amounts of cassiterite found in the concentrates and not in the original placers.

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[1]Mertie, J. B., Jr., The Kaiyuh Hills, Alaska, U. S. Geol. Survey Bull. 868-D, 1937, p. 174.

[2]Dept. of Mines Pamphlet No. 1, 1942, pp. 32-35.

Occurrences of Placer Cassiterite in Interior Alaska

District	Location of Occurrence	Relative Abundance	Source of Information
Circle	Half Dollar Creek	Abundant	Dept. of Mines
Fairbanks	Willow Creek, trib. Cleary Creek	Common	" " "
Fortymile	Fortyfive Pup, trib. Buckskin Creek	Rare	" " "
	"The Kink", N. Fork of Fortymile River	Common	Fred Purdy and Geol. Survey Bull. 872, p. 245
Gold Hill	Morelock Creek	Abundant	Robt. Coates

Good prospects of placer cassiterite have also been reported by Charles Holky in the headwater tributaries of the Cosna River, southwest of the Tofty district.

TUNGSTEN DEPOSITS

Placer Tungsten

Scheelite probably occurs more commonly in interior Alaska placers than is generally supposed. Recorded occurrences are numerous, but the records are far from complete.[1] About a third of the samples of placer concentrates collected during 1942 contained scheelite, as listed in the following table. The terms abundant, common, scarce and rare indicate the relative amounts of scheelite found in the concentrates and not in the original placers.

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[1]Dept. of Mines Pamphlet No. 1, 1942, pp. 37-40.

Occurrences of Placer Scheelite in Interior Alaska

District	Location of Occurrence	Relative Abundance	Source of Information
Bonnifield	Little Moose Creek	Scarce	Dept. of Mines
	Lower Eva Creek	Scarce	" " "
Circle	Half Dollar Creek	Common	" " "
Fairbanks	Cleary Creek, above Bedrock Creek	Abundant	" " "
	Dome Creek, above Seattle Creek	Abundant	" " "
	Upper Fox Creek	Abundant	" " "
	Willow Creek	Abundant	" " "
Fortymile	Fortyfive Pup, trib. Buckskin Creek	Common	" " "
	Jack Wade Creek	Scarce	" " "
	Chicken Creek	Scarce	Fred Purdy
	Meyers Fork	Scarce	" "
	Stonehouse Creek	Scarce	" "
Koyukuk	Lake Creek	Rare	Dept. of Mines
Ruby	Midnight Creek	Rare	" " "
	Trail Creek		Toivo Rae
Talkeetna	Dutch Creek	Common	Kenneth Wier

