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HISTORICAL NOTES ON THE STANDARD MINE, GRANT COUNTY, OREGON

By
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It is believed that few persons are aware Oregon once produced and exported cobalt ore. The Standard Mine of Grant County was the producing property, and the ore was shipped to Europe at the turn of the century. In view of present-day demand for cobalt, these historical notes on the Standard Mine are of special interest.

Cobalt is a relatively rare element in the earth's crust, making up only about 0.001 percent. It is nearly always associated with other metals such as iron, copper, nickel, and gold. As cobalt minerals are seldom found in sufficient quantity to be mined for cobalt alone, production is chiefly a by-product of other metals, mainly copper. Only a small portion of the nation's requirements come from domestic sources, and at the present time the Blackbird district of Idaho is the only United States producer.

Before World War I, cobalt was used chiefly for pigment by the ceramics industry. Recent years have seen a spectacular increase in demand for cobalt for high-temperature alloys, magnets, high-speed steels, and many other uses. At the same time, much progress has been made in metallurgical research on extractive methods for cobalt. The net result is that world production has taken a sharp upward trend.

Ed.

The Standard Mine of Grant County is known as one of the prominent early-day eastern Oregon producers. It is also generally regarded today as a copper-gold property from which interesting specimens of cobalt minerals can be obtained. A fact not commonly known is that the Standard achieved international fame at the turn of the century for its shipments of cobalt ore to Germany. This is documented in the file of mine news clippings presented to the Department by Mrs. H. E. Hendryx (The Ore.-Bin, vol. 17, no. 2, 1955) and it is from these clippings and the Blue Mountain American volumes in the archives of the Oregon Historical Society, Portland, that the following account has been compiled.

The Standard's early history is described in a clipping from the Mining Investor, May 11, 1903, as follows:

". . . it (the Standard Mine) was located back in the 60's by Juneau, a Frenchman, who afterwards explored the coast of Alaska and after whom the town

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of Juneau is named. The Standard was worked from the surface in those early days at a profit. Juneau and associates erected a small smelter and produced a matte which they packed on mules to The Dalles, Oregon, and from there shipped to France by steamer. Juneau and associates sold the property for $10,000; since that time successive owners have worked it periodically but the difficulties to be overcome in transportation have been too great to afford much profit."

A similar account in a clipping from the Blue Mountain American, March 7, 1903, fails to mention Juneau's smelter, but does state that the material shipped to France was "cobalt."

The first reference to the cobalt production made at the turn of the century appears in a clipping from the Blue Mountain American, October 5, 1901, which states: "Several shipments of cobalt ore have been made to Germany, with very good results, and it is believed that this property is the only cobalt mine in the United States."

Another article from the same paper dated October 25, 1902, reports:

"Another shipment of cobalt ore is being prepared by the Standard management for the German people who received the last batch. The foreigners were so well pleased with the ore carrying the cobalt that they are eager to get all possible, and will take it as rapidly as it can be mined and shipped. Before shipment, the cobalt matrix is separated largely as possible from the copper and gold, although much gold goes with the cobalt."

Continued cobalt production is indicated in another Blue Mountain American clipping dated January 17, 1903, in which the Standard is stressed as the "No. 1" property of the Quartzburg district and mention is made that the management has been using the five-stamp mill recently purchased by the Equity Company for concentrating the cobalt ore shipment intended for Germany. A follow-up article in the same paper, January 31, 1903, contains the statement that this "shipment of cobalt concentrates was made on time for the German interests."

The first clue to the value of cobalt at this time appears in a Blue Mountain American article dated March 7, 1903. The article states:

"It was estimated in the basis for the (merger) that there was above $500,000 of ore reasonably in sight in the three properties (Standard, Copper Ridge, and Willie Boy) and an offer of $1.00 a pound f.o.b. the cars at Baker has been made for the cobalt in a 7% concentrate."

This same article also contains the statement, "The cobalt ore from the mine took first prize where ever exhibited in international expositions, and it was at Buffalo that the German syndicate became aware of the Standard's rare metal."

At this point the Hendryx records are incomplete due to partial loss in the Sumpter Fire and recourse was made to the Oregon Historical Society archives. Several additional references to the cobalt phase of the Standard's production were found there and selected items are summarized in the following paragraphs.

Blue Mountain American, August 22, 1903. A full-page ad for the Killen, Warner, Stewart Company re Standard Mine investment recounts the early history and describes two cobalt-gold shipments to Germany as follows:

"High grade cobalt-gold ores were shipped to Germany with the following results:

Koenigliches Blaufarben Werk, Germany
No. 1-Gold, 8 oz; silver, 10 oz; copper, 25.7%; cobalt, 4.87%;
Total value per ton---$334.50

No. 2-Gold, 4.5 oz.; copper, 3%; nickel, 0.5%; cobalt, 11%;
Total value per ton---$43.90."

