

# MINES & GEOLOGY BULLETIN



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## Tungsten in Alaska

By Paul A. Metz and Mark S. Robinson  
Economic Geologists,  
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University of Alaska, Fairbanks

Tungsten is a silver-grayish white metal of high specific gravity (19.35) that is important to industrial societies because of its unique physical and mechanical properties. Next to carbon, tungsten has the highest melting point of all elements (3,400°C). It has the highest tensile strength of all metals (590,000 lb/sq in.), and has a high heat of sublimation, low compressibility, and a low coefficient of thermal expansion.

The major uses of tungsten are related to its own physical properties and those of its compounds and alloys. These properties include extreme hardness, hardness retention and strength at high temperatures, high tensile strength, high resistance to wear, and adequate electrical conductivity.

End uses of tungsten include production of metal-working machinery, tool steel, construction and mining machinery, drill bits, turbines, rocket nozzles, structural materials in nuclear and space applications, transportation equipment, electrical equipment, lamp filaments, high-temperature thermocouples, and inorganic chemicals such as dyes, inks, and pigments.<sup>1</sup>

The United States produces about 7 percent and con-

sumes about 17 percent of the annual world tungsten output. Domestic production in 1978 came primarily from two mines, one in Colorado and one in California. The estimated 1978 domestic production was 7,000 short ton units (stu) of tungsten trioxide (WO<sub>3</sub>). The estimated 1977 apparent domestic consumption was 15,555 stu. The final end uses of tungsten were (in percent): metalworking and construction machinery, 74; transportation, 11; lamps and lighting, 7 electrical, 4; other, 4.<sup>2</sup>

## Types of Deposits

Tungsten occurs in various geologic environments, from high-temperature deep-seated deposits to low-temperature thermal springs. The major economic occurrences include contact-metamorphic deposits (tactites), hydrothermal veins, stockworks and related porphyry molybdenum deposits, and stratabound syngenetic deposits.<sup>3</sup>

In the United States, the primary sources of tungsten are contact metamorphic deposits within skarns. The calc-silicate minerals that form tactites include garnet, epidote, hedenbergite, and hornblende. The rocks also contain magnetite, quartz, and calcite. The contact-metamorphic deposits are formed by the addition of thermal energy from an intrusive body within a reactive calcium carbonate (lime-rich) environment. Elements concentrated in the skarns or tactites include iron, silica, aluminum, and manganese and lesser quantities of

magnesium, tungsten, molybdenum, copper, zinc, sulfur, and fluorine.

In tungsten-bearing tactites the ore mineral is usually scheelite or molybdenum-bearing scheelite. The ore bodies are usually bounded by the wall of the intrusion and are also locally controlled by host-rock composition and structure. They are tabular and parallel to the intrusive contacts, and individual ore zones range from several centimeters to several meters in width. The vertical and lateral extent of the mineralization varies greatly, with some ore zones extending over several thousand meters. Tonnages and grades are also highly variable, but larger bodies contain tens of millions of tons of ore that can average between 1 and 2 percent  $WO_3$ .<sup>1</sup>

Tungsten-bearing quartz vein deposits compose three-fourths of the known world reserves of the metal; most of these reserves are in China and Southeast Asia. As with tactites, the veins are associated with granitic plutonic rocks, and the host rocks are usually shale, siltstone, quartzite, or their metamorphic equivalents rather than carbonate rocks. The veins have simple mineralogy, and contain either quartz with scheelite or one of the wolframite-series minerals. Other minor minerals include sphalerite, galena, chalcopyrite, tetrahedrite, arsenopyrite, pyrite, pyrrhotite, molybdenite, fluorite, rhodochrosite, and potassium feldspar. The veins are usually steeply dipping tabular or echelon bodies with lenticular ore shoots that range from a few centimeters to several meters thick. Strike lengths and down-dip extensions have been recorded in excess of 300 m. The average grade of most veins is believed to be about 1 percent  $WO_3$ .

Stockwork and related porphyry molybdenum deposits are important sources of by-product tungsten production in the United States. The ore bodies form in intensely fractured, brecciated, and sheared porphyritic intermediate to felsic plutonic rocks and in the surrounding host rocks. The primary ore mineral of tungsten is scheelite. The deposits contain only a few hundredths of 1 percent  $WO_3$ ; nevertheless, the tungsten contributes significantly to the total value of the mineral deposit. The deposits are measured in hundreds of millions of tons of ore and are mined at rates of ten of thousands of tons per day.

Although stratabound syngenetic tungsten deposit models have been developed only in the last 20 years, several major mines have been found and hundreds of suspected stratabound tungsten occurrences have been located in Europe, Asia, and Australia. These deposits are genetically associated with mercury and antimony mineralization. The host rocks are primarily basic volcanic rocks, but scheelite mineralization also occurs in sedimentary and volcanoclastic sequences. The ore bodies are lenticular, and the mineralized sequences range from less than 1 m to several tens of meters thick. The mineralized horizons may extend for tens of kilometers. The size of the known deposits are in the range of

several million tons of mineralized rock about 1 percent  $WO_3$ .

