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William A. Egan - Governor | Charles F. Herbert - Commissioner

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IN THIS ISSUE

SOME COMMENTS ON THE SURFICIAL GEOLOGY OF THE SOUTHWESTERN BROOKS RANGE

by
Robert E. Garland, DGGS Geologist

Bedrock exposure in the area of the southwestern Brooks Range encompassed within the Survey Pass and Ambler River quadrangles is excellent. An estimated 25% of the area is free of surficial cover. This is of great benefit to the program of bedrock geologic mapping currently being conducted in the region. Approximately 75% of the area, however, is covered with surficial deposits of one sort or another. While this surficial cover can frequently be used in bedrock mapping in individual instances, on an areal scale it is primarily a hindrance. Nevertheless, for those who have an interest in surficial features, cold-climate land forms, glacial geology, and the Quaternary Period, this region has much to offer.

Most of the surficial features reflect a cold-climate origin. Found here are felsenmeer (block fields), stone rings, stone stripes, solifluction lobes, protalus ramparts, and rock glaciers---all depositional features characteristic of a frost-action environment. Kames, kame terraces, eskers, moraines, and outwash trains are depositional features of glacial origin. There are numerous (about 35) small valley and cirque glaciers near the highest mountains. Most of these are located in the Arrigetch Peaks, around Mt. Igikpak, or between them; a few more are found further to the west---near Mt. Chitiok, Shulakpachak Peak, and Blind Pass Mountain. Erosional features characteristic of a cold climate include U-shaped valleys, cirque basins, faceted spurs, hanging tributaries, stoss-and-lee topography, and polished and striated bedrock surfaces. Pingos, polygonal ground, beaded drainage, and thaw lakes, characteristic of a permafrost environment, can be found in the lowland valleys of the Kobuk, Ambler, and Noatak Rivers.

Certain of the surficial features of the region are particularly striking. Foremost among these is the series of well-preserved arcuate moraines located in the valleys of

the Alatna, Kobuk, Reed, Mauneluk, and Shungnak Rivers, near where these streams exit the south flank of the Brooks Range. Similar moraines are also found surrounding (or at least partially impounding) the lower ends of Iniakuk and Walker Lakes. Other striking features include some classic U-shaped valleys (Kichiakaka Creek, Kugrak, and upper Noatak Rivers); a very fine example of a "birds-foot" delta (northern end of Walker Lake); textbook examples of rock glaciers and protalus ramparts (Mt. Igikpak vicinity); and braided meandering streams (Ambler, Kugrak, Noatak, Kobuk, Alatna), some of which develop extensive aufeis. Less striking, but more intriguing and perhaps having regional tectonic significance as well as being fine examples of their kind, are a series of rock slides occuring along the southern flank of the range in the so-called schist belt of rocks. These slides are aligned roughly parallel to the east-west regional grain of the bedrock and are one of the most recently formed surficial features.

Mapping of the surficial geology has been done in only a very few places in the Brooks Range. Two studies within the Survey Pass or Ambler River quadrangles were those of Fernald (1964) and Hamilton (1969). Much mapping work remains to be done, and geologists looking for a mapping project location that offers geological variety as well as a wilderness experience can find both here. But, regardless of the reason for being in the area, people will likely find that many of their pictures and recollections will record forms and features imparted in the surficial geology.

Fernald, A.T., 1964, Surficial geology of the central Kobuk River valley, northwestern Alaska: U.S. Geol. Survey Bull. 1181-K, p. K1-K31.

Hamilton, T.D., 1969, Glacial geology of the lower Alatna valley, Brooks Range, Alaska; in United States contributions to Quaternary research--Internat. Assoc. Quaternary Research, 8th Cong., Paris, 1969: Geol. Soc. America Spec. Paper 123, p. 181-223.

ENERGY CRUNCH CAPTIVATES NATION'S HEADLINES

The current energy "problem" has increasingly dominated the nations news. The Mines Bulletin, not previously noted for its tabloid-style "scare-'em-but-don't-tell-'em anything" style of journalism, is going to continue in its staid, honest, factual, tell-it-like-it-is tradition. So, with this in mind, we hereby present three solutions to the energy crisis.