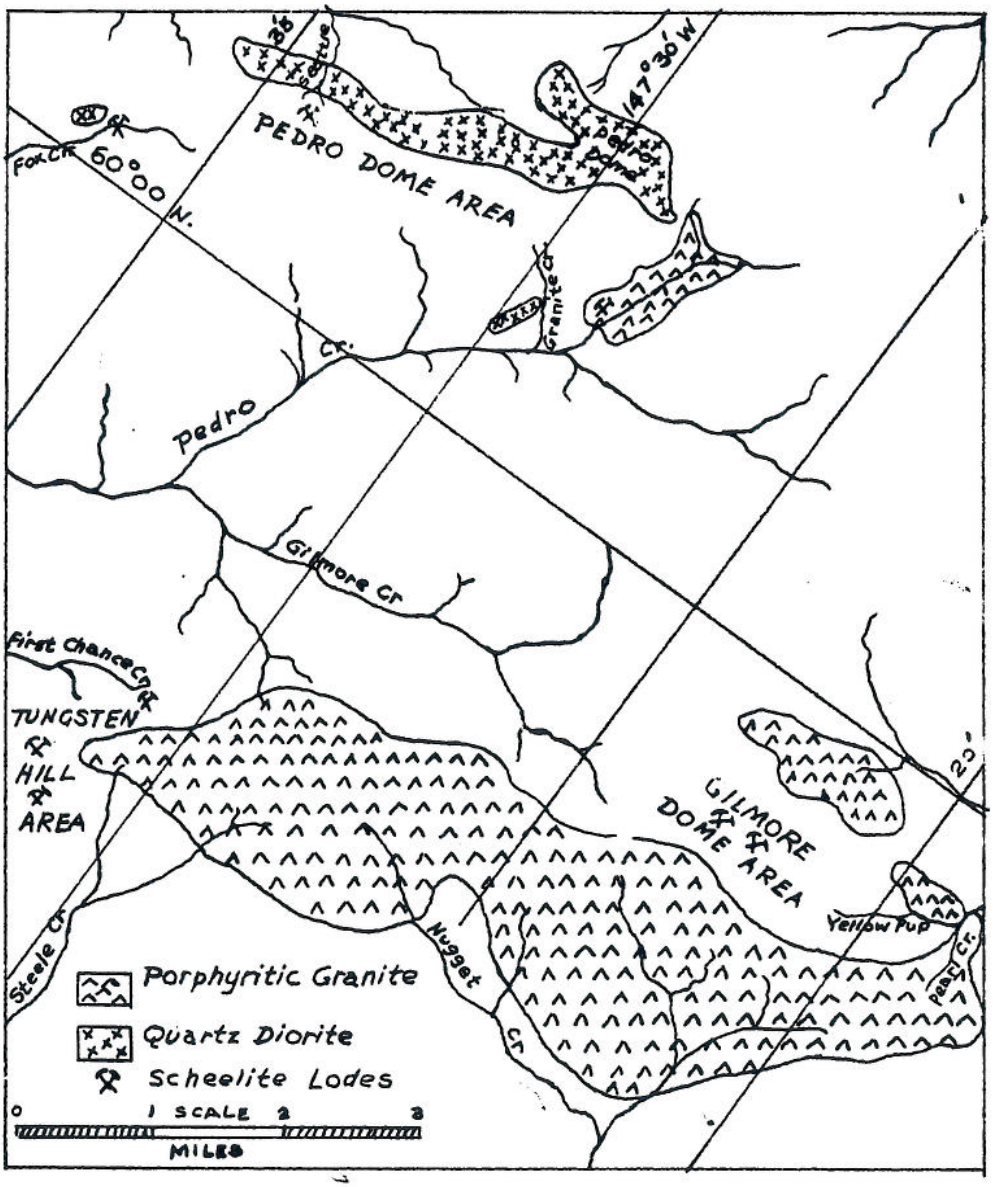
A sample of jig concentrates submitted by Don Gustafson from the Red Top mine in the Kantishna district consisted mainly of scheelite. Placer scheelite is said to occur in creek gravels in the vicinity.

Considerable wolframite was found by William Burns, former Territorial Assayer, in a sample of placer concentrates from Steel Creek, in the Livengood district. The identification was made a number of years ago.

Fairbanks District

Localities

Tungsten lodes in which scheelite is the chief ore mineral have been found in three areas in the Fairbanks district. They are: (1) The area at the head of Gilmore and Yellow Pup creeks, known locally as Gilmore Dome; (2) the area at the heads of First Chance, Engineer and Steele creeks, generally called Tungsten Hill; and (3) the Pedro Dome area. These areas are shown on the accompanying map.



Map showing areas of scheelite mineralization in the Fairbanks district. Adapted from U. S. Geol. Survey Bull. 849-B, Plate 3.

Prospecting and Exploration

During the last war some scheelite was mined in the Gilmore Dome and Tungsten Hill areas,[1] but all work ceased after about 1918. Exploration of the Gilmore Dome deposits was resumed in 1941. Several scheelite lodes were discovered in the Pedro Dome area during 1942. The existence of at least one of them may have been previously known, but its location had apparently been forgotten.

A geological survey of the Gilmore Dome and Tungsten Hill areas was made by a field party of the Department of Mines during a 6-week period in June and July, 1942. Later that summer a somewhat similar survey of parts of the same areas was made by a field party of the U. S. Geological Survey. In September 1942, an experimental magnetometer survey of the Gilmore Dome area was made by the Department of Mines for the purpose of tracing ore zones by their associated magnetic minerals.[2]

In the Gilmore Dome area, prospecting and exploration were carried out during 1942 by Cleary Hill Mines, Inc. and by Louis Colbert. Cleary Hill Mines secured a lease on a group of claims formerly worked by Alaska Tungsten Mines Company, and started surface exploration in the spring of 1942. Mr. Colbert began prospecting in the fall of 1941, on several claims adjoining the Cleary Hill holdings on the south and east.

Operations by Cleary Hill Mines have consisted of exploring the scheelite lode formerly worked by Alaska Tungsten Mines Company. The old shafts are now inaccessible; so the lode was first traced for 800 feet on the surface by a series of bulldozed trenches. The scheelite was found to occur in a zone of silicated limestone and calcareous schist, which dips 25-45° NNW. Following the surface work, an inclined shaft was sunk on the best showings. At a depth of 60 feet, drifts were run about 20 feet along the ore, both east and west from the shaft, and a 20-foot winze was sunk from near the end of the east drift. Below 60 feet the shaft was steepened and run beneath the ore, to avoid badly shattered ground. At a depth of 147 feet a drift was run 30 feet from the shaft to again intersect the ore. It is planned to continue exploration by drifting along the footwall of the ore, on the 147-foot level.

