

THE ORE.-BIN

Vol. XII

1950

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FAMOUS QUICKSILVER MINE FINISHED

The Bonanza mercury mine near Sutherlin, Douglas County, Oregon, closed down early in December 1949, and it is most unlikely that it will ever be reopened even if a war emergency should come. Its closing is a sign of the times and a warning. The Bonanza served the country well during World War II by producing a large quantity of a critical war mineral. The peak of production came early in the war period when the metal was most needed, and Bonanza became one of the largest domestic producers. Imports were interrupted and the country found itself wholly dependent upon domestic production. Later, when the United States became involved, several government agencies frantically urged peak production in the interest of national survival. In order to get this maximum production, development work was neglected. Neglect of development work at a mine is suicidal, and Bonanza thus suffered along with most other metal mines in responding to war needs. The direct cause of the passing of Bonanza, however, is the low market price of mercury in relation to the high cost of operation in this country. The low market price is caused by the large quantity of imports produced at a cost with which our mines cannot compete. Revaluation of European currencies was a contributing factor. Measured in comparative purchasing power of the dollar down through the years, the price of mercury in this country is the lowest on record.

The history of Bonanza goes back to the early days of Oregon mining. Probably the mine was discovered in 1865, about the same time as the Nonpareil mine in the same district. Old workings and the remains of an old Scott furnace are evidence of early-day activity, but there is no historical record of work or production during that time. In 1928 the quicksilver industry in Oregon received a stimulant in the successful operation of the Black Butte mine south of Cottage Grove together with the strengthening of the mercury market. The price had increased substantially and averaged about \$123 per flask for the year. Records show that the Bonanza mine was then held by J. W. Wenzel, F. S. Skiff, and C. Scherer. The mine was examined and reportedly disclosed a large tonnage of low-grade ore. The Northwestern Quicksilver Company, of which Wenzel was the manager, obtained control in 1931. Development work was done but no plant was installed because of the depressed state of industry in general. H. W. Gould & Company was reported to have done development work in 1934. In 1935 Wenzel sold out his interest to H. C. Wilmot, who became a leading figure in subsequent development and production at the property. In 1937 Wilmot installed a Herreshoff furnace and production was begun in the fall of that year in a plant designed by C. N. Schuette of San Francisco. At about this time, new ore of good grade and width was developed and value of the furnace heads increased. A new Gould rotary furnace was added to the plant in 1940 and after this furnace got into production, the rate of output was about 500 flasks a month, which made Bonanza one of the two largest producers of the country.

The discovery and development of the ore bodies, together with the increased unit value of the ore fed to the furnace, came at a time when demand for mercury in this country seemed insatiable. The market price had been rapidly increasing since 1937 because of the war clouds in Europe and the piling up by European governments of stockpiles of all war minerals including mercury. Market price rose from \$90 a flask in 1937 to more than \$200 in 1940. A ceiling of \$196 a flask was finally placed on the metal by OPA.

Bonanza experienced many operating difficulties during the war. Labor was difficult to obtain and more difficult to keep. War Labor Board policies fixed wages that could be paid to miners, and at the same time wages at shipyards in Portland as well as in logging camps were in excess of those allowed the mines. With an inadequate labor force and with the great demand for production, development work as stated above was neglected and reserves were depleted. Production, however, was maintained as long as the great demand upon domestic mines lasted.

In 1943 imports of mercury began to come into the United States in record quantity. The submarine menace had been largely overcome and supplies of European quicksilver, as well as newly developed Canadian production, became readily available to this country. A large surplus was accumulated; therefore, in January 1944, the government removed its price support and the price dropped quickly from \$196 to \$130 a flask. Subsequently there were minor fluctuations but the general price trend was downward. It is now about \$71 a flask.

Operating costs rose along with general reduction in market price. It soon became evident that unless some assistance was given by the government, the quicksilver industry would fade out of the picture. There was considerable talk in Congress about protecting our strategic minerals industry; incentive legislation of one kind or another was proposed, but sufficient interest was lacking. Our national policy appeared to concentrate on giving aid to European industry, leaving our own mines to shift for themselves. The aid to Europe has included bringing in large supplies of quicksilver far in excess of domestic consumption. For example, during the first ten months of 1949 imports totaled nearly 98,000 flasks. Consumption was at the annual rate of about 30,000 flasks, and during the first nine months production was at an annual rate of about 9,000 flasks. Under such conditions the chances of a price which would allow profitable operation of a domestic mercury mine were nil.

One after another of the mines which operated during the war had closed down, leaving in 1949 two, the Bonanza and the Mt. Jackson in Sonoma County, California, still plugging along hoping for a break. (The Cordero mine in northern Nevada started up in October 1949 but closed down during December.) At this writing, only the Mt. Jackson mine (including the Great Eastern) is producing, and it seems likely that its demise is only a matter of months.

As long as we remain at peace - a condition devoutly hoped for - the closing of an underground strategic mineral mine is only of local importance; but as has been stated over and over again, if we have another war a huge supply of all strategic metals would be essential to our survival. Imports would be cut off for an indefinite period. Nobody knows Russia's force in submarines or how long a blockade would last and how efficient it would be, but it is certain that such a blockade would strike quickly, probably without any warning. Then our strategic mineral supplies would be dependent upon two sources, our national stockpile and our domestic mines. The stockpile should be enormous in the category of minerals that we cannot readily produce from our domestic mines if it is to tide us over. Quicksilver mines that have been closed down for any length of time cannot be reopened and put into production quickly. This situation is realized by mine operators but is not understood by the public at large and probably not by many Congressmen. As for the State Department, it seemingly does not care. It is concerned wholly with foreign affairs. Domestic matters are the worry of Congress and some government bureaus.

During several years immediately preceding World War II many persons qualified by training and experience cried out against our lack of preparedness in failing to accumulate large stocks of critical war materials, especially those in which the United States was and is deficient. The cries went practically unheeded. The war came and we found ourselves short of many of these materials upon which prosecution of a war was absolutely dependent - notably tin, chromite, manganese, tungsten, antimony, bauxite, mercury, and quartz crystal. We then had to rely on domestic production of most of these minerals to tide us over until they could be safely imported in quantity. Another war would probably not allow us time to get production out of closed-down mines such as the Bonanza.

Preparedness lessons of World War II ought to be fresh and deeply imprinted in the minds of our leaders, and it would seem to be, as before the last war, only modest insurance to maintain a nucleus of a strategic minerals industry. The expense would be so small measured in terms of the security obtained.

National stockpile information is secret; therefore, the public is ignorant of the amount of strategic mineral supplies available for an emergency. However, the matter of encouraging foreign producers of minerals at the expense of our own producers is an open book for anyone who wishes to read. Domestic producers of mercury, tungsten, antimony, and chromite have practically passed out of the industrial picture because of lowering of tariffs and encouragement of imports. Unless and until huge supplies are built up in our national stockpile, our security is in danger.

This national picture has another angle - that of local conditions of employment in some of the mining regions of the West. These conditions seemingly have no weight in the plans of those who form and direct our foreign policy.

Bonanza's passing may be just another tiny incident in the national picture but it is not so tiny to people in Oregon who not only see it as adding to unemployment but also recognize it as another sign of the approaching death of the country's strategic minerals industry.

F.W.L.

SALEM PLANT SOLD TO MANGANESE PRODUCTS, INC.

According to West Coast edition of the Iron Age, December 22, 1949, the alumina-from-clay plant at Salem, Oregon, has been purchased by Manganese Products, Inc., from the War Assets Administration for \$750,000. Reportedly the plant will start producing manganese concentrate from low-grade domestic ores beginning early in 1950. President of the company is John R. Allen, Seattle. Dr. R. W. Moulton, Associate Professor of Chemical Engineering, University of Washington, is a technical director of the firm.

Professor Moulton has informed the Ore.-Bin that the process which will be used by this firm involves the acid leaching of low-grade manganese ore with a sulfurous acid solution. The manganese dioxide in the ore oxidizes the sulfur dioxide in the leach solution to sulfuric acid. This acid solution is then partially neutralized by the addition of ammonia. This neutralization results in the precipitation of the dissolved impurities iron, alumina, and silica.

The purified leach solution containing manganous sulphate and ammonium sulphate is then treated with additional ammonia and air for oxidation. This treatment results in the precipitation of a hydrated manganese dioxide. The resulting solution contains principally ammonium sulphate which will be recovered as a commercial by-product.

INSTITUTE OF NORTHWEST RESOURCES

The second annual Institute of Northwest Resources will be held on the Oregon State College campus June 19-30, 1950. Teachers, graduate students, and others interested in natural resource studies, conservation and development are invited to include the Institute session in their summer plans.

A number of scholarships will be available for those who are deserving of assistance. School superintendents, Chambers of Commerce, and civic organizations, as well as government agencies, are urged to send delegates. Credits in the graduate School of Science may be earned by students enrolling in the Institute. The fee for the Institute alone is \$14. For information concerning all details address Professor J. Granville Jensen, Department of Geography, Oregon State College, Corvallis.

METAL MARKETS

According to E&MJ Metal and Mineral Markets, January 12, 1950, demand for the principal nonferrous metals continues fairly active. Zinc was somewhat unsettled because one producer continued to offer the metal at 9 3/4 cents a pound, while others held their metal at 10 cents. The American Zinc Institute reported December production of slab zinc at 71,096 tons compared to 65,055 tons for November. Stocks increased 4,945 tons to 93,964 tons. Production of Special High Grade was 17,750 tons in December as against 14,595 tons in November. Output of this grade was somewhat limited by the strike at the New Jersey Zinc Company's smelter.

Demand for lead was fair. Sales for the week amounted to 5,930 tons. Undertone of the market was steady to firm. Market price was maintained at 12 cents New York.

Demand for copper was fairly strong for January and February delivery. January copper sales contracts involved 91,000 tons. An order for 5,000 tons for Italy was placed on January 5. The price continued at 18 1/2 cents Connecticut Valley, although there is some nervousness over the price outlook for February.

The price of Grade A quality tin was reduced 1/2 cent per pound by RFC on January 9. Grade A tin is available at 77 cents per pound in the outside market.

Quicksilver was quoted at \$71-73 per flask with some metal available at \$70.

Foreign silver continued at 73 1/2 cents an ounce troy. The price of domestic silver is fixed by law at 90.5 cents.

Antimony metal is quoted at 32 cents a pound in bulk f.o.b. Laredo, Texas. Antimony ore per unit of antimony contained, 50-55 percent, \$2.50-2.60; 58-60 percent, \$2.60-2.70; 60-65 percent, \$2.70-2.80.

Chrome ore per long ton, dry basis, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, plus ocean freight differential for deliveries to Portland, Oregon, and Tacoma, Washington, Indian and Rhodesian, 48 percent Cr₂O₃, 3 to 1 chrome-iron ratio, \$37.50; 48 percent Cr₂O₃, 2.8 to 1 chrome-iron ratio, \$35; South African, 48 percent Cr₂O₃, no ratio, \$26; Turkish, 48 percent Cr₂O₃, 3 to 1 chrome-iron ratio, \$38-39; Brazilian, 44 percent Cr₂O₃, 2.5 to 1 chrome-iron ratio, lump, \$32; domestic, 48 percent Cr₂O₃, 3 to 1 chrome-iron ratio, \$39 f.o.b. nearest shipping point.

Manganese ore long term contracts, prices a matter for negotiation. Nearby business basis 48 percent Mn, 81.8-83.8 cents per long ton unit c.i.f. United States ports, duty included.

Tungsten ore per short ton unit of WO₃ for ore of known good analysis, Chinese duty paid New York, \$17.50-18.00; Brazilian, Bolivian, etc., duty paid, same price.

STATE DEPARTMENT BULLETIN HELPS IN OIL SEARCH

The search for oil in Oregon, which has been conducted without success for several decades, will get an assist from a report just issued by the State Department of Geology and Mineral Industries. Petroleum geologists depend on fossils to tell them the ages of the rocks which they map on the surface and penetrate by drilling. Some of these, called Foraminifera, are so minute as to require microscopic study. The bulletin just released contains descriptions and

drawings of many Foraminifera, and also includes a study of larger nonmicroscopic molluscan fossils. By comparing fossils from rocks of unknown geologic age with such published records of fossils whose ages have been determined, it is possible to determine the geologic ages of the unknown rocks.

Foraminifera from areas near Eureka, California, Toledo, Oregon, and Grays Harbor, Washington, are described. The California and Washington localities were studied because they contain the key to fossil-bearing formations in Oregon. The report, written jointly by the late Dr. Joseph A. Cushman, geologist with the U.S. Geological Survey, Roscoe E. Stewart, geologist with the State Department of Geology and Mineral Industries, and Katherine C. Stewart, Portland micropaleontologist, is issued as Bulletin 36, parts VI-VIII. It contains 95 pages, 5 plates illustrating the Foraminifera described, 3 maps, 4 charts, and 1 table. It may be obtained at the Portland office at 702 Woodlark Building and at the field offices at Baker and Grants Pass. Price is \$1.25.

GEOGRAPHIC NAMES

The following list of geographic names has been approved by the U.S. Board on Geographic Names of the Department of the Interior. The first seven names appeared in the Board's Decision List for April 1949, and the remaining two were contained in their list published in October 1949.

Oregon

Bastendorff Beach: beach about 1 mile long extending northeastward from Yoakam Point to the entrance to Coos Bay; named for Emil Bastendorff, who homesteaded in the vicinity; Coos County; sec. 3, T. 26 S., R. 14 W., Willamette meridian, 43°20'37"N., 124°21'00"W. Not: Bassendorf Beach, Bastendorf Beach.

Hinton Point: point on the south shore of Yaquina Bay on the west side of King Slough; named for Rowland B. Hinton, an Oregon pioneer who lived in the vicinity; Lincoln County; sec. 16, T. 11 S., R. 11 W., Willamette meridian, 44°36'52"N., 124°01'34"W. Not: Idaho Point, Point Virtue, Virtue Point.

King Slough: inlet about 1.5 miles long, opening into Yaquina Bay west of Yaquina River; named for Jack King, who homesteaded in the vicinity; Lincoln County; secs. 16, 21, and 28, T. 11 S., R. 11 W., Willamette meridian, 44°36'42"N., 124°01'30"W. Not: Hoxies Cove, Hoxie's Cove, King's Slough.

McCaffery Slough: stream about 1.7 miles long, heading in sec. 4, T. 12 S., R. 11 W., and flowing northward to enter the Yaquina River, opposite Oneatta Point; named for a pioneer settler who lived near the slough; Lincoln County; sec. 34, T. 11 S., R. 11 W., Willamette meridian, 44°34'45"N., 124°01'03"W. Not: Johnson Slough, McCafferys Slough.

Oneatta Point: point on the north bank of the Yaquina River about 2 miles above its mouth; Lincoln County; sec. 27, T. 11 S., R. 11 W., Willamette meridian, 44°35'10"N., 124°01'00"W. Not: Idlewild Point.

Wendts Island: island about 0.5 of a mile long, located in Multnomah Channel about 3 miles east-northeast of Scappoose; named for an early settler; Columbia County; secs. 4 and 9, T. 3 N., R. 1 W., Willamette meridian, 45°46'N., 122°49'W. Not: Watts Island.

Yoakam Point: point about 1 mile southwest of Coos Head and the entrance to Coos Bay; named for John Yoakam, who settled in Coos County in the early 1850's; Coos County; sec. 4, T. 26 S., R. 14 W., Willamette meridian, 43°20'36"N., 124°21'33"W. Not: Yokam Point.

Hiack Creek: stream about 2.5 miles long, heading about 3 miles southwest of Dolph, sec. 8, T. 6 S., R. 9 W., and flowing northeastward to the Little Nestucca River about 1.5 miles south of Dolph, Siuslaw National Forest; the name is from that of the Hiack Ranger Station, formerly located near the mouth of this creek; Tillamook County; sec. 4, T. 6 S., R. 9 W., Willamette meridian, 45°05'00"N., 123°47'25"W.

Horton Pass: gap in the Wallowa Mountains about 1.5 miles northwest of Eagle Cap, in Wallowa and Whitman National Forests; named for the late F. V. Horton, a forester of the Pacific Northwest; Wallowa County; sec. 33 (unsurveyed), T. 4 S., R. 44 E., Willamette meridian, 45°10'30"N., 117°19'30"W.

SOUTH SLOUGH MINE ELECTRIFIES

The South Slough mine, operated by Leonard H. Gibbs of Coquille, Oregon, is installing coal mining equipment purchased from the Southport mine which ceased operations in 1948. Equipment at the Southport mine was sold at a foreclosure sale for taxes last spring and included a large air compressor, two coal-cutting machines, electric motors, pumps, coal cars, rails, and wiring. The South Slough mine has been worked by Mr. Gibbs since 1944 when he leased the property from H. G. Kern, Mrs. Otto Schetter, Groth, and J. S. and M. C. Getty. The property is located at the head of South Slough in the S $\frac{1}{2}$ sec. 2, T. 27 S., R. 14 W., in Coos County. Prior to Gibbs' activity at the South Slough there was an earlier operation in the vicinity which was called the Schetter or McKenna mine.

The State Department of Geology and Mineral Industries surveyed an area totaling 250 acres surrounding the mine, as part of its Coos County coal survey in 1944. In addition to the mapping, the outcrop of the coal was traced for over 5000 feet by means of open cuts, short tunnels, and hand-auger holes. Analysis of the coal by the Department showed: ash, 7.20 percent; moisture, 22.59 percent; B.t.u., 8,704 on an "as received" basis.

The mine is reached by a gravel road known as the Krome Road approximately 9 miles in length, which leaves the Coast Highway (U.S. 101) a few miles north of Coquille near the site of the former Defense Plant Corporation chrome concentrating plant built during World War II.

The South Slough vein is thought to be a thinner portion of the Beaver Hill bed lying in a down-dropped fault block. The Beaver Hill bed was formerly worked by the Southern Pacific Company at a mine located at Beaver Hill, a long-since vanished settlement. This mine extended to a depth of more than 1400 feet below sea level before it was abandoned in 1923.

THE HEAVY ELEMENTS

Element	Symbol	Atomic Weight	Element	Symbol	Atomic Weight
Curium	Cm	242	Polonium	Po	210
Americium	Am	241	Bismuth	Bi	209
Neptunium	Np	239	Lead	Pb	207
Plutonium	Pu	239	Thallium	Tl	204
Uranium I	U	238	Mercury	Hg	200
Thorium	Th	232	Gold	Au	197
Protoactinium	Pa	231	Platinum	Pt	195
Actinium	Ac	227	Iridium	Ir	193
Radium	Ra	226	Osmium	Os	191
Virginium	Vi	224	Rhenium	Re	186
Radon	Rn	222	Tungsten	W	184
Alabamine	Ab	221	Tantalum	Ta	180

On January 19, 1950, the Associated Press carried the announcement of the discovery at the University of California of a new element, the heaviest known. It has tentatively been named Berkelium.

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Editor's Note

The accompanying historical narrative will interest different people in different ways. To the student of history it will spotlight conditions in a New England state just following the Revolutionary War; to the economist it will point to certain economic laws relating to money and inflation; to the lawyer it will be the story of a well-known and fundamental court decision; and to the average person it will be a true story with a lesson, as pointed out in the last sentence of the narrative. Although our domestic money system has progressed a long way since 1786, now, as then, a legitimate money transaction should involve both a willing buyer and a willing seller. No party to such a deal is "willing" if there is funny money involved.

THE MAN WHO WOULD NOT ACCEPT PAPER MONEY^{1/}

By

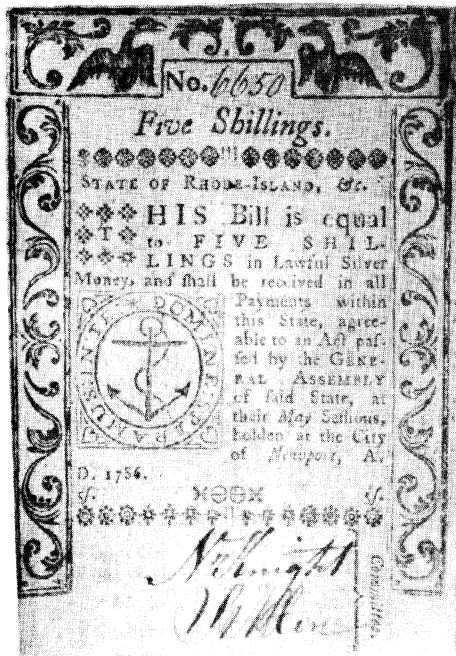
Elston G. Bradfield

The jostling crowd outside the courtroom elbowed and shoved as individuals tried to get closer to the open windows. The benches inside were jammed and spectators filled all available standing room. For this was the day Newport's excessively poor butcher John Wheeden was standing trial for refusing to accept paper money.

For months the dispute between paper money men and their opponents had rent the state of Rhode Island. Business had practically ceased in the port towns. Some merchants had given up their fight for sound money and, abandoning their enterprises, had fled to adjoining states where they hoped to be allowed to carry on normal operations. Fist fights had become an every day occurrence and mob action threatened more than once. Now the time for legal ruling had come.

As a result of the long years of the Revolution and the unsettled conditions following the collapse of the continental currency, all of the newly independent states were unhappy in that year of 1786. But nowhere were there more malcontents than in the state of Rhode Island. With a population of about 55,000, her people were ready for any panacea that might offer salvation. Anything that seemed to promise relief from heavy taxes and burdensome debt was welcome. So Rhode Island fell victim again to that will-o'-the-wisp of the desperate - "easy money."

^{1/}From The Numismatic Scrapbook Magazine, January 1950, and reproduced by the courtesy of the publishers, Hewitt Brothers, 5450 North Clark Street, Chicago, Illinois.



FIVE SHILLING NOTE MADE LEGAL TENDER
FOR ALL DEBTS BY THE RHODE ISLAND
GENERAL ASSEMBLY, 1786.

Two years earlier a proposal for a bank of paper money had been beaten down. In spite of the opposition of the wealthy seaboard towns and the propertied classes, the representatives of the country districts pushed a bill calling for paper currency through the assembly in May 1786.

A paper bank of one hundred thousand pounds was authorized. The bills were to be issued in convenient form in denominations of sixpence, ninepence, one shilling, two shillings sixpence, three, five, six, ten, twenty, thirty, and forty shillings, and three pounds. Each note below ten shillings required two signatures only; those from twenty shillings up bore three signatures. On the reverse was imprinted the admonition "Death to Counterfeit." The currency was to be legal tender for all debts and in case any person refused to receive it as such his debt was to be barred forever. The bills were to be paid into the treasury by the end of fourteen years. Four percent loans were to be pledged with real estate for double the sum borrowed. This was thought to be sufficient guarantee.

Immediately upon issue the currency skidded down the familiar depreciation slide. Merchants would not accept the paper except at heavy discount. To push their paper money

on the unwilling, the assembly quickly drew up and passed a forcing act, making one who refused to accept the currency at face liable to a penalty of one hundred pounds and the loss of the rights of a freeman. In consequence many businesses simply closed up shop or resorted to primitive barter.

Grass almost grew in the streets of Providence and Newport. Over half the shops had their shutters up. Business was stricken. And since the merchants would not take the paper money, farmers boycotted them and refused to sell any produce. By July food was short in the towns and suffering intense. Still the farmers held to their rag money and the townsfolk to their insistence on a sounder variety. The deadlock was not broken until an incident occurred in Newport that threw the whole matter into the courts.

One day in September 1786, John Trevett, a cabinet maker who had lost an eye while serving as an officer during the Revolution, stopped in John Wheeden's butcher shop for a few pounds of beef at fourpence a pound. In payment he proffered the new issue paper. Wheeden refused the tender. Travett, a strong paper money advocate, angrily signed a complaint against Wheeden. The test case was on.

Trial began immediately, September 16, for the legislative act had anticipated such resistance and specified that a hearing must be held within three days. The right of jury trial was specifically forbidden by the act, nor was any appeal possible, the decision of the judges being final.

The case was heard by the Supreme Court of Judicature. Both the plaintiff and defendant were well represented by counsel, one of the defending attorneys being the noted Major General James M. Varnum. On the bench were Chief Justice Paul Mumford and Justices Joseph Hazard, David Howell, and Thomas Tillinghast.

The first day was taken up with presentation of the case. Feeling was so intense and opinions so pronounced that two of the judges so far forgot their judicial dignity as to speak from the bench against the paper bank. The two principals in the action were almost entirely overlooked as the great constitutional questions involved were argued.

Varnum spoke long and eloquently. He attacked the recently enacted laws under which the case had been brought to trial. He demolished the action of the legislature in setting up special tribunals "incontrollable by the Supreme Judiciary of the state."

General Varnum referred to the delicate system of checks and balances between the legislative, judicial, and executive branches on which our government rests. "A nation may be considered as a moral being, whose health and strength consist in the due proportion, nice adjustment, and equal preservation, of all its parts; and when one branch of the government steps into the place of another, and usurps its functions, the health and strength of the nation are impaired; and should the evil be continued, so as that the one be destroyed by the other, the nation itself would be in danger of dissolution."

The main portion of the defense attorney's speech, however, was aimed at the legislative fiat forbidding trial by jury. He said jury trial was one of the basic rights of freemen long before the barons presented the Magna Charta to King John. Numerous acts and judicial rulings were cited from English and colonial jurisprudence down to the Declaration of Independence. The general was astounded that "some of our warmest politicians, whose heads are undoubtedly wrong, and it is greatly to be feared their hearts are not right" have prevailed on the assembly to abrogate trial by jury. "It is possible that these pretenders to the knowledge of the law should be serious, when they avow so dangerous an opinion? If they are, let them be informed that they contradict the wisdom and the practice of the ages."

The general closed his impassioned speech with "Trial by jury is a fundamental, a constitutional right - ever claimed as such - ever ratified as such - ever held most dear and sacred; that the legislature derives all its authority from the constitution - has no power of making laws but in subordination to it - cannot infringe or violate it; that therefore the act is unconstitutional and void; that this Court has power to judge and determine what acts of the General Assembly are agreeable to the constitution; and, on the contrary, that this Court is under the most solemn obligations to execute the laws of the land, and therefore cannot, will not, consider this act as a law of the land." Judgment was not long in coming. Next day Justice Howell delivered the court's decision that the criminal charge brought by the state against Wheeden was not within the jurisdiction of the court. In effect, this amounted to a declaration that the Assembly's paper money acts were unconstitutional and void. Generations of jurists since have cited the case of Trevett vs. Wheeden as a precedent for the right of the judiciary to rule on the constitutionality of laws enacted by legislative bodies.

As soon as the justice finished, a great shout broke out in the courtroom to be taken up by the waiting townfolk outside. Wheeden was a free man and the champions of sound finance had taken a long step toward victory.

But the paper money group were not ones to accept defeat readily. At once the "erring" judges were haled before Assembly to explain their effrontery. Since the judges had committed no punishable offense, however, grounds for impeachment were lacking. With great reluctance, the fuming legislators let the justices go, only to dismiss them from office a few months later when their commissions came up for renewal.

Meanwhile, the currency had fallen rapidly. In September the Assembly set an official rate of three shillings in paper for one in coin. By April of 1787 the ratio was six for one. From then on deterioration was rapid.

One more attempt was made by the legislature to enforce acceptance by requiring that citizens take a test oath to support the money and accept it at par. Penalties for violation were severe. The oath was so highly unpopular, however, that it was soon repealed. At the

same time the forcing act the Supreme Court of Judicature had refused to recognize was revoked. Thereafter the currency sank lower and lower until finally the official rate was fifteen to one. Total repeal came at last in September 1789. In February 1793 burning of the notes commenced and continued from time to time until May 1803. During that time 96,646 pounds of the 100,000 issued were destroyed.