COAL GASIFICATION: PROGRESS REPORT

(Reprinted from Industrial Research, v. 16, Feb. 1974)

CHICAGO-What with the fuel squeeze affecting nearly every segment of the population---industry, government, and private research laboratories are frantically searching for ways to fill the gas pipes and oil drums.

This is not to say that energy alternates have not been around. They have---for years: nuclear, solar, and geothermal energy sources (to name a few) have been tried, but, except in the case of nuclear, have not been widely applied.

Nuclear energy---principally from fission processes---has been meeting with increased opposition from environmentalists as requiring further safeguards. Nuclear fusion, the scientific ace-up-the-sleeve for American economy, as a drastically safer and economically satisfying process, seems to be at best a decade in the future.

The problems with the others are mainly associated with initiating transmission systems. A solar farm covering acreage the size of Arizona, for example, could easily supply more than enough electricity for the entire nation. How to get it distributed is another story, though.

So the search continues. Now experts have come face-to-face with a process that has been known since 1913, capable of demonstrating some unique capabilities. Coal gasification ---the process of converting coal into high-quality synthetic natural gas (SNG) as well as coal transformation into oil---can economically supply the country's fuel needs for years to come, and in so doing, helps to get rid of high sulfur-containing coal that is otherwise unburnable from the pollution standpoint.

To this end, nearly every major petroleum company, refinery, and big-industry is trying to make the process more efficient, improve the gas' Btu content, and produce a cleaner gas for a wider variety of applications.

Coal gasification's rationale is obvious: There are at least 150-billion tons of recoverable coal located in formations that are currently mineable, according to a recent National Petroleum Council report. Even at the maximum demand rate considered possible---including use in synthetic gasification processes---only about 10% of this reserve would be used by 1985. And the U.S. Geological Survey puts total U.S. coal reserves at 3.2-trillion tons.

If only 2-trillion tons of this are potentially recoverable, says Dr. George R. Hill, director of the Office of Coal Research (OCR) and a member of the Electric Power Research Institute, Palo Alto, Cal., and if coal can be converted to oil at a yield of two barrels per ton, a reasonable estimate, we have the equivalent of more than 4-trillion barrels of oil---ten times the total known worldwide oil reserves!

So what are we waiting for? The answer is, we're not.

The Institute of Gas Technology's (IGT) HYGAS pilot plant facility, developed at the Illinois Institute of Technology, Chicago, and supported by the American Gas Association (AGA) along with OCR, has been investigating coal-to-synthetic gas conversion for nearly 20 years, and since 1971, successfully demonstrating the process on a pilot plant basis.

The HYGAS plant, according to Dr. Hill, currently turns more than 3 tons per hour of Montana lignite coal into pipeline-quality gas with a Btu content of 900 to 1,000. This amounts to approximately 45,000 cubic meters of gas daily.

"The basic problem in converting coal to SNG," explain IGT's F.C. Schora Jr., B.S. Lee, and J. Huebler, "is seen most readily by comparing the compositions of the compositions of the raw material and the product.

"A typical bituminous coal contains 75% carbon, 5% hydrogen, and about 20% undesirable constituents ---ash and sulfur---which must be removed. On the other hand, natural gas, or methane, contains 75% carbon, 25% hydrogen, and minimal amounts of ash and sulfur.

"So, to convert coal to pipeline-quality gas, one must either add a lot of hydrogen, or reject a lot of carbon. The HYGAS process does both."

The process takes the coal through a series of high temperature and pressure steps.

Typically, coal is crushed, dehydrated, and if necessary, pretreated by hot-air diffusion to minimize its tendency to stick together, or cake.

Next, the coal particles are slurried into a light oil, which is fed into a gasification reactor intained at about 700° to 815C (1300 to 1500F) and a pressure of 2,900 to 4,400 kg/cm^2 (1,000 to 1,500 lb/in.^{2}).