#### Geology of Alaska Tungsten Deposits

Although there are over 250 known tungsten occurrences in Alaska,<sup>4</sup> major past production has come from two areas: the Riverside mine in the Hyder district in southeastern Alaska (about 3,000 stu of  $WO_3$  from 1941-46), and the Stepovich lode in the Fairbanks district (about 4,000 stu from 1916-18 and 1942-44). Minor amounts of scheelite concentrates have been shipped from interior and southwestern Alaska placer gold mining districts during times of higher prices.

The scheelite mineralization in the Riverside mine occurs in quartz sulfide veins in the Texas Creek granodiorite of Jurassic or Cretaceous age. The oldest rocks in the area are Mesozoic or Paleozoic amphibolite, gneiss, schist, and phyllite. In the immediate vicinity of the mine hornfels, phyllite, and schist of the Hazelton(?) Group of Late Triassic or Early Jurassic(?) age are in contact with the Texas Creek granodiorite. The greatest abundance of scheelite occurs in veins in and adjacent to xenoliths of schist in the granodiorite. The main ore body in the Riverside mine is the Lindeborg shear zone, an elongate shear in schist and argillite parallel to foliation which strikes N. 45°-55° W. and dips steeply to the north. According to Byers and Sainsbury,<sup>5</sup> the replacement of schist contains quartz with stringy bands of fine-grained scheelite parallel to the schistosity. The mineralized zone is up to 30 m wide, 700 m long, and 230 m deep. Ore minerals include scheelite, base-metal sulfides, and native gold. Gangue minerals include quartz, calcite, ankerite, and barite. The average tenor of the ore mined was about 1 percent  $WO_3$ .<sup>5</sup>

The main tungsten production in the Fairbanks district has come from contact-metamorphic deposits in the Birch Creek Schist (Precambrian or lower Paleozoic) that has been intruded by porphyritic granite (Mesozoic). The tungsten mineralization is located in three geographic areas: Gilmore Dome, Steele Creek-First Chance Creek, and Pedro Dome. The major production came from the Stepovich mine, in the Gilmore Dome area (fig. 1).

The Stepovich lode occurs in allicated limestone lenses of Birch Creek Schist. The highest grade mineralization occurs at the intersections of quartz pegmatite dikes with the limestone. Amphibolites in the schist are also important local controls of ore deposition. The primary ore mineral is scheelite and the skarn and gangue minerals include diopside, hornblende, garnet, clinozoisite, zoisite, vesuvianite, calcite, quartz, anorthoclase, muscovite, biotite, chlorite, apatite, sphene, axinite, and meliphanite. The mineralization occurs as granular ore in the crystalline limestone and as replacements in quartz pegmatites and quartz veinlets. The irregular size and shape of the ore shoots make estimates of the remaining reserves difficult. The shoots, which are generally less than 1 m wide, extend for at least 500 m along strike and are inferred 250 m down dip. The



Fig. 1. Significant tungsten districts in Alaska. 1 - Western Seward Peninsula; 2 - Central Seward Peninsula; 3 - Southern Seward Peninsula (Nome); 4 - Central Brooks Range (Wiseman); 5 - Fairbanks district; 6 - Hot Springs district; 7 - Kantishna district; 8 - Hyder district.

average grade of the historic mined ore was somewhat less than 5.0 percent  $WO_3$ .<sup>6</sup>

#### Prospecting Techniques

Exploration for tungsten should begin with a thorough understanding of the various tungsten-bearing geologic environments or deposit types. Second, the regional geology of potential target areas must be known; regional studies may include reconnaissance geologic mapping and geophysical surveys. Third, the prospector should narrow the target area by stream-sediment or pan-concentrate sampling, particularly for heavy metals. Also, potential host rocks should be examined with an ultraviolet light to determine the presence of scheelite (tungsten minerals are commonly difficult to identify without this technique). Finally, the samples should be assayed for  $WO_3$ .

Historically, exploration for tungsten, particularly in Alaska, has been concentrated on contact-metamorphic deposits, hydrothermal vein deposits, and stock-work and related porphyry molybdenum deposits. The stratabound syngenetic tungsten deposit model should be carefully considered in any exploration program for tungsten in Alaska.<sup>7</sup>

#### Marketing Aspects

The price of tungsten has risen rapidly, from \$44.22 per stu in 1973 to \$131.35 in late 1978. U.S. domestic demand is expected to rise at a rate of 6 percent per year through 1985,<sup>2</sup> and even with current and planned mine and plant expansion the U.S. will continue to increase imports of tungsten.

When the major tungsten production in Alaska terminated in 1946, the price of tungsten ranged from \$24-28 per stu. In 1946 dollars, the current price of the metal is \$41.44; thus, the commodity price has increased much faster than the general price level.

#### Summary

With increasing demand for tungsten in the United States, either new deposits must be found or imports

must be increased. The favorable price level for tungsten and the long-term-demand projections should tend to encourage exploration and development of tungsten resources.

Alaska has at least 250 subeconomic occurrences of the element. The occurrences have been found by using well-established mineral exploration models. In the future, tungsten resources may be found in Alaska by using new exploration models such as the stratabound syngenetic model.