A nineteenth century writer said "Rhode Island was the most unfortunate of all the colonies in her currency legislation. She kept peag^{2/} longer than any of the others, and plunged into paper issues more recklessly than any. The loan bank system she tested to the bitter end." Her experiment in making something out of nothing was no more successful than countless others, before and since.

 2/ Editor's note: peag, peage, wampumpeag, wampum, shell money. Beads made of shells used by North American Indians as money and by early colonial settlers in the fur trade (Webster).

ANTI-FRICTION HEATING METAL

The E&MJ Metal and Mineral Markets, New York, is authority for the statement that "Liqui-moly," manufactured by the Lockrey Company, College Point, New York, is available for experimental purposes for lubricating high-speed, high-temperature, and high-pressure bearings. Some forms of molybdenum possess the characteristic of plating a surface that is under pressure and such material as represented by "Liqui-moly," it is claimed, forms a permanent friction-supporting film which cannot be "squeezed out."

* * * * *

The National Rifle Association publication, the American Rifleman, February 1950, states that the Alpha Corporation, Greenwich, Connecticut, is marketing a molybdenum disulphide powder called "Molykote Type Z" that has a high film strength and low coefficient of friction under extreme bearing pressures. The Type Z plus SAE No. 10 oil in a 3 to 1 mixture is the usual method of lubricating dies used in drawing out metals.

ALUMINUM BRIDGE

In the Annual Report of the Canadian Department of Mines and Resources for 1947 just issued it is stated that "an aluminum highway bridge weighing 200 tons is being built across the Saguenay River at Arvida, Quebec."

GOLD AMALGAM IS UNPROCESSED GOLD

According to Pay Dirt, January 20, 1950, published by the Arizona Small Mine Operators Association, gold amalgam has been included in the Treasury Department's definition of unprocessed gold which may be sold on the open market without a license. "Such amalgam must not have been heated or treated in any way before sale. What if the purchaser retorts the amalgam? The Treasury so far is silent on that point but it is pretty clear that the further negotiability of the gold would be questionable."

SYNTHETIC MICA

Synthetic mica with essentially the same properties as natural mica is being made successfully by scientists of the National Bureau of Standards according to an announcement by Secretary of Commerce Charles Sawyer. It is stated that the synthetic product has properties of withstanding high temperatures superior to the natural mineral. The synthetic mica is made from four materials, quartz, magnesite, and bauxite, plus a fluorosilicate compound which acts as a crystallizing agent. This fourth material, it is said, is the critical one which gives the synthetic material its superiority over natural mica in resistance to high temperatures.

CHROMIUM SERVES MULTIPLE PURPOSES
IN STEELMAKING; MOST OF IT IMPORTED

(From Steel Facts, October 1949, published by American Iron and Steel Institute, N.Y.)

Chromium has a popular connotation of flashiness; perhaps because of the shiny chromium plated trim on automobiles and household equipment. In the raw state, it is a hard, gray metallic element, and one of the "workhorses" of the steel industry. More than 80 percent of all chromium mined is consumed by the world's steel industry.

Imports required

The United States takes a little more than half of total world chromium output, but produces normally less than one percent. This country depends largely on imports from Rhodesia, New Caledonia, Cuba, South Africa, Turkey, and several other countries in lesser amounts. In addition to the tonnage purchased from abroad, some chromium is recovered from steel scrap melted in electric and open hearth furnaces.

The principal use of chromium is as an alloy in making steel. More than 212 million pounds of the metal were used for this purpose in American furnaces in 1948. However, chromium in pure form is not added to steel, but is used as ferro-chromium, an iron-chromium alloy.

Depending on the amount used in a heat of steel, the addition of chromium has a wide range of effects on the product. It combines with carbon, intensifying the effect of that element in making steel harder and tougher. Steels containing one to two percent chromium make excellent magnets because of their ability to remain magnetic for long periods of time. Chromium also dissolves in iron and improves its corrosion resistance. Stainless steels, containing 14 to 22 percent chromium, have been developed for their corrosion resistance. The ability to maintain a high degree of strength at elevated temperatures is imparted to steel by the inclusion of 17 to 19 percent chromium. The manufacture of high speed steels and tool steels commonly utilizes the element to maintain hard, keen cutting edges. When nickel or vanadium is used in conjunction with chromium, the value of each increases as an alloying element in steel.

Heat resistance is high

The resistance of chromium compounds to heat and to corrosive slags accounts for its secondary use in the steel industry. Chromite, the only commercial ore of chromium, is a valuable refractory in basic open hearth furnaces. An estimated two and one half pounds of this material, in brick or lump form, is consumed for every ton of steel produced.

Though the steel industry is the major consumer of chromium, it must buy the raw material in competition with several other industries. Probably the second largest use for chromium is in electroplating. Household appliances and fixtures are chromium plated for beauty and corrosion resistance. Chromium plating also resists wear and cylinders of internal combustion engines are often plated to resist piston wear. Refractories for glass and ceramic making furnaces also require chromite. Chromium chemicals are used in dyeing, paint pigments, and in leather tanning. The nonferrous metals industries use such chemicals for pickling.

Seek domestic sources^{1/}

To meet the demand for chromium, extensive research is being undertaken to locate and develop new domestic sources. Deposits in the United States and its possessions are generally low grade. The cost of processing the mineral for use in steelmaking often makes it noncompetitive with that which is imported, though shipments have been made from Alaska,

^{1/} Note: Domestic chromite mines, even those which can produce what was considered metallurgical grade during World War II, cannot compete with foreign chromite in peacetime. Aside from low wages paid foreign miners according to our standards, revaluation of foreign currencies in terms of the dollar further reduced the chances of profitable operation of domestic mines. Only the government can afford to undertake research to locate and develop new domestic sources.

California, Idaho, Montana, Oregon, Texas, and Washington. Since chromium is a strategic material, continuing efforts are being made to find economical methods of concentrating chromium minerals in low grade ores.

The increase in use of stainless and heat resistant steels is reflected in the consumption of chromite since 1940. In only three of those years has consumption decreased. During 1948, about 875,000 net tons were used for metallurgical, refractory, and chemical purposes.

ENGLE BILL WOULD ASSURE CREDIT FOR ASSESSMENT WORK

"The House Public Lands Committee has approved a bill which clarifies the procedure by which holders of mining claims can claim credit against the current assessment year (ending July 1, 1950) for assessment work performed on mining claims during the year ending July 1, 1949. The measure was introduced by Representative Clair Engle of California in the closing days of the last session.

"The assessment moratorium act of June 17, 1949, provided that any labor performed or improvements made on any mining claims during the year ending July 1, 1949, could be credited against the labor or improvements required to be performed or made for the year ending at 12 o'clock Meridian on the first day of July 1950.

"Claimants who wished to take advantage of this provision were required to file notice of their intention by August 1, 1949. However, some confusion existed as to the act's provisions and many failed to file the affidavits of work performed, merely taking advantage of the assessment moratorium provisions. Engle believes that the diligent claimants who have done their work should not be discriminated against merely because of this omission, and introduced the following bill to correct the matter:

"That every claimant of a mining claim in the United States who wishes to obtain the benefits conferred by the second proviso to the first section of the Act of June 17, 1949, may file, or cause to be filed, in the office where the location notice or certificate is recorded, on or before 12 o'clock Meridian on the first day of July 1950, a statement of the labor performed or improvements made on any such mining claim during the year ending July 1, 1949, or such statement may be included as part of the annual notice of the performance of assessment work for the year ending at 12 o'clock Meridian on the first day of July 1950." "

(From Pay Dirt, January 20, 1950, p. 12.)

MINERAL MARKETS

Market prices for metals and minerals as of February 16, 1950, are reported by E&MJ Metal and Mineral Markets, New York, as follows: Copper firm at 18½ cents per pound Connecticut Valley. Quotations for lead were steady at 12 cents New York. Zinc was steady at 9 3/4 cents per pound East St. Louis. The uncertainty over the coal situation affected transactions as far as galvanizers were concerned. Tin was quoted between 74 3/8 cents and 74½ cents for prompt delivery. The General Services Organization, formerly the Bureau of Federal Supply, is acquiring tin for stockpiling through the RFC. The quicksilver price varied from \$71 to \$73 per flask according to quantity.

Aluminum ingots 17 cents per pound; in pigs, 16 cents. Antimony, bulk, Laredo, 27½ cents per pound. Bismuth, per pound in ton lots, \$2.00. Chromium per pound, 97 percent, spot, \$1.12. Cobalt per pound, 97-99 percent, from \$1.80 to \$1.87 according to quantity. Columbium per kilogram, \$250 to \$280. Germanium, per pound, \$180. Indium, per ounce troy, 99.9 percent, \$2.25. Iridium, per ounce troy, \$100. Lithium, per pound, 98 percent, \$9.85 - \$11. Magnesium, per pound carload lots, 20½ cents. Manganese, per pound, minimum 96 percent Mn, maximum 2 percent iron, 35½ cents carload lots in cases. Electrolytic manganese, 99.9 percent Mn, 28 cents carload lots. Molybdenum per pound 99 percent, \$2.60 to \$3.00. Nickel, per pound Port Colborne, Ontario, 40 cents, U.S. import duty included. Osmium, per ounce, \$100. Palladium, per ounce troy, \$24. Platinum, per ounce troy, \$66. Radium, per milligram, \$25 to \$30, according to quantity.

March 1950

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

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A REVIEW OF OREGON MINING IN 1949

Introduction

Mining in Oregon during 1949 was characterized by the preponderance of production of nonmetallics. A further falling off in metal mining occurred when the Bonanza quicksilver mine closed down late in the year. Four dredges in eastern Oregon accounted for nearly all of the gold production of the State. There was a small production of metals, mainly gold, from the Bohemia district in Lane County and the Buffalo mine in Grant County. During winter months when water was available about 40 hydraulic mines, principally in southwestern Oregon, operated into 1950. A new hydraulic mine was put into production in the old mining district of Spanish Gulch, Wheeler County.

Metals

Gold, silver, copper, lead, and zinc

Metal mining continues to decline because the profit incentive required to find and develop mines is almost completely lacking. The low, fixed price of gold measured by what the dollar will now buy in labor and goods makes gold mining unattractive.

Four dredges worked in Baker and Grant counties throughout the year. The Baker Dredging Company operated a bucket-line dredge in Sumpter Valley, Baker County; Porter and Company operated a bucket line on Clear Creek in Grant County; the Buffalo Dredging Company operated a bucket line about half the year at Mount Vernon on the John Day River in Grant County; and Calhoun & Howell worked a dragline dredge on the North Fork of the John Day River in Grant County.

Only one lode gold mine, the Buffalo in Grant County, produced consistently throughout the year. Two mines, the Champion and Helena, in the Bohemia district of Lane County, shipped some ore and concentrates to the Tacoma Smelter. The Champion mill worked part of the time. Exploration was carried on at the Queen of Bronze, the Cowboy, and the Hamlin mines in Josephine County, and a small amount of copper ore was shipped from these mines to Tacoma.

Mercury

Especially since the war the small domestic quicksilver industry has been struggling to keep alive, hoping that Federal government policies in regard to imports would change so that a nucleus of a quicksilver industry could be maintained in the interest of national defense. One by one the mercury mines have shut down. The Bonanza mine, Douglas County, Oregon, was one of the standbys during the war and had been producing steadily although on a reduced scale since the war. It finally succumbed and closed down early in December. It seems unlikely that it would be practicable to reopen this mine, even under the pressure of a war emergency.

Quicksilver production in Spain and Italy has been encouraged by Government policies at the expense of our own production, and the United States has come to rely almost entirely on imports. For example, according to U.S. Bureau of Mines reports, domestic production in 1949 was about 9,400 flasks. Imports of mercury during the first ten months of 1949 amounted to 95,358 flasks, most of which was purchased by the Economic Cooperation Administration and placed in the Government stockpile. The domestic price was about \$71 a flask of 76 pounds at the end of the year. This means about \$35 a flask measured by the prewar dollar value. No domestic mine can break even at this price.

Chromite

All chromite mining in Oregon has ceased. One mine which struggled along until the middle of 1948 finally gave up the ghost. Its owner pulled the equipment and abandoned the underground workings, which are in serpentine and, without maintenance, will cave rather rapidly and thoroughly. He was unable to arouse any interest in his ore from the Government stockpiling agency although his output was in demand during the war as metallurgical chrome.

Nonmetals

The relatively high rate of production of nonmetallics in 1948 was continued, with some reduction, in 1949. The three portland cement plants at Oswego in Clackamas County, at Lime in Baker County, and at Gold Hill in Jackson County ^{operated} at capacity throughout the year. Diatomite quarried by Great Lakes Carbon Corporation at Terrebonne in Deschutes County continued to produce at capacity. Most of this processed material was used as a filter aid. Quartz and granite were quarried steadily during 1949 by the Bristol Silica Company, Rogue River, Jackson County. The output was used for poultry grit and foundry furnace linings. Dant & Russell, Inc., Dantore Division, continued to produce perlite plaster sand and also finished the installation of a million-dollar acoustical tile plant at the mine located on the Deschutes River in southern Wasco County. Dantore continues to be the only perlite produced in the Northwest. Other perlite projects are in the planning stage. The demand for lightweight aggregate in building blocks continued good in 1949, but use of haydite increased, probably at the expense of pumice. Six pumice producers operated consistently through 1949. Two of these producers started marketing a pumice plaster sand.

Development Work

In southwestern Oregon development work was undertaken in the area of the Gold Hill "pocket," Jackson County, where a lenticular body of molybdenite was uncovered in bulldozing.

A nickel deposit at the Shamrock mine in northern Jackson County was explored on the surface and by underground work by the U.S. Bureau of Mines. The Bureau's work at this property was a continuation of work started in 1948 following an investigation by the State Department of Geology and Mineral Industries. Ore consists of pyrrhotite carrying nickel, copper, and a small quantity of cobalt.

Early in 1949 scheelite was found in the granitic area near Ashland in southern Jackson County. Two shipments of the ore were made to a tungsten concentrating mill in California. The State Department of Geology and Mineral Industries is making an investigation of the area including topographic and geologic mapping designed to obtain, if possible, a structural pattern of the occurrences in order to assist prospecting. Results of this study will be published.

Alcoa Mining Company has continued to carry on exploration work of the ferruginous bauxite deposits in Columbia County but on a reduced scale. Most of the areas of interest have been checked by drilling and sampling. Alcoa continues to maintain its office and laboratory at Hillsboro, Washington County.

Oil prospecting was carried on during 1949 in the Harney Valley near Burns. The Weed and Poteet No. 1 was drilled by the United Company of Oregon to a depth of 6480 feet and abandoned. A fire destroyed equipment at this test early in December 1949. Previously the United Company had drilled to a depth of 4500 feet in Fay No. 1 and suspended drilling in favor of the Weed and Poteet No. 1. In December the I. W. Love Drilling Company started a test located about 15 miles southeast of Burns after doing some geophysical work.

Value of Mineral Production

Total value of Oregon's mineral production in 1949, according to a preliminary estimate made by the U.S. Bureau of Mines, amounted to approximately \$20,680,000 of which about \$20,000,000 was in nonmetallics. This compares with a total value in 1948 of about \$24,980,000 with value of nonmetallics of about \$24,350,000.

Construction fell off somewhat during 1949 which accounts for the decreased value of production of nonmetallics. The postwar boom in private building subsided to a large extent and construction financed by Government funds began to take up the slack. Near the end of the year Government-financed projects made up the major proportion of construction activity.

Mining Laws

During the past year the U.S. Bureau of Land Management has issued voluminous printed material and has held public meetings all designed to show alleged weaknesses in the United States mining laws. The Bureau and the U.S. Forest Service have combined in this endeavor. They have enlisted the support of logging operators, stockmen, and recreationalists in efforts to show the supposed need for changing the mining laws so that the Bureau and the Forest Service may obtain complete control of the surface of mineral land. They state that such control is necessary in order to put into effect the so-called multiple use of land.

Informed people with experience in mining and prospecting view these activities of the Federal bureaus with misgivings. Mining people, realizing the continued growth in Federal ownership of land and natural resources, see in this control of mineral lands the inevitable bad effects on an already sick industry - an industry which is vital to the country in time of war.

Outlook for the Metal Mining Industry

Metal mining in Oregon is at a low ebb. Gold mining was the backbone of Oregon's metal production in prewar days, but gold mining has declined to only a few operations since the war. The decline was caused partly by the ill effects of War Production Board Order L-208 which closed gold operations down without recourse in 1942, and partly by the fixed price of gold in relation to the low value of the dollar measured by what it will buy in labor and supplies. The conditions in Oregon reflect, on a smaller scale, those in California, Nevada, Utah, Colorado, and Montana. Similar discouraging conditions exist in other metal mining categories with the possible exception of copper.

Why is our domestic nonferrous metal mining industry in such a sad state? In the first place, known ore reserves were depleted during the war when mining was emphasized at the expense of development. Then there is little in the way of profit incentive offered to private capital to invest in new mining ventures. Risk capital has all but disappeared because of repressive taxation, Government regulations, and Government competition in the investment field. Note the recent announcement in the Mining World that the Miami Copper Company will finance a new \$13,000,000 project northeast of Miami, Arizona, by means of an RFC loan. This old, established company would have no difficulty in financing the project from private sources, and it is perfectly obvious that a Government loan is a profitable deal for Miami stockholders. But what is the effect of such deals on private venture capital?

The closing of mercury mines since the war has focused attention on the loss of our small domestic strategic minerals industry because of inability of our domestic mines to compete with imported supplies, some of which are financed by United States funds in the interest of promoting foreign trade. Uncle Sam has become the banker for promotion of foreign mineral production which competes in the domestic market at a big advantage over our mines. Buying of foreign minerals for our strategic stockpile, and revaluation of foreign currencies in terms of the dollar have given foreign producers a preferred position in the domestic market. Besides mercury this advantage affects producers of such metals as lead, zinc, copper, tungsten, antimony, and chrome.

A few unbiased and informed people in government realize the serious situation of the mining industry and are greatly concerned, primarily because of the national defense angle. Efforts have been made and are being made to legislate new life into the industry, so far without success. Perhaps under present policies of government we must turn to subsidies to save the industry and turn our backs on private initiative and independence. It looks as if one of the last bulwarks of free enterprise is about to be breached. The result will probably mean government control of a mining industry made up of a few large companies. In this event, the small mine operator and the prospector will soon be only a memory.

F. W. L.

FOSSIL TREE TO BE PRESERVED

The 30-million years old fossil tree in the roadcut at the east end of McCord Creek bridge, Columbia River Highway, is to be transplanted.

Relocation and widening of the Columbia River Highway between Dodson and Cascade Locks will destroy the site of the fossil tree trunk that has long been one of the many interest points of scenic Columbia River Highway. The tree trunk is to be moved to a viewpoint and historical monument site planned for an area about 1000 feet east of McCord Creek, according to Mr. Carl Peterson, Resident Engineer for the Oregon State Highway Department.

This tree was uncovered when the Columbia River Highway was first constructed, about 1914. A picture appearing in the November 1916 issue of The Mineral Resources of Oregon, publication of the Oregon Bureau of Mines and Geology, shows the tree to be about 8 feet high and 2 feet through. Weathering and souvenir collectors have reduced the tree to approximately one-half its original height. In an effort to protect it, the State Highway Department erected a fence around it.

Although the tree has a sign on it identifying it as a "Western Hemlock" there is some question as to the accuracy of this identification. The July 1948 issue of the Geological News Letter, monthly publication of the Geological Society of the Oregon Country, quotes Dr. George F. Beck, paleobotanist of Central Washington College of Education, as follows:

"The wood structure places the tree in the broad category Cedroxylon which includes all fossil woods having a pinelike structure without the scattering resin canals. Modern hemlocks, firs, and golden larch belong to this group, with an outside possibility of cedar of Lebanon or the Chinese firlike Keteleeria being involved. What I can see of the ray detail almost surely excludes hemlock, so that fir or golden larch is the likely modern equivalent."

The rocks enclosing this tree belong to the Eagle Creek formation of upper Oligocene or lower Miocene age. The Eagle Creek formation is composed principally of volcanic agglomerates and tuffs and marks a period of explosive volcanic activity in Oregon around thirty million years ago. Undoubtedly the vast quantity of material ejected by the volcanoes engulfed the forests of the area and provided the necessary conditions for petrification. Fossil wood is common in this formation; within a few feet of this tree and in the same road cut is a smaller stump, and in the railroad cut just below the highway there is a log larger than the fenced-in tree. In Tanner Creek, just east of McCord Creek, fossil logs several feet long and as much as two feet in diameter have been found.

H.M.D.

MOUNTAIN MINERALS

Perusing Rice's Dictionary of Geologic Terms recently we were struck by the numerous minerals which bore the prefix "mountain." Although mountain cork and mountain leather, varieties of asbestos, are fairly well known, some of the other "mountain minerals" were relative strangers. For instance, mountain flax, a fine silky variety of asbestos, mountain meal, a synonym for diatomite, and mountain milk, a very soft spongy variety of calcite, are followed in the dictionary by mountain soap, an unctuous variety of halloysite, and mountain tallow, a soft waxlike hydro-carbon. Not to be outdone by these, we also found mountain butter a hydrated aluminum sulphate, occurring in delicate fibrous masses or crusts, which in turn is undoubtedly surpassed in beauty by mountain crystal, a synonym for rock crystal, which is exceeded in intensity of color by mountain green, another name for malachite. There are even subvarieties of mountain minerals. Tucked away in the midst of the list we found mountain paper, a thin paperlike variety of mountain cork. We found one mountain mineral that had a cousin - mountain brown ore, which is another term for limonite used in Virginia. It is related to a much richer cousin called valley brown ore, comparatively pure hydrated iron ore found in the Valley of Virginia. Incidentally, valley brown ore is the only 'valley' mineral listed. Rice apparently avoided in-between geographical units, for we found only one "hill mineral" and that hardly meets the test, since it proved to be hillebrandite, which is a calcium silicate.

R.S.M.

COAL SHORTAGE CHEMICALS FURNISHED BY GAS COMPANY

Portland Gas & Coke Company not only met northwest demands for its Gasco briquets during the coal shortage but also helped supply vitally needed chemicals to east coast industries.

Briquets which are produced at a rate of approximately 100,000 tons annually, were sent to southern and eastern Oregon, Seattle, Spokane, Pocatello, and Vancouver, B. C. Briquets also were shipped for gas-making purposes to Eugene, Tacoma, and Bremerton.

Benzol, normally obtained from coking coal in the steel industry was shipped east. It is used by manufacturers of detergents, paints, aniline dyes, and synthetic rubber. Gasco was able to divert benzol in tank car lots to the eastern market while at the same time meeting west coast commitments, including regular tanker shipments to the Rubber Reserve corporation plant operated by Dow Chemical Company at Gardena, California.

Benzol is produced during the manufacture of gas from oil, a field in which the Portland utility has pioneered. As a result, it is the nation's only large producer of oil-derived aromatic chemicals closely approximating those obtained from coal. Gasco's benzol production is approximately 5,000,000 gallons annually.

(From Commerce, March 10, 1950, published by the Portland Chamber of Commerce.)

RESEARCH FELLOWSHIPS AVAILABLE

The University of Washington offers five fellowships in the School of Mineral Engineering for research in coal and nonmetallics, in cooperation with the U.S. Bureau of Mines. Fellowship studies start on July 1 or September 1 and continue for twelve months. Payments to fellows are made monthly and total \$1,320 a year. Fellowships are open to graduates of universities and technical colleges, who are qualified to undertake investigations of research quality. Anyone interested should correspond with Dr. Drury A. Pifer, Director, School of Mineral Engineering, University of Washington, Seattle 5, Washington.

CEMENT PLANT SHUT DOWN FOR SHORT PERIOD

The Pacific Portland Cement plants at Gold Hill and Marble Mountain quarry suspended operations in February because of bad weather and market conditions, Frank Sutcliffe, local manager, said. Repairs to both plants are under way including installation of a dust eliminator at the Gold Hill plant. The majority of employees have been kept on full or part time work during the shutdown.

A.I.M.E. INDUSTRIAL MINERALS CONFERENCE

The North Pacific Section, American Institute of Mining and Metallurgical Engineers, will be hosts at an Industrial Minerals conference sponsored by the three Northwest A.I.M.E. sections on April 6, 1950, at Seattle. Besides the North Pacific, Columbia, and Oregon sections of A.I.M.E. the Vancouver branch of the Canadian Institute of Mining and Metallurgy will join in sponsoring the regional meeting. Registration for the sessions will be in Room 211, Mines Building, University of Washington, beginning at 9:00 A.M., April 6. The technical sessions will start promptly at 9:30 A.M. A banquet will be held at the Edmund Meany Hotel, which adjoins the University campus, at 6:00 P.M. The following papers will be included in the technical session:

"Phosphate Industry in Idaho" - Earl W. Murphy, Boise, Idaho.

"Chemical Phases of the Elemental Phosphorus Industry" - J. C. Miller, Pocatello, Idaho.

"Techniques of Identification of Nonmetallic Materials" - Dr. J. I. Miller, Seattle, Washington.

"Prevention of the Hydration of Lime" - Harold Cahoon, Seattle, Washington.

"Nonmetallic Mineral Resources in Montana" - Dr. E. S. Perry, Butte, Montana.

"Perlite in Oregon, Washington, and Idaho" - Kenneth E. Hamblen, Portland, Oregon.

"Problems of the Silica Business in the Northwest" - F. I. Bristol, Rogue River, Oregon.

Two field trips are planned, - one to the Tacoma Smelter on Friday forenoon, April 7; the other will be a visit to the Bethlehem Steel plant in Seattle on Friday afternoon, April 7.

Reservations for luncheon and banquet on April 6 should be made in advance, preferably by April 3, to Drury A. Pifer, Secretary, North Pacific Section, A.I.M.E., School of Mineral Engineering, University of Washington, Seattle 5, Washington.

The Cordilleran Section of the Geological Society of America will hold a convention in Seattle on April 7 and 8, immediately following the Industrial Minerals conference.

ALLOY TO EXTEND USE OF MAGNESIUM EXTRUSIONS

An improved magnesium extrusion alloy containing six percent zinc and six-tenths of one percent zirconium has shown increased toughness and fatigue strength, according to the March issue of "Magnesium."

Early experimental work in Germany and England on zirconium-containing magnesium alloys had been devoted mainly to casting alloys. Investigation at the Dow Chemical Company has been directed at developing an extrusion alloy with improved properties.

It was found that the high strength properties were due mainly to small grain size, insured and maintained by the addition of zirconium. Other factors contributing to strength properties are extrusion conditions, such as speed, temperature and reduction of cross-sectional area.

An outstanding application in the use of the alloy is in floor beams in the Douglas DC-6 airplane. While the first major uses of the alloy (ZK60) have been in the aircraft field, the requirements of strength, toughness, notch insensitivity and light weight are said to be applicable to truck and trailer floor sills and parts, textile machinery, materials handling equipment, and numerous other commercial applications.

(From E&MJ Metal and Mineral Markets, New York, March 2, 1950.)

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DEPLETION

By

S. H. Williston*

The mining industry, especially in the nonferrous metal field, is sick. Depletion of reserves caused by war needs, lack of venture capital, the dearth of new discoveries, encouragement of imports - all are taking their toll. According to the Utah Mining Association in 1939 Utah had 226 "shipping" mines. In February 1950 there were 25 shipping mines, some of them scheduled for early closure. This striking decline is in one of the largest mining states in the country. In the face of such evidence, the Treasury Department has advocated the closing of "loopholes" allowed mining and oil companies in percentage depletion allowances.