As the slurry passes down the reactor, the heat and pressure cause methane gas to be produced. Hydrogen gas, generated from the coal char, is also fed back into the gasifier to further react with the coal to produce more methane.

Several ways to produce the hydrogen from residue char are feasible. Electrothermal (shown in the diagram), oxygen-stream, and stream-iron processes are under development.

David Tobin, IGT's senior advisor, told Industrial Research, "The most promising, low-cost hydrogen production system we know about is the steam-iron process.

"This technique, upon which we hope to have a pilot plant operation going shortly, reacts steam with iron pellets to form iron oxide and hydrogen. The pellets are reconstituted by reduction with the coal char while the hydrogen is used in the gasifier, so it becomes a closed-cycle operation. It's a very efficient, economical process to make hydrogen, and it will give us a greater yield."

What is most significant about IGT's first feasible process to form SNG is that it can use all types of coal, from low-rank lignite to the higher bituminous grades. In fact, the lower-rank, less-expensive coals are often the easiest to gasify, claim IGT officials.

Numerous other programs are also making head-way to commercial usage, not only for SNG, but for synthetic oil as well.

Among them are FMC Corp.'s experimental COED pilot plant which converts coal to synthetic crude oil, medium-Btu gas, and a char. The Navy has tested the crude by powering the destroyer USS Johnson on a 30-hour cruise. Results are totally satisfactory, and performance is said to be indistinguishable from that of standard fuel oil.

FMC's process is a "cracking," or pyrolysis technique in which the coal is crushed and decomposed by heat to produce a heavy oil that is subsequently treated by hydrogen under pressure to make the synthetic crude oil. The medium---400 to 500---Btu gas is an "off gas" of the pyrolysis process.

The COED plant produces one barrel of oil, 9,000 cubic feet of gas (650 cubic meters), and 0.5 tons of char from each ton of coal. Further processing, officials claim, may make this yield more useful.

Unlike HYGAS and COED, a combined Stone & Webster and Gulf General Atomic program treats coal as a basic hydrocarbon and increases the hydrogen content from the 5% natural to the usable 25% methane level.

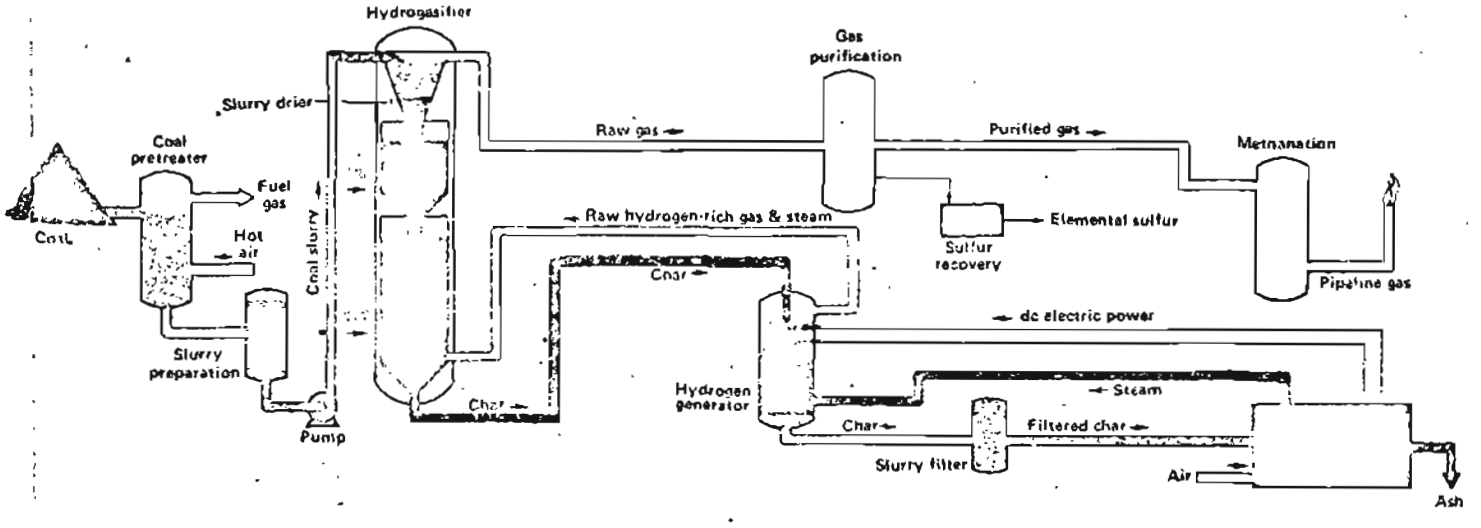
To do this, S&W uses a high temperature, gas-cooled nuclear reactor in the gasification sequence as the heat source for producing the hydrogen.