#### References Cited

- <sup>1</sup>Hobbs, S.W., and Elliot, J.E., 1973, Tungsten, in Brobst, D.A. and Pratt, W.P., eds., *United States Mineral Resources*: U.S. Geol. Survey Prof. Paper 820, p. 667-678.
- <sup>2</sup>Kornhauser, B.A., 1978, Tungsten: Staff, U.S. Bur Mines Mineral Commodity Summaries, p. 180-181.
- <sup>3</sup>Maucher, Albert, 1976, The stratabound cinnabar-stibnite-scheelite deposits, in Wolf, K.H., ed., *Handbook of stratabound and stratiform ore deposits*: New York, N.Y., Elsevier Scientific Publishing, v. 7, p. 477-503.
- <sup>4</sup>Cobb, E.H., 1975, Tungsten occurrences in Alaska: U.S. Geol. Survey Mineral Inv. Resource Map MR-66, scale 1:2,500,000.
- <sup>5</sup>Byers, F.M., Jr., and Salisbury, C.L., 1956, Tungsten deposits of the Hyder district, Alaska: U.S. Geol. Survey Bull. 1024-F, p. 123-140.
- <sup>6</sup>Byers, F.M., Jr., 1957, Tungsten deposits in the Fairbanks district, Alaska: U.S. Geol. Survey Bull. 1024-I, p. 179-216.
- <sup>7</sup>Metz, P.A., 1977, Comparison of mercury-antimony-tungsten mineralization of Alaska with stratabound cinnabar-stibnite-scheelite deposits of the Circum-Pacific and Mediterranean regions, in *Short Notes on Alaskan Geology - 1977*: Alaska Div. Geol. and Geophys. Surveys Geol. Rept. 56, p. 39-41.

#### Two Open-File Reports on Geophysics Released

Two open-file reports on the Talkeetna-Kashwitna Rivers area in south-central Alaska have been recently completed. They are:

- AOF-107I, "Provisional geophysical interpretation of simple Bouguer gravity map, Talkeetna-Kashwitna Rivers area, Alaska," by S.W. Hackett (pl. 1:63,360). \$1.50.
- AOF-107J, "Preliminary geophysical interpretation (basement complex) of aeromagnetic map, Talkeetna-Kashwitna Rivers area, Alaska," by S.W. Hackett (pl. 1:63,360). \$1.50.

If any readers would like their names listed in the annual revision of Information Circular 8, "Consultants available for work in Alaska," please send your name, address, and a brief description (10 words) of your specialty to the College office. We will be happy to include your firm or name in the IC.

Lastly, we regret to inform you that rising postage costs have forced us to raise the price of our Energy Resources Map of Alaska and our ERTS Satellite Map of Alaska. When ordering, add \$0.92 to the \$2.50 for the Energy Map and \$2.22 to the \$7.00 for the five-piece Satellite mosaic.

**Bottoms Up.** In the last three and a half years only one new industrial project over \$50 million has won environmental approval in the relatively high unemployment state of California. That was a brewery.—*Mining Engineering*, March 1979.

## UA Confab on Placer Mining Set for April 3-4

A 2-day conference on placer gold mining will be held Tuesday and Wednesday, April 3 and 4, at the University of Alaska in Fairbanks. Emphasis will be on recovery systems for placer gold. A variety of associated topics will be covered, including gold characteristics, cleanup procedures, suction dredges, environmental constraints, gold marketing, and permits required to mine in Alaska. Also, mine operators from Alaska and the Yukon Territory will describe their mining operations.

The daily sessions began at 8:30 a.m. and end at 4:30 p.m. J.P. Tangen, president of the Alaska Miners Association, will speak on recent legal decisions pertinent to placer mining at a 7 p.m. banquet April 3. Registration is \$20 (\$30 for two luncheons and the banquet). For further details on the program, contact Dr. Earl Beistline, School of Mineral Industry, Brooks Bldg. UA, Fairbanks, AK 99701. For information on housing and registration, contact Mrs. Sharon Crutchfield, Dept. of Conferences, 117 Eielson Bldg, UA.

The conference is cosponsored by the UA School of Mineral Industry and the Alaska Miners Association.

## Non-Colonialism at Home

(from Wall Street Journal, Dec. 12, 1978)

It is fashionable to attribute the lack of economic development in the Third World to decisions made from afar about its natural resources. The colonial administrators departed, the story goes, only to be replaced by neocolonialists in London, Bonn, Paris and Washington, who locked up Third World resources in uses that kept the emerging nation-states poor. This explanation of Third World poverty still inspires a great deal of outrage against the U.S. among university people and provides excuses for socialist failures in the Third World.

We are puzzled why this doctrine is so narrowly applied. It seems to us that it is at least as good an explanation for the growing lack of economic development in Alaska and the western states. After all, a New Yorker and an Alaskan probably have less in common than Washington and Third World bureaucrats who shared an Ivy League education. We wonder if it is true that all imperialists are foreign or whether there are domestic ones, too.

One characteristic of imperialists is that they don't rely on consensus politics, as happened the other day when 121 million acres of Alaskan lands got locked up. The Senate wouldn't do it, so the President and Interior Secretary did. Citing "emergency" conditions, the Interior Secretary used the Federal Land Policy and Management Act of 1976 to close off development of 121 million acres for three years. This is the first emergency withdrawal under the act, and if it is any indication of what to expect, the entire country will be locked up in a few years.