The Century Dictionary defines depletion as "the act of emptying, reducing, or exhausting, as the depletion of natural resources." Webster defines it as "impairment of capital; decline in value caused by the consumption or diminution of an asset." Every ton of ore mined depletes by that amount the nonrenewable ore body from which it is mined. The money received for that ton of ore should include a profit plus interest on the investment plus a proportional return of capital, else the investment is an illusion. For income tax purposes the return of capital is depletion allowance and if an investor does not get an adequate depletion allowance, his capital is dissipated. If he is able, he will look to fields other than mining for investment.

Realizing the serious conditions in the mining industry throughout the West, the Ore.-Bin requested Mr. S. H. Williston to discuss the depletion allowance situation from a mine operator's standpoint. Mr. Williston, formerly a member of the Governing Board of the State Department of Geology and Mineral Industries, has had wide experience in mining and oil work.

The Editor.

Discussion of the depletion allowances for oil and metal mining has been filling the newspapers ever since the President and Secretary of the Treasury made an attack upon them as "loopholes" the first month of the year. Far from being loopholes, percentage depletion was definitely provided for by Congress. It has been part of our income tax laws for almost twenty years. While a manufacturing corporation can continue almost indefinitely in operation, purchasing its raw materials on the open market and selling its finished product to the ultimate consumer, all the natural resource industries consume their capital in the normal

* Vice-president Cordero Mining Company.

procedures of business and with the exhaustion of the oil, ore, or timber, must go out of business. Congress has recognized this fact ever since 1913. Income taxes were to be levied on income and income taxes were not to be levied on the return of capital.

The history of depletion, especially mining depletion, is a long one. The original depletion base was "discovery value" but since this method of determining depletion involved not only the determination of values of properties, but also estimates as to tonnage of reserves and cut-off points as to what was and what was not ore, the intricacies became so complex that in 1932, as a result of comprehensive study, Congress adopted percentage depletion as the most equitable means for the return of capital tax-free to the oil and mining industries. The figures adopted - $27\frac{1}{2}$ percent in the case of oil, 22 percent in the case of sulphur, 15 percent in the case of metals, 5 percent in the case of coal - were the close equivalent of what had been granted to those industries under discovery depletion in the preceding twenty years. Only the metal industry was penalized. The study indicated that the metal industry was entitled to approximately 15 percent on the basis of the market price of the metal. When the law was finally approved, depletion allowance was based not on the price of the metal contained, but on the value of the ore or concentrates delivered to the smelters.

When percentage depletion was first granted, individual income taxes were low and the individual stockholder of a mining company was not severely penalized by the fact that no provision was made for percentage depletion allowance to the stockholder. In recent years, with the greatly increased income tax rates and the decline in the value of the dollar, percentage depletion allowances of all types have been effectively cut in half. Under present tax laws the payment of dividends from earnings and depletion allowances to stockholders prior to the liquidation of the company are considered ordinary income and are taxed at graduated rates. To any individual who had a net income of \$8,000, after deductions and taxes, in 1939 and who has managed to maintain his purchasing power by increased income until today, present Federal tax rates effectively deny 50 percent of the depletion to which he is entitled.

The Treasury, in its presentation before the Ways and Means Committee, placed much emphasis on so-called "basis depletion." They inferred that if an oil or mining company were to receive "basis depletion," they would recover their investment in the property. The Treasury failed to disclose the fact that "basis depletion" is based on "allowed or allowable cost depletion" and takes little or no account of losses on unsuccessful ventures. Basis depletion is "allowable" even if a corporation loses money so the Treasury would hold that the investment had been recovered if "allowable" even though the corporation lost money.

Where conditions are such that an individual can invest either in oil or in mining as an individual, he receives a full tax-free depletion allowance. This is frequently possible in the oil industry. It is only rarely possible in the mining industry.

The $27\frac{1}{2}$ percent depletion rate allowed to oil has apparently been sufficiently high to encourage the exploration for and development of new reserves. The figures for last year would indicate that exploration is up at least 10 percent over a few years ago and much higher than it was in the late thirties.

The depletion rates for mining are apparently far too low since exploration for and development of new metal reserves within the United States is now not over a third of what it was in 1940 and the mining industry, unlike the oil industry, is in a considerably worse position as far as exploration, development, and reserves are concerned, than it was before the war.

Actually, both the oil industry and the mining industry are turning into inflated postwar dollars raw materials discovered and developed at prewar costs. If profits were calculated on the cost of replacing those reserves at present prices, many, if not most, balance sheets would provide dismal reading.

Mr. Henry Fernald, one of our most eminent mining tax authorities, has shown that if an individual investor with an income of \$16,000, after deductions and taxes, is to invest in a new mining corporation which is operated in regular mining fashion, the company will have to earn, before taxes, more than 1500 percent in its 14 years of life for the investor to be better off than he would have been if he had bought tax exempt bonds. Should the investor have an income greater than that, it is most improbable for him to profit through corporate investment in mining and if he has an income less than that, the hazards of the industry are such that it would probably be inadvisable for him to take the gamble.

There is likewise a very strong reason to believe that larger mining companies could better serve their stockholders by setting aside the corporation depletion allowances, exhausting their ore reserves and liquidating the companies. Only the most phenomenal successes for exploration and development expenditures from depletion allowances can return to the stockholders in the companies that follow that policy more than an early liquidation would give them. These are very apparent reasons for the decline in exploration for metals within the United States.

Should Congress adopt the recommendation of the President and the Secretary of the Treasury, wildcatting for oil would be immediately curtailed and exploration and development in the mining industry would be still further reduced below its present dangerously low level.

The United States can become a "have not" nation, not because large strategic mineral reserves are lacking but because no financial reward is obtainable for finding and developing them.

THIS YEAR'S ASSESSMENT WORK

Federal Law

It seems unlikely that Congress will declare a moratorium on assessment work for the current assessment year. Therefore holders of unpatented mining claims should plan to do their assessment work before July 1, 1950, in order to maintain their possessory rights.

The Federal statute governing assessment work reads "On each claim located after the 10th day of May, 1872, and until a patent has been issued therefor, not less than \$100 worth of labor shall be performed or improvements made during each year." The year referred to is now called the "assessment year." It begins at noon of July 1 and ends at noon of July 1 of the following year. Although the law reads "during each year," it has been held that work begun but not finished before noon of July 1 will satisfy the statute if the work is prosecuted "diligently" until completed. Thus, this year, work should be started before noon of July 1 and if not finished on that date, it should be continued with reasonable diligence. It is always safest to plan the work so that it will be finished and recorded before July 1. Then there can be no question raised concerning the "diligence" of the claim owner.

State Law

Oregon law requires that within 30 days after the work has been performed an affidavit must be made and recorded in the mining records of the county in which the claim is located setting forth the following:

- (1) The name of the claim or claims if grouped and the book and page of the record where the location notice of said claim or claims is recorded.
- (2) The number of days' work done and the character and value of the improvements placed thereon, together with the location of such work and improvements.
- (3) The date or dates of performing said labor and making said improvements.
- (4) At whose instance or request said work was done or improvements made.

- (5) The actual amount paid for said labor and improvements, and by whom paid, when the same was not done by the owner or owners of said claim. (L. 1939, ch. 8, sec. 1, p. 19)

Claims on O&C lands

Holders of mining claims located on Oregon and California Railroad revested lands and Coos Bay Wagon Road grant lands of western Oregon must file a proof of labor also with the U.S. District Land Office, now located at Swan Island, Portland, according to a provision in the law which reopened these revested lands to exploration, location, entry, and disposition under the general mining laws, reading as follows:

"The owner of any unpatented mining claim located upon any of such lands shall file for record in the United States district land office of the land district in which the claim is situated. . . ; within sixty days after the expiration of any annual assessment year, a statement under oath as to the assessment work done or improvements made during the previous assessment year, or as to compliance, in lieu thereof, with any applicable relief Act."

O and C lands were made up originally of odd-numbered sections. There have been some exchanges and therefore these lands now contain some even-numbered sections. A claim owner who is not certain whether or not his claim lies within these revested lands should request information concerning the status of his claim from the Bureau of Land Management, Swan Island, Portland.

Questions

Questions concerning assessment work most frequently asked the Department are taken up below.

How is the value of assessment work determined?

Lindley¹ states that according to the Supreme Court of Montana an approved method of arriving at the value of assessment work done is as follows:

"In determining the amount of work done upon a claim, or improvements placed thereon for the purpose of representation, the test is as to the reasonable value of the said work or improvements - not what was paid for it or what the contract price was, but it depends entirely upon whether or not the said work or improvements were reasonably worth the said sum of one hundred dollars."

In more detail Lindley writes in the same section:

"In estimating the value of the labor performed the jury should consider the distance of the mine from the nearest point where labor could be procured, the cost of maintaining men while the labor was being performed, the current rate of wages, and any other necessary and reasonable expense which might be incurred in the performance of the said labor."

Ricketts² writes on sufficiency of performance:

"The test of the sufficiency of the annual expenditure is the reasonable value: not what was paid nor the contract price, but whether the expenditure tends to facilitate the development or actually promotes or directly tends to promote the extraction of mineral from or improve the property or be necessary for its care or the protection of the mining works thereon or pertaining thereto."

¹ Lindley, Curtis H., Lindley on Mines, Third Edition, San Francisco, 1914, section 635, pp. 1578, 1579, and 1580.

² Ricketts, A. H., American Mining Law, Bull. 123, California Div. of Mines, San Francisco, 1943, section 491, p. 296.

May work done on one claim be applied on a group of contiguous claims?

Ricketts³ gives instructions in answer to this question as follows:

"A general system may be adopted for the improvement and working of contiguous claims held in common. In such case the expenditure required under the law may be made upon any one of them, or upon adjacent patented lands, or upon public lands, but the expenditure of money or labor must be equal in value to that which would be required on all the claims if they were separate and independent. The claims must be contiguous, and each location thus associated must, in some way, be benefited by the work done or money expended as labor performed or improvements made upon or for a location therein. Assessment work which has no reference to the development of all the locations will not be sufficient. It is not necessary for a claimant to prepare plans and specifications with regard to how he intends to develop his location. A court should not substitute its judgment for that of the claimant as to the wisdom and expediency of the 'plan.' Yet it remains a question whether the requirement of the law has been fulfilled, i.e., that the work is such that, if continued, it will lead to a discovery and development of the veins or ore bodies that are supposed to be in the locations, or, if these are known that the work will facilitate the extraction of the ores, or be necessary for the care and protection of the property. . . .

"The natural and reasonable presumption is that all the work is done as a part of the 'plan' or system, and, as such applicable to all the locations within the group; still the burden of proof as to the sufficiency of the expenditure rests with its claimants."

Also in this connection Lindley⁴ states:

"Obviously, a tunnel, the portal of which is situated at a higher elevation than some of the claims in a group and projected in a direction away from them, could hardly aid in the development of such lower claims.

"As water is essential to the development and working of placers, expenditures made in constructing ditches, flumes, and pipe-lines, for the purpose of conducting water to the property for use on such property, will undoubtedly satisfy the law. The cost of a survey preliminary to the location of a ditch for the development of the claim will not, however, be credited on the required statutory expenditure, where the ditch has not been dug."

May work be done outside of the boundary of a claim to apply as assessment work on the claim or group of claims?

On this point Ricketts⁵ says:

"Work done in good faith outside of the limits of a mining claim for the purpose of prospecting or working it, will hold the claim the same as if done within the boundaries of the location itself. But it must be made to appear that the work is of value to the claim upon which it is sought to apply such work. The work may be done at a distance from the property and may consist, say, in the turning of a stream, or the introduction of water, or the construction of a flume to carry off the debris or waste material, or the construction of a road or trail outside of the limits of the claim, or the construction of a tunnel made solely with reference to the development of the claim, or the sinking of a shaft and running drifts therefrom."

³Ricketts, A. H., op. cit., sections 488 and 490, pp. 293, 295.

⁴Lindley, Curtis H., op. cit., section 631, p. 1562.

⁵Ricketts, A. H., op. cit., section 486, pp. 290, 291.

From Lindley:⁶

"Work done outside of the claim upon another patented claim, if for the benefit of the one unpatented, may be considered as work done upon it. In cases of consolidation of claims, it is not necessary, in order to have its due share of such work or improvements credited to each claim, that such group of claims should all be embraced in the same proceedings for patent. If the mining laws are complied with in other respects, such claims may be applied for and entered singly or otherwise, and at different times, without in any way impairing the right to have the value of such share credited to them respectively. But where improvements not situated upon the claim are alleged to have been made for the development of such claim, it must be clearly demonstrated that such improvements have a direct tendency to such development. They must have direct relation to the claim, or be in reasonable proximity to it."

Must assessment work be done on each 20 acres of an association placer claim?

Again quoting from Ricketts:⁷

"Annual assessment work is not required upon each twenty-acre lot of an association placer claim. In other words, no greater annual expenditure is required upon an association claim of one hundred and sixty acres, or less, than upon an individual location of twenty acres, or less."

What is or is not good assessment work?

This question has to do with quality rather than quantity of work. Standard works on mining law cite numerous examples in answer to this question. Allowable work is specified by Ricketts⁸ as follows:

". . . The labor may be done upon the vein or lode or in a tunnel or upon or below the surface. Work done upon the vein or lode is something more than taking rock therefrom, from time to time, and testing it for the purpose of finding pay ore. Work may consist of unwatering the claim or in the erection of a flume to carry away water or waste, or in the introduction of water or the turning of a stream. The erection of machinery and other works or of a building, if of benefit to the claim and not too distant therefrom, or the building of a road or trail or the clearing of brush from a mining claim to facilitate the work thereon, may be sufficient. Reasonable compensation may be allowed for the use or for the sharpening of tools used, but not the purchase price thereof. The value of powder, fuse, candles, rails, and timber actually used, but not the cost of transporting them, may be counted. Reasonable compensation for the daily use of horses employed in drawing cars or in raising ore, etc., but not their cost; livery hire, feed or shoeing, may be treated as labor performed. Reasonable value of meals furnished to men while employed in 'assessment work,' but not the cost of tableware, house furnishing, provisions, nor tobacco, may be counted. . . .

"Diamond drill holes on lode claims and drill tests on placer claims in connection with dredging operations upon adjoining land and the searching for lodes within placer claims have been held to be sufficient compliance with the law.

"The services of a watchman are sufficient, if necessary to preserve the excavations, the structure erected to work the claim or to preserve personal property; but they are not sufficient when he merely lives upon the claim or warns others from locating it. Negotiations, traveling, preparations for work, contracts and the like, can in no sense be said to be work done on the claim. Personal expenses incurred and the time spent for the purpose of getting work

⁶Lindley, Curtis H., op. cit., section 631, p. 1560.

⁷Ricketts, A. H., op. cit., section 490a, p. 296.

⁸Ricketts, A. H., op. cit., section 484, pp. 288, 289, 290.

to operate the mill or the services of a person whose time is spent in endeavoring to obtain means for the development of property are, also, in no sense labor performed upon the claim."

Van Nuys⁹ illustrates examples of proper and improper assessment work as follows:

"Prospecting work: Open cuts; prospecting tunnel; diamond drillings; shafts; etc.

Developing work: Mine timbering; shaft or tunnel following vein; blocking out ore; etc.

Mining: Stoping; removing ore from mine or to mill; etc.

Miscellaneous: Trails and roads; tramways; mine rails, candles, fuse, powder used; mine machinery, including transportation and installation, if for permanent use; powder house, tool house, blacksmith shop, ore bins, etc. . . .

"Illustrations of work not allowed as assessment work:

Buildings not strictly necessary for development or mining; such as a miner's cabin, bunk house, boarding house, etc.

Tools and other loose equipment; but their current rental value may be counted.

A mill or smelter, and repairing same; ore crushing and treatment being a manufacturing process.

Traveling; services of engineer or geologist; gathering samples and assaying; all being too remote.

Assessment work benefiting a group of claims in common cannot be apportioned according to actual benefit to each claim but only pro rata. Assume a group of three claims, Nos. 1, 2, and 3, and that owner does work on No. 1 for benefit of all three, but a relocater proves work worth only \$200. Effect not decided in this State (Washington, Ed.), but courts of other states disagree. Do not be caught in this trap; do the full value."

Credit for work done in 1948-1949

Public Law 107 (Act of June 17, 1949) which suspended annual assessment work for the assessment year ending July 1, 1949, contained a specification as follows:

" . . . Provided further that any labor performed or improvements made on any such mining claim during the year ending July 1, 1949, may be credited against the labor or improvements required to be performed or made for the year ending at 12 o'clock Meridian on the first day of July 1950."

This law did not contain specific directions to the claim holder on the method of obtaining formal credit for assessment work done for the assessment year ending July 1, 1949, which could be credited as work for the following assessment year. To clarify this provision, Representative Engle of California introduced a bill (HR 6406) which passed the House February 13, 1950, and is now (April 4, 1950) pending in Senate Interior and Insular Affairs Committee. This bill contains the following provision:

"That every claimant of a mining claim in the United States who wishes to obtain the benefits conferred by the second proviso (preceding quotation, Ed.) to the first section of the Act of June 17, 1949, may file, or cause to be filed, in the office where the location notice or certificate is recorded, on or before 12 o'clock Meridian on the first day of July 1950, a statement of the labor performed or improvements made on any such mining claim during the year ending July 1, 1949, or such statement may be included as part of the annual notice of the performance of assessment work for the year ending at 12 o'clock Meridian on the first day of July 1950."

F.W.L.

⁹Van Nuys, M. H., An outline of Mining Laws of the State of Washington, State Division of Mines and Mining, Olympia, 1940, pp. 24, 25.

HAYDITE PLANT STARTS OPERATION

A new industry in the nonmetallies field for Oregon started operation April 21 when Governor Douglas McKay threw the switch which started the kiln rolling at the Smithwick Concrete Products Company plant in Portland. The plant will produce 300 yards of finished material a day on a 24-hour, 7-day week basis. Shale is being quarried in Washington County a few miles south of Vernonia and shipped by rail to the kiln. The quarry will employ four to six men, while twelve men will be used at the plant. The kiln measures 100 feet in length by 8 feet in diameter. The plant is unique in that it contains an after-cooler which also serves as a pre-heater for incoming air to the kiln. Haydite is a trade name owned by the American Aggregate Company of Kansas City, Missouri, for a lightweight aggregate made from expanded shale.

It is reported that some of the output from this new plant will be used for the aggregate for the decking of the Tacoma-Narrows Bridge which is being rebuilt by the Washington Toll Bridge Authority.

ROCK AND MINERAL BOOKLET PUBLISHED

The Department has recently published a 50-page booklet entitled "A description of some Oregon rocks and minerals," by Hollis M. Dole. This booklet includes a classification of rock types and tells how to identify the more common rocks and minerals of the State. Major uses and occurrences are listed. Because the booklet is chiefly intended to accompany the rock and mineral sets which the Department loans to schools, and does not belong to the regular series of Department publications, no copies will be mailed to exchange libraries. A limited number of the booklets are available, however, and may be purchased at 40¢ per copy.

METAL MARKETS

E&MJ Metal and Mineral Markets issue of April 20, 1950, reports that metal markets were all active. Copper advanced one cent per pound during the preceding week, making the price 19½ cents, Connecticut Valley points. Zinc was raised to 11 cents per pound, East St. Louis. Lead was maintained at 10½ cents per pound, New York, although sales improved and the undertone of the market was characterized as steady to fair. Steel operations are up to 100 percent capacity, which is reflected in demand for manganese ore, most of which has been imported. (Whether or not the large demand for manganese ore for current steel operations prevents accumulation for stockpiling purposes is not mentioned. Ed.) Chrome ore is reported to be in more active demand. Foreign silver was unchanged at 71 3/4 cents a troy ounce. The price of quicksilver remains at \$71-\$73 per flask for spot metal. It was reported that the European quicksilver cartel has been dissolved and that sellers of Spanish and Italian quicksilver will go their separate ways. There is no indication that dissolution of the cartel has so far affected the market price in this country.

The State Department has issued a list of commodities on which tariff concessions will be sought in order to increase our imports and relieve dollar shortage in foreign countries. The list covers 2500 items and includes lead, zinc, nickel, manganese metal, and most ferro alloys. Copper is not mentioned. Negotiations will be conducted with some seventeen countries at meetings scheduled to begin in England September 28, 1950.

U.S. GOLD AND SILVER EXPORTS AND IMPORTS IN FEBRUARY 1950

Gold held under earmark at the Federal Reserve Banks increased during February by \$50,410,868 to \$4,416,911,057. Total exports of gold were \$4,118,545 of which \$1,180,880 was to Portugal and \$1,091,997 to Syria. Total imports of gold were \$4,350,062 of which \$1,788,169 was from Taiwan (Formosa). Total exports of silver were \$29,921. Total imports of silver were \$4,355,313, of which \$1,409,869 were from Mexico.

(From World Trade News, U.S. Department of Commerce, April 13, 1950.)

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NEW BUILDING STONE DISCOVERY

Introduction

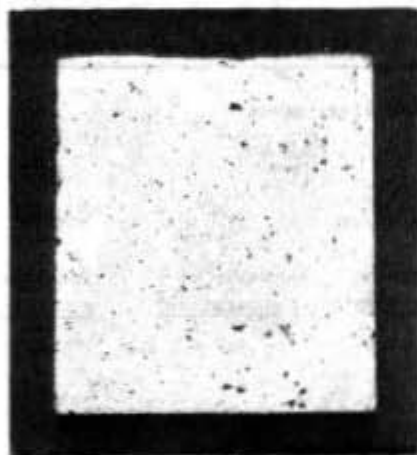
The discovery of a bed of pinkish-white rhyolite tuff near Crooked River in western Crook County may make available a new building material with some unique characteristics. The description of the stone is based only on the outcrop, as no exploration work has so far been done. The deposit, as shown on the accompanying index map (page 28), is located in sec. 21, T. 16 S., R. 17 E., and is reached by taking the graveled Combs Flat road southeast from Prineville for a distance of 17 miles to the junction at Crooked River, thence downstream on the Crooked River road for approximately 5 miles to the Bailey School at the mouth of Owl Creek. The rhyolite tuff bed lies a short distance to the northeast of the Carey Ranch which is about 1 mile up Owl Creek from the school house. The rock crops out along a fairly steep hillside for a distance of half a mile or more in a series of beds which dip steeply into the hill.

Description of the stone

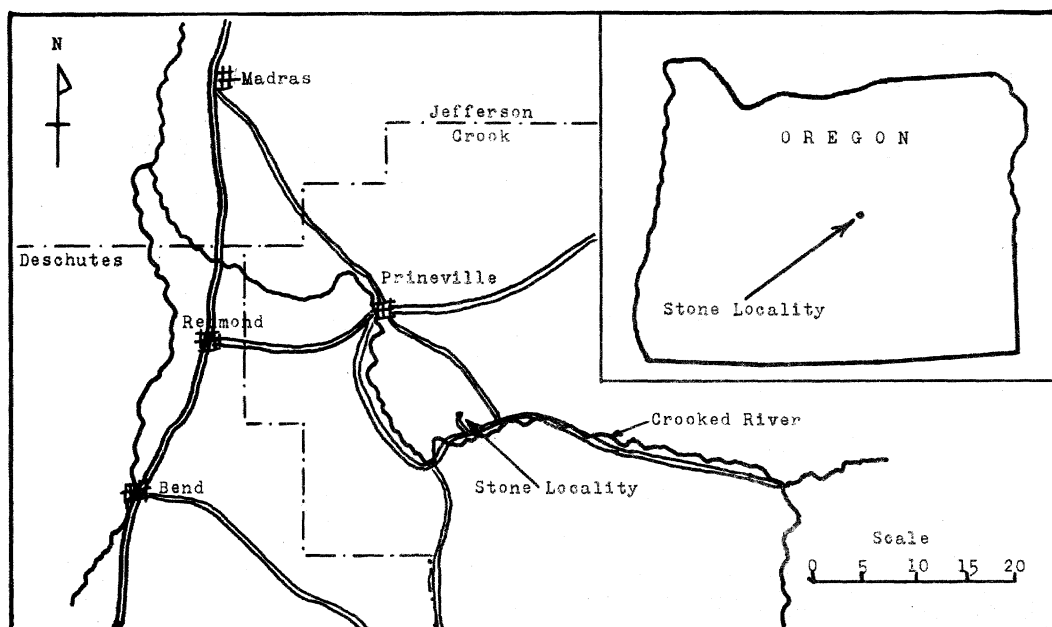
The accompanying photograph shows a sawed section of a piece of the stone in which the dense, uniform texture is indicated. There is a pale-pinkish matrix in which numerous creamy-white patches occur. In addition, there are some tiny black rock fragments which add interest to the appearance of the stone. It can be sawed readily and little if any ravelling or pitting has been observed. Architects who have seen the stone have been very enthusiastic over its possibilities, since it would provide them with a new material which would be easy to prepare and would be an Oregon stone.

The tuff possesses a low apparent porosity and a remarkably high crushing strength. The specific gravity is much less than most common building stones.

The following table summarizes the physical properties of the Crooked River stone and compares them with three other Oregon stones which have been used in the erection of buildings in the State. Physical properties of some of the "standard" building stones used in construction are also included for comparison. Professor S. E. Graf of the Mechanical Engineering Department of Oregon State College cooperated in making tests of the stone on samples prepared by the State Department of Geology and Mineral Industries.



Photograph of sawed specimen of Crooked River tuff showing uniform texture (natural size).



Index Map Showing Location of Crooked River Stone

Physical Properties of Some
Oregon Lightweight Building Stones

<u>Description</u>	<u>Crushing strength</u> (lbs./sq.in.)	<u>Apparent porosity</u> ¹	<u>Water of absorption</u> ²	<u>Specific gravity</u>
Crooked River tuff	13,859	17.1 %	9.4 %	1.82
Volcanic tuff from quarry at Pleasant Valley Baker County, Oregon	2,916	33.9	22.3	1.53
Rhyolite tuff from Willowdale quarry Jefferson County, Oregon	----	31.6	21.9	1.66
Mt. Angel tuff from quarry on Little Abiqua Creek Marion County, Oregon	----	36.0	26.6	1.35

¹ Apparent porosity is obtained by dividing the weight of absorbed water (in grams) by the volume (in cubic centimeters) of the stone.

² Water of absorption is obtained by dividing the weight of water absorbed by the weight of the dry stone.

Average Values for Some Common Building Stones

	<u>Crushing strength</u>	<u>Apparent porosity</u>	<u>Specific gravity</u>
Granites -	15,000	0.5% (max.)	2.65
Sandstones -	10,000	2-15%	2.65
Limestones -	10,000	0.5-5.0%	2.73
Marbles -	12,000	0.5% (max.)	2.78

From the above table it is evident that the Crooked River stone possesses some remarkable and favorable characteristics for use as a building material.

Chemical analysis

The Crooked River stone was analyzed in the Department's chemical laboratory with the following results:*

Silica (SiO_2)	67.15 %
Iron as ferric oxide (Fe_2O_3)	1.36
Alumina (Al_2O_3)	13.30
Lime (CaO)	3.88
Magnesia (MgO)	0.62
Potash (K_2O)	1.63
Soda (Na_2O)	3.03
Ignition loss	9.67

Petrographic description

This rock is a coarse vitric tuff. It is composed of pumice in a matrix of glass shards and dust; mineral grains make up no more than 5 percent of the total. Pumice makes up around 65 to 70 percent of the rock, glass shards and dust 25 to 30 percent, and obsidian occurs in occasional black fragments.