The value listed in the No. 2 shipment is undoubtedly a misprint as the values are described as "representative of the shipping high-grade copper and cobalt ores."

Blue Mountain American, December 31, 1904. This article mentions a logging contract let by the company and the installation of a sawmill for timber for a proposed reduction plant. It also reports underground development progress and describes a car of ore for mill test purposes as "about ready" for shipment. Of interest, with respect to cobalt, is a statement that (1) the Lewis and Clark Expedition was considering a special cobalt ore exhibit, and (2) the following quotation credited to Manager H. H. Nicholson:

> "From the three shoots that have been opened on the lower level of the Standard, and with a concentrating plant such as we expect to install in due time, I could produce for a considerable period from three to five tons of a high-grade cobalt concentrate a day. The magnitude of the product amazes the German dealers in cobalt. They do not believe such a body of cobalt has ever been found. When they come to consider one to five tons of cobalt each day for several months, they are bewildered. Hence, I have been compelled to proceed along original lines of work in marketing the cobalt product of our mine."

Blue Mountain American, December 9, 1905. Under the headline "Standard Mill Will Be Installed At Once" is the information that the property had been visited by J. F. Traylor, "one of Denver's best known millwrights"; that the plant is to be of 50-ton capacity, but so constructed as to be enlarged to 150 tons; that concentration in "simplest form" is to be employed with the flow sheet including an "ore breaker," Elspass mill, four Wilfley tables, and two slimers. The gold-copper concentrate production is described as scheduled for shipment to the Sumpter Smelter and the cobalt concentrate to either a New York or German firm.

Blue Mountain American, August 4, 1906. Thomas A. Edison is named as the holder of what is described as "a long term contract" for cobalt output according to an announcement by the Standard Company president, D. M. Campbell.

Blue Mountain American, December 15, 1906. Mill capacity is described as increased to 100 tons daily by addition of three Allison-Chalmers rollers, and Campbell is again quoted on the subject of the Edison contract as follows:

> "While I was east recently, I had a long conversation with Thomas A. Edison. . . . He owns two cobalt mines. . . , one in Canada and another in Tennessee, but he told me that the separation was much more difficult than from our mine. He is . . . anxious to get at every available supply. I have contracted to deliver him thirty tons a month after the first of the year."

Press articles on various other aspects of the Standard Mine's activity continue to appear until February 1908 at which time the manager is reported to have been seriously hurt by a fall into the water wheel. These later articles contain no additional reference to the mine's cobalt production, however, although it is a matter of record that many shipments of copper-gold concentrates were made to the Sumpter Smelter through the year 1907.

How much cobalt was delivered on the Edison contract during this period is not known, but a statement in the Standard Mine report in U.S. Geological Survey Bulletin 846A indicates that at least some cobalt was delivered to the Edison Laboratories during that time. In any event it is evident from the records just cited that shipments of the Standard's cobalt ores and concentrates were made to foreign outlets on several different occasions during the property's early history, with possible later shipments to the Edison Laboratory in this country.

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STRATIGRAPHIC DRILLING PROGRAM
SUNRAY MID-CONTINENT OIL COMPANY
Multnomah County, Oregon, August-September 1956

Permit No.	Lease	Core hole No.	S. T. R.	Location	Elevation	Lessee
S 1	Lee	1	SW¼ 12, 2 N., 2 W.	3176.52' S., 584.76' E. NW cor. sec. 12	255.0'	H. H. Lee NW St. Helens Road Burlington, Oregon
S 2	Kappler	1	NW¼ 12, 2 N., 2 W.	1716.52' S., 949.16' E. NW cor. sec. 12	196.8'	Ralph & Helen Kappler Mulino, Oregon
S 3	Kappler	2	NW¼ 12, 2 N., 2 W.	1844.84' S., 114.76' E. NW cor. sec. 12	257.1'	Ralph & Helen Kappler Mulino, Oregon
S 4	Kappler	4	SE¼ 2, 2 N., 2 W.	36.11' N., 220.57'W. NW cor. sec. 12	277.3'	Ralph & Helen Kappler Mulino, Oregon
S 5	Kappler	3	NE¼ 11, 2 N., 2 W.	2137.90' S., 671.58' W. NW cor. sec. 12	393.4'	Ralph & Helen Kappler Mulino, Oregon
S 6	Gardner (not drilled)	1	SW¼ 12, 2 N., 2 W.	3989.47' S., 1995.20' E. NW cor. sec. 12	91.0'	Carl W. Gardner 8016 N. Lombard St. Portland, Oregon
S 7	Gault	1	SW¼ 12, 2 N., 2 W.	4468.21' S., 1218.02' E. NW cor. sec. 12	129.9'	John Gault 6925 N.E. Garfield Ave Portland, Oregon
S 8	Austin	1	SE¼ 11, 2 N., 2 W.	4399.83' S., 185.69' W. NW cor. sec. 12	268.6'	C. M. Austin Route 1, Box 191 Portland 1, Oregon
S 9	Kappler	5	NW¼ 12, 2 N., 2 W.	629.92' S., 580.34' E. NW cor. sec. 12	184.5'	Ralph & Helen Kappler Mulino, Oregon
S 10	Austin	2	SE¼ 11, 2 N., 2 W.	477.25' S., 1251.08' W. NW cor. sec. 12	357.7'	C. M. Austin Route 1, Box 191 Portland 1, Oregon

