

STATE OF OREGON  
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PORTLAND, OREGON

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BIRCH CREEK CINDER OCCURRENCE  
Baker County, Oregon  
by  
Norman S. Wagner\*

Introduction

A tremendous amount of volcanic cinders (millions of yards) occurs on the headwaters of Birch Creek in Baker County. They appear to constitute the bulk of a prominent oval-shaped butte which is nearly a mile in length and somewhat in excess of half a mile in width at its base. This butte occurs on the flank of a "table top" lava and rises an estimated 200 to 300 feet above the lava surface. A county road-metal pit is situated on the southwestern flank of the butte.

Owner

Both public domain and patented ranch land cover the butte. The patented land embraces by far the most of the occurrence and this land is owned by Mr. J. B. West and associates. Mr. West's address is Route 1, Huntington, Oregon.

Location

The occurrence is situated in Tps. 13 and 14 S., R. 43 E. Rough mapping from section and quarter corners as identified by Mr. West indicates that the butte is nearly one mile long at its base along its longest or north-south dimension. It begins essentially on the line which divides the southern half of sec. 5, T. 14 S., into north and south halves, and it extends northward to the same line in sec. 32, T. 13 S. The width is about half a mile or slightly more. The western flank begins somewhat east of the western north-south section line. The eastern flank lies somewhat east of the north-south quarter line. The crest of the butte occupies the eastern half of the northwest quarter of sec. 5.

Huntington is the nearest shipping point, a total of 13 miles from the county pit as follows: 11 miles by graveled county road up Durbin Creek to the F. J. Haw ranch on Birch Creek, plus 2 miles of access road through the Haw and West properties.

Development

The only development work on this occurrence has been that done in connection with the recently opened county pit. This pit was located from evidence obtained in a bulldozer cut which showed an abundance of readily available road-metal material. Subsequent operations have resulted in a pit 200 feet long with a 25-foot face.

Geology

This "butte", as it is locally called, appears to be a volcanic cone. As already mentioned it is situated on the flank of a lava flow which caps the hills to form a mesa. The lava is basic as are the cinders. The top of the cone is flat with a sizeable depression in its center. Only the lack of a small segment prevents the trace of its periphery at the very crest from making a symmetrical oval. As is, it is horseshoe shaped.

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\* Field Geologist, State Department of Geology and Mineral Industries.

While lava as well as fragmental material may compose the cone, a traverse around the cone and to the crest showed fragmental material to occur exclusively on the surface excepting for a small area in the dissected portion of the crest where lava is exposed.

The fragmental material as exposed in the county pit is black and is estimated to contain 95 percent minus 3/4-inch mesh, bank run. The common size appears to be about 1/8 to 3/8-inch. Large chunks do exist but they are not common. This material is composed of both scoriaceous lava and solid fragments. Elsewhere on the cone and particularly at the crest, the color is brick red but an admixture of off color pieces grading to gray or black suggests that the red color may be limited to the exposed surface material.

As is the case in the pit the fragments elsewhere on the cone are both solid and scoriaceous in character but larger pieces (up to 3 and 4 inches in diameter) are to be seen in some places.

#### Economics

A test of a small sample from the county pit indicates that the material weighs 73 pounds to the cubic foot. This is intermediate in weight compared to cinders (about 45 pounds to the cubic foot) and clean gravel (about 100 pounds to the cubic foot). This weight is greater than is altogether desirable for use as a light-weight aggregate. However, the scoriaceous fraction alone would weigh considerably less, and in consideration of the enormous size of the occurrence it is possible that careful investigation would show areas in which scoriaceous fragments existed in relatively greater abundance.

The nature of the occurrence as judged by the county pit would permit mining operations using a shovel or dragline and screen only. Because of the low initial cost of such mining due to the lack of any appreciable overburden and to the lack of necessity of crushing, it might be practicable to install some means of segregating the scoriaceous and non-scoriaceous fractions should a lighter weight aggregate be desired.