This has the advantage of producing 30% more ecologically acceptable fuel per unit coal than systems using coal for both the feedstock and process heat.

Even the old European standby---the Lurgi process, developed in Germany in 1936 in which coal, preheated steam, and on-site produced oxygen are fed into the gasifier---is being further investigated. F. Donald Hart, the AGA president, reports 20,000 tons of U.S. coal have been exported to the British Gas Corp.'s plant at Westfield, Scotland. Should the process prove sufficiently efficient, installation of Lurgi plants in the U.S. could result.

While many are cursing the energy squeeze, others are praising it as providing needed prodding to R&D ingenuity. The fact that "Necessity is the mother of Invention" is unshakable. That her reprimands are often blessings-in-disguise may also come to be widely recognized.

INSTITUTE OF GAS TECHNOLOGY'S HYGAS PROCESS DEMONSTRATES SUCCESSFUL COAL GASIFICATION
pilot electrothermal and stepwise techniques methanate hydrocarbons into medium-Btu synthetic natural gas



NEW ERA FOR ENERGY

by Paul Harvey, National Columnist
(Reprinted from Pay Dirt, December 24, 1973)

A British editor, Bart Collins, says the fuel shortage will be good for us!

He says the United States has the ingenuity to find other kinds of kindling for the fire---all kinds of untapped sources of energy---leaving us better off and independent of anybody. The fuel crisis, says this observer, is "the best thing that's happened to America."

What exciting years these next 10 will be! We'll see the second coming of age for nuclear energy but that'll be just part of it.

Off Florida they may sink turbines in the Gulf Stream and harness a movement of water greater than 10,000 Niagaras. In the Far West states they'll generate electricity with increased development of geothermal steam.

Off the "rock-bound coast of Maine" the surging tides will produce commercial quantities of mechanical and electrical power from an inexhaustible and nonpolluting source---the natural ebb and flow of the ocean.

California and the Southwest, with their plentiful sunshine, will crash-research new applications of solar energy more than adequate for the energy needs of those areas.

Our wide rangelands will revert to an ancient source---windpower---harnessing it with sophisticated, streamlined windmills.

And in areas dependent upon sun or wind-power, electricity will be conserved in superstorage batteries for those periods when the sun doesn't shine and the wind doesn't blow.

There will also be sources of energy I can't name now because they aren't even in the dictionary yet!

If all these alternative energy sources are within reach, why have they not been developed already?

Two reasons:

First: Plentiful oil and gas tranquilized us.

Second: Obstructionists paralyzed us.

Some of us who were ecology conscious a quarter-century ago have backed off in recent years as there emerged a legion of instant experts on everything. Hollywood play actors self-appointed themselves scientific guardians of our natural resources.

Organizations of do-gooders---some of them genuinely meaning to do good---cropped up, collected dues, filed lawsuits.

They paralyzed at least six power-dam projects that I know of. They arrested the development of nuclear energy, calling it "hazardous", though there has not been one mishap of consequence during the 20 years' development of nuclear energy.

They shut down whole industries which were allegedly "raising the temperature of river water" a fraction of a degree. "What of the fish?" they cried.