Amended and official copy.

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U.S. BUREAU OF MINES REPORTS ON JOHN DAY CHROME ORE

A recent Bureau of Mines report shows that low-grade chrome ore from the John Day area of Grant County, Oregon, can be smelted to yield ferrochrome-silicon, used as an alloying metal in steel making or blended with magnesite to produce refractory brick. Besides giving the results of its research, the report describes three deposits in the area - the Iron King, Chambers, and Dry Camp - where several years ago the Bureau outlined an estimated 208,000 tons of ore averaging 22 percent chromic oxide. Less than 1000 tons have been mined, as the two largest deposits are submarginal under the present-day domestic price and consequently offer no incentive to develop. While demonstrating the technical feasibility of two processes for using the John Day ore, the report notes that the economics are yet to be determined.

Results of the research are published in Report of Investigations 5238, "Exploration and Utilization Studies of John Day Chromites, Oregon," by R. J. Hundhausen and others. The publication may be obtained free of charge from the U.S. Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pennsylvania.

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PORTLAND AREA WATER-RESOURCES REPORT AVAILABLE

The U.S. Geological Survey has just issued as Circular 372, "Water Resources of the Portland, Oregon, and Vancouver, Washington, Area." The report is one of a series concerning the water resources and present water utilization of selected industrial areas of national importance. It may be obtained free of charge from the U.S. Geological Survey, Washington 25, D.C.

The area considered in the report includes nearly all of Multnomah and Washington counties and parts of Clackamas, Columbia, and Yamhill counties in Oregon, and all of Clark County and part of Cowlitz County in Washington. The report presents streamflow data, including information on magnitude and frequency of floods, quantity and quality of ground-water supplies, and chemical quality and other data on public water supplies. A brief review of the geology of the area is also given. A geologic map accompanies the report. The map is a compilation of existing geologic maps supplemented by recent field investigations by the Survey.

According to the report, the water supply available to the Portland-Vancouver area exceeds requirements for any foreseeable industrial expansion. Both surface-water and ground-water sources yield, with few exceptions, water of satisfactory quality for most uses. Water from the Columbia River contains sufficient dissolved solids to be moderately hard, whereas water from tributary streams is very soft. Ground-water supplies are generally of good quality, but tend to be harder and more mineralized than the surface water. A study of the water-bearing properties of the geologic formations in the area reveals that formations older than Columbia River basalt are generally nonpermeable (Eocene volcanic rocks) or yield saline water (Tertiary marine sediments). Columbia River basalt, Troutdale gravels, and Pleistocene and Recent alluvium are the most important sources of ground water in the area. A map of the major ground-water areas is also included.

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DOMESTIC METAL PRICES

From E&MJ Metal and Mineral Markets, September 20, 1956

Copper - 39.510 cents per pound, refinery (domestic average).
Lead - 16 cents per pound New York.
Zinc - 13½ cents per pound East St. Louis.
Quicksilver - $255-257 per 76-pound flask New York.
Silver - (foreign) 90 3/4 cents per ounce New York; (domestic) 90 1/2 cents government price.
Aluminum - per pound f.o.b. shipping point (freight allowed) 30-pound ingot 99+ percent, 27.1 cents per pound; in pigs, 25 cents.
Antimony - 99½ percent grade, domestic, bulk, Laredo, 33 cents per pound.
Bismuth - $2.25 per pound in ton lots.
Cadmium - delivered, $1.70 per pound.
Cobalt - per pound in 500- to 600-pound containers, $2.60.
Cobalt ore - per pound of cobalt contained f.o.b. Cobalt, Ontario, 9 percent grade, $1.30; 12 percent, $1.60.
Gallium - per gram in 1000-gram lots, $3.00.
Germanium - per gram, 1000 gram lots, 1st reduction 48½ cents.
Iridium - per ounce troy $100-110.
Lithium - per pound 98 percent $11-14.
Nickel - per pound electrolytic cathodes f.o.b. Port Colborne, Ontario, 64½ cents duty included.
Osmium - per ounce troy $80-100.

