October 1949 Portland, Oregon

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OREGON'S 1948 MINERAL PRODUCTION SHOWS BIG INCREASE

Total value of Oregon's mineral production in 1948 amounted to $24,980,000 according to a preliminary estimate of the U. S. Bureau of Mines. This is an increase of more than 55 percent over the value for 1947. The increase is especially remarkable since metallic mineral production was and still is at a very low ebb because of the severe decline in gold mining during and since the war. Value of metallic mineral production in 1948 was about $630,000. Thus the value of nonmetallics in 1948 was more than 97 percent of the total. This upsurge in nonmetallics production is directly due to the increase in construction activity since the war, reaching a high point in 1948. The value of Oregon's nonmetallics production has nearly tripled since 1945.

Nonmetallic minerals in general are low-priced products and must be consumed near the point of production so that production of nonmetallics usually depends on population. As population increases, demand for nonmetallics increases. To a certain extent the increase in Oregon's population is reflected in the large increase in production of nonmetallic minerals.

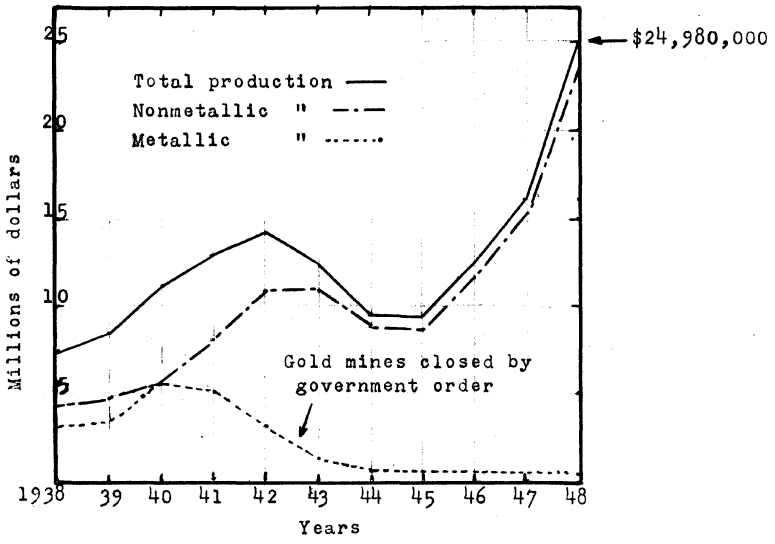
A break-down of mineral production as well as a graph showing production for the past 10 years follows:

Mineral Production of Oregon in 1948 1/

		Quantity	Value
Chromite	short tons	3,345	2/
Clay, raw	do ...	172,168	$ 128,586
Copper	do ...	2	868
Gold	troy ounces	14,611	511,385
Lead	short tons	7	2,506
Mercury	flasks	1,351	103,338
Pumice	short tons	106,277	307,274
Sand and gravel	do ...	8,384,755	10,628,889
Silver	troy ounces	13,596	12,305
Stone	short tons	3,682,420	5,733,658
Other: Cement, chromite, diatomite, heavy clay products, perlite, and quartz		----	7,551,000
Total			$24,980,000

1/ Preliminary.
2/ Value included with "Other."

Graph Showing Oregon's Mineral Production 1938 to 1948



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THE MINERALOGY AND ORIGIN OF JOSEPHINITE*

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ABSTRACT

Josephinite is a naturally-occurring, terrestrial nickel-iron alloy, found along Josephine Creek, Josephine County, Oregon, and associated with stream gravels as water-worn pebbles, sometimes ellipsoidal in shape. A group of more than 75 specimens examined gave the following physical and chemical data: average sp. gr., 5.66; hardness, 4.5 to 5.0; streak, lead-gray; luster, metallic; fracture, hackly; malleable, sectile; strongly magnetic; opaque. The group of specimens examined ran as follows: largest dimension, 3.2 mm. to 31.4 mm. The chemical formula for josephinite is written usually as Fe_2Ni_5, altho josephinite contains also a little cobalt, phosphorus, and sulfur.