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[1]Mertie, J. B. Jr., Lode Mining in the Fairbanks District, U. S. Geol. Survey Bull. 662, 1916, pp. 419-424.

Davis, John A., Lode Mining in the Fairbanks District, Ann. Rept. of the Mine Inspector to the Governor of Alaska, 1922, pp. 111-112.

[2]Joesting, H. R. and Anderson, Eskil, Preliminary Report on Scheelite Deposits in the Fairbanks District. In preparation.

About 110 tons of ore with an estimated WO_3 content of 4.5% was taken out during underground exploration, up to March, 1943. Of this, about 63 tons was shipped to the Purchase Depot in Fairbanks in the fall of 1942. As in most deposits of this type, the ore is irregular in thickness and tenor. In general, it is from about 6 inches to 4 feet thick, with a normal thickness of about 1 to 2 feet. The WO_3 content varies between a trace and 30%, and averages slightly less than 5%.

Prospecting by Louis Colbert has consisted of searching for scheelite-bearing float and tracing it to its source by digging pits through the overburden. By this means he has found several good prospects in a mineralized zone that is apparently distinct from the zone in which the Cleary Hill ore occurs. An option on Mr. Colbert's claims has been taken by Cleary Hill Mines. Plans call for larger scale prospecting in the summer of 1943.

Little prospecting has been done in the Tungsten Hill area since about 1918, when a large number of pits and shafts were sunk. Several years ago a small dragline cut was made by Robert Heath and Louis Colbert, but this has now caved. All of the old pits and shafts are inaccessible, but the locations of mineralized zones may be inferred from material remaining on the dumps. A number of specimens of high-grade ore - one containing 8% WO_3 - were found on some of the old dumps. Several shafts were apparently sunk on small quartz veins. Some of these veins carry considerable scheelite, but they are apparently too small to be of commercial importance. Possibly the veins intersect calcareous beds and form larger ore shoots by replacement, as on Gilmore Dome.

In the Pedro Dome area several scheelite prospects were found during 1942. One was found by Dan Eagan and associates on the west side of Twin Creek at Mile 18 on the Steese Highway. Scheelite occurs here in several small stockworks of quartz stringers cutting fine grained quartz diorite. It is also found sparingly in the quartz diorite near the quartz stringers. Some surface work was done during the fall of 1942 and a tunnel was run 30 feet into the hillside during the following winter. Where exposed, the ore in the stockworks is below commercial grade.

A second prospect was found by Bob Leslie and Frank Hawks at the head of Seattle Creek, and some work was done by Duane Franklin and partner. A trench was bulldozed through several feet of overburden and into the weathered schist bedrock. A small pit was then sunk in the bottom of the trench, to a total depth of 8 feet below the surface. Exposed in the trench was a 3-foot zone of finely disseminated scheelite, containing a few small, high-grade spots, and with an estimated average WO_3 content of from 0.5 to 1 percent. Fine-grained quartz diorite was also exposed in the bottom of the pit. Because it was made when the ground was covered with snow, a thorough examination of the prospect was not possible.

A third prospect is reported to have been found by Ed Verdin in a placer cut at the head of Fox Creek. It has not been examined by thewriter. Bedrock is said to be badly weathered, so that relations are obscure. A sample of placer concentrates obtained from a cut nearby consisted mainly of scheelite, of the variety that fluoresces pale yellow, thereby indicating that an appreciable amount of molybdenum is present.

Geologic Features

Most of the scheelite deposits of the Fairbanks district are found in calcareous beds in the schist, which is the predominant country rock. Mineralization was apparently effected by tungsten-bearing solutions expelled from underlying granitic rocks; these solutions reacted with the calcareous rocks, replaced much of the calcite, and deposited scheelite and associated gangue minerals. Non-calcareous schists adjacent to the ore were unaffected by the mineralizing solutions, although occasional small scheelite-bearing quartz veins are found in them.

Several granitic intrusions are known, around which scheelite deposition has taken place. One is the mass of porphyritic granite that outcrops in a 2 by 8 mile area between Pearl Creek on the east and upper First Chance Creek on the west. Near the east end of the granite are the Gilmore Dome deposits, while at the west end are those of Tungsten Hill. Other intrusions near which scheelite deposits have been found are in the Pedro Dome area. Quartz diorite is the chief intrusive rock-type in this area, but there are also several smaller intrusions of porphyritic granite, as well as a number of granitic dikes. Most of the intrusions are elongated east-west, parallel to the regional strike of the schist.