Palladium - per ounce troy $23-24.
Platinum - per ounce troy $103-108.
Selenium - per pound, commercial grade, $13.50 (producer's price).
Titanium - per pound, grade A-1, 99.3+ percent, maximum .3 percent iron, $3.00.
Titanium ore - per gross ton, ilmenite 59.5 percent TiO_2 f.o.b. Atlantic Seaboard $26.25; rutile per pound, minimum 94 percent, concentrate 10-15 cents.
Tungsten - per pound 98.8 percent, minimum 1,000-pound lots, $4.50.
Zirconium - per pound, sponge, $10.

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OREGON MINING NEWS

The Sunshine Mining Company, Kellogg, Idaho, has leased the Columbia, Tabor Fraction, E & E, North Pole, and Villiard mines in the old mining camp of Bourne, Grant County, Oregon. These are quartz-gold properties of early-date note and their consolidation into a group affords control over an important section of the lode which traverses all properties. Although several attempts have been made to reactivate various of these properties during the past four decades, little development work of significance has been accomplished, nor have the old workings ever been fully reopened for examination. As a result, the task of appraising the present consolidation will entail an extensive amount of rehabilitation work before new exploratory development can be made. Sunshine has had the properties under preliminary examination for several months and the job of reopening certain portions of the old workings is now under way. Mr. Harry Bowyer is foreman and 8 men are currently employed.

The discovery of lode gold in the vicinity of Bourne followed the discovery of placer gold in 1861 at Griffin Gulch, a tributary of Powder River a few miles southwest of Baker City. Early in 1862 the rich Auburn placers were discovered. From Auburn, which within a year contained 5,000 inhabitants, exploring parties discovered the placers of Sumpter, Mormon Basin, and Rye Valley in Oregon and the Boise Basin and Owyhee mines in Idaho. By 1864 practically all the mining districts of eastern Oregon were known. In 1889 lode mining came to the fore in eastern Oregon and several of the Bourne area mines were major operations.

The North Pole - Columbia lode, along which the Columbia, Golconda, Tabor Fraction, E & E, North Pole, South Pole, and Villiard mines are located, can be traced for nearly 6 miles and is probably the most extensive gold lode in northeastern Oregon. During the early period of operation and up until 1916 when the Columbia ceased operations, most all properties now held in the present consolidation were operated independently, each with a separate capitalization, management, and mill. Mining practices and efficiencies of operation varried between properties. Little was done during this period in the way of preparing systematic assay maps or mill statistics, and many of the records that were kept have since been lost. It is impossible to present a comprehensive account of these operations today, but an informative report prepared by Swartley (The Mineral Resources of Oregon, Vol. 2, No. 4, December 1916) and based on the then available records, credits the entire lode with a production of "somewhat in excess of $8,000,000, estimated to January 1st, 1915." This same report further states that tailings losses for the entire lode were around $4,000,000 (based on a 90-percent recovery) due to the inefficiencies of the primitive mills and milling practices then in use. The combined milling efficiences of the existing mills "from beginning to end" is given as "not exceeding 67 percent."

The Arentz-Comstock Mining Venture, 807 First Security Building, Salt Lake City, Utah, is now completing construction of a 100-ton mill on the Bretz cinnabar mine in southern Malheur County. Important reserves of new ore were developed by drilling on the Bretz during the past two years, first by the U.S. Mercury Company and later by the Shawano Corporation. The present plant is being built on an operational agreement between the Arentz-Comstock Company and the Shawano Company. John Ruiz, McDermitt, Nevada, is owner of many of the claims. The Bretz was a notable producer during World War II. The flow sheet calls for flotation of the ore followed by batch retorting of the float concentrates in two "D" retorts. Most of the basic machinery is now in place and several of the buildings are erected. Final completion of the plant is scheduled for mid-October. Mining will be done by open-pit methods and a large stockpile of ore has already been recovered during the course of digging the initial pit excavations. Access road from McDermitt to the property is now being gravelled on a cooperative basis by the company and Malheur County. Mr. Roy Hickman is acting superintendent of operations for the company and Mr. Paul M. Sorensen is engineering representative for the Comstock interests.