Josephinite is a naturally-occurring, terrestrial nickel-iron alloy, found associated with stream gravels along Josephine Creek, Josephine County, Oregon. It was first reported by W. H. Melville in The American Journal of Science, 43, 509, 1892. Josephinite is formed probably by the magmatic separation from peridotite magmas; these are later altered by hydration to form serpentine. Josephinite is found associated with chromite, magnetite, gold silver, and platinum, in stream gravels; because of its high specific gravity, it tends to collect at bedrock, together with the aforementioned minerals, where it may be recovered by sluicing. For many years mineralogists have assumed that josephinite was derived from the serpentine thru which Josephine Creek has cut its channel; actual samples have never previously been described, however, in which josephinite was found adhering to its serpentine matrix.

*(Altho this paper is, strictly speaking, on a mineralogical rather than a meteoritical subject, it is here included because of the similarity in chemical composition between josephinite and nickel-rich ataxites (cl. = D_1), and because josephinite itself has occasionally been suspected of being meteoritic in nature.-F.C.L.)

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From this lack of evidence, the idea that josephinite might be of meteoritic origin was obtained. Some investigators have thought that perhaps blebs of molten metal, showered from a large meteorite, might have been responsible for its occurrence; others have reasoned that part of a large meteorite, perhaps the missing Port Orford, Curry County, Oregon, (C.N. = 1245,428), pallasite disintegrated, covering the area with thousands of small metallic fragments, later to be washed down and to be deposited in the Josephine gravels.

In the summer of 1948, I proposed to Dr. J. Hugh Pruett, astronomer of the University of Oregon, that I should make a study of josephinite and attempt to prove definitely whether it is of terrestrial origin. With the kind coöperation of a number of miners in the Kerby area, I was able to secure about 75 specimens of this mineral; in addition to studying these specimens, I made an extensive investigation of the Josephine Creek area, paying particular attention to the stream gravels. In the course of this work, I brought to light several fine specimens of josephinite with serpentine matrix adhering.

The accompanying data (in Table 1) resulted from a laboratory examination of this material. From these data it will be noted that my observations warrant the suggestion that a change should be made in the reported specific gravity and hardness of josephinite. The present reported specific gravity is 6.20, and the hardness, 5.0. A careful check of the specific gravity of the 15 specimens listed in Table 1 yields an average specific gravity of 5.66. The specific gravity ranges from 4.43 to 6.94. The lower specific gravities are due probably to oxidation products. The hardness ranges from 4.5 to 5.0.

TABLE 1. PHYSICAL PROPERTIES OF JOSEPHINITE

Specimen No.	Specific Gravity	Specimen No.	Specific Gravity
1	5.92	9	5.96
2	4.43	10	5.32
3	4.78	11	5.43
4	5.17	12	5.01
5	5.53	13	6.53
6	6.80	14	6.94
7	5.66	15	5.43
8	6.91		

Average sp. gr. of specimens 1 to 15 inclusive: 5.66; lowest sp. gr. observed: 4.43; highest sp. gr. observed: 6.94. Streak, lead-gray; luster, metallic; fracture, hackly; malleable, sectile; strongly magnetic; hardness, 4.5-5.0.

Josephinite is found occurring in stream gravels as water-worn pebbles, some of which are ellipsoidal in shape. A group of more than 75 specimens examined ran as follows: largest dimension, 3.2 mm. to 31.4 mm. The mineral has been reported as occurring more rarely in the form of much larger specimens.

TABLE 2. CHEMICAL PROPERTIES OF JOSEPHINITE

(The chemical formula is written usually as Fe_2Ni_5 or $FeNi_3$.)

$FeNi_3$: % of { Fe = 27.57, Ni = 72.43

Fe_2Ni_5: % of { Fe = 24.08, Ni = 75.92

	Analysis*
Fe	25.24 %
Ni	74.17
Co	0.46
Cu	Nil
P	0.04
S	0.09
SiO_2	Nil
Total	100 %

Josephinite is soluble in NHO_3; it gives a scarlet precipitate with dimethylglyoxime reagent after the removal of the iron by precipitation with NH_4OH.

* From F. S. Dana's System of Mineralogy, 7th Ed., 1, 117, 1944.

A BRILLIANT DISCOVERY

Titanium dioxide is a white powder used in making the best white paints, paper, plastics and even Milady's face powder. In recent years research has provided new and better varieties and the quest continues for still higher quality. It took a dramatic turn recently when scientists decided they could get better optical measurements if they had large crystals instead of the fine white powder. They produced the large crystals and were rewarded with a brilliant discovery; they had gems more brilliant than diamonds. The new "Titania" gems can be produced in clear crystals as well as blue and amber variations. Although more brilliant than the diamond, they are not so hard, therefore not so resistant to wear.