But now we're running out of gas. We're shivering---just a little but just enough to sober up those self-educated ecologists who have been overrunning their headlights.

But Americans do their best when there's incentive. I have heard from two lady schoolteachers in Lufkin, Texas, who are running their car on whisky.

Wasn't that rather expensive, I asked? They explained that they have a special formula fuel which requires only potato peelings and water and sugar. They say their "recipe" just has "all kinds of energy."

INDIANA FARMER USES HOMEMADE POWER

(Reprinted from Fairbanks Daily News-Miner, Feb. 7, 1974.)

While the rest of us shiver through the coming months and worry about gasoline rationing, at least one Indiana farmer plans to be cozy this winter without using any fuel oil at all.

Richard Shuttleworth of Redkey, Indiana, has constructed and is now operating an ingenious device that simply and automatically transforms ordinary cow manure . . . into "homemade fuel oil" and "homemade gasoline" with which he can run an automobile engine, power a gas stove, fuel lamps, operate a gas refrigerator, and fire a space heater.

According to the Mother Earth News, Shuttleworth has built a methane generator, a large composting unit that turns organic waste of any kind---plant, animal or human---into nitrogen-rich fertilizer and methane gas. Methane is the major component of the natural gas that is commonly used to heat houses and fuel industrial processes.

The idea is actually an old one that has been used extensively in fuel-poor countries such as India for a number of years. Until Shuttleworth put together his unit, however, little or practical value had been done with the concept in the United States.

Now that a working generator has shown that it can produce usable quantities of high-grade fuel on a Hoosier cattle spread though, it might not be long before a sizable number of U.S. and Canadian consumers start clamoring for the commercial marketing of digesters.

(Editor's note: It has long been this observers' opinion that the finding of a practical application for organic waste was solved years ago by certain cigar manufacturers.)

THE SMALL MINER---VALUING A MINE

by Arden L. Larson, Multi-Metals, Inc.
(Reprinted from The Mining Record, Aug. 29, 1973)

The subject of the value of a mine is generally not at all understood by the small miner.. Since we do not go around buying mines very often, we are not in the business of appraising them. More often, we are the fellows who are selling the mine. Thus it is important for us to understand the viewpoint of the mine buyer.

First, a mine is not worth what it produces. How often have you heard that such and such a mine produced a million dollars worth of gold? How the fellow who tells this tale often does not continue it far enough. The mine that produced this large a sum of money might have lost money in doing it. It might have cost them two million dollars to produce the gold! However, our local mining historians ignore this fact and go on telling the world that the mine produced this much and inferring that the guy who owned it made a million dollars. This type of atmosphere has caused some very big letdowns for small miners when they receive an offer for their mine. It has also resulted in some very good properties remaining idle because some mining company didn't offer what the owner thought it was worth. Let us hope through better understanding that these mines can help alleviate our metal shortage.

Suppose that you have a mine with proven ore reserves of one million dollars in value. From my above discussion you know that it isn't worth one million dollars to sell it, so let me explain what it might be worth. Let us assume that this ore will take ten years to mine, thus you could produce one hundred thousand dollars per year from this mine. Now, that money is your total sales, you still have to pay for mining, milling, and all of the other costs.

For this example, let us assume that there is no capital cost. That is that the milling is done on a custom basis, thus you would not have to depreciate the cost of the mill. Further, let us assume that the necessary mining machinery has been brought in from another property where its cost has already been recovered. Thus we are giving this example a real break, the only costs are the direct cost of mining and custom milling.

Let us assume that the ore is worth fifty dollars gross value per ton. As we already said, we mine one hundred thousand dollars worth per year or two thousand tons. We will assume a mining cost of ten dollars per ton and a milling cost of five dollars per ton for a total direct cost of thirty thousand dollars per year. This

would imply a profit of seventy thousand dollars per year but this is wrong. We have not figured in mill losses, smelter charges, freight, etc., so let's assume that we realize only sixty-five per cent of sixty-five thousand dollars. Thus the profit of this mine would be thirty-five thousand dollars per year for ten years or three hundred and fifty thousand dollars total.