The size of the pumice ranges from $\frac{1}{4}$ mm to 8 mm in diameter; most particles are sub-angular but the edges are generally smooth. It has an index of refraction less than 1.50 and greater than 1.49, indicating a rhyolitic composition. Although few vesicles remain, occasional devitrified particles show remnants of bubble walls.

The matrix has an index of refraction of circa 1.50, also indicating a rhyolitic composition. Most of the matrix is without character, but typical shard structure is frequently observed. The size range is all below $\frac{1}{4}$ mm.

Both the pumice and the matrix show signs of devitrification. Each is weakly birefringent and has occasional poorly developed spherulites. The weakly birefringent material was too small to be resolved under the microscope but is apparently quartz and feldspar. In the pumice the weakly birefringent areas sometimes appear to follow the sides of collapsed vesicles. Magnetite is common in the pumice and the shard matrix is tinted pink by disseminated hematite in dust-size particles. The hematite dust tends to increase around the edges of the pumice, thus accentuating the outline of these particles; however, the pumice particles are comparatively free of hematite.

Mineral grains are dominantly quartz with minor feldspar and accessory sphene, augite, and magnetite. The quartz occurs in rounded to angular grains and varies in color from water clear to smoky black. The darker quartz grains have many inclusions which apparently are mainly rutile. The feldspar is orthoclase. It occurs in subhedral to anhedral phenocrysts which have an index of refraction greater than 1.52 and less than 1.53, is optically negative, and has a large axial angle; all gradations of alteration from clear to completely

*Analysis by L. L. Hoagland, Chemist.

masked are present. No reaction rims were noted on either the quartz or feldspar but some feldspars were shattered. Platy intergrowths of quartz and orthoclase are frequent; these grains are usually dark colored, subangular, and the feldspar commonly shows alteration. Grain size of these minerals and their intergrowths varies from 0.1 mm to 1.5 mm. Although most magnetite is probably secondary, euhedral phenocrysts were seen. The euhedral forms are thought to be primary.

Secondary mineral products are kaolin, chlorite, iron oxides, and leucoxene (?).

The dark grains of the rock are quartz, quartz-orthoclase intergrowths, obsidian, magnetite, chlorite, and devitrified pumice.

It is possible that this rock is a welded tuff. The collapsed vesicles in the pumice, the lack of form of much of the matrix, the denseness of the whole rock, and the absence of foreign material would indicate this.

Summary

The Crooked River stone possesses not only the physical characteristics which would make it suitable for a building material but it possesses the equally important factor of having an interesting and attractive appearance. The stone can be shaped easily, and although no freezing and thawing tests have been conducted, its low absorption indicates that it will weather well. Volcanic tuffs have been used in both eastern and western Oregon as building stone for many years without any apparent deterioration, even though their water absorption is relatively high. In sufficient exploration work has been done on the deposit to determine whether or not the material can be obtained in pieces of economic size or whether the sub-surface stone will possess the same physical characteristics as at the outcrop. The answers to these questions can only be determined by opening up the deposit sufficiently at several places and carrying out additional testing work.

EASTERN OREGON MINING NOTES

Mr. Bert Hayes, John Day, will resume exploration work in the near future at the Standard mine on Dixie Creek in Grant County. Hayes plans to sink a 50-foot shaft to explore the vein below the old workings. Samples of ore taken from an old pillar gave high results in cobalt and gold.

* * * * *

The Buffalo Dredging Company, which operated a bucketline dredge near Mt. Vernon in the John Day Valley during 1949, is sampling dredge ground on the Middle Fork of the John Day River in Grant County.

The Golden Century Industries, an Idaho corporation in which Mr. George Fenton is one of the principals, has leased and is testing part of the Baker Ranch at the mouth of Conner Creek, a tributary of the Snake River in Baker County, Oregon. This company is also testing placer ground in the McNamee Gulch area in the Greenhorn Mountains, Baker County.

* * * * *

William Rick has leased the Macy mine, Baker County, Oregon. He has rehabilitated the camp and some of the underground workings. In addition, he has sunk a 45-foot winze. Some of the development ore has been milled in a small Gibson mill.

* * * * *

The mine road from the Snake River road up Conner to the old Conner Creek mine in Baker County has been extended about 2 miles so that the southwest edge of the Marble Mountain limestone area is now accessible by road.

DEPARTMENT EXHIBITS AT INDUSTRIES EXPOSITION

An exhibit emphasizing the mine-to-mill-to-consumer path that minerals must follow before they can be utilized was prepared by the Department of Geology and Mineral Industries for the Greater Portland Industrial Exposition held at Portland University May 2 to 7. Included in the display was a series of rocks ranging from unweathered basalt through various stages of laterization to a ferruginous bauxite, thence to alumina and metallic aluminum and finally to finished extrusions. Another group of minerals and products traced the course that cinnabar, the principal ore of mercury, goes through to become a useful product in such things as the recently perfected mercury dry cell and various chemicals containing mercury. Perlite, a newcomer to the industrial minerals field, was represented by the crude quarry run material, the "popped" granules, and the finished products such as wallboard and insulation fill. Lightweight aggregates were represented also by pumice and expanded shale, both of which are being produced in Oregon for lightweight insulating building materials. Building stones were represented by several blocks of rhyolite tuff from Willowdale, where a quarry of a reddish-brown rhyolite tuff occurs, and a cream-colored tuff from the Carey Ranch area near Crooked River southeast of Prineville. The various steps leading up to the manufacture of calcium carbide were shown in a display consisting of black marble from the Enterprise quarry, the same rock after being burned, and the final product which is formed by the fusion of burned lime and coke in an electric furnace. Also included in the exhibit were displays of silica, granite, high-alumina clay, diatomite, and some bricks made from local silts. A display of semi-precious gems and other objects fashioned from various gem stones was loaned to the Department by a Portland gem cutting establishment whose products are sold all over the United States. Probably the most interesting feature of the Departmental booth was the demonstration by Charles Jacobs, ceramist, who divides his time between the Oregon Ceramic Studio and the Department. Mr. Jacobs conducted his demonstration each evening during the week and on Saturday and Sunday afternoons, when he showed the techniques of "throwing" clay pots and jars on a potter's wheel.

The Portland Chamber of Commerce and the Raw Materials Survey assisted the Department in the preparation of the exhibit at the Exposition. Without the assistance of these organizations the exhibit would not have been possible as the Department has no funds budgeted for such a purpose.

OREGON MINING ASSOCIATION DRAFTS RESOLUTIONS

The Oregon Mining Association held its annual meeting in Portland on April 21. A series of resolutions dealing with the principal problems confronting the mining industry in Oregon were drawn up and passed including the following:

1. Advocating tariffs for protection of domestic minerals.
2. Urging a change in the policies presently followed by the Munitions Board so that domestic mining would be given a chance to supply materials to the national stockpile.
3. Urging a revision of taxes on the mining industry as recommended by the National Minerals Advisory Council so that the mining industry may survive.
4. Opposing the Bureau of Land Management's proposed legislation for changing the mining laws.
5. Urging compensation for damage and loss to mine owners occasioned by Federal regulation L-208, which arbitrarily shut down gold mines during World War II.
6. Opposing the proposed legislation for a Columbia Valley Administration.
7. Advocating the building up of a strong school of mineral engineering at Oregon State College.

MONTAN WAX

According to Industrial and Engineering Chemistry, April 1949, the American Lignite Products Company is operating a plant to produce montan wax at Lone, California. This product is extracted from lignite by means of petroleum solvents.

Montan wax formerly was imported from Germany in large quantities but now the California source makes the United States independent of all foreign sources. This wax is used in making polishes, candles, phonograph records, paper sizing, compositions, paints, electrical insulating compositions, adhesives, and various other uses.

The U.S. Bureau of Mines began investigations about 1946 on various United States lignite and subbituminous coal deposits to determine the amount of montan wax extractable. The solvents used were those reported to have been employed by the Germans on their brown coals - namely, either benzene or a mixture of benzene and alcohol.

Results were as follows: Of coal samples tested from Arkansas, California, Colorado, Montana, North Dakota, Oregon, Texas, Washington, and Wyoming, highest yields of extract were from the Arkansas and California samples. Coals from other sources did not yield enough extract to make them practical as commercial sources of montan wax. Higher yields were obtained when using 80 percent benzene-20 percent ethyl alcohol mixture as a solvent than with benzene alone. Slightly higher yields were obtained from samples air dried than dried at 105° C.

Results of petrographic studies on the composition of some of these lignites showed that lignites giving high yields in extractable wax were attrital (composed of minute plant refuse), whereas low-yield lignites were composed mainly of woody tissue.

Yields of extract from air-dried coals, calculated to dry, ash-free coal basis, percent:

	Benzene	80 percent benzene 20 percent ethyl alcohol
Lignitic coals		
Arkansas	8.8 - 10.8	13.6 - 16.6
California . . .	8.2 - 9.9	15.1 - 15.3
Montana	-	2.6
North Dakota . .	1.5 - 2.2	2.9 - 4.5
Texas	2.1 - 2.3	5.6 - 5.7
Washington . . .	2.7	4.4 - 5.7
Subbituminous coals		
Colorado	-	2.6
Montana	-	2.0
Oregon	-	3.0
Wyoming	-	2.9 - 5.4

References: U.S. Bureau of Mines Information Circulars 7518, 7446, and 7417.
Chemical Engineering, September 1949, p. 270.

DEPARTMENT RECEIVES MINERAL COLLECTION

The Baker Chamber of Commerce has presented the Department with a fine collection of mineral specimens contained in a glass cabinet. These specimens belonged to the old John Arthur collection a part of which had been previously purchased by the Department which now has the complete Arthur collection on display at the Department's Baker office located at 2033 First Street.

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PUMICE PRODUCTION RECORD FOR 1949

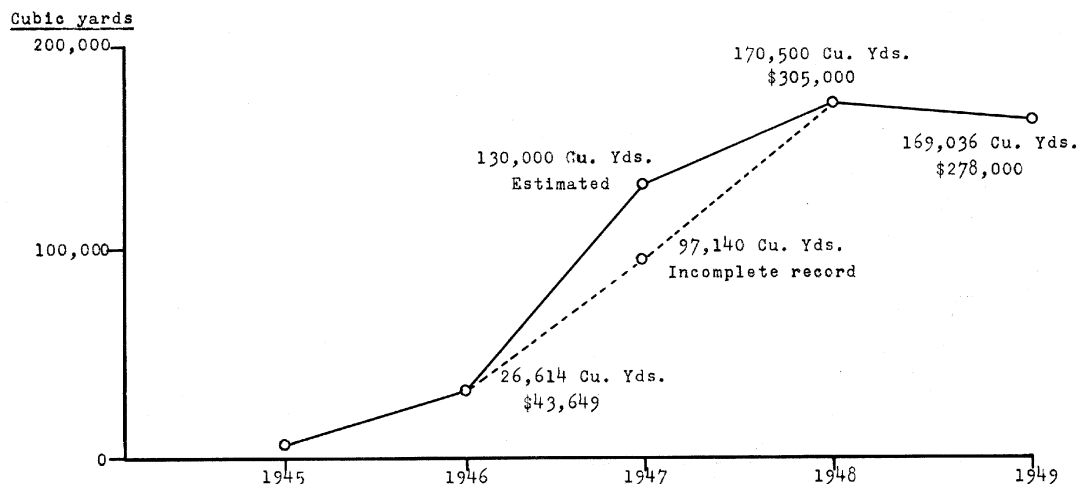
Pumice production in Oregon during the year 1949 amounted to 169,036 cubic yards of assorted aggregate and 76½ tons of abrasive grade lump material. Included under the aggregate classification is block and ready-mix aggregate, plaster sand, and a small amount of unprocessed pit-run pumice. The value of the aggregate production is estimated to be approximately \$278,000.

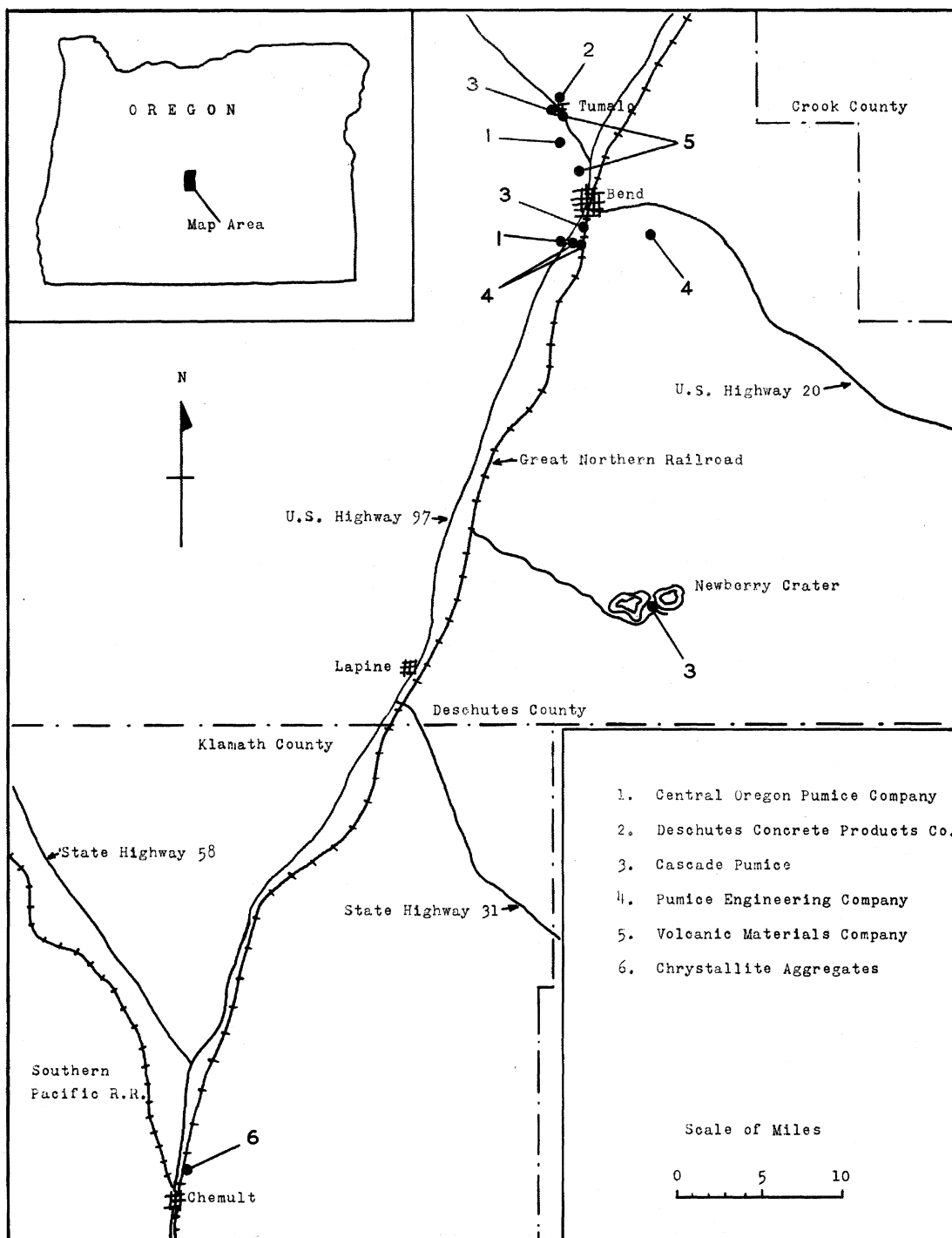
These figures were compiled from production statistics supplied by all but one of the established producers listed in the progress report on "Oregon's Pumice Industry" contained in the December 1949 Ore.-Bin.

The 1949 production for the one operation for which no production was available is estimated at slightly less than the reported 1948 production, and this estimate was used in compiling the 1949 production total already given. This total is believed to be fairly accurate.

A comparison of the 1949 production with that of previous years is shown in the accompanying graph.

N.S.W.





Index map showing location of pumice producers in Bend-Chemult area of Central Oregon.

PUMICE RESEARCH

Washington State Institute of Technology, Division of Industrial Research, Pullman, is currently engaged in a research program on pumice concrete. This program was initiated because of a request from concrete products manufacturers and is being carried on in co-operation with them. The Institute is attacking the most important problems in connection with the pumice block industry first, but nearly every phase of the problem has been tentatively outlined for future investigation.

The causes and control of shrinkage in walls constructed with pumice concrete blocks is receiving the Institute's attention at the present time. Although no final results are yet available, preliminary work indicates that excessive shrinkage of the blocks after being laid up in a wall can be minimized by using a properly cured block containing (a) a minimum of moisture, and (b) the inclusion of steel reinforcing in the wall.

An investigation of the weathering abilities of various paints for use on exteriors of pumice concrete masonry is also being carried out. Paints are applied to walls of about 10 square feet area, and tested at an accelerated rate in a specially constructed weathering cabinet. All types of suitable coatings are being checked, transparent types particularly.

The problem of correct mix ratios for pumice concretes is also being investigated by the Institute and a large number of test cylinders are being prepared and strength tested. Tests on Oregon pumice are included in the present program since the bulk of pumice used by Washington block manufacturers originates in Oregon where large, easily accessible deposits of excellent material are available.

R.S.M.

LARGE PETRIFIED TREE DISCOVERED

Mr. John Osborn, Prineville, Oregon, has uncovered a fossilized tree of unusual size. Although only a small portion of the trunk has been exposed, the diameter at the butt measures $12\frac{1}{2}$ feet. A 33-foot length of this petrified giant of some prehistoric forest has been uncovered by Osborn, and pieces of fossil wood found on the surface indicate that a considerable portion of the tree probably lies hidden beneath the surface of the hillside. The tree is located on Osborn's farm which is about $4\frac{1}{2}$ miles north of Prineville. It was discovered accidentally when Osborn was bulldozing out a road to his home. A sample of the wood has reportedly been identified as sequoia by Dr. George F. Beck, Eastern Washington College of Education, Ellensburg, Washington. Dr. Beck is a noted authority on fossil leaves and woods of the Pacific Northwest. The wood should prove of interest to rock collectors and lapidarists since it polishes well and displays an interesting growth pattern.

NEW GEOGRAPHY TEXTBOOK

Oregon Geography is the title of a new book by Samuel N. Dicken, Professor of Geography at the University of Oregon. The contents as announced by Dr. Dicken give a comprehensive list of chapter subjects as follows: Introduction, Historical Geography, The Face of Oregon, Sea and Coast, The Coast Range, The Klamath Mountains, The Basin-Range, The High Lava Plains, The Owyhee Upland, The Blue Mountains, The Deschutes-Umatilla Plateau, The Cascade Range, The Willamette Valley, Land Forms, Climates, Vegetation and Soils, Population, Production, and Communication.

The book will be available about September 1, 1950, at the University of Oregon Cooperative Bookstore, Eugene, and at Gills, Fifth and Stark Streets, Portland.

TEN YEAR ORE.-BIN INDEX

Demand for the 10-year index of the Ore.-Bin issued in 1949 has reduced the Department's stock to a relatively few copies. Those that are left are available at 15 cents a copy.

DIATOMITE NEAR TELOCASET, OREGON

Diatomite is to be seen at several places in the lake beds in the vicinity of Telocaset southern Union County, Oregon, and also in a smaller lake bed area situated a few miles to the southeast of the Telocaset diatomite. With the exception of one small pit from which it is reported that diatomite was dug and shipped to Walla Walla for insulation purposes, the presence of diatomite in the area is indicated by fragments in the earth extracted from gopher holes and dug wells of early homesteader times.

In most places the geologic setting in the vicinity of these occurrences indicates local deposits of small size. In one place, however, there is a belt in which the gopher hole and dug well evidence points to extension along the flanks of low rolling hills for an unbroken distance of about three quarters of a mile. These low hills are comprised of lake bed strata, the soil covering of which has been, in part, intensively worked by cultivation. They constitute the foothills of a much larger and higher basalt-capped hill. A whitish cast to the soil shows at the base and on the lower flanks of these hills. This is conspicuous in some places, and in others is less noticeable, but it indicates that the hidden diatomite strata may be here in appreciable thickness compared to showings elsewhere in the area. The only other information bearing on this occurrence was obtained from a resident farmer, Mr. G. V. Wilkenson, whom the writer interviewed in an attempt to obtain well-log data which might throw light on the subject.

About 1935 Mr. Wilkenson sunk a 60-foot well (half dug and half drilled) on the lower flank of the foothill ridge somewhat above one of the stronger white soil areas. This well was dry. It is now almost completely filled in. There are no diatomite fragments to be seen in the soil surrounding the collar. Mr. Wilkenson, reports, however, that the well penetrated diatomite at a depth of about ten feet from the surface and remained in diatomite to the bottom. The overburden was lake bed material and soil. This proved to be the only recent well located so that it would penetrate this belt of diatomite. Mr. Wilkenson had no difficulty in identifying diatomite and his report should be given due weight. Moreover, one of the early homesteader's wells, around which chunks of diatomite were found, was situated within a few hundred feet of the Wilkenson well, and at a lower elevation on the hillside where a thinner overburden could be expected.

This belt of probable diatomite is situated within a quarter of a mile of the Union Pacific mainline. It is chiefly because of this location with reference to transportation that this occurrence is described.

The major lake bed (a small one compared to the lake bed areas farther to the south in the Baker quadrangle) covers some $5\frac{1}{2}$ sections in the Antelope Valley area adjacent to, and directly south of Telocaset. This embraces all, or portions of secs. 27, 28, 29, 31, 32, and 33, T. 5 S., R. 40 E., and secs. 3, 4, and 5, T. 6 S., R. 40 E. The three-quarter-mile belt of diatomite showings is situated in the NW $\frac{1}{4}$ sec. 4 and in the E $\frac{1}{2}$ sec. 5, T. 6 S., R. 40 E.

The belt of diatomite indications trends in a general northeast direction roughly parallel to the rail line. Judged from a mining standpoint the terrain rises gently from the level of the rail line so that a dry quarry site can be planned, provided of course that prospecting should disclose a minable thickness of good quality diatomite.

The Telocaset lake beds appear to be identical to those in the lower Powder River valley and contain large and excellent grade deposits of diatomite especially well developed in the vicinity of Keating.

N.S.W.

OREGON GOLD MINE TO SHIP

The Humdinger gold mine on Williams Creek in Josephine County, Oregon, is under lease to W. S. Robertson and three associates. At present they are cutting a quartz lens on two levels. The quartz varies in width from 3 to 5 feet with most of the values in the sulphides. High-grade ore is being mined for shipment to Tacoma.

ALL IS NOT GOLD

Sobering to the overly optimistic, and depressing to those already pessimistic, were the remarks of Dr. J. E. Hobson, executive director of the Stanford Research Institute, before a manufacturers' conference held in Berkeley, California, last week. Drawing upon data supplied by Dr. Weldon B. Gibson, chairman of the Dept. of Business and Industrial Economics at the Research Institute, Dr. Hobson reported that the outlook for new western industrial expansion in the immediate future is not good although the long term prospects are better; private investment will continue to decline from the 1948 high of almost a billion dollars a year to a low of perhaps half that amount by 1953; but after 1954 the rate of investment should begin to rise and perhaps by 1960 will exceed the 1948 level. A decline in the total income in the West is expected for two or three years to be followed by new highs in 1956 or 1957. Summarizing his analysis of the economy of the six western states (Nevada omitted) the doctor reported:

"There exists in the Far West a tendency for population increases to level off; our income position is not being maintained; our food, lumber, and petroleum industries are our most important lines of activity; our industrial growth, while significant, has not kept pace with population increases, but has exceeded for the moment our ability to consume industrial products; our economy is tied to the development of natural resources; our situation is somewhat unbalanced as a result of the high ratio of small unit operations and service-type business to the total; many of our raw materials are sub-marginal on the basis of existing technology; we are lacking in some basic natural resources; we have a temporary water and power shortage; Western migration of industry has declined markedly; and industry in general is over-expanded in the West."

From Iron Age, New York and San Francisco, May 25, 1950.

MERCURY IN THE FIRST QUARTER OF 1950

Imports of mercury continued at high levels in the first quarter of 1950, although substantially below the quarterly average for 1949, according to the Bureau of Mines, United States Department of the Interior. January-March 1950 receipts were

Salient statistics on mercury in 1948 and in 1949, by quarters,
and in January-March 1950, in flasks of 76 pounds

Period	Production ^{1/}	General imports	Exports	Consumption
1948: January-March	5,300	7,844	79	10,000
April-June	3,600	19,410	156	15,700
July-September	3,150	5,342	96	9,400
October-December	2,050	9,136	195	10,300
Total 2/	14,388	41,732	526	2/ 46,253
1949: January-March	1,440	7,133	55	10,400
April-June	1,460	28,757	220	7,600
July-September	6,980	56,763	65	8,000
October-December	4,265	4,265	237	3/ 13,900
Total 2/	9,930	96,918	577	2/ 39,857
1950: January-March	1,700	13,210	66	11,200

^{1/}In addition at least 300 flasks were produced from the treatment of scrap such as old batteries in the first quarter of 1948, 170 in the second, 600 in the third and 1,100 in the fourth; 375 were produced in the first quarter of 1949, 380 in the second, 325 in the third, 305 in the fourth, and 410 in the first quarter of 1950.

^{2/}Final annual figures; quarterly data not adjusted.

^{3/}Revised figures.

From Mineral Industry Surveys Mercury Report No. 94.

ASSESSMENT WORK

S.3639 (amended) by Senator Guy Cordon has passed both the House and Senate and is waiting for the President's signature (June 26). The bill extends to October 1, 1950, the time for doing assessment work for the assessment year ending July 1, 1950. The amended bill reads as follows:

AN ACT

"An Act providing for an extension of the time during which annual assessment work on mining claims held by location in the United States, including Alaska, may be made, and for other purposes.

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the time during which labor may be performed or improvements made, under the provisions of section 2324 of the Revised Statutes of the United States, on any unpatented mining claim in the United States, including Alaska, for the period commencing July 1, 1949, is hereby extended until the hour of 12 o'clock meridian on the 1st day of October 1950: Provided, That assessment work or improvements required for the year ending at 12 o'clock meridian July 1, 1951, may be commenced immediately following 12 o'clock meridian July 1, 1950."

* * * * *

The Engle bill HR 6406 became law (Public Law 544) on June 16, 1950. The object of the law is to clarify the procedure under which a claim owner may receive credit on his work requirement for the 1949-1950 assessment year because of work done during the 1948-1949 assessment year. (See Ore.-Bin, April 1950, page 25). The law provides "That every claimant of a mining claim in the United States who wishes to obtain the benefits conferred . . . may file, or cause to be filed, in the office where the location notice or certificate is recorded, on or before 12 o'clock meridian on the first day of July 1950, a statement of the labor performed or improvements made on any such mining claim during the year ending July 1, 1949, or such statement may be included as part of the annual notice of the performance of assessment work for the year ending at 12 o'clock meridian on the first day of July 1950."

BERYLLIUM HAZARDS IN HOME AND INDUSTRY

A small percentage of a beryllium compound is contained in the powder used to line the inside of fluorescent tubes used widely to light modern homes and offices. The coating of powder gives off visible light when struck by the ultraviolet rays created by the electric current passing through the gas in the tube.

Although beryllium metal is not poisonous, its compounds, particularly its salts, are very harmful. These tubes become a serious hazard when broken since the beryllium compound can cause inflammation of the respiratory organs and changes in the skin. Insoluble beryllium silicates have caused malignant tumors in rabbits, and soluble beryllium salts are highly toxic and cause acute necrosis of the liver. Extreme care should be exercised in handling broken or cracked fluorescent tubes. They should never be handled by children.