It may seem strange that such a large difference in physical properties is obtained simply by changing the particle size. However, this is a very important factor and considerable research has been done to determine the optimum size of the tiny particles of titanium dioxide so that they will have maximum whiteness. The best size for whiteness and opacity is about 1/125,000 of an inch across each particle. With the "Titania" gems the effort will be in the opposite direction; it will be desirable to have the crystals as large as possible.

Many materials show a similar change when produced in a large crystalline condition instead of very small crystals. We like our table salt as a fine white powder but the infrared spectroscopist uses it as a clear transparent crystalline plate like glass. He makes little containers with it to hold the organic liquids he examines with infrared radiation. Ordinary glass containers would not allow the radiation to pass through.

Usually we think of glass as a clear transparent material but if we grind it to a fine powder it is white like salt or titanium dioxide. But, if we replace the titanium dioxide in the white enamel with the powdered glass the enamel loses its whiteness completely. The physicist explains this by saying that titanium dioxide has a very high refractive index. This also explains its greater brilliance than the diamond; for titanium dioxide the refractive index is 2.70 and it is only 2.41 for the diamond. From high school physics we remember, probably, that the refractive index is a measure of the extent to which a material will refract or bend the light as it passes through it.

A few years ago the only type of titanium dioxide available had the crystal structure of anatase with an effective refractive index of 2.55. By rearrangement of the atoms in the crystal, the rutile structure was developed having a refractive index of 2.70 with a consequent increase in tinting strength and hiding power. No thought was given at that time to making gems more brilliant than the diamond, the object was to make white paints and enamels more opaque. It was highly successful in this respect as the paint manufacturer well knows and also the painter and householder when he applies the improved paint. The consumers of titanium dioxide will be glad to know that it is now more freely available, thanks to increased production facilities and improvements in processing.

(From "For Instance" No. 49, 1949, published by American Cyanamid Company, New York, N.Y.)

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PRODUCING TUFF BUILDING BLOCKS

Tuff Stone Company, Inc., of Portland is currently producing sawed blocks of volcanic tuff at a quarry located 6 miles northeast of Sublimity in Marion County, Oregon. William R. Singletary and Fred M. Franklin head the operation which is cutting 8 by 8 by 16-inch blocks from the quarry face. The rock has the formational name of Fern Ridge Tuffs.

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IT PAYS TO ADVERTISE

At the cost of a sign posted along the highway, one enterprising individual has succeeded in clearing his land of worthless boulders distributed in large numbers over his fields. The sign, which can be seen on U.S. Highway 30 several miles east of Pendleton, offers "petrified watermelons" free for the hauling away. The "melons" are actually rounded, elongate basalt boulders, but tourists have hauled away 500 tons of them, the owner reports.

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DO YOU OWN SOME GOLD?

In general, persons are required by law to have a government license in order to possess or deal in gold. Exceptions are given below as contained in the Gold Reserve Act of 1934 as amended to April 15, 1942.

Natural gold may be held, bought, sold, and transported within the United States without the necessity of obtaining a government license. Natural gold is defined by the Treasury as gold recovered from natural sources which has not been melted, smelted, or refined or otherwise treated by heating or by a chemical or electrical process. Thus the only gold which would come under the Treasury definition and which may be bought and sold in this country without any strings attached is metallic gold obtained from a natural source by mechanical means only - that is by such methods as sorting, washing, sluicing, screening, and tabling.

Gold obtained in the form of sponge, which results from retorting gold amalgamated with mercury, may be held and transported without a license by the person retorting the amalgam, provided that the person shall hold at any one time an amount not in excess of 200 troy ounces of fine gold. The person holding such gold may dispose of it only to the United States mint or to a person holding the proper government license.

Gold coin of value to coin collectors may be acquired, held, transported within the United States, or imported without the necessity of holding a license. However, such coin may not be exported without a license from the Director of the Mint. There is a special provision concerning quarter eagles ($2.50 pieces). These may form a part of a collection for historical, scientific, or numismatic purposes, except that such collections may not have more than four quarter eagles of the same date and design struck by the same mint.

A person engaged in an industry, profession, or art which requires gold for the legitimate conduct of such activities may import unmelted scrap gold and may acquire, hold, melt, and treat gold in any form without a license provided the aggregate amount of such gold does not exceed at any one time 35 troy ounces of fine gold. This gold must be used by the person possessing it in his actual business of fabricating or in his profession or art.