So, what is the mine worth? Definitely not a million dollars or even half of that. It isn't worth three hundred fifty thousand dollars either, because that is all that will be returned to the buyer if everything remained exactly as it is today. Well, you all know that wages and prices are not going to remain the same, they are going to increase. The problem then arises of projecting cost increases and hoping that metal prices will increase accordingly. History has shown that this is not the case. The price of lead was higher twenty years ago than it is now! Thus in buying a mine there is a great deal of risk involved.

The mine, when it is reduced to a profit per year figure on a piece of paper, is just like any other investment. What is the real value of this investment today? This can be computed by several different formulas which discount these future earnings of the mine to today's dollars. What this means is that the profit of the tenth year of thirty-five thousand dollars is not worth that much today. Let me explain it like this. Suppose I were to sell you ten hundred dollar bills to be delivered in ten years. Would you pay one thousand dollars to me now? No. You would think of all sorts of reasons why you shouldn't do that, in particular inflation. In ten years, the purchasing power of that thousand dollars would probably be much less than what it is now. Furthermore, you could take your money and invest it in a bank (a safe investment) at an interest rate of six per cent. Thus your bank book would be worth about eighteen hundred dollars in ten years. Or you could put six hundred dollars in the bank and in ten years have your ten hundred dollar bills. Remember, this is with a safe investment.

With this in mind, then what is the worth of that tenth year's profits? If you discount those profits at six per cent, they are worth nineteen thousand five hundred thirty dollars in today's dollars. They lose almost half of their value by being ten years away. This whole method of discounting might make a little more sense if you compared it to an annuity that you might buy from an insurance company. In fact, the mine can be compared to an annuity of thirty-five thousand dollars per year for ten years. You could purchase an annuity of thirty-five thousand dollars per year for ten years for a little over one quarter of a million dollars.

Does this mean that the mine is worth that much? No, it doesn't because the annuity is a safe investment. There is such a large amount of risk involved in mining that the "value" of the mine must be further discounted due to the risk factor. A discount figure of fifty per cent is not at all uncommon. Thus we have finally arrived at a value for this million dollar mine of one hundred twenty five thousand dollars.

You will recall that we gave this mine all of the breaks in not having any capital costs involved. If we were to put the burden of building a mill and buying mining machinery upon the cost of the mine, we would rapidly find out that we could not afford to buy the mine for anything because of the risk factor involved. Carried a little bit farther, if the mine were given to us, we couldn't afford to gamble the cost of a mill and mining equipment. It is no small wonder why big mining companies go after big mines.

Let us look at the guy who sells the mine. We have said that the mine might be worth one hundred twenty five thousand dollars under the right circumstance. Does that mean that he will make that much? No, it doesn't, mainly because the ore has to be found and proven. In order to receive an offer for this amount, the owner must have gone to considerable expense in proving his orebody either by drilling or crosscutting to obtain a large number of representative samples of the ore. Thus his expense in the exploration and discovery of the ore body may easily exceed fifty thousand dollars. Even so, there is room for him to make some money.

The valuation of a mine is a difficult problem for both the buyer and seller. The understanding of the other fellow's problems is the first step to a successful business relationship.

(Editor's note: Mr. Larson's address is frequently asked for by subscribers. His articles were orginally published in The Mining Record, 290 Filmore, Suite 301, Denver, CO. 80206. Mr. Larson is the president of Multi-Metals, Inc., of Ilse Route, Canon City, CO. 81212.)