ANNOUNCEMENTS

On May 31, 1950, Alcoa Mining Company announced the resignation of Ernest A. Messer, Resident Engineer in charge of Oregon activities since 1945, to enter private consulting work. The announcement included the appointment of Jack H. McWilliams as Mr. Messer's successor, together with the statement that geological investigations would continue in Oregon and other western areas with office and laboratory remaining at Hillsboro, Oregon.

* * * * *

Messer, Toye, and Associates, Incorporated, announce opening of offices in the Spalding Building, Portland 4, Oregon, to engage in engineering and contracting. Associated with Ernest A. Messer and Don C. Toye are W. D. Moreland, Charles W. Mumford, and Grant Chandler.

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NATIVE ROCKS AS FERTILIZER¹

By

Dr. W. D. Keller*

Abstract

From the Organic Farmer, April 1950

The original fertility of a soil is the result of two processes: the accumulation of humus and the weathering of the source rock. Organic farmers believe that when soil fertility has been depleted it can best be restored by duplicating these natural processes, that is, by adding organic matter and native rocks to the soil. This article focuses attention on the second process - the addition of native rock which when weathered will provide the desired nutrient elements.

Origin of primary fertility

Rocks in general contain the main nutrient elements, except for nitrogen, which plants require. The rocks and minerals must first undergo weathering (alteration) to form soil (soil is composed mainly of sand, clay, and yellow, red, or brown iron oxides). During the weathering process, soluble forms of compounds of potassium, phosphorus, calcium, magnesium, sodium, and trace elements such as manganese, copper, cobalt, zinc, boron, and others are formed. Then, through the action of the colloidal fraction of the clay and humus, the elements listed above are taken from solid rock and are made available in a useful form to the rootlets.

Nutrient transfer via clay and humus

The rootlets withdraw much of the nutrient elements from the clay and humus and exchange hydrogen (acidity) for the calcium, potassium, etc. removed. The acid clay and humus establish chemical balance again by extracting from adjacent rock fragments more potassium, calcium, etc. This weathering action by acid soil and organic matter on rock particles breaks down the rock into more clay, more soil, and releases the desired nutrients.

A useful rock donor must have these two qualifications: it must contain the elements useful as plant nutrients and it must be relatively susceptible to weathering. Possessing these two qualifications, it becomes a long-lasting soil builder.

* Professor of Geology, University of Missouri.

¹ The State Department of Geology and Mineral Industries is directly concerned with sources of rocks and minerals which contain possible nutrient elements such as calcium, magnesium, phosphorus, potassium, and sodium, together with various trace elements needed for certain crops. Supplementing the accompanying abstract of article by Dr. Keller there is appended a list of mineral analyses of Oregon samples which show the presence of possible desirable elements. Some of the analyses made primarily to determine trace elements are semi-quantitative. Ed.

Natural versus processed additions

The elements liberated from native rock will be considerably more diverse than those of the more nearly pure, processed fertilizers and will normally include trace elements.

One of the many disadvantages of processed chemical fertilizer is its tendency to overstock the soil with the few elements contained in the fertilizer. Thus, by greatly oversupplying some constituents it creates nutrient deficiencies in others.

Effective rock types

A. CALCIUM DONORS

1. Agricultural limestone (agstone) supplies calcium to the soil. Too much of a dose, however, will blot out the availability of other elements by neutralizing the acid activity. Preference is now swinging from pure calcium limestone to limestone containing a variety of elements, because the primary function of limestone is to fertilize not neutralize.
2. Gypsum supplies calcium and sulphur to the soil. It is slightly soluble in nonacid soils, such as alkali soils of dry western states.
3. Raw phosphate rock supplies calcium, phosphorous, and some trace elements.

B. MAGNESIUM-CONTAINING ROCKS

1. Dolomite supplies calcium and magnesium. Magnesium is very important to the formation of chlorophyll. The magnesium-to-calcium ratio should not be allowed to drop below 1 to 10 because an over-liming neutralizes the acidity which is necessary to liberate the magnesium.
2. Igneous and metamorphic rocks. Those that contain plagioclase feldspars release calcium through reaction with clays and humus. These silicate compounds of calcium are more resistant to weathering than are limestones, hence response of soil to them is slower.

Dunite and peridotite contain olivine, a magnesium iron silicate, and release magnesium to the soil.

C. POTASSIUM ROCK SOURCES

1. Glaucinite-bearing rocks furnish potassium, calcium, and magnesium. Glaucinitic dolomites in eastern states average 6 percent potassium.
2. Leucite-bearing rocks. Leucite is an aluminum magnesium silicate which weathers fairly rapidly. Known occurrences in the United States are limited to Wyoming and Montana. Wyoming leucite rock analyses^{are} as follows: 9 percent potassium oxide, 6 percent calcium oxide, 7 percent magnesium oxide, 2 percent phosphorus pentoxide, and trace elements. The rock consequently makes a highly valuable fertilizer. Volcanic ash from Vesuvius in Italy is notably high in leucite.
3. Granite contains potassium feldspar but responds slowly to weathering.
4. Volcanic ash, the extrusive equivalent of granitic rock, is ordinarily more susceptible to weathering than its crystalline equivalent. In many respects volcanic ash is close to the ideal, naturally pulverized rock fertilizer.

- D. Other materials such as slags from metallurgical furnaces, portland cement clinkers, and waste products due to improper burning of lime or dolomite may be effective as rock fertilizers.

Pulverizing of rocks essential

Silicate rocks should be pulverized finer than carbonates (limestone and dolomite), volcanic ash excepted. Some pulverized materials available in nature may be applied to the soil in their natural form. These are: silt from river bottoms, wind-blown dust (loess), and volcanic ash.

Agricultural stone, once considered to be the "poor relative" of fertilizers, now ranks with them as a native fertilizer. Moreover, agricultural limestone producers are now blending their products with other native rocks and minerals to meet particular soil needs. The rock-fertilizer industry is still in its infancy, consequently many deposits of potential fertilizers are yet to be recognized.

SOME ANALYSES OF OREGON ROCKS
INDICATING POSSIBLE FERTILIZING VALUE

Chemical analyses of samples of rhyolite and perlite from Lady Frances mine on the Deschutes River, 14 miles south of Maupin, Wasco County:

	<u>Rhyolite</u>	<u>Perlite</u>
SiO ₂ (silica)	75.88 %	73.28 %
Al ₂ O ₃ (alumina)	12.63	12.55
Fe ₂ O ₃ (ferric oxide)	1.05	.58
FeO (ferrous oxide) . . . . .	.27	.63
MgO (magnesia) . . . . .	.14	.08
CaO (lime) . . . . .	.60	.80
Na ₂ O (soda)	2.80	2.97
K ₂ O (potash)	5.32	5.00
H ₂ O+ (combined water) . . . . .	.54	3.60
H ₂ O- (water below 100°C.) . . . . .	.43	.19
TiO ₂ (titania) . . . . .	.09	.09
P ₂ O ₅ (phosphorus pentoxide) . . . . .	.03	.01
MnO (manganese oxide) . . . . .	.01	.02
Total	99.79	99.80

Analyses by James Kerr, University of Minnesota, October 23, 1946.

Volcanic cinders

Laidlaw Butte, Deschutes County
N $\frac{1}{2}$ sec. 36, T. 16 S., R. 11 E.

SiO ₂	38.04 %
Fe ₂ O ₃	8.23
Al ₂ O ₃	19.00
CaO	7.35
MgO	3.77
H ₂ O+	1.50
H ₂ O-	0.14
Na ₂ O	12.76
K ₂ O	8.50
Total	100.09

Analysis by State Department of Geology
and Mineral Industries.

Pumice

North of Chemult, Klamath County
Sec. 8, T. 27 S., R. 8 E.

SiO ₂	68.56 %
TiO ₂ . . . . .	.58
Al ₂ O ₃	14.22
Fe ₂ O ₃	1.42
FeO	1.49
MnO . . . . .	.03
MgO . . . . .	.83
CaO	2.35
Na ₂ O	5.18
K ₂ O	2.47
P ₂ O ₅ . . . . .	.10
CO ₂	None
H ₂ O	3.32
Total	100.55

Analysis by U.S. Geological Survey.
Bull. 875, p. 159.

Spectrographic Analyses

Name and location	Elements					
	Over 10%	10% - 1%	1% - 0.1%	0.1% - .01%	.01% - .001%	below 0.001%
Marquam limestone (shell marl) Sec. 2, T. 6 S., R. 1 E., 1 mile NE of Marquam Clackamas County	silicon calcium	aluminum iron sodium potassium	magnesium strontium	titanium	manganese vanadium barium	chromium nickel
Dallas limestone Oregon Lime Products quarry Sec. 11, T. 8 S., R. 6 W., Polk County	silicon aluminum calcium	iron sodium	magnesium manganese titanium potassium	chromium copper barium strontium	vanadium nickel	boron
Limestone O.P.C. quarry Secs. 26, 27, 34, and 35, T. 13 S., R. 44 E., Lime Baker County	calcium	silicon aluminum magnesium	iron sodium strontium	potassium	manganese titanium barium	chromium vanadium copper
Limestone Cottrell dust Oswego plant of O.P.C. Company Mixture of Lime and Dallas fines from stack	silicon calcium	aluminum iron magnesium sodium	titanium strontium potassium	lead	manganese chromium barium nickel	vanadium copper
(Note: Chemical analysis shows sulphur = 1.30% and sulphur trioxide = 2.41%. Spectrograph does not determine sulphur.)						
Volcanic ash Sec. 32, T. 2 N., R. 21 E., 5 miles S. of Arlington Gilliam County	silicon	aluminum potassium	iron calcium	magnesium titanium barium strontium	manganese vanadium gallium boron	chromium copper beryllium nickel
Rhyolite Juniper Ridge S $\frac{1}{2}$ sec. 36, T. 23 S. R. 25 E. Harney County	silicon aluminum	iron sodium potassium	magnesium calcium titanium	manganese lead barium strontium	chromium vanadium copper nickel boron	
Volcanic ash from Bend pumice pit Sec. 25, T. 17 S., R. 11 E. Deschutes County	silicon aluminum sodium	iron calcium potassium	barium	magnesium strontium	manganese titanium vanadium	chromium copper nickel boron
Pumice North of Chemult Sec. 9, T. 27 S., R. 8 E. Klamath County	silicon aluminum	iron calcium sodium potassium	magnesium titanium strontium	manganese lead barium	chromium vanadium nickel boron copper	

Name and location	Elements					
	Over 10%	10% - 1%	1% - 0.1%	0.1% - .01%	.01% - .001%	below 0.001%
Siltstone Keasey shale Sunset tunnel Sec. 24, T. 3 N., R. 5 W. Washington County	silicon aluminum	iron calcium sodium	magnesium manganese titanium potassium	chromium copper barium strontium	vanadium nickel boron	
Peridotite Near Gravelford Coos River Sec. 35, T. 28 S., R. 12 W. Coos County	silicon magnesium	aluminum iron	calcium potassium chromium nickel	sodium manganese titanium vanadium boron	copper barium strontium cobalt	
Powder River silt at Donny Creek Sec. 35, T. 10 S., R. 39 E. Baker County	silicon aluminum	iron magnesium calcium sodium titanium potassium	barium strontium	manganese lead chromium vanadium copper nickel	boron	molybdenum
Powder River silt from entrance to irrigation ditch north end of Baker Sec. 17, T. 9 S., R. 40 E. Baker County	silicon	aluminum calcium potassium	iron magnesium sodium barium strontium	manganese titanium chromium	vanadium copper	nickel boron

All spectrographic analyses were made in the Department's laboratory.

SUMPTER DREDGE SOLD

According to the Baker Record Courier dated July 20, 1950, the Baker Dredging Company has sold its Sumpter Valley dredge to the Powder River Dredging Company reportedly organized with Portland capital. The dredge will work new ground tested a few years ago in the lower end of the valley. Carl Deibolt, Portland, is president of the new company and L.A. Skillings will be Resident Manager.

* * * * *

BUFFALO MINE ACTIVE

Production at the Buffalo mine, eastern Grant County, is being continued under the direction of R. G. Amidon. An expanded development program is planned to include a long adit tunnel which will explore the veins at a vertical depth of 650 feet. The Buffalo has been a consistent shipper since World War II. In mining, high-grade gold ore is sorted and low-grade is treated in a flotation plant. Sorted ore and concentrates are usually shipped in the same car.

ORE BUYER VISITS OREGON MINES

David A. Somerville, ore buyer for the Tacoma Smelter, visited mining districts in both southwestern and northeastern Oregon during the week beginning July 17. Mr. Somerville investigated possibilities of obtaining ore shipments, especially shipments of siliceous ore.

WE CAN PRODUCE HIGH-GRADE CHROME ORE

By

Fayette I. Bristol*

Rogue River, Oregon

This paper is being written as the United States is undergoing partial mobilization to fight a war in Korea with very good chances of it breaking out in other parts of the world.

As of today there is no domestic production of chrome ore in the United States. Our stockpile of chrome ore is very short.

The writer's background in domestic chrome ore production is as follows:

Was a chrome ore producer in 1942, 1943, and 1944.

Was chairman of Military Affairs Committee hearing and an RFC hearing held in Grants Pass, Oregon. Out of these meetings came the establishment of local buying depots for strategic minerals during the war.

President of Oregon Mining Association and member of American Institute of Mining and Metallurgical Engineers.

During the war with Germany and Japan substantial production of high-grade chrome was made. The stockpile at Grants Pass, Oregon, received approximately 50 percent of the high-grade chrome produced and production continued up to and including the spring of 1949 when operating costs climbed above the market price.

This area of chrome ore producing mines is throughout Jackson, Josephine, and Curry counties in Oregon and Siskiyou and Del Norte counties in California. All of this country is very rugged. In most cases the chrome mines are on high ridges where much snow is encountered during the winter. Truck hauls will average 60 miles. A very few mines can operate during the winter although the climate in the valleys is mild. There are in this area approximately 350 mines and prospects from which some chrome ore can be produced.

Chrome ore occurs in irregular kidneys in the peridotites. The remarkable thing about these kidneys is that the best place to look for another one is in the neighborhood of the one you have just finished mining out. It is very rare that a chrome mine has any real tonnage blocked out. Development work is the biggest part of the cost.

The largest producers in World War I were the largest producers in World War II, even though most of them were considered worked out in World War I.

The modern bulldozer opened up many new areas in World War II. So today after producing more chrome ore than was thought possible during World War II there is now more high-grade chrome ore indicated than was the case in 1941.

In 1941 it was possible to get good miners in this area for \$26 per week. The price paid for chrome ore during 1942 and 1943 was based on this wage scale. It so happens that as of the present the lumber mills have moved into this area and it is enjoying the highest wages in the United States, plus a boom. The men in the woods are now getting \$85 and \$100 per week and are the same type of help needed to mine chrome ore.

The foregoing are the basic problems of producing chrome ore.

This area can produce:

30,000	tons of metallurgical grade chrome ore in 1951
75,000	" " " " " " 1952
110,000	" " " " " " 1953

To do this the following must be done:

Program made effective by September 1, 1950, delivery to be accepted in Grants Pass, Oregon, and Yreka, California, after this date in carload lots and truck load lots by January 1, 1951.

*President Oregon Mining Association.

Prices good through 1953.

As the grade of chrome ore delivered will depend more on the price structure than anything else. The price must favor the highest grade.

Basic Price

\$120 per long dry ton of 2240 pounds for ores and concentrates analyzing as follows:

Chromic oxide (Cr_2O_3) 48.00%

Chromium (Cr) to iron (Fe) ratio 3.00:1

(The chromium (Cr) content of any ore or concentrates is 68.4 percent of the chromic oxide (Cr_2O_3) content)

Premiums

Chromic oxide content - above 48 percent \$5.00 per ton for each 1 percent of chromic oxide content.

Chromium to iron ratio - above 3.00 to 1: \$5.00 per ton for each 0.10 to 1 ratio up to but not exceeding 4.00 to 1.

Penalties

Chromic oxide content - below 48 percent: \$4.00 per ton for each 1 percent of chromic oxide content down to and including 40 percent.

Chromium to iron ratio - below 3.00 to 1: \$3.00 per ton for each 0.10 to 1 ratio down to and including 2 to 1.

This price schedule means paying approximately \$50.00 per ton premium for domestic chrome ore or a total cost to the nation of \$5,000,000 per year to insure a supply of high-grade chrome ore.

During the war with Germany and Japan over 63 of the first 68 boats carrying chrome ore to the United States were sunk. So the cost of \$5,000,000 per 100,000 tons would be a real saving.

Taxes would recover a substantial portion of the \$5,000,000.

METAL MARKETS

The E&MJ Metal and Mineral Markets, New York, issue of July 20, 1950, reports increased interest in metals because of the Korean crisis. Demand for copper and zinc is in excess of supply. Mercury has been in brisk demand and the price has firmed. Tin prices have increased.

Copper

The House has approved a bill to suspend the 2 cents-per-pound import duty on copper for another year. The Senate is expected to approve this bill, although the length of the suspension may be shortened. Deliveries of copper to fabricators in June totaled 126,047 tons. Total June deliveries probably exceeded 150,000 tons if those to the Government stockpile are included. The price of copper remains at 22½ cents per pound Connecticut Valley. Demand for copper in foreign countries has increased also and some countries who are receiving E.C.A. funds are requesting authorization to purchase metal from countries other than the United States.

Lead

Demand for lead was strong and the price advanced ½ cent to 12 cents per pound on July 13. Sales for the week totaled 31,574 tons as compared with 19,492 tons for the previous week. Domestic mine production of lead totaled 37,780 short tons in May as compared with 35,612 tons for April, according to the U.S. Bureau of Mines.

Zinc

The zinc market is very tight but higher prices for zinc are not regarded with favor by sellers because such prices would not bring out appreciable additional quantities of zinc. The producers fear Government regulation if the price gets out of hand. Prime western zinc remains unchanged at 15 cents per pound East St. Louis. Domestic mine production totaled 51,576 tons in May as compared with 49,113 tons in April. Canadian exports to the United States totaled 9,827 tons in May. Export business was reported on the basis of 16 cents per pound for the common grade f.a.s. Gulf ports.

Tin

The tin market has been sensitive to changing conditions in the Korean crisis. The London market rose sharply on July 14 and then reversed itself and receded on July 19. An international tin agreement was assured by action of the Economic Social Council at Geneva on July 13. The quotation on 99 percent grade, July 13, was 90½ cents per pound, on the 19th, 88½ cents per pound.

Quicksilver

As would be expected, the Korean situation has caused activity among quicksilver buyers to increase their stocks. The market price firmed to \$73 per flask.

Manganese ore

It has been stated in some quarters that the supply situation in manganese ore has not been altered by the international situation. Large users claim that the price range of 79.8 to 81.8 cents per long ton unit c.i.f. United States ports, duty included, is representative of the market. However, some sellers are asking 85 cents and even higher.

Chrome ore

Price per long ton dry basis, Indian and Rhodesian, 48 percent Cr_2O_3 , 3 to 1 chrome-iron ratio, lump, \$35-\$36; 48 percent Cr_2O_3 , 2.8 to 1 ratio, \$32.50; 48 percent Cr_2O_3 , no ratio, \$25. South African (Transvaal) 48 percent Cr_2O_3 , no ratio, \$26; 45 percent, no ratio, \$17-\$18.30. Turkish, 48 percent Cr_2O_3 , 3 to 1 ratio, \$37.50-\$38.50. Brazilian, 44 percent Cr_2O_3 , 2.5 to 1 ratio, lump, \$31. Domestic, 48 percent Cr_2O_3 , 3 to 1 ratio, \$39 per ton f.o.b. nearest shipping point.

Tungsten ore

Price per short ton unit WO_3 for ore of known good analysis: Chinese, duty paid New York, \$23-\$23.50; Bolivian, Brazilian, etc., duty paid \$23-\$23.50; domestic scheelite delivered to buyers plant, \$28.50.

MANGANESE RESOURCES ARE STUDIED BY HOUSE COMMITTEE

The adequacy of the government's stockpiling program for strategic minerals was under fire at a recent hearing of a special Armed Services subcommittee.

In urging government aid to the manganese industry, J. Carson Adkerson, president of the Manganese Producers Association, testified that a 23-year old prediction of his has come true.

"I have constantly warned that Russia would lead us on with just a sufficient supply to get us dependent on her ore - and then at a critical hour cut us off," he said. "Russia, the world's leading manganese producer, has sharply curtailed exports since 1948."

Adkerson reported that there are sources of supply in at least 27 states, yet the number of manganese producers has dropped sharply. In 1944, he said, there were 131 producers, and in 1946 only 10.

James Boyd, director, United States Bureau of Mines testified that. . . . United States supplies of manganese would be short of meeting requirements should an emergency arise in the future, but expressed the belief that within two years, under pressure and at a stiff price, this country could become independent of imports of manganese.

From Pay Dirt, July 21, 1950, published by Arizona Small Mine Operators.

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MILLIONS OF DOLLARS IN GOLD BULLION BARS BROUGHT DOWN OVER LONELY MOUNTAIN ROADS*

FROM MINE TO BANK VAULT, THE ROUTE OF THE CLEANUPS
FROM BAKER COUNTY MINES IS LINED WITH CONSTANT DANGER OF HOLDUPS

And Yet, Oddly Enough, There Has Never Been a Bullion Robbery in the History of the Camp--
How Mine Operators Resort to Strategy to Throw Possible Robbers Off the Scent--A Fake Holdup
Frustrated--Conspiracy to Rob Frank Baillie, of the Columbia Mine Cleanup--The Historical
Godfrey and Tabor Robbery.

Quietly, unostentatiously, mysteriously--as befits the labor of toting around thirty
thousand plunks d'or in the shape of gold bullion bars fresh from the stamp batteries and
retort, General Manager Emil Melzer, of the celebrated North Pole mine, on Cracker Creek,
came down from the Upper Camp last week, and alighting from the Sumpter Valley train, en-
tered a waiting cab and was driven straight to a local bank, the doors of which had been
left unlocked long past the regular closing hour, in pursuance it is believed to a tele-
graphic request from Sumpter. Dismissing the cab at the back entrance, Mr. Melzer, assisted
by a bank official, lugged a Gladstone traveling bag through the door, and the incident, so
far as the general public was concerned, was closed.

When Mr. Melzer and the heavy traveling bag boarded the train at Sumpter, it required
the services of two men to lift the mysterious grip to the car platform.

\$30,000 IN GOLD

Obviously the grip weighed from 75 to 80 pounds, maybe 90. Estimating gold at 16 ounces
to the pound, \$20 to the ounce, the grip contained from \$24,000 to \$30,000 of yellow bars.

It may not have contained gold at all. It may have held a broken casting from the
North Pole's stamp battery. It may have been weighted with iron filings. Some one else
on the same train with Mr. Melzer may have carried an inoffensive looking gunny sack,
weighted with the real North Pole cleanup. Melzer's heavy grip may have been the rankest
kind of bluff to divert attention from the fact that the following day the cleanup would
come down in the care of maybe a trusted employe of the mill, disguised. The presumption
is strong, however, that Mr. Melzer's weighty traveling bag contained the cleanup from
the North Pole mine.

RESORT TO STRATEGY

Eastern Oregon mine operators are compelled to resort to all sorts of strategy in
getting their cleanups to Baker City banks. The most elaborate secrecy is maintained by
mill men and mine officials in the matter of when the cleanup is made. News of such an

* The Evening Herald, Baker City, Oregon, vol. 4, April 19, 1904.

event, if it leaked out, would give someone a tip that shortly thereafter the gold would be toted down from the hills and it would be an easy matter to lay in wait at some turn in the road and perpetrate a robbery. It is usually the practice to send the Superintendent down from the mine, entrusted with a heavy grip, in the display of whose weight he is purposely indifferent. Perhaps on the day following, another mine employe, with another grip, equally heavy, displayed the same ostentatiousness, comes down from the mine, and drives to the bank. Next day, or a couple of days thereafter, still another grip is sent down, and maybe it is tipped off to the newspapers that the cleanup has been deposited. And then, some dark night, another grip carried by perhaps the General Manager of the mine, is taken secretly from the mine to the nearest bank, and thereafter the procession of heavy grips ceases.

BIG CLEANUPS

When it is remembered that the monthly cleanups from such mines as the North Pole, Columbia, and Bonanza, range from \$15,000 to \$100,000. it can readily be seen that extraordinary care must be exercised to prevent loss of the gold bricks.

A CLEAN RECORD

It is a matter for wonderment that Baker County mine operators have not been robbed of their cleanups. And yet the history of the camp is free from such a record. Whether this due to the absence of bold robbers in this region, or whether it is due to the astuteness of the mine operators, is an open question.

RED BOY HOLDUP

The nearest approach to a bullion robbery in Baker County was three years ago, when Godfrey & Tabor, of the Red Boy mine, were held up by three masked men near the summit of the divide between Granite and Sumpter. They were ordered to stand and deliver. They did so. Upon their arrival at Sumpter they telegraphed to the Sheriff's office in Baker City, and followed on the train. At the Sumpter Valley depot Mr. Godfrey told a reporter for the Herald that he had been robbed. Asked if the highwaymen had secured the July cleanup, which was known to have been about ready for deposit at that time, he refused to state positively whether they did or did not.

WILD RUMORS

All sorts of rumors immediately became current. One report was to the effect that the three highwaymen had secured \$25,000 worth of gold bullion and had buried it somewhere in Buck Gulch, while they escaped to Idaho and hid themselves in the Thunder Mountain country. Another report was that one of the bullion bars had been chipped up with a cold chisel and run through the Pyx mill, the amalgam being sold in Baker City by one of the men implicated in the robbery. After the sensation had died away, Godfrey and Tabor both asserted emphatically that the bullion had been carried at the time of the robbery in a buggy, driven by Godfrey's brother, which had preceded their own rig by a couple of hours and that the only loss suffered at the hands of the robbers was a gold watch and about \$200 in coin.

TRUTH NEVER TOLD

There were arrests and confessions and sensational rumors of one of the men turning State's evidence and giving the whole thing away, but the thing soon died out and it has never been demonstrated to the satisfaction of the general reading public whether Godfrey and Tabor lost the bullion or not.

A BIG ROLL

One of the biggest cleanups ever known in the history of the Baker County mines was brought down one time two years ago from the famous Bonanza mine at Geiser. Not a soul knew of the treasure shipment, outside of one or two mine officials and two Deputy Sheriffs

who were sent from Baker City to guard General Manager Thatcher while making the lonely trip from the mine to the railway at Sumpter. The amount of gold carried at that time was \$102,000. Frequently at later dates Mr. Thatcher, guarded by officers of the law, brought down cleanups worth from \$50,000 to \$80,000.

ANGEL UNAWARES

One time a prominent professional man of Baker City was visiting at the Bonanza mine, the guest of the General Manager. When he was ready to return home he was asked to grant a favor to the management-- to carry a grip to Baker City and hand it over to the cashier of a local bank. "It contains papers of value," explained the Manager. The commission was executed, and not until the Baker City man, in company with an employe of the mine sent along by the Manager, arrived at the bank did he learn that the grip full of "valuable papers," contained about \$80,000 in yellow gold bars.