Although many of the higher grade deposits are found some distance from the nearest known granitic contacts, the genetic relationship between the scheelite and igneous rock is indicated by the frequent occurrence of sparse disseminations of scheelite in sills and dikes that are offshoots of the main intrusion. Scheelite has also been found in small quartz stringers in the igneous rock.

On the summit of Gilmore Dome the schist in which the lodes occur is enclosed on three sides by granite, and granite undoubtedly underlies the schist at no great depth. Elevations taken during a plane-table survey show that the granite on the surface at the nearest known contacts is from 300 to 500 feet lower than the scheelite prospects. Interpolation of these elevations indicates that the granite itself is domed up under the summit of Gilmore Dome, consequently it may lie only a few hundred feet vertically beneath the surface. Any cupolas or dike-like extensions of the granite would of course lie at even shallower depths.

In the Tungsten Hill area the relationship between the scheelite and granite is even more apparent than on Gilmore Dome. The replaced calcareous rocks in which the ore occurs are cut by numerous small granitic sills and dikes, some of which contain sparsely disseminated scheelite; and several prospects were found in replaced zones and small veins adjacent to the igneous rocks. Less is known of the Pedro Dome area, but it is inferred that relations are analogous to those in the other areas, since the prospects have been found in or close to the granitic rocks.

Only in the Gilmore Dome area has there been sufficient recent prospecting to expose commercial scheelite deposits. At least two ore zones have been found in this area. These zones were originally beds of limestone and calcareous schist that have been largely replaced by scheelite and gangue minerals. Scheelite occurs disseminated in a good part of the replaced rock. Locally, rich ore shoots are found where quartz stringers intersect the flatter dipping replaced beds. Where these stringers cross mica schist or quartzite schist they contain only small amounts of scheelite, and the wall rock is little altered. Where they enter a limestone horizon, however, extensive silicification and deposition of scheelite have taken place for several feet on each side of the stringers.

Gangue minerals associated with the scheelite are, in the approximate order of their abundance: Quartz, calcite, pyroxenes, hornblende, garnet, titanite, apatite, vesuvianite, epidote, feldspars and biotite. Of these the first four comprise the bulk of the gangue. Practically all are calcium-bearing minerals and were formed by direct replacement of calcite, although most of the hornblende is an alteration product of pyroxene. Some of the calcite is secondary, but much of it was simply recrystallized during mineralization. Molybdenite, pyrite, pyrrhotite and chalcopyrite are found only rarely. Fluorite is found in ore from Tungsten Hill, but not from Gilmore Dome.

The ore has not been sufficiently studied to determine in detail the order of deposition of the minerals. In general there was considerable overlap in deposition, with most of the pyroxene and hornblende, and some of the quartz and scheelite, forming during early stages of the mineralization; while a good part of the quartz and scheelite were deposited late. Some of the pyroxene and hornblende, however, were deposited later than the scheelite.

Underlying the ore in the Gilmore Dome area is a 1 to 4 foot zone of dark green, slightly schistose amphibolite. It consists principally of hornblende, with smaller amounts of quartz, biotite. pyroxenes, magnetite and apatite, and with occasional minor amounts of garnet, chlorite and feldspars. Scheelite is sometimes found along cracks. In some specimens the hornblende is an alteration product of pyroxene. A similar rock appears to be associated with the ore in the other areas, as indicated by its occurrence with float containing scheelite; but its position with respect to the ore was not observed, nor is it known that the association is invariable.

The origin of the amphibolite is not clear. According to Prindle and Katz,[1] similar rocks, apparently unrelated to scheelite mineralization, are associated with crystalline limestone in the Fairbanks district. In the areas considered here, they appear to be related to the scheelite in so far as they have been partly altered by the same hydrothermal solutions that introduced the tungsten. In parts of the Gilmore Dome area the amphibolite zones have been traced by magnetic measurements and thus have been of aid in tracing the ore.

Only one of the orebodies, in the Gilmore Dome area, has been sufficiently explored to permit making any conjecture as to its probable extent. This deposit has been traced, with some lean or barren parts, for 800 feet on the surface, and at one place to a depth of 125 feet along the dip. No ore or replaced rock has been found in float past the known surface limits of the deposit, consequently its horizontal extent may not be much greater than 800 feet. Whether the ore continues to any considerable depth apparently depends on the downward continuity of the replaced zone and also on the depth at which the underlying granite lies. According to rather scant field evidence, the granite lies within a few hundred feet of the surface. Probably the ore will be cut off at the granite contact, assuming that the replaced zone reaches the granite. No change is observable in the character of the ore at the present maximum depth of exploration of 125 feet, and it is likely that it will continue to considerably greater depths.