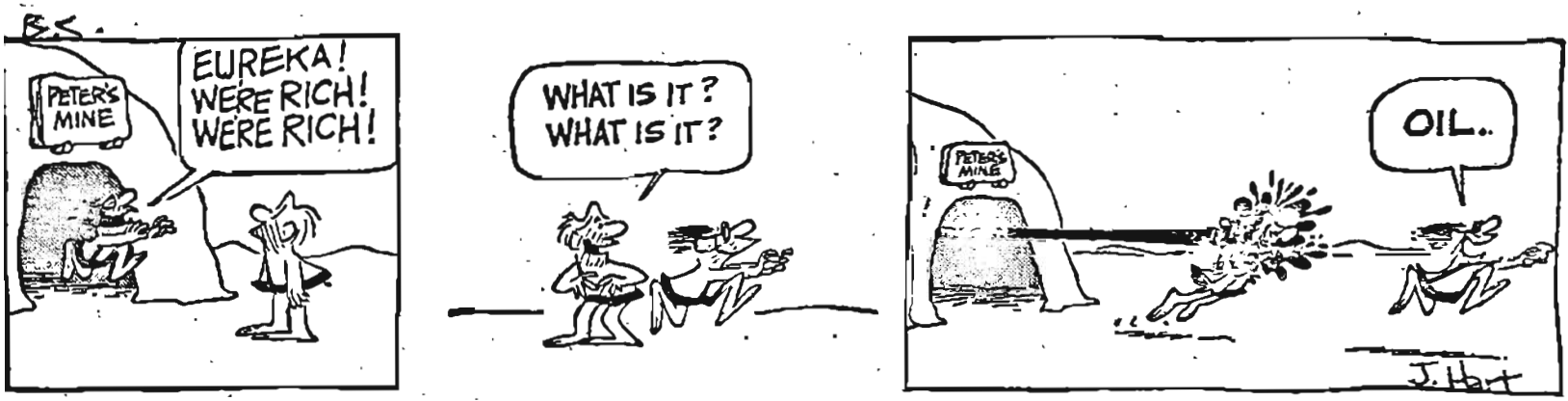
METALS MARKET

	Feb. 22, 1974	Month Ago	Year Ago
Antimony ore, stu equivalent, European ore	$18.9-19.9	$19.45-20.55	$7.60-8.60
Barite (drilling mud grade per ton)	$14-18	$14-18	$18-22
Beryl ore Stu.	$30-35	$30-35	--
Chrome ore per long ton	$33.00	$33.00	$24-27
Copper per lb.	68.57¢	68¢	53.08¢
Gold per oz.	$163.3	$141.20	$65.59
Lead per lb.	19¢	19¢	15¢
Mercury per 76# flask	$295.00	$285.00	$294.00
Molybdenum conc. per lb.	$1.72	$1.72	$1.72
Nickel per lb. (cathode)	$1.62	--	$1.53
Platinum per oz.	$228.00	--	$135.78
Silver, New York, per oz. (Handy & Harman)	591¢	401¢	197.88¢
Tin per lb., New York	375¢	305¢	179.6¢
Titanium ore per ton (Ilmenite)	$38.00	$38.00	$22-24
Tungsten per unit(GSA Domestic)	$44.60	$46.78	$55.00
Zinc per lb.	31.8¢	31.7¢	19.12¢

MINERALS CONFERENCE SLATED

The 1974 Pacific Northwest Metals and Minerals Conference will be held in Seattle on April 25th and 26th. Joint sponsors of the conference, to be held at the Washington Plaza Hotel, are the North Pacific Section AIME and the Puget Sound Chapter of ASM.

The two-day meeting will feature papers concerning energy resources and possible solutions to environmental challenges. Sessions are planned dealing with non-ferrous metal mining, construction aggregates and industrial minerals. Papers in the field of metallurgy will cover such topics as welding, fracture, fatigue and melting, and casting.



NEW DOCUMENTS RELEASED

The following DGGS documents have been released:

AOF-39, Geochemical analysis of stream-sediment samples from the Ambler River A-1, A-2, A-3, B-1, B-2, B-3, C-1, C-2, and C-3 quadrangles, Alaska, by R.E. Garland, G.H. Pessel, T.C. Trible, and W.W. McClintock, map sheet (1:63,360), 3 data sheets. Send prepayment of $6.50 to McCauley's Reprographics, 721 Gaffney Rd., Fairbanks, AK 99701.