From the standpoint of quantity only, the potential tonnage of reserves is very large. The location of the occurrence with respect to rail distribution is fairly good, but a large market for building-block aggregate is lacking. Unless very favorable freight rates may be had, the immediate market area would appear to be limited to the numerous small cities in the farming area from Weiser, Idaho, to Ontario, Oregon.

#### Reference

Notes on building-block materials of Eastern Oregon. G.M.I. Short Paper No. 14, State Department of Geology and Mineral Industries, 1946.

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#### THE MINING INDUSTRIES

by

W. C. Broadgate\*

The majority of mining men seem to be of the opinion that true conservation of our domestic mineral resources hinges upon continued production at adequate prices which will encourage an accelerated rate of development and give proper inducement to private enterprise to make new discoveries. This today is an expensive procedure. Utilization of technological improvements also will lower costs and permit the economic extraction and processing of our considerable bodies of known marginal and low-grade ores.

Proponents of the scarcity theories have on their side the plausible and undoubted truism that when a pound of ore is extracted, that pound of ore can never be replaced in the ground. Such an oversimplification is easy to sell to the public. This statement

\* Technical consultant for the subcommittee on mining and minerals industry of the U.S. Senate Special Committee to study problems of American small business. Address given at 34th Annual Meeting Chamber of Commerce of the United States, Natural Resources Department, Atlantic City, New Jersey. May 2. 1946.

generally is bolstered by Government figures showing "commercial ore reserves" (without definition) divided by some high rate of consumption, giving an alarmist view of the possible exhaustion of our reserves.

I want to point out that published mineral statistics are not always reliable for establishing the facts of a "have" or "have-not" position. Economic cut-off points continue to move toward lower value ores for various reasons, some of which I have already enumerated, thus increasing our "statistical" reserves. Probably only a relatively small portion of potential mineralized areas has been prospected because of the obvious limitations of the physical methods in use up to recently. It may be expected that the development of geophysical prospecting will reveal important ore bodies now covered by various kinds of overburden, and "blind" lodes which do not outcrop. Some ores, like those of mercury, are seldom blocked out ahead in any quantity and each year potential exhaustion is apparent - yet an adequate price will bring out sufficient quantities and apparently leave the reserves in no worse shape than before. Also, tax laws do not encourage blocking out or reporting large ore reserves.

#### Tariffs and subsidies

Then we must consider the serious results of depending solely on imports, or as one school of "conservation" puts it, "keeping our ores in the ground for the need of future generations." Removal of all tariff protection is an integral part of such a plan. This program obviously would discourage private exploration and development. Due to the fact that higher grade ores might be mined out selectively so industry could compete as long as possible with cheaper, imported foreign ores and metals, it might actually reduce our known "commercial" reserves. It also might encourage importers to gouge the American consumer with high prices, once our mines were shut down and no longer in competition with foreign production.

The potential use of various minerals and metals is dependent upon the technology of any particular period of our economic and scientific history. To date the number of such materials in use has increased. But there is no way of knowing whether in the next few decades shifts from one material to another may cause a mineral in the ground which today is an asset, tomorrow to be almost valueless. This possibility is illustrated by the increasing utility of the light metals and plastics. There would be no point in preserving for posterity metals or minerals for which it has little or no use. Better that we extract and use them now.

Nothing I have said should be so construed as to indicate a desire to shut off imports of metals, minerals, and other strategic materials of which there may be an obvious shortage. But I think it important that our public-land policy, our tariff policy and, perhaps, a subsidy policy, be planned so as to keep a healthy, progressive domestic mining industry operating within our borders. Such a subsidy policy should be aimed at extracting marginal ores now accessible and which might be permanently lost were the mines permitted to close.

#### Mineral stockpiles for defense

A sensible national stockpile policy, such as is now being considered by Congress, would cushion us against future wartime insufficiencies. There also have been suggestions made that a supplementary "buffer" stockpile designed to stabilize supply and demand might serve a useful purpose. Such a policy should, while not interfering with suitable acquisitions of material from abroad, favor under some "buy American" provision, the development of additional domestic sources both by encouraging discovery and aiding in improvement of the technology of extraction from lower grade deposits.