A person may hold at any one time not more than 35 troy ounces of fine gold in the form of unmelted scrap. He may furnish it only in such form to persons authorized by license or otherwise, to acquire unmelted scrap gold, or he may sell it in unmelted form to the United States. Such persons may acquire gold for these purposes only from:

(1) A person duly licensed by the government.
(2) A person authorized under the regulations to hold and dispose of gold without a license.
(3) A United States mint or assay office.

Persons as specified above may not sell or otherwise dispose of gold except as unmelted scrap gold, or fabricated gold, or in metals containing not more than 5 troy ounces per short ton, or gold in its natural state; provided that gold filings, clippings, and the like which result from the legitimate conduct of the work in which the person is engaged may be disposed of in the same form to licensed persons or to the United States.

No person may acquire, hold, transport, melt or treat, or import gold coin or gold derived by any person from gold coin or any gold which has been held in noncompliance with the Act of March 9, 1933, any executive orders or orders of the Secretary of the Treasury issued thereunder.

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EASTERN OREGON MINING NEWS

Andrew Murray and associates report plans to conduct a testing program next spring on potential dredge placer in the vicinity of Greenhorn, Grant County. This plan is the result of preliminary testing recently completed.

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Placer operations conducted throughout the past season by Anthony Brandenthaler on ground in the Virtue Flat area of Baker County, have proved successful. An average of four to five

men have been employed sluicing with water pumped from the old Virtue mine. Operations will be suspended this winter, but a larger capacity pump is to be installed for use during the coming season.

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Dredging operations by Porter & Company will be continued on the present Olive Creek set-up in Grant County for another season. Next season the dredge is to be moved to a property on Crane Creek also in Grant County.

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Kenneth Grabner and Ralph Leonhardy have just completed construction of a small mill at the Thomason mine near Unity, Baker County. This property was opened last year by Leonhardy and Vinson. An estimated 5000 tons of ore is reported to have been milled at that time in the mill at the nearby Bull Run mine. Vinson is no longer connected with the enterprise. Grabner is owner of the Grandview mine which is adjacent to the Thomason claims, and the present plans are eventually to work the Grandview property in conjunction with the Thomason operation.

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OREGON GEOLOGISTS CORNER GEOLOGY JOBS IN NEW MEXICO

John Eliot Allen, formerly geologist with the Oregon Department of Geology and Mineral Industries and later associate professor of geology, Pennsylvania State College, has accepted the position of head of the Department of Geology at the New Mexico School of Mines at Socorro.

Stewart Jones, Oregon State College graduate, who obtained his doctorate in geology at Columbia University, New York City, is assistant professor of geology at the New Mexico School of Mines.

J. Paul Fitzsimmons, formerly geologist with the Oregon Department of Geology and Mineral Industries and the U. S. Geological Survey, who obtained his doctorate at the University of Washington, is now assistant professor of geology at the University of New Mexico at Albuquerque.

Eugene Callaghan, University of Oregon graduate, formerly with the U.S. Geological Survey and later head of the Department of Geology at the University of Indiana, is now Director of the New Mexico Bureau of Mines and Mineral Resources, Socorro.

Philip F. McKinlay, Oregon State College graduate, is a geologist with the New Mexico Bureau of Mines and Mineral Resources.

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GOLD

At a recent press conference, Treasury Secretary Snyder again denied rumors that he will increase the price of gold or that the United States will return to the gold standard. His denial was issued after reporters had queried him about rumors as to a possible gold price change as the result of the devaluation of foreign currencies.

Prompted by the press conference questioning, the Treasury Department issued a formal statement concerning the legal authority to change the gold content of the dollar and the Treasury's price for gold. The statement declared: (1) only an Act of Congress can now alter the statutory gold content of the dollar; (2) the authority of the President to change the gold content of the dollar by executive proclamation expired June 30, 1943; (3) while the Secretary of the Treasury has authority to purchase and sell gold at such rates and upon such terms as he may consider most advantageous to the public interest, his authority in this respect is limited by United States obligations as a member of the Monetary Fund and the Bretton Woods agreement. The statement explained that no official of the United States can propose any change in the par value of the United States dollar to the Fund unless Congress authorizes such action by law.

(From American Mining Congress Bulletin Service, No. 32, October 10, 1949.)

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