AOF-41, Coal bibliography for Alaska, by W.M. Lyle and N.J. Bragg, 31 p. Send prepayment of $3.25 to Technical Supply, 729 First Avenue, Fairbanks, AK 99701.

AOF-44, Estimated speculative recoverable resources of oil and natural gas in Alaska, by R.M. Klein, W.M. Lyle, P.L. Dobey, and K.M. O'Connor, 8 p., table, map sheet (1:250,000); $2.00, McCauley's Reprographics, 721 Gaffney Rd., Fairbanks, AK 99701.

AOF-47, Glacier Bay National Monument - Evaluation of mineral deposits, by D.L. McGee, 16 p., map (scale 1:250,000). Send prepayment of $2.25 to Technical Supply, 729 First Avenue, Fairbanks, AK 99701.

MONEY---A MYSTICAL BOOM
(From Newsweek, March 4, 1974)

Investors have concluded lately that most major currencies will lose much of their purchasing power in the months ahead. The doubts have set off a world-wide stampede to buy tangible commodities of all kinds: copper, silver, sugar, even potatoes. Most of all the nervous are buying gold, a mystical symbol of eternal value. The price of gold rocketed up to a record $163 an ounce in London last week, almost double the quote a year ago, and up $23.50 in less than a month.

The gold rush is paradoxical for two reasons. Gold price leaps used to reflect primarily doubts about the worth of the dollar - - but the dollar's price in foreign currencies has generally been climbing for the past several months. Also, the values of most major currencies are no longer formally tied to gold. But now investors are disturbed by forecasts that inflation will average close to 9% in the U.S. this year, 10% to 15% in Europe, as much as 20% in Japan. That means that paper currencies will buy steadily fewer goods and services, no matter what the price at which they can be exchanged for each other.

Now, gold is being purchased avidly by just about anyone with assets to protect: corporations, banks, Arab oil sheiks, offshore mutual funds, Germans who still remember the wallpaperization of their currency in the Weimar years, and French farmers.

Even American citizens are joining the rush. They cannot yet legally buy gold bars, but they have always been permitted to own gold coins. Sales of British sovereigns. Mexican 50-peso coins and good old double eagles (U.S. $20 gold pieces) are booming. In the past two weeks alone, double eagles traded in New York have gone from $200 apiece to nearly $300.

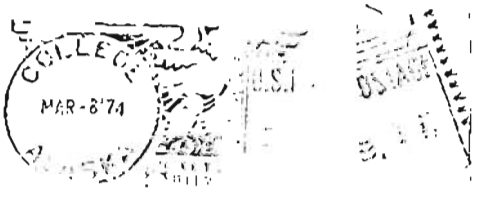
Some central bankers are showing renewed interest in gold, too, although it is supposed to be phased out of the world monetary system. Some government officials have suggested tripling or quadrupling the "official" $42.22 price of gold held by government banks; that might enable some nations to exchange gold for another costly commodity, imported oil. The U.S. opposes any move that would enhance the role of gold in international finance. If the Common Market countries raised the official price and the U.S. and other nations did not, the move might be interpreted in the markets as amounting to a devaluation of their currencies, although under the present rules of the monetary system it actually would not be. A Common Market revaluation of

gold without agreement from other countries, however, would violate the rules of the International Monetary Fund.

Whatever happens to the official price, traders can see little that might bring the free-market price down soon. Production in South Africa, which mines most of the world's gold, has been declining in recent years as veins become played out---a trend that has helped keep the price up. Contrary to myth, however, gold purchasing is not without risk. The world supply available for trading is so small that the sudden sale of a few million dollars' worth could yet send the price plunging.

PARTIALLY FLOWN AEROMAG MAPS AVAILABLE

Now available are the last two maps of the 1973 aeromagnetic project. The maps are of the Talkeetna C-4 and D-4 quadrangles, which were only partially flown because of poor flying weather. The maps cost $1.05 prepaid or $1.00 if purchased at one of the four DGGS offices (Anchorage, Fairbanks, Juneau, Ketchikan).



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F I R S T C L A S S

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