It seems to me that, entering into the picture of encouraging domestic mining is the necessity of tax-law revision which will permit the return of mining investments and adequate profits commensurate with the risks involved. Some changes in S.E.C. policy also might be helpful, although the S.E.C. probably is not as great a factor in limiting mining investment as sometimes is claimed.

Future of American industry

To sum it up, the future of the American mining industry appears to depend upon these factors, which are not necessarily listed in order of importance:

1. Tax laws which will provide inducement to invest in new mining ventures and which will permit adequately attractive returns to present and future operators.
2. S.E.C. regulations which will encourage the flotation of mining shares while at the same time giving reasonable protection to the investing public.
3. Protection from unreasonable floods of imported metals and minerals by means of tariffs, quotas, or both, planned so that domestic mining will have a fair share of domestic markets at prices which will permit enterprises to succeed in our high standard of living economy, without discouraging essential imports.
4. Government encouragement of marginal mining where conservation may be best served by continuous extraction, resulting in either sale or stockpiling of the production, whichever appears to be expedient at the moment. Such a program should be arranged so as to interfere as little as possible with private enterprise and probably should be accomplished by some variation of the premium system.
5. A comprehensive stockpiling law similar to that recently passed by the United States Senate (S-752), with reasonable "buy American" protection to encourage domestic private enterprise.
6. A long-range exploration program, both geophysical and physical, by the Department of the Interior, designed to add to our knowledge of potential sources of minerals, as well as continued research leading to improved mining and beneficiation methods.

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THE NATIONAL PICTURE

by

Evan Just\*

In undertaking to discuss national policy in regard to natural resources, I proceed in the belief that the American people are sympathetic to the fullest exercise of private enterprise. Nevertheless, regardless of the ownership or control, we who discover, develop and produce these resources must assume a responsibility to exploit them with full regard for the public interest. In our generation, if we do not accept our job as a trusteeship, the public will move in on us and take over to the extent necessary to safeguard its interests.

The discharge of our responsibility to the public requires that we conduct operations efficiently and with a minimum of waste. Waste in this sense refers to material left behind in extraction, discarded in processing, or devoted to uses for which some grosser, or more abundant material would do as well. We must further seek to make a just apportionment between the demands for current consumption and probable future requirements, the latter including both the future needs of our generation and those of posterity.

The resource problems that concern me most today refer to a small group of minerals. Well meaning but poorly informed people caused considerable public confusion over mineral conservation.

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\* Editor Engineering and Mining Journal. Extract from address given at 34th Annual Meeting Chamber of Commerce of the United States, Natural Resources Department, Atlantic City, New Jersey, May 2, 1946.

Of some minerals, we have such a plentiful supply that no interference with the normal course of private enterprise is advisable now. Also, there is a group of minerals that, however plentiful or scarce they may be, are convenient but not necessary to our economy. A third group, the "strategic" minerals, have apparent domestic reserves so small that any precautions against a national emergency should properly take the form of stockpiling.

#### Abundant and strategic minerals

In the plentiful category are coal, iron ore, magnesium, salt, potash, phosphates, molybdenum, limestone, sand, and construction and ceramic materials. To it I also add petroleum, aluminum, manganese, sulphur, and vanadium. Reserves of these minerals of a grade rated as commercial today are believed to be limited. However, they are supplemented by vast supplies of lower-grade material which modern technique can make available at somewhat greater cost and suitable installation of plant.

In the less essential class are barite, diatomite, fullers earth, garnet, corundum, scrap mica, and titanium. As an industrial raw material, gold is also in this class.

In the strategic group are tin, nickel, antimony, platinum, tantalum, cobalt, asbestos, flake graphite, industrial diamonds, and quartz crystal.

Uranium and thorium, the raw materials for atomic energy, present a special case. From being insignificant, they have suddenly been catapulted into a position of supreme importance. In terms of prewar economy we seem to have our share, and may overshadow all others now that a much greater value is put on low-grade materials. However, it is futile to guess about these minerals. None of us has any idea of the tonnage requirements or price levels of the future. As a component of the earth's crust, uranium is fairly abundant. With painstaking search and almost no price limits, we may find plentiful low-grade sources of production.