ROBBERS FOILED

One time about four years ago a conspiracy was hatched up in Bourne to rob General Manager Frank Baillie, of the Columbia mine cleanup. Merely by accident Mr. Baillie heard of the conspiracy while in the outhouse in the rear of the Bourne hotel. One of the men in the conspiracy was an employe of the Columbia stamp mill. The cleanup was made in regular form and the amalgam retorted. Heavily armed, the General Manager with a weighty grip, drove to Sumpter from the mine, but the weighty grip contained nothing more valuable than a stamp die. The bullion was safely locked in the office safe at the mine and remained there for a month, while a procession of men with heavy grips was sent almost daily down the canyon to Sumpter. Finally the bullion was taken by one of the men and safely landed in the bank at Baker City. It was worth about \$50,000, and would have been a neat haul.

LONELY ROADS

Nearly all of the big producing mines of Baker County are located in isolated places in the Blue Mountains, accessible only by stage. The string of big mines along Cracker Creek, the E. & E., North Pole, Columbia, Tabor Fraction, Golconda, and others, are connected with the outer world by a road winding down a deep and narrow canyon. The road itself is merely a sort of tunnel among the pine trees. It is an ideal location for a holdup. But oddly enough, not a single robbery has occurred along this road.

A FAKE HOLDUP

One time, during the halcyon years of the operation of the Golconda mine, under the old English regime, Superintendent Frank Stickney was the victim of a practical joke, hatched up by a lot of chaps in Sumpter, at the head of whom were Phil Nebergall, well known in Baker City, and Malcolm Thornton, at that time Superintendent of the Sumpter electric light plant, owned then by W. L. Vinson, of Baker City. A spectacular holdup was planned and carried out faithfully. Thornton's part in the game was to stand behind a tree and when Stickney drove by to step out and yell "Hands Up." He spoke his piece well, but what happened wasn't in the play at all. Stickney was in the buggy with a grip full of gold bars between his feet and a Winchester rifle across his knees. An employe of the mine was acting as driver. When Thornton, masked and armed with a crooked stick shaped like a shotgun, stepped out from the shade of a tree and shouted "Hands Up," Stickney opened fire and there was a scattering among amateur holdups as never was. No one was hit by the flying bullets from Stickney's gun, and to this day it is asserted that he knew all about the joke and fired in the air. This is given weight by the fact, that Stickney, who is an old member of the Multnomah Athletic Club, was a dead shot with a rifle.

BIG TREASURE

Before the Geisers sold the Bonanza mine to the Standard Company for \$500,000, Albert Geiser is said to have brought down over the 20-mile road between the mine and Sumpter, a grand total of a million and a quarter dollars worth of gold bullion.

The only authentic record of bullion robbery in Baker County is vouched for by J. Nat Hudson, the Nestor of mining camp journalism, who one time edited the Sumpter News, now the Blue Mountain American. Hudson says that a Chinaman placer miner once picked up a \$17,000 nugget in Gimlet Gulch or Three-Cent Gulch, somewhere in that neighborhood, just as a couple of white men happened along. The Chinaman was promptly relieved of his burden, and the slab of gold, which Hudson asserts was as big as a side of bacon, was chizzled into three pieces and packed to Salt Lake. Hudson has the reputation of being an elaborate fish liar, but the truth of the \$17,000 nugget story is vouched for by other old timers.

Robberies of sluices in old times were almost an every day occurrence, and the practice in some parts of the district is still kept up--at least wherever Chinamen operate. Miners consider it no sin to steal from a pigtail, excusing themselves on the ground that the gold does the Chinaman no good anyway, because he ships it off to China and lives on rice and chop suey while here.

(Copy of the Baker Evening Herald by courtesy of Paul Van Arsdale, Baker.)

PACIFIC STONEWARE COMPANY TESTS PERLITE AS GLAZE

Perlite as a substitute for feldspar in a ceramic glaze on stoneware jars has been tested by the Pacific Stoneware Company, Portland, and first tests have shown the substitute to be very satisfactory. The perlite was supplied by the State Department of Geology and Mineral Industries. Perlite does not give a dead-white colored glaze, but rather has a faint yellowish tinge due to the small amount of iron present. In addition to the advantage of a lower first cost, perlite would require only one firing in this work whereas the feldspar glaze requires two firings.

The Department will publish a report in September 1950 giving the results of experimental work by the Department on use of volcanic glass in ceramic glazes.

OREGON MINING NOTES

Fire destroyed the shaft and some surface equipment of the Oregon King mine near Ashwood in Jefferson County on the night of August 2, 1950. Rehabilitation work underground had been started; the origin of the fire is not known.

* * * * *

An expanded development program has been planned for the Buffalo mine, eastern Grant County, Oregon. A long tunnel will be driven to explore the veins at depth.

* * * * *

The Baker Dredging Company has sold its 9-cubic foot Sumpter Valley dredge to the Powder River Dredging Company, a new corporation. The dredge will work new ground in the lower end of Sumpter Valley.

* * * * *

Kenneth Watkins, Disston, has leased the Champion mine and mill, Bohemia district, Lane County, Oregon, and has about 20 men employed. A shipment of concentrates has been made to the Tacoma Smelter.

* * * * *

Dave Zambeth and son are working a hydraulic mine on Little Pine Creek east of John Day, Grant County, Oregon.

* * * * *

The Jay Gould mine at Greenhorn, Baker County, has been purchased by H. G. Burnham, Fairview; Earl Stanley, Gresham; and Walter Brown, Baker. A small mill has been installed and a development program started under the supervision of Fred Wickham, Baker.

* * * * *

The Porter and Company $4\frac{1}{2}$ -cu. ft Yuba dredge is being moved from the headwaters of Olive Creek to new ground on Crane Creek in the Granite district, Grant County, Oregon.

THE DISCOVERY OF AN ADDITIONAL SAMS VALLEY, OREGON, METEORITE*
(ECN = + 1229,425)

Russell A. Morley
399 North 18th Street, Salem, Oregon

In the summer of 1949, while engaged on a collecting expedition in southern Oregon, I visited the Jacksonville Museum in the hope that I might obtain some information regarding the exact location of the Sams Valley, Jackson County, meteoritic fall. I was unable to secure any information regarding the exact location other than what was to be obtained from the ECN (equatorial coordinate number) = + 1230,424, taken from "A Catalog of the Meteoritic Falls of the 11 Western States," by Dr. Frederick C. Leonard and Miss Dorothy H. Alley, which appeared in C.M.S., 4, 58-65; P.A., 55, 381-8, 1947. That ECN would place the location of the find somewhere in the middle of Sams Valley.

While looking over the collections of the Jacksonville Museum, I asked the keeper, Mr. J. B. Noble, whether the Museum had any meteorites in its collections. He showed me a large specimen labeled meteorite, which, on examination, proved to be an oddly shaped specimen of weathered diorite that had been covered with orange shellac in order to give it something of the appearance of a meteorite! While I was engaged in this examination, my mother was carefully examining the mineral collection, in which she located 3 specimens bearing a card labeled meteorites. On first examination, 2 of the 3 specimens proved to be magnetite. The third appeared to be a meteorite. With the cooperation of Mr. H. A. Berntson, the local machinist, I removed a slice, which I polished and etched. The Widmanstatten pattern proved to be that of a medium octahedrite (Om). I took the meteorite to the local store, where I found that it weighed approximately 2 lb., $4\frac{1}{2}$ oz. = 1028 gm. The overall dimensions of the specimen are 12.5 x 4.5 x 4 cm.

On the completion of this work, I set out to locate, as nearly as possible, the exact location of the Sams Valley find. The great majority of the people in the area either were newcomers or had never heard of any meteorites there. After a long and careful search, I happened, by good fortune, to locate the property of Mr. Frank B. Payne, of 524 Evelyn Avenue, Albany 6, California. He was then visiting his nephew, Mr. Andrew Payne, who now resides on the family property. Mr. Frank Payne, at the time I met him, was showing some friends the places where he and his father had mined. He was most kind in relating the history of his father's discovery, which at the time was considered to be of little importance and was therefore never reported. One day while Mr. Payne's father, Mr. W. M. Payne, was engaged in panning in a small gulch on his property, he found, in the bottom of his pan, a piece of heavy material that, when washed off and rubbed with a file, appeared to be iron; a little farther up the gulch he encountered the specimen now in the Jacksonville Museum. At a short distance still farther up he came upon an even larger specimen; this specimen he gave to a friend, by the name of Edward Cooper, whom I have been unable to locate.

The sample that I removed from the original meteorite in the Jacksonville Museum I compared with a known specimen from Sams Valley in the collection of Dr. J. Hugh Pruett of Eugene, Oregon. Both he and Dr. Kunz of the Department of Chemistry of the University of Oregon agreed with me in that Dr. Pruett's specimen and the sample from the Jacksonville Museum were from the same fall. We forwarded the 2 specimens to Dr. Frederick C. Leonard of the Department of Astronomy of the University of California, Los Angeles, for further examination. Both Dr. Leonard and Dr. Joseph Murdoch of the Department of Geology of that institution examined the specimens, and Dr. Leonard reported that, in their opinion, the 2 meteorites are members of the same fall. These statements, in addition to my observations

* Abstracted from the Contributions of The Meteoritical Society, Popular Astronomy, vol. LVIII, no. 5, May 1950.

and Mr. Payne's testimony, leave little doubt that the Sams Valley fall was a multiple fall or a shower; until the weather improves, however, search for more individual meteorites will have to be postponed.

Mr. Payne, in my presence, named the gulch "Meteorite Gulch." It is located on the Payne property, on a bend of Sams Creek, on the north bank and about 10 feet above the stream, at low-water stage. The gulch runs for several hundred feet up the slope of the hillside, which is now well covered with brush and timber. The specimens were recovered at bedrock, in the bottom of the gulch, which is not more than 10 feet wide at the top and forms a V-shaped trough at the bottom. The exact location is in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 35, R. 2-3 W., on the Frank B. Payne property on Sams Creek near Beagle, Jackson County, Oregon, in the Trail quadrangle. The benchmark 1347 marks the corner of sec. 13. The longitude is approximately W. 122° 52' 30", and the latitude N. 42° 31' 46". On the basis of this position, the equatorial coordinate number (ECN) of the fall should be changed from + 1230,424 (as given in Dr. Leonard's "A Catalog of Provisional Coördinate Numbers for the Meteoritic Falls of the World," Univ. of New Mexico Publ. in Meteoritics, No. 1, p. 44, 1946) to +1229,425.

HANNA LEASES OREGON NICKEL

The Hanna Development Company, a subsidiary of the M. A. Hanna Company, has leased the Oregon Nickel Mining Company property on Nickel Mountain near Riddle, Douglas County, Oregon. Research on the metallurgy of the ore is being carried out in Hanna's research laboratory, and development work will depend upon results obtained in the research laboratory.

Early in World War II the Freeport Sulphur Company explored this deposit by means of diamond drilling and developed a large tonnage of low-grade nickel silicate ore. The Nickel Mountain deposit probably contains the largest quantity of nickel in the United States.

NEW BAUXITE DISCOVERY

Bauxite has been found in another area of northwestern Oregon. The occurrence is in sec. 1, T. 9 S., R. 2 E., northeast of Mehama, Marion County. Insufficient development work has been done to indicate possible quantity of reserve. Float samples analyzed in the Department's laboratory gave percentage results on two different types as follows: Low iron type, Al₂O₃, 49.19; Fe₂O₃, 11.83; SiO₂, 6.64; high iron type, Al₂O₃, 31.44; Fe₂O₃, 37.36; SiO₂, 6.42.

NEW POWERS GIVEN BUREAU OF LAND MANAGEMENT

A press release from the United States Department of Interior lists actions which now may be taken by the Director and Regional Administrators of the Bureau of Land Management under new authority delegated by the Secretary of the Interior. These actions include surveying and resurveying of public land; issuing all types of mineral leases except potash and phosphate; and all matters relating to administration of grazing districts, as well as issuance of leases for grazing on public lands outside grazing districts.

Other major functions delegated to the Director are timber sales, not to exceed 40,000,000 board feet; sales of isolated or disconnected tracts of public land; the issuance of leases for public airports, for parks and recreation purposes; exchanges of land where the value of the selected land does not exceed \$250,000; the issuance of patents for grants of land; and the issuance of leases with option to buy small tracts of land for homesite and business purposes, and the disposal of public lands for homesteading.

In addition to existing functions, Regional Administrators will have a number of new powers including: authority to institute trespass litigation by direct recommendation to the United States Attorney; to make air navigation site withdrawals; restorations under the Federal Power Act; restoration of Reclamation land to location under general mining laws; authority to grant coal permits and licenses and certain types of coal leases; all steps leading to issuance of patents for Federal airports; exchange of land with private individuals; transfer of lands to Alaskan Housing authority; and certain actions relating to mining claims.

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

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PREPAREDNESS

By

F. W. Libbey

Preceding the United States' entry into World War I the European conflict brought home the great need for strategic minerals in prosecution of a war because of their essential use in building mechanized war equipment and munitions. However, the long delay before active participation by the United States gave us time to build up domestic production in supplying the Allies with these materials.

The importance of strategic minerals became well recognized, and it was fully realized that another world war could not be prosecuted successfully without huge supplies of such material. Several years before World War II, when all signs pointed to the gathering storm of another conflict, the government was urged continually by engineering societies and experienced individuals not to delay in assembling large stockpiles of essential minerals, and above all to encourage in every way possible the building up of a healthy domestic mining industry.

Dilatory planning and execution found us at the beginning of World War II with inadequate supplies of war minerals, especially the vitally important minerals: manganese, chromite, tungsten, tin, and antimony. Many boats carrying critical mineral supplies were sunk by German submarines, and it was not until the submarine menace was overcome that the country really was safe from a major disaster. Everyone in authority realized the situation and there were innumerable published recommendations that the government should without delay start a realistic program to build up an adequate strategic minerals stockpile after the close of World War II as insurance against another emergency. Every thoughtful person appeared to realize the need, and Congress made various appropriations for this purpose. A board was established in Washington with authority to purchase supplies for a national stockpile.

After five years of operation by the government agencies set up for the particular purpose of stockpiling, the program to insure the country against the lack of adequate preparation felt in two previous world wars is less than 50 percent complete. It has been stated that an estimated \$4,000,000,000 worth of material would be needed to make up the planned-for stockpile. The various classifications and amounts in each classification are secret. However, it has been reported that beginning July 1950 material in the stockpile was valued at a little more than \$1,550,000,000 and that nearly \$500,000,000 worth of stockpile materials are on order.

The knowledge that the stockpile is perhaps nearly 50 percent complete after 5 years does not give a true picture by any means. Possibly the stockpile contains 100 percent of the required amount of some material which would be far less essential than another material

of which the stockpile contains 10 percent of the required amount. For example, it seems doubtful if the stockpile contains a year's supply of manganese required in a war year, and steel cannot be made without manganese.

Following are brief statements concerning the status of some of these essential war minerals:

Chromite. There is no domestic production. In peacetime the domestic metallurgical and chemical industries import all their requirements, and low-grade domestic deposits are unable to compete in price with foreign chrome. Wartime needs would probably be over a million tons a year. Foreign sources are Turkey, South Africa, and the Philippines. So far as domestic production is concerned the government has taken practically no action.

Manganese. Domestic production is about 140,000 tons a year, practically all from Montana. Peacetime requirements are about 1,400,000 tons a year. Sources are South Africa, Gold Coast, India, and Brazil. The U.S.S.R. has large resources of manganese but has for all practical purposes cut off exports to the United States. There are some large deposits of low-grade manganese in this country and the government has proposed to spend \$600,000 in an experimental plant at Artillery Peak, Arizona, one of these low-grade areas. The government has also announced tentative plans to spend a large sum of money on recovery of manganese from smelter slags. Some authorities state that this plan is impractical.

Antimony. Domestic peacetime requirements are 20,000 tons a year. Estimated wartime requirements are 40,000 tons a year. United States and Mexican production at present totals 3,000 tons a year which might be expanded to 15,000 tons a year. Foreign sources are Bolivia and South Africa, but principal supplies from China are cut off completely. No definite government action has so far been taken to increase domestic production.

Tungsten. Russia now controls 70 percent of the world's producing capacity in Korea, China, and Burma. United States peacetime requirements are 50 percent of world production; United States wartime requirements are something like five times that. Available foreign sources are Bolivia and a small amount from Portugal. Domestic mines are under contract to the Munitions Board until late this year. Stocks available for industry - none. Other than Munitions Board purchase of domestic production there has been no government action to encourage domestic production. The price has increased from \$18 a unit, a depressed price following tariff reductions, to \$32 a unit with small lots bid up to \$38 and none available.

Mercury. Domestic production after October 1, 1950, - none. The demise of the mercury industry has been due to government purchases abroad and a complete disregard of the importance of maintaining a small mercury industry in this country as insurance against a war emergency. Domestic producers cannot compete with Spanish and Italian production where high-grade ore is mined with cheap labor. It has been the state department's policy to encourage foreign producers by using ECA funds to buy up large supplies of quicksilver. Domestic peacetime requirements are 40,000 flasks a year; wartime requirements 122,000 flasks a year. Total world production in 1949 is estimated at approximately 110,000 flasks. Time required for domestic production to reach a wartime peak would be not less than three years. Amount in the government stockpile is believed insufficient to last three years. Action by the government to rectify this condition - none.

Nickel. Domestic production is extremely small and consists of some primary nickel recovered in copper refining, but the greatest part of our production is obtained from secondary nickel in scrap such as nickel anodes, nickel silver, and copper nickel alloys. In 1949 domestic nickel production amounted to 6,470 tons. Domestic imports during 1949 were 97,144 tons and consumption was 68,326 tons. Requirements in a war year would probably be in excess of 100,000 tons. This country is wholly dependent upon one source of supply - the International Nickel Company, Sudbury, Ontario. What would happen to us if sabotage should cripple seriously the Canadian output? Considering the great importance of nickel in national defense, the national stockpile should contain several hundred thousand tons, and a conscientious effort should be made to build up a nucleus of a nickel-producing industry in

this country. Some sulphide deposits are known in Alaska and both oxidized and sulphide deposits have been explored in Oregon. Probably the largest known domestic deposit is at Nickel Mountain, Douglas County, Oregon, which the M. A. Hanna Company has recently leased and on which the company is carrying on metallurgical testing work. Every encouragement should be given to this project by the government even though commercial operation may not be economic in peacetime in competition with the Canadian deposits.

It seems as if the preparedness lesson learned the hard way in World War I and World War II must be learned all over again. Every mistake made in preparing for two world wars has been made in getting ready for a third one. Probably the major stockpiling policy was governed by the state department's policy of encouraging foreign mineral production without regard to the effect on our own economy. This policy has been pushed down the throat of other government agencies ^{having} to do with the strategic stockpile in conjunction with another mistaken idea current in important circles in Washington that our strategic minerals should be conserved by leaving them buried in the ground.

Certain truisms will here bear repeating. Mines are not found ready to turn out metal overnight. They are the result of long-continued development, together with proper design and construction of plant. Since the time element is so vital in modern war, planners for a program of war mineral production should be fully aware of all the time-consuming steps required to make a raw prospect into a producing mine. Another thing - mines once shut down and lacking constant underground maintenance may be lost. Reopening mines is likely to be a long, expensive process, since often the required repair work is as expensive as opening a new mine. And still another thing - mines have wasting assets. Receipts should be sufficient to cover amortization of capital and interest on the investment in addition to a fair profit. Otherwise the mine is a losing enterprise. If we are to have a mining industry under free enterprise, there must be not repressive but understanding taxation and metal prices high enough to attract mining capital; otherwise a sick industry.

For the security of the country those in authority should be urged to formulate definite policies immediately to provide an incentive for domestic production of strategic minerals. The simplest and most effective plan would probably not meet with favor in government circles because it is too simple - that is, to offer a price that would attract miners irrespective of what the normal market price is. In this way immediate action could be obtained and the country as well as those states having the strategic minerals would benefit in putting new life into manganese, chrome, mercury, tungsten, and antimony mining. If we continue to rely entirely on foreign strategic minerals for stockpiling without regard to the need for a live domestic industry we are headed for disaster.

STRATEGIC ANXIETY

In recommending legislative steps at the Federal levels to stimulate production of strategic metals, a special mining committee of the San Francisco Chamber of Commerce states that: Mercury mining has declined by 95 percent; less than 10 percent of manganese used is produced in this country; no chrome is being produced domestically; less than one-quarter of our wartime production of antimony is left; and tungsten production is still far less than one-half of our wartime production.

(From Iron Age, West Coast Edition, San Francisco, August 24, 1950.)

SOUTHERN OREGON MINE LEASED

The Little Arctic gold mine has been leased by Harmon Gold Mines, Inc., from McTimmons and Associates. B. P. Harmon of Roseburg, Oregon, is the president and engineer of this newly organized corporation. At present five men are employed and development work is being done. The Little Arctic mine is located near the summit of ~~Green~~ ^{King} Mountain in Jackson County, Oregon. The ore consists of free gold in serpentine.

DEFENSE PRODUCTION ACT

The Defense Production Act of 1950 contains the following provisions directly relating to procurement of minerals.

Title III - Expansion of Productive Capacity and Supply

Sec. 302. To expedite production and deliveries or services to aid in carrying out Government contracts for the procurement of materials or the performance of services for the national defense, the President may make provision for loans (including participations in, or guarantees of, loans) to private business enterprises (including research corporations not organized for profit) for the expansion of capacity, the development of technological processes, or the production of essential materials, including the exploration, development, and mining of strategic and critical metals and minerals. Such loans may be made without regard to the limitations of existing law and on such terms and conditions as the President deems necessary, except that financial assistance may be extended only to the extent that it is not otherwise available on reasonable terms.

Sec. 303. (a) To assist in carrying out the objectives of this Act, the President may make provision (1) for purchases of or commitments to purchase metals, minerals, and other raw materials, including liquid fuels for Government use or for resale; and (2) for the encouragement of exploration, development, and mining of critical and strategic minerals and metals: Provided, however, That purchases for resale under this subsection shall not include agricultural commodities except insofar as such commodities may be purchased for resale for industrial uses or stockpiling, and no agricultural commodity shall be sold for such purposes at less than the higher of the following: (i) the current market price for such commodity, or (ii) the minimum sale price established for agricultural commodities owned or controlled by the Commodity Credit Corporation as provided in section 407 of Public Law 439, Eighty-first Congress.

(b) Subject to the limitations in subsection (a), purchases and commitments to purchase and sales under such subsection may be made without regard to the limitations of existing law, for such quantities, and on such terms and conditions, including advance payments, and for such periods, as the President deems necessary, except that purchases or commitments to purchase involving higher than currently prevailing market prices or anticipated loss on resale shall not be made unless it is determined that supply of the materials could not be effectively increased at lower prices or on terms more favorable to the Government, or that such purchases are necessary to assure the availability to the United States of overseas supplies.

(c) The procurement power granted to the President by this section shall include the power to transport and store, and have processed and refined, any materials procured under this section.

(d) When in his judgment it will aid the national defense the President is authorized to install additional equipment, facilities, processes, or improvements to plants, factories, and other industrial facilities owned by the United States Government, and to install Government-owned equipment in plants, factories, and other industrial facilities owned by private persons.

Sec. 304. (a) For the purposes of sections 302 and 303, the President is hereby authorized to utilize such existing departments, agencies, officials, or corporations of the Government as he may deem appropriate, or to create new agencies (other than corporations).

(b) Any agency created under this section, and any department, agency, official, or corporation utilized pursuant to this section is authorized, subject to the approval of the President, to borrow from the Treasury of the United States, such sums of money as may be necessary to carry out its functions under sections 302 and 303: Provided, That the total amount borrowed under the provisions of this section by all such borrowers shall not exceed an aggregate of \$600,000,000 outstanding at any one time. For the purpose of borrowing as authorized by this subsection, the borrower may issue to the Secretary of the Treasury its notes, debentures, bonds, or other obligations to be redeemable at its option before maturity in such manner as may be stipulated in such obligations. Such obligations shall bear interest

at a rate determined by the Secretary of the Treasury, taking into consideration the current average rate on outstanding marketable obligations of the United States as of the last day of the month preceding the issuance of the obligations. The Secretary of the Treasury is authorized and directed to purchase such obligations and for such purpose the Secretary of the Treasury is authorized to use as a public-debt transaction the proceeds from the sale of any securities issued under the Second Liberty Bond Act, as amended, and the purposes for which securities may be issued under the Second Liberty Bond Act, as amended, are extended to include any purchases of obligations hereunder.

(c) In addition to the sums authorized to be borrowed under subsection (b), there is hereby authorized to be appropriated to carry out the purposes of sections 302 and 303, such sums, not in excess of \$1,400,000,000, as may be necessary therefor.

PORT KNOX DEPOSITORY

By

Edward L. Weikert, Jr.

Monetary gold stocks of the United States now exceed \$24,000,000,000 - of this amount more than \$14,000,000,000 is stored in the vault of the Fort Knox gold depository, one of the institutions under the supervision of the Director of the Mint, an officer of the United States Treasury.

Virtually impregnable from attack the United States Depository was completed in December 1936 at a cost of \$560,000. It is located approximately thirty miles southwest of Louisville on a site which formerly was a part of the Fort Knox military reservation. The first gold was moved to the depository by railroad in January of 1937. That series of shipments was completed in June 1937 when approximately \$5,500,000,000 in gold was stored there. Another shipment was begun in June 1940 and completed in February 1941, bringing the present stocks of gold stored at Fort Knox to the \$14,000,000,000 figure. This consignment was also transported by rail.

The two-story, basement and attic building is constructed of granite, steel, and concrete, based upon a 10-foot foundation of concrete. Its exterior dimensions are 105 by 121 feet. Its height is 42 feet above the first floor level. It was constructed under the supervision of the then Procurement Division of the Treasury Department, now the Public Buildings Administration of the Federal Works Agency. Upon its completion, it was placed under the supervision of the Director of the Mint.

Within the building is a two-level steel and concrete vault, 40 by 60 feet, with fourteen compartments in the subterranean level and a like number on the ground level for the storage of gold. The vault door weighs more than 20 tons. Roofs of the vault as well as the depository are of bombproof construction. No one person can open the vault door; various members of the depository staff must dial separate combinations. The vault casing is 25 inches thick. Its construction includes steel plates, steel I-beams and steel cylinders laced with hoop bands and encased in concrete. The vault roof is of similar construction and is independent of the bombproof depository roof.

As an added protection, the corridor encircling the vault is fitted with mirrors which provide a constant view of the space between the two roofs. Between the corridor and the outer wall of the depository is space utilized for offices, store rooms, and other purposes. The outer wall of the depository is of Tennessee granite lined with concrete. Included in the materials used in construction were 16,500 cubic feet of granite, 4,200 cubic yards of concrete, 750 tons of reinforcing steel and 670 tons of structural steel.

Over the marble at the front of the building is the inscription "United States Depository" with the seal of the Treasury Department in gold. Offices of the chief-clerk-in-charge and of the Captain of the Guard open upon the entrance lobby. At the rear of the building is another entrance, for the reception of bullion and supplies. Facilities for weighing the bullion and for an accounting force occupy other rooms.

Outside the building, but connected with it by passages from the basement of the depository, are four guard boxes, one at each corner of the building. A driveway encircles the building and a steel fence marks the boundaries of the site. The driveway leads thru an entrance gate opening on the Dixie Highway. Sentry boxes, similar to the guard boxes at the corners of the depository, are located at the entrance gate.

An automatic electric signal system telephone, a radio, and microphone equipment have been installed among the mechanical safeguards in the building. The nearby Army post gives additional protection. The depository is equipped with its own emergency power plant, water system and other facilities. In the basement is a pistol range for the guards.