The President also invoked the Historic Sites and

Antiquities Act to permanently set aside 56 million of the acres as national monuments. To put this in perspective, prior to his action, about 9.5 million acres had been set aside under the act since it passed in 1906.

Protecting the Alaskan lands did not require insult and injury from the President and Interior Secretary. Most of the lands were already protected under the D-1 section of the Alaska Native Claims Settlement Act. The failure of the Senate to arrive at a consensus decision in the last session of Congress did not expose these lands to "rape, ruin and run," or to anything other than a few hunters.

People in the eastern U.S. might not know the size of 56 million acres. That's roughly New York state plus most of New England. The 121 million acres equal the land area of the eastern seaboard states from Maine down into North Carolina. We have heard about the power of special interest lobby groups before, but we have never seen anything like this.

And it is only a small part of the story. The Alaskan land lock-up at least involves public lands. Throughout the western states private land is being locked up as well as a result of nondegradation air and water standards. To bring undeveloped privately owned western lands into development is now next to impossible, and to expand development in developing areas has been made more difficult. It is, after all, difficult to do anything when air and water must remain pristine.

Whatever the intention, the result has been to hold down the economic development of the western states, thus protecting eastern labor unions, industrial plants and resources from competition. Examples abound. Proposed federal regulations cancel the economic advantage of low sulfur western coal by requiring the same scrubbers for it as for "dirty coal." The environmental movement provides a convenient mask for any eastern legislators who want westerners for customers, not competitors.

The lock-up of public and private lands in the western states is a result of intense lobbying pressure, and we doubt that the public understands the consequences. The Independent Petroleum Association says that as a result of law or administrative procedures about 500 million federal acres, roughly one-fourth of the U.S., are off limits to oil and gas development. At a time when we are growing increasingly dependent on unstable foreign sources of energy, the most rapidly growing aspect of the American economy is the land and resources that are being removed from development.

The withdrawal of large amounts of public land from the nation's resource base would seem to be properly a role for Congress. The President received a letter urging him to make the unprecedented withdrawal from Rep. Udall and the House Interior Committee. According to the letter, "Protection for the American people's Alaskan treasures is required to insure that the decisions concerning these public lands are made by the people's representatives, and not by private interests." Somehow

we feel uncomfortable with the thought that Senators are not the people's representatives, but an Imperial President is. *Instead of suing the President, maybe the state of Alaska should take its case to the UN.* (Emphasis ours—Ed. note.)

### Haynes Named New DNR Deputy Commissioner

In late January, Commissioner Robert E. LeResche announced the appointment of Geoffrey Haynes, 31, as the new DNR Deputy Commissioner. Haynes, who was an Assistant Attorney General in the Alaska Department of Law, began his new position February 1, succeeding Frederick H. Boness, who left the DNR to practice law in Anchorage.

Haynes has a Bachelor of Arts degree from Miami University of Ohio (1969) and a Doctor of Jurisprudence from the University of Oregon School of Law (1972). Before joining the Department of Law in Juneau, he was a legislative assistant with the U.S. Department of Commerce in Washington, DC. Geoff is unmarried.

### AGS to Hold 1979 Symposium in Late April

The 1979 symposium of the Alaska Geological Society will focus on Alaska's mineral and energy resources, economics, and land status. The meeting will be held April 23-25 at the Captain Cook in Anchorage.

Various speakers will speak on five broad topics. Monday, April 23, will be devoted solely to petroleum resources; on Tuesday morning, Alaska's coal deposits will be discussed, with water, industrial minerals, and associated data banks covered that afternoon. Wednesday's program will highlight representatives from the minerals industry, who will speak on the geology of hard-mineral resources in the morning session and legislation and the economics of mineral exploration in the afternoon.

The regular registration fee is \$40, with various options. For further information contact the AGS, c/o American Express, 3201 C St., Anchorage, AK 99503 (ph. 276-2845).

### Quartz Hill Molybdenum Deposit may be World's Second Largest (from *Petroleum Information*, Jan. 24, 1979)

U.S. Borax says its molybdenum deposit in Southeastern Alaska may be the second largest in the world, and is now urging passage of an Alaska National Interest Lands Conservation Act that would specifically exclude the Quartz Hill area from restrictive land use classification. The mineral deposit, near Ketchikan, lies within the Boundaries of the Misty Fjords National Monument created by President Carter December 1. Dr. Carl L. Randolph, president of U.S. Borax, said the company in 1976 had estimated the size of the

mineral deposit in excess of 100 million tons. However, new drilling during 1978 indicates reserves of 700 million tons, he said.

Sixty thousand feet of core drilling to date indicate in-place reserves equivalent to 1.25 billion pounds of molybdenum, Randolph said. The in-place reserves have an estimated gross value of \$7 billion and include a portion containing 500 million tons grading .18 per cent molybdenum disulfide. Based on present molybdenum demand forecasts, U.S. Borax estimates Quartz Hill could have annual gross sales of \$150 to \$200 million over a life of about 40 years. Randolph said the depth and width of the deposit aren't known and future drilling is expected to add to the estimated reserves.

### ...FORUM...

*The Bulletin occasionally prints viewpoints found in editorials and letters to the editor of various publications.*—Ed. note.