#### Limited reserves

The minerals which play what is rated an essential part in our current economy and whose known domestic reserves of commercial and nearly commercial grade are important, but limited, are mercury, lead, block mica, silver, zinc, tungsten, copper, fluorspar, cadmium, and chromite. The known reserves of commercial and nearly commercial grade have been estimated by the U.S. Bureau of Mines and Geological Survey to be less than a 60-year supply at the 1935-1939 rate of consumption. In quoting these figures I stress the terms "known reserves" and "commercial grade" because none of us knows or can even make reasonable guesses about our total reserves, the future rates of use, or the grade limits which progressive technology can utilize.

We are particularly in the dark as to the actual extent of our total reserves. The deposits on which we have drawn up to the present have been principally those which have surface manifestations easily found by prospectors or by elementary applications of geology and geophysics. Sound geological reasoning tells us that a great many more have no simple surficial expression or have been covered with detritus, sediments, soil, vegetative cover, or lava flows. It is certainly expectable that at least a portion of these concealed deposits will be detected by applied geological and geophysical science, or by chance, if public policy encourages the growth of science and the assumption of risk.

Furthermore, our generation has seen but few important new discoveries, except of petroleum. Of solid minerals, the mining industry has been able to provide our consumers' needs primarily by the painstaking extension of known deposits, by improved extractive technique, and by marvelous advances in beneficiation, reduction and refining.

#### What is conservation?

The steps that a public alarmed over alleged shortages instinctively seeks to take are to sequester most of the known reserves and to discourage domestic extractive industries, on the theory that we would thus have a backlog against the demands of a future emergency.

I submit that such a policy would be the most anti-conservational one we could adopt. It would cripple the industry without whose trained personnel, immense plant, and maintenance activities, a public reserve would have but little emergency usefulness. It would arrest the risk taking and technical progress by which we can expect to extend known reserves beyond our present imaginations.

Furthermore, it would condemn, possibly for all time, those low-grade reserves which are presently accessible but probably could not justify on their own account the reestablishment of abandoned operations. The reserves that will be made available for consumption by keeping a progressive industry in being, whatever they may eventually prove to be, will certainly be greater than those we can protect by a policy of "lock-up" conservation. Whenever we adopt this latter policy, then we are truly a have-not nation, both in minerals and in common sense!

In brief, the wisest conservational policy we can pursue in regard to these supposedly scarce minerals is to depend more heavily on imports than in the past, but to subordinate the rate of importation to a policy of encouraging a healthy domestic industry. Such an industry must embrace risk-taking progressive technology, and competent management. It must contain sufficient plant and trained personnel to make an adequate nucleus for meeting the demands of an emergency. These objectives should be achieved through intelligent tax policies which encourage development, and reasonable protection by tariff or some other form of non-discriminatory subsidy.

#### Need stockpiling and intelligent use

Beyond the matter of conservation, let us consider the extent to which future generations will require the minerals on the critical list in order to outstrip us either in civilized progress or fiendish destructiveness. Looking over the list, I think we can conclude that most, if not all, of their applications are susceptible to substitutions, or will be, in due course. To cover the possibility that this conclusion overrates the adaptability of our future technology, an intelligent stockpiling program will certainly provide for any indispensable needs.

Therefore, I cannot get excited over the depletion of mineral resources if we adopt a sound stockpiling program and resist the pleas of uninformed conservationists who would lock up our known reserves and cripple the extractive industries. The pressing problems of conservation are those connected with soil, timber, erosion, water, and the curtailment of waste.

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#### OREGON MINERALS MAPPED

A map showing the location of over 300 mineral deposits in the state of Oregon has just been published by the State Department of Geology and Mineral Industries. Principal localities of 43 minerals are shown in red on a base map measuring 22 inches by 34 inches. Brief explanatory notes describing 12 of the most important ores are printed on the margin. A small index map showing generalized locations of beach and stream gold placer deposits is also given. Copies of the map may be obtained at the department's office, 702 Woodlark Building, Portland, or at the field offices at Baker and Grants Pass. Price postpaid 10 cents.

