

THE ORE.-BIN

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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.

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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.

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#### 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.

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#### 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 Cr<sub>2</sub>O<sub>3</sub>, 3 to 1 chrome-iron ratio, \$37.50; 48 percent Cr<sub>2</sub>O<sub>3</sub>, 2.8 to 1 chrome-iron ratio, \$35; South African, 48 percent Cr<sub>2</sub>O<sub>3</sub>, no ratio, \$26; Turkish, 48 percent Cr<sub>2</sub>O<sub>3</sub>, 3 to 1 chrome-iron ratio, \$38-39; Brazilian, 44 percent Cr<sub>2</sub>O<sub>3</sub>, 2.5 to 1 chrome-iron ratio, lump, \$32; domestic, 48 percent Cr<sub>2</sub>O<sub>3</sub>, 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 WO<sub>3</sub> for ore of known good analysis, Chinese duty paid New York, \$17.50-18.00; Brazilian, Bolivian, etc., duty paid, same price.

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#### 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.

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#### 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.

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#### 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.

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#### 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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