### Alaska Rich

(from *Seattle Post-Intelligencer*, Dec. 28, 1978)

On behalf of the board of directors and members of the Alaska Miners Association, I wish to bring to your attention several points The Post-Intelligencer failed to consider in the Dec. 11 editorial supporting President Carter's classification of 56 million acres of Alaska land as national monuments.

There was no need for the president to take any action, for these lands were already subject to an existing withdrawal under section 17(d)(1) of the Alaska Native Claims Settlement Act even though the so-called "D-1" status expired on Dec. 18.

Further, the assumption that Carter has put aside the lands until Congress has an opportunity to act disregards history. Congress never has terminated a national monument classification, even in the face of a national emergency, except to convert it into a national park.

The merits of permanently precluding mineral exploration were not measured against the nation's critical need to find domestic mineral and energy supplies.

Our nation also needs raw materials to support our industrial economy...

According to the Bureau of Mines, 28 out of 37 minerals now being imported into the United States are found in Alaska. Likewise, 31.1 percent of all proven domestic reserves of oil and gas are found in Alaska. Identified mineral resources in Alaska, excluding iron or titanium, have an estimated value of \$5.5 trillion. The conclusion that no one could find much in the areas to make money from is not based on fact.

Proved molybdenum reserves at Quartz Hill are known to be worth many millions of dollars but Quartz Hill is in the middle of one of the new national monuments.

As for the overall tourism picture, the president's action will have an inhibiting effect because these areas will be closed to the construction of roads, hotels, and visitor centers....

Go and visit Alaska's new national monuments—all 17 of them—then report not on the majestic beauty but on the expense of your visit; the number of poor, hispanic, black, or handicapped people you met within the monuments. I believe you will find that these new monuments are not a great national asset, but a play-toy for the "spoiled generation."

Finally, while we in Alaska feel threatened economically by the president's decision, we are also aware that Seattle has strong economic ties to Alaska and a negative economic impact on Alaska will adversely affect your city.

J.P. TANGEN,  
Alaska Miners Association,  
Juneau, Alaska

Division of Geological & Geophysical Surveys  
College, Alaska 99708  
November 28, 1978

Dear Sirs:

I was raised in Long Creek, Alaska. There has been mining going on for seventy years on that creek. When I was a boy the mining never hurt the fish or animals in that area.

There used to be about eight mining outfits, all of which were putting mud in the creek. There was always an abundance of fish in Long Creek.

At the present time Mr. Al Kangas owns the creek. Two years ago he tried pit mining and did not put any mud in the creek. Last year you couldn't even catch one grayling in Long Creek. This year he put a little mud in the creek and the fish started coming back. The reason the fish have started coming back is that during the no mud period the beaver dams had gotten too high for the fish to get up the creek and spawn. Now with a little mud going down the creek the beaver dams fill up and the fish can get up the creek to spawn. This also helps the beaver and the moose because when the pond fills up, new brush grows and the animals do not have to leave the area to look for food.

I am the only miner, to my knowledge, that has submitted a multiple use plan to the state. Although I can't seem to get any direct answers from any of the state departments, I have not written to the Governor as of the present time. I have, however, put my plan in action.

I am leveling my tailings and putting the overburden piles back over them. Next summer I plan to plant some type of grain on the parts I have completed. Barley, oats, wheat and rape seed do very well in the Ruby area. When I finish mining all of my ground I should have a

good 320 acre farm going.

I am a life long Alaskan of 43 years and all of my family loves Alaska. If I can possibly make all of my plans work I will have something that my future generations can look forward to and be proud of. This is what will make our state even greater than it already is.

Our creek is at least 100 miles by streams to the larger streams where possibly salmon could spawn and that is doubtful as those streams are so full of pike and scavenger fish that no salmon spawn could get through. Also between our mine and the larger streams there are probably over 1,000 beaver dams which act as settling ponds.

We live in Ruby and fish some of help our enormous food bills. We also raise a garden which helps but only part of the year.

Most mining operations in our area are family operations, but we support the store in Ruby, the parts houses in Fairbanks and Anchorage and many of the department stores and other outlets.

We all spend many dollars on air freight and river freight which the miners with highway connections save on. At times we also lose a great deal of mining time because we have to wait so long for our parts and fuel.

We are very particular about oil spills because oil has a tendency to float the very fine gold right out of the boxes which we can not afford to lose even with the high price of gold. Many people do not realize this.

Another thing that is holding a lot of development back is having to put up such a thing as a bond. Because of the way I am mining with farming, there will be no substantial damage to the land or the streams of Alaska.

Disturbing the tundra moss is helpful, not detrimental as most people believe. My father, Hans Tilleson, came to Alaska in 1908 and lived and mined here for fifty years. He has told me what the country looked like before the mining and I can see the good that the old timers did. For instance, around Fairbanks in the old days all there was was a lot of moss and scrubby spruce trees. The miners burnt the country off several times on purpose. This burnt the moss down so that it was thin enough to let different types of trees such as birch, cottonwood, aspen, alder and willows take root where they couldn't before the moss was burnt. Because of the frost and the depth of the moss this occurred wherever mining operations existed.