Mr. A. C. Van Galder, president of the Oregon Drilling and Mining Company, Inc., of Jacksonville, Oregon, reports that his company has leased or optioned several quicksilver prospects in the Fields - Steens Mountain area of Harney County. Some drilling has already been done and more is scheduled for this season and possibly next spring.

Messrs. Chester and E. W. Kubli, Jacksonville, have recently acquired the Steamboat Cinnabar No. 1 property located in sec. 18, T. 40 S., R. 4 W., Jackson County. The upper claims have been reopened and work is progressing on two lower tunnels. Plans are to put in a small furnace. The Steamboat Cinnabar, formerly known as the Curl prospect, includes three claims and had minor production during World War I.

The Chemical Lime Company, Baker, is engaged in development of its high purity limestone which is situated at the head of Marble Creek, Baker County. Preliminary quarry benching is already well advanced and plant construction is underway. The operation should be ready for production in the forepart of 1957. Mr. Robert G. Veraeke is in charge and a construction crew of about 15 men is currently employed.

O.K. Coster and Carl Wikstrom have constructed a small mill at their Rock Creek chrome mine in the SW¼ NE¼ sec. 33, T. 33 S., R. 12 W., in the extreme southwest corner of Coos County. The mill consists of a 5-ton Gibson elliptic roll gold mill, a 12 by 18 Denver duplex jig, and a 12-ton Gibson table. The mill is powered by two small gasoline engines. It has a capacity of 3/4 to 1 ton of concentrates in 8 hours. A zone 1 to 2½ feet wide of crushed chromite from a landslide area is being mined.

Shipments of chrome ore are reported to have been made by Mr. Gardner from the Ward mine and Mr. R. C. Beggs from the Red Hill mine. Both properties are situated in Grant County east of John Day. Shipments are understood to be continuing with regularity from the Haggard & New mine, also in the John Day country.

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GOVERNOR APPOINTS REPRESENTATIVES

Elmo Smith, Governor of the State of Oregon, has appointed the following as his representatives to the Western Governors Mining Advisory Council meeting to be held in Los Angeles October 1 in conjunction with the American Mining Congress meeting:

Fay I. Bristol, President, Oregon Mining Association, and President, Bristol Silica Company, Rogue River, Oregon.
Hollis M. Dole, Director, State of Oregon Department of Geology and Mineral Industries, Portland, Oregon.
Austin Dunn, Member of Governing Board of State of Oregon Department of Geology and Mineral Industries, Baker, Oregon.
Fay W. Libbey, Consulting Mining Engineer, Portland, Oregon.
Earl Mollard, Superintendent, Hanna Nickel Smelting Company, Riddle, Oregon.

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LAND DETERMINATION AREAS ANNOUNCED

The U.S. Forest Service has notified the Department that it has begun examination of an area in southern Union County southwest of La Grande for determination of surface rights under Public Law 167. The district, termed the Woodley area, is at the headwaters of the Grande Ronde River and includes parts or all of T. 6 S., Rs. 35 and 36 E.

The Bureau of Land Management states that it will begin examination of O and C and public domain lands in Tps. 29 and 30 S., R. 2 W. The O and C lands will be examined under provisions of the law that have been in effect prior to passage of Public Law 167. The Bureau is completing their examinations in Tps. 37, 38, and 39 S., Rs. 5 and 6 W. Examinations in T. 34 S., Rs. 5 and 6 W. have been completed and advertising in the local newspapers will begin shortly.

A summary of all land determination areas by the U.S. Forest Service and the Bureau of Land Management, together with their status, will be printed in the October issue of The Ore.-Bin.

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DEPARTMENT GOVERNING BOARD MEETS

The Governing Board of the State of Oregon Department of Geology and Mineral Industries held meetings August 17-18 and September 24. The August meeting was held in Baker and was called principally to develop the Department's budget for the 1957-1959 biennium. The September 24 meeting was held in Portland for the purpose of discussing land withdrawals and routine business. Members of the Governing Board are: Mason L. Bingham, Chairman, Portland; Niel R. Allen, Grants Pass; and Austin Dunn, Baker.

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NEW DRILLING PERMIT

State Drilling Permit No. 19 was issued to Oroco Oil and Gas Company, Payette, Idaho, September 27, 1956, for a test drilling in the NE¼ SE¼ sec. 19, T. 16 S., R. 46 E., Malheur County, Oregon. The lessor is Floyd L. McBride, Jamieson, Oregon, and the test is to be called the McBride No. 1.

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