The gold in the depository is in the form of standard mint bars of almost pure gold. In form these bars are similar to an ordinary building brick, but are somewhat smaller. The approximate dimensions are $6\frac{3}{4} \times 3\frac{1}{2} \times 1\frac{3}{4}$ inches. Each bar contains approximately 400 troy ounces of gold, worth \$14,000. The avoirdupois weight is about $27\frac{1}{2}$ pounds. They are stored without wrappings in the vault compartments of the depository. When they are handled great care is exercised to avoid abrasion of the soft metal. When gold coin was in circulation the loss to the Government by abrasion was substantial.

While all of the physical gold stock is stored in the various institutions of the Bureau of the Mint, it is not, as sometimes supposed, "kept out of circulation." Most of it is made a part of the money stream thru the medium of gold certificates or gold certificate credits, which are issued only to the Federal Reserve Banks. The Federal Reserve Banks may obtain gold by redemption of the certificates when necessary for the settlement of international balances. This process, coupled with the fact that the Treasury will receive gold imported from other countries, and pay legally determined monetary value thereof, (less handling charges) maintains the value of the dollar in the world exchange. The amount of the gold certificated or gold certificate credits currently outstanding is approximately twenty billions of dollars.

The chief-clerk-in-charge at the Fort Knox Depository is Russell T. Van Horne, an officer of many years' experience in the field service of the Bureau of the Mint. The guard force is made up of men selected from various government agencies.

(From The Numismatic Scrapbook Magazine, Chicago, August 20, 1950)

NEW USE FOR OREGON VOLCANIC GLASS

A new use for Oregon volcanic glass has been developed by the State Department of Geology and Mineral Industries. The volcanic glass when used as a feldspar substitute in a ceramic glaze produces a glaze suitable for stoneware, artware, and terra-cotta products. Finely ground pumice, volcanic ash, and perlite, forms of volcanic glass found mainly in the central and eastern parts of the State, can be used to replace more costly material shipped into the area from considerable distances. The glaze was perfected after nearly two years of research by Mr. C. W. F. Jacobs, Department Ceramist, who experimented with numerous nonmetallic products found in Oregon. Results and test data have been published in a short paper entitled "Glazes from Oregon Volcanic Glass," and may be purchased from the Portland office, 702 Woodlark Bldg., or in the field offices in Baker and Grants Pass. Price postpaid is 20 cents.

PAINT PIGMENT SHIPPED

Mr. Orrin Petersen, consulting engineer for the C. K. Williams Company, Emeryville, California, has supervised the mining and shipping of about 900 tons of limonite from county-owned land west of Scappoose, Columbia County, Oregon. The limonite will be used as paint pigment. About the same quantity of this iron ore has been mined annually by the C. K. Williams Company for the past four years.

SUCTION DREDGE ON STATE LAND BOARD LEASE

Hellickson and English are operating a suction dredge on the Rogue River just north of Grave Creek, Josephine County, Oregon. The dredge is working under a lease from the State Land Board.

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IS THERE ANY HOPE FOR THE FUTURE?

- (1) A healthy mining industry is essential to the security of this country.
- (2) The western mining industry is far from healthy. Witness the large decrease in number of shipping mines over the past five years, the absence of prospecting, and the scarcity of exploration projects except by a few large mining companies.
- (3) The low estate of the mining industry is highlighted by the "Defense Production Act of 1950" which, being interpreted, means that the Federal Government has found it necessary to "take over" the financing of development projects in an attempt to stimulate the domestic industry. Instead of removing the handcuffs the industry gets a "shot in the arm."
- (4) The Defense Production Act of 1950 is an emergency measure rushed through Congress because of the threat of war and the unhappy condition both of our mining industry and the national stockpile. Does anyone believe that the threat of war will be alleviated in the foreseeable future? How then can we escape the fact that the Defense Production Act of 1950 is a long step in the direction of a subsidized industry, which means a government-controlled industry.
- (5) The contributing factors to the condition of the mining industry are high taxes and low metal prices in relation to operating costs.
- (6) Canada's industry is in a relatively healthy condition as evidenced by the amount of prospecting, new exploration projects, and the flow of American capital into mines across the border.
- (7) One of the principal factors in the discouragement of new domestic mining operations is repressive taxation. An illuminating comparison between mining taxation in the United States and in Canada appeared on the editorial page of the September Mining Congress Journal; it is reproduced on the succeeding page.

F.W.L.

Treatment Accorded Mining:

IN THE USA

TAXES are imposed on mining income at once, often on assumed profit without known and proven ore to assure recovery of investment.

All development and preliminary costs, until a mine reaches the "production stage," are required to be treated as capital expenditures recoverable only through depletion allowances.

Depletion allowance for metal and some nonmetallic mines computed at 15 percent of "gross income from the property" but not more than 50 percent of "net income from the property." Over a period of years, these provisions frequently reduce actual depletion allowances to materially less than either of these percentage standards.

Capital gains subject to substantial tax.

Double taxation - first on corporate income and then on this same income again when distributed to stockholder in form of dividends.

Operating loss in any year may be "carried back" two years and "carried forward" two years, but in so doing the taxpayer is denied the benefit of percentage depletion, both for the year of loss and the year to which the loss is carried.

Losses from fruitless mining ventures in many cases can only be written off as tax deductions by abandonment or sale of the property, with many questions as to when abandonment may be recognized or loss on sale may be deductible.

"Straight-line" or unit depreciation to be written off each year, including loss years when no tax benefit can be realized.

IN CANADA

NEW mines are entirely exempt from taxation for first three years of operation. An additional six-months period of tax-free operation is allowed for "tune-up."

Expenditures for prospecting, exploration, and development are deductible from taxable income as operating expenses. These charges may be deferred until expiration of the tax-exempt period, and then written off at any rate in any one year, from zero up to a maximum of 25 percent.

Depletion allowance at rate of $33\frac{1}{3}$ percent of net annual earnings. In the case of mines with the valuable production derived from gold to the extent of 70 percent of the total output, depletion allowances are established at 40 percent of net annual earnings or \$4 an ounce of gold produced, whichever is greater.

Capital gains not taxed. Profits of bona-fide prospector or prospecting syndicate from sale of mine considered as capital and not subject to tax.

Depletion allowances granted to shareholders of 10-20 percent of the dividend.

Operating loss in any year may be "carried back" one year or "carried forward" five years. No disallowance of percentage depletion.

Losses from fruitless ventures deductible from taxable income in year of loss.

"Diminishing balance" depreciation may be taken at such rate in each year as taxpayer chooses, from zero to 30 percent, based on the undepreciated balance. Full application of the tax benefit principle.

UNITED STATES GOLD AND SILVER MOVEMENTS IN JULY 1950

The monetary gold stock of the United States was decreased during July by \$94,305,000 to \$24,136,262,000 at the end of the month as the combined result of ear-marking operations, receipts from foreign countries, exports, domestic production, and other factors. Gold held under earmark at the Federal Reserve Banks increased during July by \$89,969,049 to \$4,708,987,187.

Total exports of gold were \$4,069,404, of which \$1,750,017 was to Formosa, \$669,409 to Portuguese Asia and \$434,305 to Germany. Total imports of gold were \$2,555,941, of which \$616,896 was from Canada. Total exports of silver were \$375,182, of which \$185,000 was to Germany. Total imports of silver amounted to \$10,408,279, of which \$4,081,982 was from Cuba, \$2,433,828 from Mexico, \$1,293,745 from Canada and \$1,014,536 from Peru.

(From World Trade News, U.S. Dept. of Commerce, Field Service, August 31, 1950.)

DEPARTMENTAL NEWS ITEMS

Hollis Dole has finished this field-season's mapping in the Dutchman Butte quadrangle located principally in southwestern Douglas County. This 15-minute quadrangle is north of and adjoins the Galice quadrangle. Mapping of the Galice quadrangle has just been completed by Francis G. Wells and George W. Walker of the U.S. Geological Survey in cooperation with the Department. This is Dole's second field season in geological mapping of the Dutchman Butte quadrangle. He is now engaged in strategic mineral investigations with special attention to manganese deposits.

Harold Wolfe and David White have completed a reconnaissance of the area near Silver Butte in southwestern Douglas County. This reconnaissance is a continuation of the work done in 1948 by Ewart M. Baldwin, now associate professor of geology, University of Oregon, and Hollis Dole. It is planned to publish results of the work by Wolfe and White in the Ore.-Bin.

Harold Wolfe has completed field work on the study of tungsten occurrences in Jackson County. Results will be issued as a Departmental report as soon as editorial and multi-graphing work can be done.

Norman Wagner and David White are engaged in a geological reconnaissance in southeastern Oregon. Most of their studies will be in the Pueblo Mountains of southern Harney County.

Hollis Dole and F. W. Libbey have recently made investigations of some manganese deposits in Coos and Curry counties. This work was designed to review some old Departmental reports and also to investigate some newly reported occurrences. When analytical results of samples obtained are available, it is likely that further studies will be made in southwestern Oregon.

Thomas Matthews has been on leave on his annual tour as a naval reserve officer. His duties were centered at Treasure Island, California.

Norman Wagner has completed field mapping of the Telocaset quadrangle located in northern Baker County and southern Union County. Wagner's work has been a part-time activity and has extended over about five years. The map will be published as soon as possible.

R. E. Stewart, Department micropaleontologist, is carrying on studies of samples collected by geologists of this Department and various other organizations working in the State. The samples were obtained from Tertiary formations so located that the identification and range determination of the microfossils contained will greatly assist in unraveling the Tertiary stratigraphy of western Oregon. This work, in which Miss Ruth Todd of the U.S. Geological Survey is cooperating, is very important in assigning accurate ages to formations encountered in geologic mapping. The following page lists Department microfossil studies now in progress and gives an index map of western Oregon showing the locations from which samples for these studies were collected.

[illegible]

- 1 Astoria city and environs, Astoria quadrangle. Astoria formation, Miocene.
- 2 Highway cut about 1-1/3 miles northeasterly from Cannon Beach on Oregon Coast Highway, Cape Falcon quadrangle. Miocene.
- 3 Cuts along Sunset Highway northwesterly and southeasterly from Sunset Tunnel near northeast corner of Timber quadrangle and northwest corner of Gales Creek quadrangle. Sunset Tunnel. Keasey section.
- 4 Sea cliff exposure 1-1/2 miles northerly from Cape Kiwanda, 500 feet south of Triangulation Station NIP, Nestucca Bay quadrangle. Oligocene.
- 5 Exposure near mouth of Salmon River, southwestern Nestucca Bay quadrangle. Nestucca formation, upper Eocene.
- 6 Section exposed along Mill Creek and South Yamhill River, northwestern Dallas quadrangle and southern Sheridan quadrangle. Upper Eocene and upper middle Eocene.
- 7 Ellendale quarry, about 2-3/4 miles east of Dallas, Dallas quadrangle. Middle Eocene.
- 8 Newport-Toledo section of Nye shale and Toledo formation along highway and Yaquina Bay shore from Newport eastward to a little beyond Toledo, Yaquina and Toledo quadrangles. Miocene-Oligocene-upper Eocene.
- 9 Highway cut near Lorane southwest of Eugene, Cottage Grove quadrangle. Stratigraphic position uncertain.
- 10 Turner's Basket Point locality northwest of Roseburg. Type Tyee formation, upper middle Eocene. Believed to belong between the Mill Creek-Sacchi Beach beds and the Umpqua formation.
- 11 Turner's Glide section along North Umpqua River northeast of Roseburg. Umpqua formation (middle Eocene below Tyee) with perhaps some Tyee at top of section.
- 12 Coastal section between Tunnel Point and Cape Arago south of Coos Bay, Empire quadrangle. Bastendorf and Coaledo formations. Oligocene and upper Eocene.
- 13 Sacchi Beach section along coast north and south of mouth of Five Mile Creek south of Cape Arago, Empire quadrangle. Appears to be same age as Mill Creek beds, upper middle Eocene.
- 14 Bear Creek southwest of Coquille, Randon quadrangle. Umpqua formation, middle Eocene.
- 15 Turner's "Middle Fork of Coquille River section" southeast of Coquille along highway east and west of Remote just east of Coquille quadrangle. Umpqua and Tyee formations, middle Eocene.

*Geologic ages are tentative pending completion of work.

DECISIONS ON OREGON NAMES

By

The United States Board of Geographic Names

Decision List No. 5006 rendered during April, May, and June 1950

Conundrum Creek: stream about 2.5 miles long, heading about 3 miles southwest of Cornucopia in sec. 6, T. 7 S., R. 45 E., and flowing southward to Spring Creek about 0.5 of a mile upstream from its mouth, in Whitman National Forest; Baker County; sec. 13, T. 7 S., R. 44 E., Willamette meridian, 44°57'20" N., 117°15'45" W. Not: Spring Creek (q.v.)

Coos Bay: incorporated city (1940 population 5,259) at the head of Coos Bay and about 3 miles south of the City of North Bend; Coos County; 43°22' N., 124°13' W.
Not: Marshfield.

Dewey Creek: stream about 3.5 miles long, heading in the NW $\frac{1}{4}$ sec. 1, T. 10 S., R. 11 W., and flowing southeastward to the Siletz River about 1 mile west of Siletz and 0.5 of a mile downstream from the mouth of Mill Creek; Lincoln County; sec. 8, T. 10 S., R. 10 W., Willamette meridian; 44°43'15" N., 123°56'15" W. Not: Miller Creek (q.v.)

Mill Creek: stream about 3.5 miles long, heading in sec. 23, T. 10 S., R. 10 W., and flowing generally northwestward to the Siletz River about 1 mile southwest of Siletz and 0.5 of a mile upstream from the mouth of Dewey Creek; Lincoln County; sec. 8, T. 10 S., R. 10 W., Willamette meridian, 44°42'55" N., 123°55'50" W. Not: East Fork (for upper course of the stream).

Miller Creek: stream about 2.5 miles long, heading in sec. 36, T. 9 S., R. 11 W., and flowing eastward and then southward to Dewey Creek about 1.3 miles upstream from its mouth; Lincoln County; NW $\frac{1}{4}$ sec. 7, T. 10 S., R. 10 W., Willamette meridian, 44°43'20" N., 123°57'30" W.

Slab Creek: stream about 1 mile long, heading in sec. 15, T. 10 S., R. 35 E., and flowing southeastward to its confluence with Greenhorn Creek to form the North Fork Burnt River, in Whitman National Forest; Baker County; sec. 23, T. 10 S., R. 35 E., Willamette meridian, 44°41'10" N., 118°28'15" W. Not: Kinkade Creek, Kinkale Creek.

Smith Ridge: ridge about 4 miles long, extending northwestward from sec. 4, T. 29 S., R. 1 W., to sec. 24, T. 28 S., R. 2 W., between Straight Creek and West Creek, in Umpqua National Forest; named for William C. Smith, a former Forest Service employee and a native of the area; Douglas County; T. 28 S., Rs. 1 and 2 W., and T. 29 S., R. 1 W., Willamette meridian, 43°06' N., 122°52' W.

Spring Creek: stream about 2 miles long, heading in sec. 17, T. 7 S., R. 45 E., and flowing on a winding course to Little Eagle Creek about 4 miles upstream from its mouth, in Whitman National Forest; Baker County; sec. 24, T. 7 S., R. 44 E., Willamette meridian, 44°56'50" N., 117°16'15" W.

Stices Gulch: stream about 6 miles long, heading in sec. 30, T. 11 S., R. 40 E., in Whitman National Forest, and flowing northward to the Powder River about 10 miles upstream from Baker; Baker County; sec. 36, T. 10 S., R. 39 E., Willamette meridian, 44°39'15" N., 117°52'30" W. Not: Stice Gulch.

Sunny Valley: settlement about 13.5 miles north-northwest of the city of Grants Pass; Josephine County; 42°37'42" N., 123°22'30" W. Not: Grave, Grave Creek.

Thornton Creek: stream about 4 miles long, heading in sec. 20, T. 10 S., R. 9 W., and flowing south-southwestward to the Yaquina River about 1 mile west of the village of Chitwood; Lincoln County; sec. 31, T. 10 S., R. 9 W., Willamette meridian, 44°39'27" N., 123°50'15" W. Not: Horton Creek, Thornton Creek.

Trail Creek: stream about 3.5 miles long, heading in sec. 20, T. 11 S., R. 40 E., in Whitman National Forest, and flowing north-northwestward to Stices Gulch about 1 mile upstream from its mouth; Baker County; sec. 6, T. 11 S., R. 40 E., Willamette meridian, 44°38'30" N., 117°52'15" W. Not: Belgian Gulch.

West Fork Mill Creek: stream about 3 miles long, heading in SW $\frac{1}{4}$ sec. 12, T. 10 S., R. 11 W., and flowing eastward to Mill Creek about 0.3 of a mile upstream from its mouth; Lincoln County; sec. 8, T. 10 S., R. 10 W., Willamette meridian, 44°42'40" N., 123°56'05" W. Not: Dewey Creek (q.v.).

STEEL CAPACITY

Every day, the finished steel made from 24 hours of full output of ingots and castings will provide steel for all the following items (average sizes): An aircraft carrier, 500 air-planes, 1,000 anti-aircraft guns, 500 tanks, half a million 3-inch shells, 1,000 howitzers, 2,000 aerial bombs, two heavy cruisers, 1,000 freight cars, 2,000 trucks, two cargo ships, two tankers, 12,000 autos, 2,000 homes, 20,000 household refrigerators, and 20,000 stoves. And after all that, 23,000 tons of steel would remain for other purposes.

(From Steel Facts, August 1950, published by American Iron and Steel Institute, New York.)

NEW PUBLICATION ON COAL

"The Chemical Utilization of the Subbituminous Coals of Washington," by Lorentz A. Conradi, research assistant in the Engineering Experiment Station at the University of Washington, has recently been issued by the University of Washington Press, Seattle. The publication is called Engineering Experiment Station Report No. 6.

FOX NAMED EDITOR OF MINING CONGRESS JOURNAL

John C. Fox has been named editor of Mining Congress Journal to succeed Sheldon P. Wimpfen, who has resigned to join the Raw Materials Operations of the Atomic Energy Commission, where he will be engaged in special problems of uranium production.

Mr. Fox brings to the Journal the benefits of broad experience in mining and technical writing. He worked as sampler and surveyor in a Nevada gold mine; as draftsman and engineer for Chile Exploration Company; in the New Jersey mines of New Jersey Zinc Company, first as a miner and later as engineer; at the Bertha Mineral Division lead-zinc mines in Virginia, as engineer; and with the Nicaro Nickel Company in Cuba, first as engineer in charge of stripping operations, later as office and cost engineer. Extensive knowledge of underground and strip mining of bituminous and anthracite coal was gained as a technical representative in the explosives field, and during this period he also became well versed in the mining and quarrying of limestone and sandstone.

More recently he taught all phases of mining engineering at the School of Mines of Columbia University, of which he is a graduate. He also did mine consulting work, wrote for American Metal Market and was the author of the "New York Letter" of the Canadian Mining Journal.

NEW LIMESTONE QUARRY

Limestone is being quarried under contract for use as agricultural stone at the Lander's quarry located about 10 miles east of Roseburg, Douglas County.

METAL PRICES

Copper, 24 $\frac{1}{2}$ ¢ per pound Connecticut Valley; lead, 16¢ per pound New York; zinc, 17 $\frac{1}{2}$ ¢ per pound East St. Louis; tin, \$1.13 $\frac{1}{2}$ per pound, New York; mercury, \$88-\$91 per flask; platinum, \$100-\$103 per ounce troy; silver (foreign) 80¢ per ounce troy.

November 1950

Portland, Oregon

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
Head Office: 702 Woodlark Building, Portland 5, Oregon

State Governing Board

Niel R. Allen, Chairman, Grants Pass
H. E. Hendryx Baker
Mason L. Bingham Portland
F. W. Libbey, Director

Staff

Hollis M. Dole Geologist
L. L. Hoagland Assayer & Chemist
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T. C. Matthews Spectroscopist
M. L. Steere Geologist
R. E. Stewart Geologist
D. J. White Geologist

Field Offices

2033 First Street, Baker
N. S. Wagner, Field Geologist

717 East "H" Street, Grants Pass
Harold D. Wolfe, Field Geologist

PERTINENT FACTS ON OREGON CHROME

The writer of the accompanying letter has had long experience not only in mining chrome but also in selling it to the Government and private industry. He is thoroughly familiar with his subject. His letter states the facts relating to chromite occurrence and production in Oregon and northern California so clearly and concisely that the Ore.-Bin requested permission to publish it. The writer wished to remain anonymous. The reply he received from the Munitions Board is appended. It does not offer much encouragement to a miner who wants some action, and action would appear to be of the essence if international relations are as serious as we have been led to believe.

Editor

"Grants Pass, Oregon
September 20, 1950

"Mr. Hubert Howard, Director
Munitions Board
Washington, D. C.

Dear Mr. Howard:

"With the present international situation as it is and the apparent shortage of some strategic minerals, I would like to inquire as to the status of possible purchase of domestic chrome ore. During the last war I was an active producer of chrome and still have my properties available for production, although it will take considerable time to get them into active operation.

"The matter of time to get chrome mines into production is one item that I would like to draw to your attention. Due to reduction of the price of chrome ore and increase in costs, it became necessary for all chrome mines in this area to close down completely. Closing of a mine means, of course, that considerable work must be done before it can be put into active production again. For instance, should the government outline a suitable plan and put it into effect within the next thirty days, for the purchase of ore, it would

be three to four months before any chrome would be produced and the majority of production in this area would not start being delivered to railhead until next May or June. Most of the mines are situated so that it is not possible to transport the ore out from the mines except in the summer months, although mining can be done in the winter if the owners have sufficient time to get in supplies before the roads are closed. As it happens my property can be operated the year round and the French Hill property most of the time.

"The following mines, which were all operated during the last war, cannot be reached during the winter months: Brown, Cyclone Gap, High Divide, Low Divide, Sourdough, Snowy Ridge, Chrome Ridge, Doe Flat, Cox, and Thompson. Supplies would have to be gotten into these within the next sixty days to get any production to amount to anything for 1951.

"Another item that should be taken into consideration as far as the future of chrome mining in Southern Oregon and Northern California, is that during both World War I and World War II, much of the chrome mined was taken from surface indications and picking up of float surrounding these surface outcroppings. These have all been worked and many of them were not worked underground. When these men who worked these are gone it will not be possible to find these mines again. My experience in chrome mining tells me that wherever there are surface outcroppings and float, proper drilling and exploration will find more ore under the surface. Unless some permanent program is outlined that will make chrome mining profitable these deposits will be lost completely in a few years and never found again.

"It would seem that in order to protect our country against the possibility of being without chrome ore during emergencies, which continue to occur every few years, that some permanent program should be put into effect that would encourage the average miner to continue developing and mining these ores. The average chrome mine is not sufficiently large to make it attractive to investment by large monied interests. We must depend on the small fellow with a few hundred dollars to bring this ore out.

"I will very much appreciate your views on this matter and advice as to whether or not you believe that it is possible that the government will again go into the purchase of domestic chrome ore.

Very truly yours,"

Signed

"A Southern Oregon Chrome Miner"

* * * * *

Reply

"2 October 1950

"The Munitions Board is interested in metallurgical grade chrome ores. Much of the domestic ore acquired during the recent war was sub-grade material and is not desired by the steel industry. Consequently, the ore is still in government hands.

"Under the new Defense Production Act, the Bureau of Mines is charged with the responsibility of acquiring domestic minerals. It is suggested that you keep in close contact with the nearest office of the Bureau of Mines, which we understand is at Albany, Oregon.

Sincerely yours,

/s/ E. J. Lintner

Chief, Additive Alloys Branch
Office of Materials Resources"

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Preliminary Map No. 42. Geology of northwestern Oregon west of Willamette River and north of latitude $45^{\circ} 15'$, by W. C. Warren, R. M. Grivetti, and Hans Norbistrath. Dec. 11, 1945. Scale 1 inch = about 2.3 miles. Price 70 cents.

Preliminary Map No. 88. Geology of the Newport-Waldport area, Lincoln County, Oregon, by H. E. Vokes, Hans Norbistrath, and P. D. Snavely, Jr. March 15, 1949. Scale 1:62,500. Price 75 cents.

Preliminary Map No. 97. Geology of the coastal area from Cape Kiwanda to Cape Foulweather, Oregon, by P. D. Snavely, Jr., and H. E. Vokes. 1949. Price 50 cents.

R.E.St.

CHEMICAL COMPANY WANTS MANGANESE

The Continental Chemical Company, Salem, Oregon, is in the market for manganese ore. The company will pay 45 cents a unit per long ton f.o.b. shipping point for ore which runs not less than 25 percent Mn. Ore as low as 20 percent Mn will be accepted but the price would be reduced 2 cents a unit for each percent below 25 percent. A long ton weighs 2240 pounds and each percent is a unit; therefore 25 percent ore would be worth \$11.25 per long ton at railhead. There are no penalties for silica or iron. Average samples of the ore should be submitted to the company for analysis and found acceptable before shipment is made.

DRILLING RESULTS OF COAL BEDS IN SOUTHWEST WASHINGTON

"Correlation Between Test Holes in the Centralia-Chehalis Coal District, Washington" is the title of a chart and descriptive statement recently placed in open files at the offices of the U.S. Geological Survey, General Services Building, Washington, D.C.; at Room 623, Post Office Building, Portland, Oregon; and at the Division of Mines and Geology, Olympia, Washington. The chart shows in graphic form the coal beds and associated rocks of upper Eocene age that were penetrated in 22 test holes, 10 of which were recently drilled east of Centralia under the supervision of Parke D. Snavely, Jr., Survey geologist, and 12 of which are holes previously drilled by private groups. Porosity and permeability tests were made on a part of the sandstone cores obtained in the drilling and results of these tests also appear on the chart.

SURVEY OF STATE MINE TAXATION

During the past two years A. B. Parsons, formerly Secretary of the American Institute of Mining and Metallurgical Engineers, has been conducting research on state mine taxation for the U.S. Bureau of Mines. Reportedly some \$12,000 has been spent by the Bureau in gathering taxation information and making it ready for publication. There appears to be some question as to when the results of the survey will be made available to the public because of the requirements of the defense program to which the Bureau must give an increasing amount of attention. However, results of the survey are of value only as they are made available, so mining companies and state and county tax agencies should all urge upon the Bureau the need for prompt publication of this report.

STANFORD GEOLOGIST MAPS CENTRAL OREGON GEOLOGY FOR GEOLOGICAL SURVEY

During the field season just passed, Dr. A. C. Waters of Stanford University studied and mapped the geology in quadrangles near Prineville, Crook County, Oregon, for the U.S. Geological Survey. Mapping of the Ochoco Reservoir and Eagle Rock 15-minute quadrangles has been completed and the maps will be made available by the Survey as soon as possible. When topography is available, mapping will be continued in the Post and Lookout Mountain quadrangles. Interesting results have been obtained in this field work, particularly in Dr. Waters' study of volcanic rocks of the region.

ENGINEERING GEOLOGY STUDIES IN PORTLAND AREA

Geologic mapping of 15-minute quadrangles in the Lower Columbia River area near Portland by D. E. Trimble of the Engineering Geology Section of the U.S. Geological Survey was continued during the field season of 1950. These geological studies of the industrial area of this region are now about 50 percent completed. They will be continued during the field season of 1951.

TOPOGRAPHIC MAPPING

According to a U.S. Geological Survey release, only about 25 percent of the United States has been adequately mapped topographically. To complete the task the present rate of progress will require about fifty years. During the past seventy years topographic maps have been made covering approximately half of the nation. However, many of these are now of limited use because they are out of date or below required standards of accuracy. Only two states, Massachusetts and Rhode Island, have been completely and adequately mapped according to modern standards.