In the old days around the Ruby district the same thing was done. If the old timers saw one moose a year they were lucky. Now with the trees and brush that grow wherever the land has been so disturbed, it is nothing to see moose, beavers, wolves or any other game anytime you go on the roads or rivers. Look down creeks where all they did was dig prospect holes and you can tell where they were just by the heavy growth where the original soil and tundra were disturbed.

I know and have known since I was very young that farming and mining could go together. In the old days they had farming and mining together as there are

still sites around the mining areas where there were oat and hay fields to feed their cattle and horses.

I would like to own my mining claim for farming purposes after the mining because I believe that after a life time of producing something that can and will sustain a livelihood for our people on our land, I or anyone else that does productive work on our lands for ourselves for the good of our state should own it.

Sincerely yours,

Harold C. Tilleson  
Swift Creek Mining Co.  
P.O. Box 24  
Ruby, Alaska 99785

### Number of Mining Claims Filed Hits 'Horse Latitudes'

The number of new mining claims filed—1,912—has reached its lowest point since June 1977. The 3-month totals were far below both last quarter's tallies, 9,668, and the March 1978 total of 6,666. The claims, filed by recording district, were:

Fairbanks	330	Petersburg	197
Barrow	15	Ketchikan	75
Manley Hot Springs	16	Chitina	11
Mt. McKinley	15	Bethel	12
Nenana	5	Kotzebue	2
Nome	709	Talkeetna	189
Seward	101	Palmer	27
Juneau	165	Sitka	40
Haines	2	Valdez	1

### Services of the DGGs Information Office Listed

The main DGGs (College) mining-information office maintains 1) a Kardex file of all known mineral occurrences or prospects and of patented and unpatented claims (on both federal and state land) staked in Alaska since 1953; and 2) a central record file of all mining-claim notices, assessment-work affidavits, and other documents affecting claim ownership. These files are updated monthly, when mining documents are received from district recording offices throughout the state. The other mining-information offices—in Anchorage, Juneau, and Ketchikan (addresses on p. 1)—have microfiche copies of the Kardex file. The College office also maintains files of unpublished reports of mine and prospect examinations and mineral inventories dating back to Territorial days.

The new mining claims are plotted on USGS quadrangle maps on a scale of 1:250,000 and given an X and Y coordinate to pinpoint location of the mining claims; the claims are plotted by using a grid system and light table. Yearly annual assessment work, when received, is entered into the Kardex system to update active claims.

All claim information has been computerized into a

Minfile System, which is updated monthly. This information, which is printed onto microfiche to provide easy access to the data, is also available to the public on a subscription basis. (DGGs has the only mining-information office in the U.S. that not only provides interested parties with mining-claim information on both state and federal lands but offers it on a readily retrievable basis for public use.)

All mining-information offices have a large volume of public contact. In 1978 the College office alone assisted over 2,000 visitors, involving detailed research of specific mining-claim areas, of geological information from our library and files, and of unpublished open-file reports and other historical documents. All together, the offices assisted 4,095 visitors during the year. Representatives from mining firms and consultants often spend several days researching information in the offices. (For instance, the records were used extensively to research mining-claim information for the right of way for the Trans-Alaska Pipeline.)

All mining documents in College are microfilmed and processed into microfiche for distribution to the three branch mining-information offices. In 1978, the two College mining-information employees microfilmed about 114,000 documents and stuffed 4,500 microfilm jackets.

### Earthquake Registered near Yakutat

A major earthquake registering M 7.25 occurred February 28 at 11:27 a.m. (AST). It had an epicenter located about 90 km NE of Cape Yakataga near Baldwin Glacier in the eastern Chugach Mountains at 60° 36. 63' N., 141° 31.50' W. The focus was 20 km deep. L.D. Gedney and S.A. Estes, seismologists with the University of Alaska Geophysical Institute, believe the origin may be related to movement on the Border Ranges fault. Seismographs at the University of Alaska Geophysical Institute recorded numerous aftershocks a day later.

Damage reports from the USGS Palmer Observatory indicate that buried telephone lines were snapped at Yakutat, buildings in Yakutat and Whitehorse were cracked, and trailers were severely shaken at Icy Bay. There was considerable ground motion in the area. Elsewhere damage was apparently pretty light, being limited to falling dishes and so forth, as in Juneau.

### McKinley Miner, 86, Fed Up with 'd-2 Thing'

(from Fairbanks Daily News-Miner, Dec. 28, 1978)

The other shoe has fallen for Earl Pilgrim of Stampede Creek, 110 air miles southwest of Fairbanks.

Pilgrim, 86, has an antimony mine there he has worked for more than 40 years.

Until recently the mine was about two miles from northern boundary of Mt. McKinley National Park. But with President Carter's land withdrawals under the Antiquities Act, Stampede Mine is now in the middle of



a national preserve of nearly 6 million acres.

Pilgrim does not know whether his interests have been significantly hurt by the withdrawal. He was in town this week to close the sale of a partnership in the mine, which was valued at several million dollars in a federal study done on mineral deposits in d-2 lands.

A geologist for the Bureau of Land Management here said existing mining claims will continue to be worked in the new national monuments subject to restrictions on access that may be imposed by the National Park Service.

But Pilgrim said rich mineral deposits are sprinkled throughout the area and cannot be touched because of the federal withdrawals. A way of life for miners has ended because of the federal action, he said.