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#### DREDGE STARTS IN SOUTHERN OREGON

The B-H Company, Medford, Oregon, has started dredging on Sucker Creek, Josephine County. Several buildings have been constructed and a road connecting the camp with the Oregon Caves highway has been built. Tom Gerety is in charge.

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GEM STONES IN 1945\*Domestic production continues at low level

No branch of mining except for gold has been so adversely affected by war as that of gem stones. According to the Bureau of Mines, United States Department of the Interior, production value in 1945 dropped to about \$40,000, the lowest in a decade. The decline is attributed to shortages of labor, mining supplies, tires and gasoline. The gem hobbyists and the amateur and semi-professional lapidaries could not replenish their stocks of rough, and their best customers, the touring automobilists, almost completely disappeared. Further, the supply of most strategic minerals became adequate early in the year and pegmatite mining waned. It should be stated, however, the pegmatite mining during the war furnished disappointingly few gem stones. Late in the year, gasoline and other supplies became available and this, together with the return of men from the war, will doubtless encourage greater production in 1946.

The lapidaries in Oregon and Washington were active in 1945. There are at least 50 shops, the value of 1945 output being variously estimated at from \$100,000 to \$500,000.

For the first time, the value of jade produced certainly exceeded that of sapphire and probably that of turquoise. Wyoming in 1945 produced a number of tons of light-green nephrite and almost as much black jade. The publicity the press has given Wyoming jade (all produced from float) has attracted a number of outside prospectors to the state. At Lander there are three professional and a half dozen amateur cutters. The largest boulders yet found were located during 1945.

The Lander region remains the chief producer. Black nephrite, which takes a fine polish, is being obtained from the Red Desert. Discovery of jade in Laramie Range is reported. The white "jade" said to have been found near Kemmerer is, according to reliable information, chalcedony. The so-called jade as found is sold at one to over five dollars a pound. China, when peace is restored, may well become a good market for Wyoming jade.

Alaska jade appeared on the market in 1945. The locality is on the north side of the Kobuk River. Late in 1945 the Arctic Exploration Company of Fairbanks located mining claims in the district and flew a considerable shipment of jade to Fairbanks. Some of the material is stated to be of gem quality but most of it is fit only for objets d'art. The Chinese have purchased some of it. It is reported that three or four men were engaged last summer in collecting boulders from the bed of the Kobuk River. The better Alaskan material compares favorably with the better New Zealand nephrite. It is suitable for tourist jewelry and objets d'art.

Turquoise is occasionally found at the Castle Dome Copper mine in Arizona. It is "high graded" by the miners and sold in Miami or Globe. Some of it is of fine quality. A company official states: "As in the past, turquoise of an undetermined amount was recovered during routine mining operations. As a whole, the quality of the material recovered at greater depth has improved, both in hardness and in color the latter occurring in the lighter shades of blue."

Turquoise mining was relatively active in Nevada, particularly in the Tonopah and Battle Mountain districts. Most of the material is shipped to New Mexico, although some is cut locally, there being five cutting shops at Battle Mountain. Mr. Alfred L. Ransome states that the lessors, Messrs. Lee Hand and Paul Bare, of the Pedro claim on the Copper Basin property of the Copper Canyon Mining Company, Battle Mountain, produced 3601 pounds of cobbled turquoise in 1945. The Elko County mines appear to have made no shipments in 1945.

In Colorado, the King Mine, now renamed the Lickspittle, was operated in 1945 by Charles King of Manassa, Colorado. Twelve men were employed. The Hall Mine, near Villa Grove, Saguache County, will soon be operated again. There are rumors of a new turquoise deposit in the Cripple Creek district. New Mexico produced no turquoise, although Indians sorted some material from the dumps. Stuart A. Northrop states that the Indian jewelers are using chrysocolla, malachite, and chalcedony, largely from Arizona, as substitutes for turquoise. Reports indicate intermittent work on the turquoise deposit near Van Horn, Texas.