In general, it would appear that since the known deposits of economic importance occur in replaced calcareous horizons in the schist, their size must necessarily be limited to that of the calcareous horizons. Usually, of course, the deposits will be smaller than the calcareous horizons because replacement has not taken place across their full widths.

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[1]Prindle, L. M. and Katz, F. J., Geology of the Fairbanks District, U. S. Geol. Survey Bull. 525, 1913, pp. 61-62.

These calcareous horizons are apparently discontinuous, lenticular masses of varying thickness and extent, rather than continuous beds.[1] In the Gilmore Dome area the single one that has been explored varies between 1 foot and 15 feet in thickness, but its other dimensions are unknown.

A number of scheelite-bearing quartz veins have been found, especially in the Tungsten Hill area, but so far as is known, all of them are too small or too low-grade to be commercially important. Larger and higher grade deposits may be found, however, where the veins intersect calcareous beds and deposit scheelite by replacement.

Prospecting for Scheelite

Prospecting for lode scheelite in the areas discussed here has been handicapped by a lack of bedrock exposures. Although many prospects have been found, only a small portion of the areas has been prospected and it is likely that a number of deposits remain undiscovered.

Two scheelite zones have been found in the Gilmore Dome area. Whether these zones are distinct, or are merely parts of the same zone offset by faults, has not been determined. Other similar zones may also exist in the same area.

Evidence of scheelite mineralization also occurs on Pearl Creek, just below the mouth of Yellow Pup and about a mile east of Gilmore Dome. Several pieces of silicated calcareous schist float containing about 1% WO_3 were found on the east side of Pearl Creek. No prospecting has been done here. Scheelite prospects were also reported to have been found in several old shafts on the opposite side of Pearl Creek, but no ore was seen on the dumps. Another unconfirmed prospect was reported on a high ridge on the east side of upper Pearl Creek. Considerable scheelite as well as wolframite has been found in the placers of both Pearl and Yellow Pup creeks.

Little scheelite prospecting has been done in the area between the Gilmore Dome and Tungsten Hill areas. Since granite underlies most of this area, it is unlikely that commercial deposits will be found there. At or near the contact with the schist, however, contact or replacement deposits may possibly be found. Placer scheelite has been found in most of the streams draining the north side of the granite-schist contact, but so far as is known it is less abundant than in the streams draining Gilmore Dome and Tungsten Hill. Little is known of the area immediately south of the granite. Most of it is covered by thick overburden.

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[1]Prindle and Katz, op. cit. (Bull. 525), p. 62.

In the Tungsten Hill area a number of scheelite prospects are known to have been found, but little information could be obtained as to their size and tenor. Sufficient high-grade ore was found on several of the old dumps, however, to indicate that those prospects are worth reopening. Many of the prospects are described by Mertie,[1] who visited the area in 1916 when most of the work was done.

Only three scheelite lodes have been found in the Pedro Dome area, but relatively little prospecting has been done. Placer scheelite is found in most of the creeks draining the area, however, and for this reason it is likely that other lode sources of scheelite exist. Placer scheelite is particularly abundant on upper Fox and Dome creeks.

Considerable placer scheelite is also found in upper Cleary Creek and its tributaries, about 2 miles northeast of Pedro Dome. At least part of it was doubtless derived from gold quartz veins in the vicinity, several of which contain small amounts of scheelite. But conditions are also favorable for the occurrence of replacement-type scheelite deposits, since both granitic rocks and limestone occur nearby. Several prospects containing sphalerite and galena in replaced limestone have been found on tributaries of upper Cleary Creek.

Fortymile District

Buckskin Creek Area

Placer scheelite is relatively abundant in Fortyfive Pup, tributary of Buckskin Creek, about 10 miles northwest of Chicken. During a field trip in 1942 the writer observed numerous beds of limestone in the schist country rock in the vicinity of Fortyfive Pup, as well as many large and small areas of granite. Conditions are therefore probably favorable for the occurrence of lode scheelite. Little lode prospecting has been done in this locality.

Upper Middle Fork - Mosquito Fork Area

Conditions are similarly favorable for the occurrence of scheelite in the area between the headwaters of the Middle Fork and the North Fork of the Fortymile River. Several replacement deposits of copper and lead in limestone have been found near Ketchumstuk and My creeks, and it is not unlikely that scheelite occurs in the same locality. Little prospecting has been done here, because the area is remote and difficult of access.

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[1] Mertie, J. B. Jr., op. cit. (Bull. 662), p. 422-424.