"Normally I go through life fairly quietly. I don't seek notoriety. But on this d-2 thing I got sort of fed up," he said.

Pilgrim, his mine and his way of life were the subject of a news story last summer by the Associated Press, which gained him international attention.

Pilgrim said he has received dozen of letters from persons as far away as West Germany. "Every one I receive I answer," he said.

"Everyone is in favor of that 'poor old guy'," he said. "Of course it's natural to figure anyone who is 86 years old is either dead or decrepit. I'm neither."

Pilgrim said he has not taken any antimony out of his mine since 1970 but that it was the second largest producer of the mineral in the United States.

A native of Colorado who first came to Alaska in 1923, Pilgrim said he took over the claim from Bill Taylor, one of the two miners who climbed Mt. McKinley in 1910 on a barroom bet made in Fairbanks.

He owns 20 acres outright and has proved seven more claims. But the Bureau of Land Management has not processed them and now there is a question whether BLM or the National Park Service has jurisdiction over them, he said.

Pilgrim lives alone at his mine in the winter but hires a crew in the summer to work the claim. He said he took out 130 tons of antimony in 1970 and is geared up to take another shipment this summer.

### They Said It....

"Economists of the Chase Bank, one of the nation's leading financial institutions, tabulated the cost of regulation to American business and taxpayers in 1977 at \$100 billion."—*Marathon World*, no. 4, 1978.

"Alaska is the worst country in the world for down-

right swearing."—Guy M. Stockager, 1900 census taker (Colby, 1939, *Guide to Alaska*).

"It is a balanced bill. Under earlier laws, the state of Alaska and Alaska natives have already been ceded 154 million acres of land, all of it open to development. Seventy percent of Alaska's mineral rich land is outside the protected system, and 100 percent of the high potential oil and gas land remains open to development."—U.S. Senator William Proxmire (D-WI).

"We must regard life in lovely, wonderful Alaska as an end and not a means and reject the policy of looting Alaska as the possibility of profit arises."—Pres. Warren Harding, 1923.

"What concerns us is that federal agencies like EPA seem to be crumbling before the inflation-fighter specious arguments with barely a whisper."—*National Wildlife Federation*, Feb. 28, 1979.

"DOE's credibility with Congress is said to be at rock bottom. Rep. Clarence Brown (R-OH) charges that Energy Secretary James Schlesinger 'couldn't sell beer on a troopship.'"—*U.S. Maritime Monthly*, March 1979.

"PARK" spelled backwards is 'KRAP.'—Placard seen at Antiquities Act protest in Fairbanks, Dec. 16, 1978.

### USGS Requests \$455 Million for FY 1980

(from Department of Interior news release,  
Jan. 25, 1979)

The fiscal year 1980 appropriation request for the U.S. Geological Survey totals \$455,448,000. Of the total request, \$451 million is for Surveys, Investigations, and Research (SIR), an increase of \$30 million; and \$4 million is for exploration of the National Petroleum Reserve in Alaska (NPRA), a decrease of \$227 million, reflecting a termination of the exploration program of the reserve.

Highlights of programs included in the budget request include:

- Geologic and mineral resource surveys and mapping. A total of \$135 million, a decrease of \$281,000, is requested for this program, which includes increases for Environmental Aspects of Energy program to strengthen efforts to determine geologic constraints on coal mining and reclamation in the western states, and mineral surveys on wilderness study areas.
- Conservation of lands and minerals. A total of \$102 million, an increase of \$16 million, is being requested to support regulation of exploration, development, and production of oil and gas resources in OCS leases, evaluation of OCS oil and gas resources to select tracts which may be offered for lease, and

**HELP FOR JOHN**—Charles Cushman, the head of the National Park Inholders Association visiting Fairbanks this week, relates an interesting story about how the National Park Service treats its friends. Cushman visited the site of a new park in Ohio where the Park Service had acquired 500 homes without giving the owners the chance to keep their homes and sell the government "scenic easements" which block further development on their land. One exception had been made at the time he visited—the home of Ohio Congressman John Seiberling, who is of course the staunch environmentalist pushing the biggest national park proposals in Alaska. Seiberling got a scenic easement and kept his house.—*Fairbanks Daily News-Miner*, Mar. 12, 1979.



expansion of the Oil and Gas Regulation program. (For readability, figures are rounded to nearest million dollars.—Ed. note.)

"The cost of administering the Territory of Alaska is so far out of proportion to the number of inhabitants as to indicate cause for a thorough investigation."—Pres. Calvin Coolidge, 1925.