\*U.S. Bureau of Mines Mineral Market Report No. 1415, June 18, 1946.

The agate deposits on the Priddy property in Jefferson County, Oregon, a large producer by hand methods, are to be operated mechanically in the future. ... The states and territories leading in gem production in 1945 were Wyoming, Oregon, Alaska, Nevada, Utah, and Arizona.

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#### ILLICIT TRADE IN GOLD THRIVES ON INFLATION

The World Report, Washington D.C., issue of July 1946, contains an illuminating article on the world-wide illicit trade in gold. According to the article widespread inflation has bred this "yellow market" which thrives especially in the Middle East and Latin America. This trade reflects the lack of confidence in government currency, even the strong currencies of the United States and the British Empire. The peculiar properties of gold, since it can be transported easily and hidden from tax collectors, provides the common man with the desired protection against depreciating currencies. It is reported that operators in the black market in Italy will pay three times as much in lire for gold as they will for dollars. In the Middle East and in some other countries gold circulates as the medium of exchange in illegal market operations because it has a dependable market value.

It is stated that the Bank of Mexico has sold a substantial quantity of gold at \$40.53 an ounce. Recent reports are that gold is valued at \$71 an ounce in Bombay, \$108 in Cairo, and \$110 an ounce in Athens. The United States gold mining industry, facing a depression because of rising costs and a fixed price for its product, wants access to world "open" markets. However, U.S. Treasury officials reportedly believe that such gold markets are "thin" and that release of American production into the world market would drive prices quickly down to the \$35 floor which the United States maintains as a standard for purchase the world over. American operators would like to test out the statement but the Treasury officials point out that sales of gold to individuals abroad would be violating laws of other countries. Fifteen countries permit private gold holding and trade in gold. These are Egypt, India, Iran, Iraq, Palestine, Trans-Jordan, Syria, Lebanon, Greece, China, Cuba, Chile, Brazil, Mexico, and Argentina.

The world trade in gold is carried on in a sort of twilight zone of commerce built up around the open markets. It is stated that a gold peso bought legally in Mexico City may change hands 7 times legally but also there would be 13 other illegal transfers before being locked up in the vaults of an East Indian potentate.

Some governments profit through this strange mixture of legal and illegal traffic. Millions of dollars worth of gold have been smuggled out of Mexico to Cuba and then carried through the lax Spanish customs into Spain and over the borders into France and central Europe. The Bank of Mexico buys gold from Mexico mines at \$35 an ounce and has purchased \$109,000,000 worth from the U.S. Treasury at the same price in 1944. This gold is sold by the government at a 16 percent profit and buyers of this gold make their profit in putting it into world trade. Cuba charges a duty on gold declared at customs. It is reported that \$1,800,000 worth of gold, which came mainly by plane from Mexico, went through Cuban customs in four months of last winter. This amount, of course, does not include that smuggled into Cuba.

Chile has exported gold to Argentina where it has brought as high as \$50 an ounce. A weekly auction is held in Chile by the Chilean mint when gold pesos are sold to the public. Recently sales were at \$44 an ounce. It is reported that the government of India, the British Dollar Pool, and the United States have all sold South African gold to Indians for as much as double the U.S. Treasury price. The United States paid in dollars at New York and received rupees in India from the proceeds of the sale at a rate considerably higher than the official exchange rate. United States troops in India were paid with these rupees.

The amount of gold that is hoarded or circulated privately throughout the world is a large question mark. The amount has been estimated in billions of dollars. Some governments are urging that authorities clamp down on the illicit traffic; Peru has called in all private gold holdings.

Inflation is the mainspring of this profitable trade in gold and it will continue as long as inflation exists.

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#### SILVER AT 90.5 CENTS

The price of newly mined silver was increased from 71.1 cents to 90.5 cents an ounce by action of the last Congress. The bill was signed by the President on July 31.

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