The State of Kentucky has recently recognized the need and value to the State of adequate topographic maps, and the Kentucky legislature has appropriated \$1,062,000 to be matched by the U.S. Geological Survey for the next biennium to be used in preparing topographic maps. The State will be mapped in 7½-minute quadrangles on a scale of 1 inch to 2000 feet. During the fiscal year just ended, 17 quadrangles in Kentucky were completed and 5 are being published. In 1950 technicians hope to complete 52 quadrangles and send 30 to the printers. Next year the full force of the expanded program will reach the printers and a much greater number of maps will be published. Altogether 685 separate quadrangle sheets will be required to cover the 40,395 square miles within the State.

A comparison of Kentucky's program with topographic mapping in the State of Oregon is of interest. Oregon has sponsored no topographic mapping program and as the Topographic Branch of the U.S. Geological Survey has its hands full mapping in those states which provide cooperative funds, topographic mapping in Oregon is proceeding at a snail's pace. During 1949 one new Oregon topographic quadrangle map was published. So far in 1950 only one new map has been published. U.S. Geological Survey index maps show that about 30 percent of Oregon is covered by usable topographic maps. Very few of the maps are classed as first grade.

A further comparison involving our neighbor states of California and Washington is enlightening. During 1949 California had 99 new topographic quadrangle maps and 15 reprints; Washington had 3 new maps and 1 reprint. During 1950 California had 58 new maps and 9 reprints; Washington had 10 new maps and 3 reprints. An overall comparison among the three states shows ^{that} for all classes of topographic maps, California is about 84 percent covered, Washington about 68 percent, and Oregon about 39 percent.

Topographic maps are basic in all engineering and geological areal studies. In addition, such maps are necessary for intelligent tax studies, forestry and soil conservation planning, road and dam building, surface and ground-water studies, and as tactical maps in national defense.

December 1950

Portland, Oregon

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REPORT OF RECONNAISSANCE OF THE AREA FROM
 PANTHER BUTTE TO TELLURIUM PEAK, DOUGLAS COUNTY, OREGON

By

D. J. White and H. D. Wolfe*

Introduction and abstract

During September 1950 twelve days were spent by the authors in a reconnaissance of the area from Panther Butte to the Silver Peak mine on Silver Butte, from the Silver Peak mine northeastward to the Gold Bluff mine on the north side of Tellurium Peak, and along the West Fork of Canyon Creek, southwestern Douglas County, Oregon. The area is roughly five miles wide and fourteen miles in length and consists of a greenstone belt bordered on the west by the Dothan sediments and on the east outside of the immediate area by the Galice formation. The greenstones contain numerous serpentine and rhyolite masses (see accompanying map).

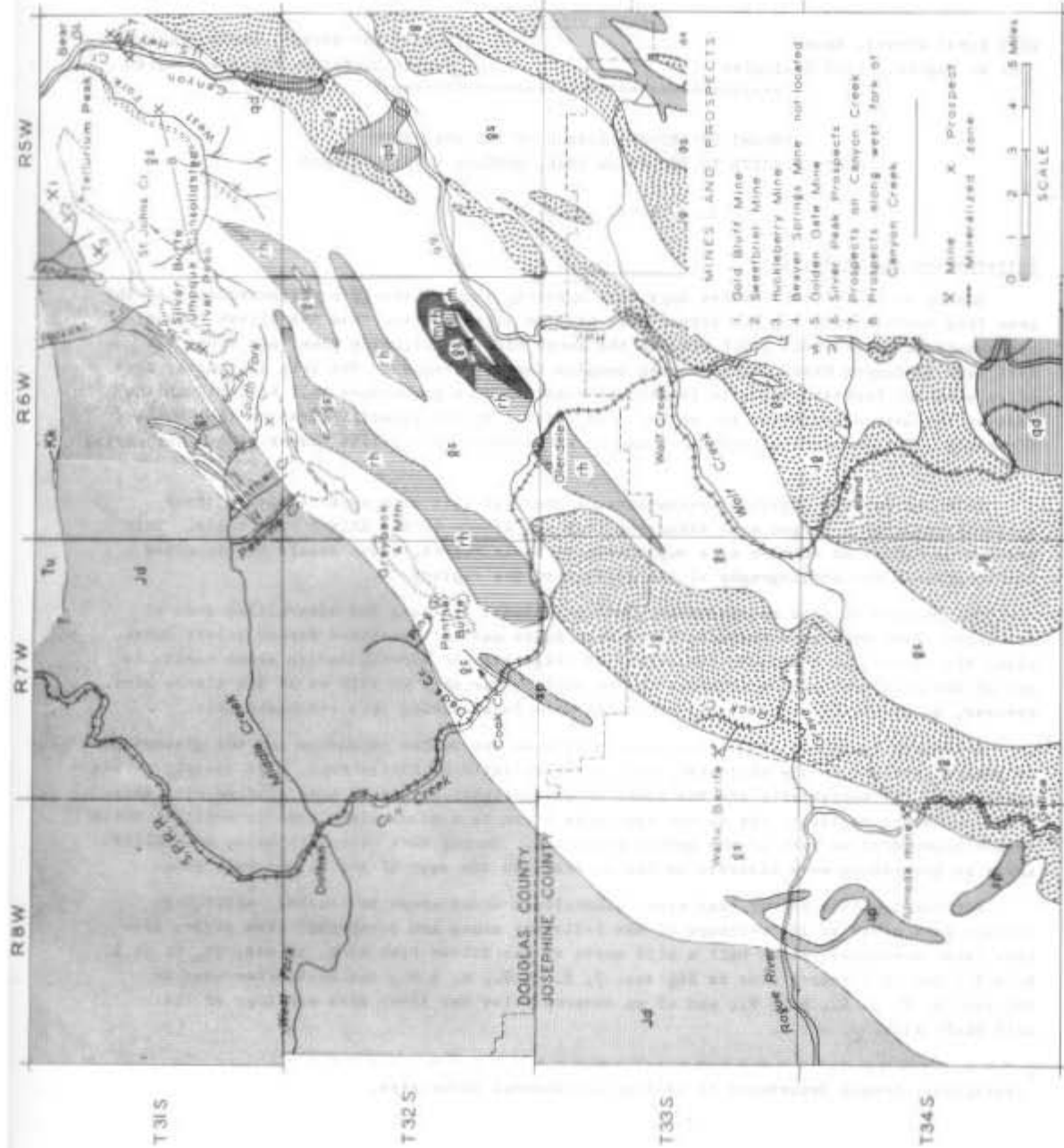
Dole and Baldwin (1947:99) recommended a study of this area as a result of their reconnaissance of a larger area extending from the Alameda to the Silver Peak mines. This memorandum report is written as a supplement to their report, which should be consulted for background and bibliography of the geology of the region.

The purpose of this reconnaissance was to attempt to trace the mineralized zone of the Silver Peak mine southwestward to Panther Butte and northeastward beyond Silver Butte. Also, the search was continued for barite as diagnostic of mineralization since barite is one of the principal gangue minerals in the Silver Peak mine as well as at the Alameda mine. However, no additional occurrences of barite were found during this reconnaissance.

According to Shenon (1933) the contact between the Dothan formation and the greenstones in general strikes to the northeast, and in the vicinity of Silver Peak, dips steeply to the southeast. The schistosity and the zones of mineralization in this area conform with this trend. The ore bodies of the Silver Peak mine occur in a mineralized zone in schists, which Shenon considered as part of the Dothan formation. During this reconnaissance, mineralized zones in greenstone were observed on Canyon Creek to the east of the Silver Peak zone.

Northeast of the Silver Peak mine, mineralized shear zones in leached, silicified schists were noted in the workings of the following mines and prospects: the Golden Gate mine (east workings), about half a mile north of the Silver Peak mine, in sec. 23, T. 31 S., R. 6 W.; the Huckleberry mine in SE $\frac{1}{4}$ sec. 7, T. 31 S., R. 5 W.; the Sweetbrier mine in SW $\frac{1}{4}$ sec. 5, T. 31 S., R. 5 W.; and at an outcrop below the lower mine workings of the Gold Bluff mine.

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Geology of the area in the vicinity of the Alameda and Silver Peak Mines.

Taken from U.S.G.S. Riddle Folio and Bulletin No. 545 by J.S. Oller.

In general the sulphide minerals are rather sparsely distributed in the leached schists of the above mines, and massive sulphides were not observed in any of them. Southwest of the Silver Peak mine mineralized zones were observed in workings of the Silver Peak prospects located in sec. 27, T. 31 S., R. 6 W. It is doubtful that the mineralized zones of the Silver Peak prospects represent an actual continuation of the ore zones of the Silver Peak mine, but probably they are either individual zones along the same general trend or faulted parts of the Silver Peak zone.

Dole and Baldwin (1947:98) mention a prospect tunnel which was driven along a quartz stringer in greenstone on the south side of the South Fork of Middle Creek. This quartz stringer does not follow the trend of the shear zones, but apparently was formed in a cross fracture in the greenstone. Southwestward beyond this point along the west slope of Grayback Mountain and Panther Butte no mineralized zones were found other than along quartz stringers in serpentine masses.

A siliceous mineralized zone occurs along the West Fork of Canyon Creek and is exposed on the east bank of Canyon Creek along U.S. Highway 99 approximately 0.8 of a mile south of Bear Gulch. This zone of mineralization occurs in greenstone and trends northeastward paralleling the shear zone of the Silver Peak area.

Some mines and prospects in the area other than the Silver Peak and Umpqua Consolidated mines

Because Shenon (1933) discusses the Silver Peak and Umpqua Consolidated mines, a detailed review of ore deposits and developments at these mines is not included in this report. The mines and prospects visited during this reconnaissance are listed below. All elevations mentioned were determined with an altimeter and only a minor amount of control was available for checking and adjusting the readings of the instrument.

Gold Bluff mine (1)*

The Gold Bluff mine is located in the NE $\frac{1}{4}$ sec. 5, T. 31 S., R. 5 W., in what appears to be foliated greenstone close to a small serpentine mass. Several tunnels have been driven in the serpentine in this general area. On a logging road at an altitude of 1,600 feet about 200 feet below what is believed to be the lower workings of the Gold Bluff mine is a 15-foot-wide iron-stained leached zone containing disseminated sulphides. This zone strikes N. 45° E. and dips steeply to the southeast. A grab sample (P-10389) from this zone assayed in the Department's laboratory contained no gold or silver.

Sweetbrier mine (2)

The Sweetbrier mine is located in SW $\frac{1}{4}$ sec. 5, T. 31 S., R. 5 W., on the East Fork of Mitchell Creek. Buildings on the property are located at an altitude of 1,710 feet. Southeast of the buildings at an elevation of 1,820 feet are an open cut and a 35-foot drift on a northeastward-striking pale green to white schist with disseminated sulphides. Pyrite, some chalcopyrite, and a small amount of malachite were observed in one specimen obtained.

It is likely that this mine is the same as the Gold Ridge claim.**

Huckleberry mine (3)

The Huckleberry mine is located in the SE $\frac{1}{4}$ sec. 7, T. 31 S., R. 5 W., on the north side of a southeast fork of Mitchell Creek. It is owned by E. B. Hart and F. J. Fahy. Equipment at the mine consists of a mill building with a small two-stamp mill and a concentrating table.

There are two tunnels on the property, a short lower tunnel at 1,800 feet in elevation and a larger upper tunnel at an altitude of 1,950 feet. An old tram 200 to 300 feet in

*Numbers after mine names are the same as key numbers on accompanying map.

**Oregon Dept. Geology and Mineral Industries Bull. 14-C, vol. 1, p. 102, 1940.

length extends from the mill building to the upper workings. The portal of the upper tunnel is caved, but it appears to trend N. 50° E. The size of the dump indicates several hundred feet of workings. The material on the dump consists ^{mainly} of a light-green to gray schist with disseminated sulphides. The lower workings are in greenstone and chloritic schist. This tunnel extends N. 80° E. for 80 feet and then forks, one branch of which extends a short distance N. 25° E. and the other S. 60° E. About 2 feet of sheared material with a minor amount of pyrite is exposed a few feet from the face of the southeastward-trending branch. This zone strikes N. 40° E. and dips SE 75°.

Production and history of this mine is recorded* as follows:

"Mineral was reportedly discovered in 1912 . . . and work has been carried on sporadically since that time. The record of production is as follows: 1912-1915, \$2000; 1931, \$400; 1932-1936, \$4000 per year."

Beaver Springs mine (4)

This mine was not found but is reported** to be located in secs. 7 and 18, T. 31 S., R. 5 W. H. L. Shawver, now deceased, is said to have traced the **Silver Peak mineralized zone** in a northeasterly direction toward the Beaver Springs mine. From 1923 to 1928 a tunnel trending S. 35° E. was driven for over 1,000 feet. Its portal is now caved. Ore is reported to have shown pyrite, chalcopyrite, bornite, and sphalerite, and a sample of the ore is said to have assayed 12 percent copper, 1 ounce of gold, and 12 ounces of silver to the ton.

Golden Gate mine (5)

The main workings of the Golden Gate mine are located east of the Silver Butte road at an elevation of about 3,000 feet and consist of a shaft, an open cut, and several short tunnels. According to Shenon (1933:23-24):

"Most of the mining on the north side of Silver Peak has been done by N. A. Bradfield on the Golden Gate property. He located seven claims in 1919, and although lessees have since worked the property, he still retains the ownership. According to Mr. Bradfield two cars of ore have been shipped. One car containing 36 tons gave gross smelter returns of \$1,000, mostly in gold, and another car shipped by lessees is reported to have returned \$1.76 a ton.

"In all, about 600 feet of underground development work has been done. Most of the work has been concentrated on the claims near the road in the vicinity of the Bradfield cabin; the remainder on claims about half a mile to the east.

"The production has come chiefly from an open cut and some shallow workings close to the Silver Butte road. The ore occurring here is a dark grayish-green chlorite schist striking N. 30° - 60° E. and dipping 50°-70° SE. A layer in the schist contains pyrite cubes and some stringers of chalcopyrite, and according to Mr. Bradfield free gold can be panned from some of the rock. The pyrite cubes range in size from those that are barely visible to some with faces over half an inch across. The cubes cut across the schistosity of the enclosing rock, thus indicating that they were formed later."

The mineralized zone in the chlorite schist at the main workings shows little similarity to that at the Silver Peak and Umpqua Consolidated mines.

Two tunnels several hundred feet east of these workings have been driven in gray to white, siliceous leached schist containing disseminated sulphides. The schist is similar

*op. cit., page 105.

**op. cit., page 100.

to that at the Silver Peak and Umpqua Consolidated mines, but contains less quartz. A lower tunnel is at an altitude of about 2,925 feet and an upper tunnel is about 100 feet higher.

The upper tunnel consists of a crosscut tunnel running S. 50° E. for 65 feet. Thirty feet in from the portal, gray to white leached schist with disseminated sulphides is encountered and extends for about 20 feet. About 45 feet from the portal a drift turns S. 50° W. and follows the schist for 30 feet. The schist dips steeply to the SE. Greenstone is exposed at the face of the crosscut and faulting is indicated. A short distance east of the portal a prospect pit exposes the schist which appears to have been sheared off by faulting.

The lower crosscut is approximately 200 feet in length. A drift extending northeast and southwest from this crosscut exposes leached mineralized schist which has a maximum thickness of about 10 feet. The schist strikes N. 50° E. and dips 60° SE. and appears to pinch out at both ends of the drift.

Silver Peak prospects (6)

A short crosscut tunnel is located in sec. 27, T. 31 S., R. 6 W., on the east side of a new fire access road leading to the southwest from Silver Butte road at a point 0.4 mile from the saddle south of the Silver Peak mine. Elevation of the portal is 3,340 feet. The tunnel extends S. 45° E. into the hill approximately 80 feet. At 70 feet along the crosscut a drift extends approximately 50 feet S. 50° W. Fifteen feet from the beginning of the drift another crosscut runs S. 40° E. for 20 feet. About 15 feet of leached siliceous schistose material with disseminated sulphides is exposed in this crosscut. The mineralized zone strikes N. 45° E. and dips 57° SE. This zone is bounded on the northwest by a fine-grained white chert.

Dole and Baldwin (1947:99) mention a tunnel on the Silver Peak property, located at the head of a small tributary of the South Fork of Middle Creek. This tunnel at about 3,200 feet in elevation trends N. 40° E. and parallels the schistosity. It was flooded and could not be entered. The leached schistose zone appears to be bounded on the southeast by greenstone and on the northwest by a fine-grained gray to white chert (?).

One hundred fifty feet lower and a short distance south of the tunnel at 3,200 feet in elevation is a tunnel which drifts on a schistose leached zone extending N. 40° E. approximately 50 feet, then turns N. 70° E. for 50 feet and then N. 60° E. for 150 feet. This drift follows a sheared mineralized zone ranging from 3 to 10 feet wide. The last 150 feet has a well-defined hanging wall which strikes N. 60° E. and dips 65° SE.

Prospects on Canyon Creek (7)

A mineralized zone consisting of siliceous material with disseminated sulphides is exposed in new road cuts along U.S. Highway 99 and along Canyon Creek about 0.8 mile south of Bear Gulch. The zone appears to strike to the northeast. More than 600 feet of this zone is estimated to be exposed in the east bank of Canyon Creek which cuts diagonally across the strike of the mineralized zone. A chip sample was taken from 200 feet of this zone exposed along the creek. The sample (P-10387) showed a trace of gold and no silver or copper. A short tunnel on the north side of a small tributary to the west of Canyon Creek penetrated about 20 feet of the zone before greenstone was encountered. A dump on the east side of Canyon Creek several hundred feet north of the locality where sample P-10387 was obtained shows similar siliceous material containing sulphides. The adit here was filled with water and was not examined.

Prospects along the West Fork of Canyon Creek (8)

In the SE $\frac{1}{4}$ sec. 15, T. 31 S., R. 5 W., on the east side of the West Fork of Canyon Creek at an elevation of about 1,325 feet is an old prospect consisting of an open cut and an inclined shaft which explore a siliceous mineralized zone in greenstone. The prospect is 3.1 miles from U.S. Highway 99 via California-Oregon Power Company power line road that follows

along the west side of the West Fork of Canyon Creek. A cabin is located on the east side of the road. The open cut trends N. 45° E. for about 40 feet along the strike of the mineralized zone which is 6 feet wide and contains disseminated sulphides, mainly pyrite and chalcopyrite. The zone as exposed in the inclined shaft, which is 20 feet deep, appears to contain more quartz than that part of it exposed in the cut and is heavier in sulphides which frequently are in massive bands. A grab sample (P-10386 B) from the dump at the shaft assayed as follows: a trace of gold, no silver, and 1.20 percent copper.

At a point 3.3 miles from U.S. Highway 99 along the power line road a 4-foot zone of leached, siliceous, iron-stained sericitic material crosses the road, and at 3.45 miles at an altitude of 1,340 feet leached, siliceous sericitic schist is exposed. Four miles along this road on the hillside to the west leached siliceous schist is exposed in a small cut. The schist as exposed in the cut strikes N. 40° E. and dips to the SE. and contains a minor amount of sulphides.

At a distance of 5.8 miles the power line road turns to the southwest following along a tributary of the West Fork of Canyon Creek. At 5.9 miles a prospect is located on the east side of this tributary. Development work consists of a crosscut and a shaft. Siliceous material containing abundant sulphides was found on the dump. Elevation of the crosscut is 1,625 feet and the shaft is at 1,700 feet. West of the main road along an access road to the power line, white schists are exposed.

An adit on the west side of St. Johns Creek in sec. 19, T. 31 S., R. 5 W., at an altitude of 1,800 feet exposes gray siliceous material with finely disseminated sulphides at its portal. No attitude could be determined.

Peavine-Panther creeks prospect (9)

At an approximate elevation of 3,000 feet on the ridge between Peavine Creek and Panther Creek several open pits and one tunnel running S. 55° W. are located in a small serpentine mass bounded by greenstone. No indication of a mineralized zone similar to that in the Silver Peak mine was found in this area.

Cook Creek-Ping Gulch prospects (10)

Several prospects were noted along Cook Creek northeastward to Ping Gulch on the west slope of Panther Butte. These prospects, both placer and lode, consist of workings in a serpentine mass along the western edge of the belt of greenstone. The serpentine contains numerous quartz stringers.

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Shenon, P. J.

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ALUMINA PLANT "CONSIDERED"

It is known that Harvey Machine Co. of Torrance, California, has been considering the possibility of putting a plant for the production of alumina from imported bauxite in the Portland, Ore., area to supply its proposed aluminum reduction plant at Kalispell, Mont. The project is still in a nebulous and exploratory stage with inquiries having been made as to potential plant sites and ore unloading and handling facilities. In spite of the vast aluminum reduction plants operating in the Pacific Northwest no alumina plants exist there with all alumina being brought in from southeastern United States.

(From Iron Age, West Coast Edition, San Francisco, November 23, 1950)

DEMAND FOR METALS

The following has been extracted from the Monthly Letter of the National City Bank of New York, December 1950, under the heading "Shortages and Stockpiling."

Before the Korean war, stockpile purchases of copper were absorbing 20,000 to 25,000 tons a month, and since Korea they have averaged around 15,000. Total holdings are estimated to be approaching 400,000 tons. With this diversion of supply, even before Korea, the high civilian consumption was being met only by drawing down producers' and fabricators' stocks, which are now reduced to minimum levels. The limitation order is designed to bring consumption (excluding armament use) down to around 100,000 tons monthly. The prospective supply, including net imports, may run around 140,000 tons a month. Since the increase in armament use for some time ahead is not expected to exceed 15,000 tons, it appears that continuation of stockpiling at the recent rate is intended, and that stockpiling is the basic reason for the limitation order. In conversion deals copper has commanded up to 40 cents a pound.

Zinc stockpiling has been taking some 12,000 tons a month during most of 1950 and producers' stocks have almost disappeared. The zinc stockpile is around 475,000 tons. One of the important uses for copper and zinc is in making brass for shell casings, which requires 70 percent copper and 30 percent zinc. Thus the zinc stockpile is greatly excessive in relation to copper stocks. Meanwhile steel companies are curtailing galvanizing operations for lack of zinc, and it is reported that as high as 50¢ is asked in the gray market for high-grade zinc used in die casting. Copper and zinc are only two examples of the part played by stockpile purchases in the developing scarcity of basic materials.

VERNON SCHEID HEADS UP MACKAY SCHOOL OF MINES

Dr. Vernon E. Scheid, Professor of Geology and Chairman of the Department of Geology-Geography, University of Idaho, has accepted the position of dean of the Mackay School of Mines, University of Nevada. Dr. Scheid will move to Reno, Nevada, about February 1, 1951.

DEPARTMENT PUBLICATION TO BE USED IN HEBREW UNIVERSITY

The Department has recently filled an order received from the Hebrew University, Jerusalem, Israel, for two volumes of the serial Bulletin No. 36. Two volumes of this bulletin have been issued in collaboration with the U.S. Geological Survey as part of the Department's program of setting up a stratigraphic section of the Tertiary of western Oregon, based mainly upon studies in micropaleontology. The third volume is in preparation.

Ten other foreign orders have come from universities and oil companies in Venezuela, Colombia, Peru, and Germany.

OREGON SECTION A.I.M.E. ELECTS NEW OFFICERS

Mr. D. H. Beetem, Chief Metallurgist for the Aluminum Company of America's Vancouver reduction plant, was elected chairman for 1951 at the regular monthly meeting of the Oregon Section of the American Institute of Mining and Metallurgical Engineers held at the Mallory Hotel in Portland December 15. Mr. S. M. Shelton, Regional Director, Region II, U.S. Bureau of Mines, was elected vice-chairman and Mr. James Bell, Vice-President of the Portland Gas & Coke Company, was elected secretary-treasurer. Mr. A. O. Bartell, Managing Engineer of the Raw Materials Survey, Inc., the outgoing chairman, automatically becomes a member of the Executive Committee.

After the election of officers a few of the thirty consulting engineer members of the Oregon Section conducted a panel discussion entitled the "Who-Why-Where-When and What of the Consulting Mining Engineering Field." Mr. E. A. Messer, of Messer, Toy & Associates, was the toastmaster.

CHEMICAL CONSTRUCTION FACILITIES

Sulfuric acid production is one of the barometers of business. Over 10,000,000 tons are produced each year in the United States; a significant figure regarding its importance. Also of importance to industrial development is the fact that it is produced at low cost and in good quality. These features are a tribute to the chemical engineers whose knowledge of construction materials and whose creative skill in design and instrumentation has raised chemical and mechanical efficiency to the maximum. It is of interest to note that this engineering skill is not a closely guarded secret. Hundreds of these highly efficient acid plants have been built throughout the world and they have contributed greatly to industrial development with its attendant benefits to human welfare.

Ammonia is another important chemical in large scale production. It is probably the most important of the nitrogen compounds not only for its direct use, but also for its basic value as a raw material for dyes, pharmaceuticals, plastics and a host of other things. Almost everyone knows the chemical formula for water, H_2O , signifying a combination of two atoms of hydrogen and one of oxygen. The formula for ammonia is just about as simple, NH_3 ; one atom of nitrogen combined with three atoms of hydrogen. Nature supplied us with plenty of water but we must make most of the ammonia we use. It would seem simple to put the two gases together in the ratio of one to three and so produce NH_3 . But, when this is done, each gas ignores the other completely and nothing happens. However, apply considerable pressure, 5,000 pounds per square inch, and provide the proper catalyst, and the reaction goes smoothly producing a good yield of NH_3 . Here again commercial success depends on skillful chemical engineering and low cost raw materials.

Ammonia is used in a variety of nitrogenous fertilizers. It may be reacted with sulfuric acid to produce ammonium sulfate, or with phosphoric acid for ammonium phosphate, both of which are widely used fertilizers. Ammonia may also be converted into nitric acid which may then be reacted with more ammonia to give ammonium nitrate, a fertilizer with high nitrogen content. If limestone is readily available it may be reacted with nitric acid to produce calcium nitrate fertilizer.

A huge plant designed to produce ammonium sulfate is nearing completion at Sindri, India, and another designed to produce 200,000 tons of calcium nitrate per year is underway at Suez, Egypt. Here a good supply of limestone is available and this fertilizer is well suited to the requirements of Egyptian agriculture. The plant is of most modern design. Every important detail was calculated precisely before a foot of earth was turned on the 1,350 acres which this project covers. A similar project, nearly completed, will produce 75,000 tons of ammonium sulfate for fertilizer in Mexico, and others of equal importance are projected in countries where soil depletion is reducing crops.

These chemical plants will contribute greatly to alleviate the food shortage which exists in many parts of the world. Therefore it seems certain that at least one of the Four Horsemen of the Apocalypse soon shall ride the earth no more; the specter of famine need no longer haunt mankind. Then too, the dread Horseman of disease and pestilence is yielding fast; and perhaps, he who rides the blood red horse shall also fall. And even the haggard rider on the pale horse has been forced to assign more years to man, thanks to science and engineering.

(From For Instance, published by American Cyanamid Company, New York.)

NEW LIMONITE PLANT

Mr. James Orr is operating a pilot plant at Scappoose, Oregon, designed to activate limonite used in desulfurizing manufactured gas. Limonite mined from a deposit located about 2 miles west of Scappoose is being used. A considerably larger plant is now being built by Mr. Orr at the Scappoose location to replace the pilot plant. Grinding equipment and air separators are already in place. When completed the plant will have excess grinding capacity for work other than limonite activation.