### Our Gangue....

By Frank Larson, editor

A 'mourner,' anyone?....Today is a bummer, a real crusher. Today I lost a good and dear and faithful and loving companion....Remember the old newspaper movies, where Edmund or Pat or Hugh O'Brien or someone of that ilk runs panic-stricken into the press-room, shouting "Stop the presses. Stop the presses."?.... Well, a similar event happened here today, when I learned of the departure from this Vale of Tears of a truly great friend, ignored by the masses but well loved by but a fortunate and faithful few. On learning of his sudden and unexpected demise, I hurriedly tore up the Our Gangue column that had been laid out and quickly wrote this obituary. (Was it war correspondent Quentin Reynolds who said, "Journalism is simply literature under pressure"?). ....Anyway, at 8:38 a.m. (Alaska Standard Time) on March 14—a day sure to be solemnified as sure as December 7 or November 22—came the bulletin that the heartbeat of that gallant German-American newcomer to Alaska, Prinz Brau, had ceased. Alaska's. Finest will make its last, lonely beer run before a solemn, hushed cortege standing lonely vigil along the Parks Highway April 15 (coincidentally the 67th anniversary of the sinking of the Titanic)....An empty keg, symbolic of its labored but futile attempt at life in the cold, bitter North made famous by Service, Beach, and London, will lie at state in the Rotunda (bottom of the steps, that is) in the Midnight Mine (a subterranean Fairbanks watering trough). The victim, the Purveyor of America's Greatest Mead, fell by the wayside, its heart stilled by that cruelest of diseases, hardening of the profit-and-loss arteries....They went (pardon the pun) Tap City—much to the amazement of my friends. They figured I alone kept at least three of their employees working full time....But I sleep the Sleep of the Just, knowing in my heart I did what I could for the babe when it was born less than 3 short years ago. I nursed it through a shaky start. Like any proud father, I bragged about it. I boosted it. I sipped it, savored it, drank it, and did everything but hoard it. I even burped it. But to no avail. It was a gallant fight but it was, to paraphrase that great American, John Belushi, "three years of labor down the drain."....It may be a long dry summer, too, for General Crude if it decides to return to its claims on federal land in western Alaska this year. Preliminary results of its 1978 drilling program indicate 19 million tons of ore that averaged 3.3% lead, 9.3% zinc, and 1.4

oz/ton silver on its 200-acre holdings 80 miles north of Kotzebue and 50 miles east of the Chukchi Sea.... Farther east, Mapco's field hands may get thirsty at its uranium work at Mt. Prindle, northeast of Fairbanks. The Oklahoma-based firm, which has conducted numerous geochemical, radiometric, and geologic surveys on more than 20,000 claims over the past 2 years, encountered surface samples with 5% to 7% uranium and has applied for uranium permits to delineate its deposits this summer....In other uranium news, the Dept. of NRG awarded an \$83,000 contract to Colorado State University to study the genesis of the Bokan Mountain deposits, site of the old Ross-Adams uranium mine near Ketchikan. The purpose is to characterize, recognize, and evaluate possible similar deposits in the Lower-48....Also reconnoitering was the USGS, which published an open-file report (79-410) describing a large resource of subbituminous coal near Farewell, about 150 miles northwest of Anchorage. The coal was found in outcrops along the Little Tonzona River and the Windy Fork of the Kuskokwim River....Speaking of Farewell, one Anchorage newspaper headlined the town "Fairwell" in a recent story on the Iditarod Race dog mushers....The other Anchorage daily also had an entry in the Typo of the Month category. In an ad describing the delights of living in the Turnagain area of town, disaster site of the '64 Good Friday quake, it said, "Here's a rare opportunity to settle in to a lovely 3-bedroom home on a quiet slide street."....The home of Lee and DGG's geological ass't Cheri Daniels does not fall in the 'quiet' category any longer. Cheri gave birth to their first, a 7-lb girl named Samantha, March 7....A hand is also extended to DGG's Jay Newgaard, who finished second in a field of 126 peggers in the '79 Fur Rondy cribbage tourney in Anchorage. Jay handles the books for us....Perhaps he can book me a ticket to Munich for the reincarnation.....



.....Uncheers.

## Metals Market

	<u>Feb. 23, 1979</u>	<u>Three Months Ago</u>	<u>Year Ago</u>
Antimony ore, stu equivalent			
European ore	\$ 17.90-19.00	\$ 17.00	\$ 16.20-18.20
Barite (drilling mud grade			
per ton)	\$ 31.00	\$ 19-28	\$ 19-28
Beryllium ore, stu	\$ 50-55	\$ 45-50	\$ 40-42
Chrome ore per long ton (Transvaal)	\$ 54.00	\$ 54.00	\$ 54-58
Copper per lb. (MW-prod.)	\$ 0.92	\$ 0.70	\$ 0.62
Gold per oz.	\$251.00	\$198.25	\$178.86
Lead per lb.	\$ 0.44	\$ 0.38	\$ 0.33
Mercury per 76-lb flask	\$208.00	\$154.00	\$159.00
Molybdenum conc. per lb.	\$ 5.86	\$ 4.95	\$ 4.01
Nickel per lb. (cathode)	\$ 2.10	\$ 2.00	\$ 2.06
Platinum per oz.	\$423.00	\$307.00	\$232.50
Silver, New York, per oz.	\$ 7.85	\$ 5.75	\$ 5.00
Tin per lb., MW composite	\$ 7.19	\$ 7.44	\$ 5.88
Titanium ore per ton (ilmenite)	\$ 50.00	\$ 50.00	\$ 55.00
Tungsten per unit (GSA domestic)	\$120.00	\$131.35	\$130.00
Uranium per lb., MW US			
spot oxide	\$ 43.25	\$ 42.50-44.00	\$ 42-44
Zinc per lb. (MW-US PW)	\$ 0.36	\$ 0.34	\$ 0.305

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