

STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES
PORTLAND, OREGON

THE ORE.-BIN

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Permission is granted to reprint information contained herein. Any credit given the Oregon State Department of Geology and Mineral Industries for compiling this information will be appreciated.

* TO ALL EXCHANGE LIBRARIES *
* Announcement is made of the release of "Field *
* Identification of Minerals for Oregon Prospector *
* and Collectors", Bulletin 16, by R. C. *
* Treasurer. Copies of this publication will be *
* mailed from this office about August 10, 1940. *
* If not received within ten days from the above *
* date, advise this office immediately; other- *
* wise, replacement for copies lost in the mail *
* or elsewhere cannot be made. *

IDENTIFICATION OF MINERALS

What are psilomelane and limonite? What are the distinguishing features of cinnabar and hematite? of chromite and manganite? What are the differences between graphite and molybdenite? What minerals have commercial possibilities?

These questions are readily answered in "Field Identification of Minerals for Oregon Prospectors and Collectors", bulletin 16 of the State Department of Geology and Mineral Industries, compiled by Ray C. Treasurer. It is designed to be an elementary reference book containing, as far as possible, the essentials of field identification of minerals by simple physical means only.

A mineral is defined as a "natural inorganic substance which, when pure, has a definite chemical composition, usually a definite crystal form and specific physical properties such as cleavage, fracture, color, hardness, luster, and specific gravity". This bulletin is concerned chiefly with these physical properties. Chemical and blowpipe tests are omitted because they require equipment seldom with the prospector in the field. Prospectors, collectors and recreationists will find this bulletin contains information each desires.

Copies of "Field Identification of Minerals", Bulletin 16, may be purchased for 50¢ at the State Assay Laboratories at Baker and Grants Pass, and at the Portland office.

BONANZA MINES WILL INCREASE CAPACITY

Grading has been finished in preparation for the installation of a third furnace at Bonanza Mines, outstanding Oregon quicksilver producer. This new furnace will be a duplicate of the Gould rotary installed last year. Plant capacity will be thus increased to around 200 tons a day.

PIPELINE FOR COAL.

In line with efforts to reduce transportation costs on low-value commodities such as coal, it has been mentioned that fine- to nut-coal can be mixed with water or other suitable fluid and pumped thru pipelines. Remote deposits may thus be brought into production with pipelines leading to centers of consumption in the same way that oil is pumped hundreds of miles from wells to refineries. Arriving at the pipeline terminal, the coal and liquid could be easily separated and the coal marketed.

GOLD BRICKS!!

Many times most of us have wished we could walk through the Mint and pocket a nice shiny gold brick! But few realize what a load that would be - assuming we could get into the Mint, past the guards both human and mechanical, and out again. The standard Mint bar is larger than a common red building brick - 8 x 4 x 2 $\frac{1}{2}$ inches, but we will use the latter for illustration. The volume of this common brick is 72 cubic inches. Assuming the specific gravity of refined gold to be 19, the brick would weight 49 $\frac{1}{2}$ lbs. avoirdupois or 720 troy ounces. This golden hoard would have a value of better than \$25,000.

During the depression and just before the Gold Act of 1933 was enacted, it was reported that two men were seen walking out of one of Portland's banks with their savings of \$200,000 in money bags. Some men we say! - carrying better than 400 pounds in one trip!!!

NATIONAL DEFENSE

There are, of course, various essential jobs in the program of National Defense outside of service in armed forces. Providing this country with necessary raw materials is one of these jobs, and the required mineral raw materials are perhaps most important. If because of age, training, or some physical disability, one cannot serve in the military or supporting industrial forces, he might, if qualified, do a real service by prospecting for minerals required by the defense program.

The small permanent magnet known as Little Giant made of Alnico - an aluminum-nickel-cobalt alloy - is a powerful magnet; but the Bell Telephone Laboratories have developed a still stronger magnetic alloy. It has been named "Vicalloy"; it contains 6% to 15% vanadium, 30% to 52% iron, and 36% to 62% cobalt. It is said this alloy can be made more powerful than any other commercial magnetic material. It can be drawn into wire, rolled into tape, and machined. It is heat-treated to develop its magnetic properties, so it may be welded to other alloys and then heat-treated.

STRATEGIC MINERALS

There are 33 minerals included in the revised Preparedness Materials List of the Army and Navy Munitions Board. Of these, 9 are classed as strategic, 5 as critical, and 19 as essential. The strategic minerals are so classed because dependence in war must be placed in whole, or in part, on sources outside continental United States. Domestic productions of seven of the strategic minerals in percent of consumption are as follows: tungsten 50%, quicksilver 40%, antimony 10%, manganese 6%, chromium 1%, nickel 0.5%, and tin 0.2%.

PUBLIC - No.667 - 76th CONGRESS.

A bill, carrying appropriation of \$47,500,000 for the purchase of strategic and critical materials, includes \$2,000,000 earmarked for Bureau of Mines' use for the erection of a pilot plant or plants for the beneficiation of manganese ores and production of metallic manganese.

PUBLIC - No.664 - 76th CONGRESS

Another law authorizes R.F.C. (Reconstruction Finance Corporation) to make loans to purchase the capital stock of any corporation for the purpose of producing, acquiring, or carrying strategic and critical materials. This act would also provide funds for the manufacture of supplies and equipment essential to the national defense. In addition, the R.F.C. is authorized to assist in producing such materials. (Mining Journal, July 15, 1940)

The Procurement Division had purchased up to July 1, 1940, the following strategic materials:

<u>Material</u>	<u>Quantity</u>	<u>Cost</u>
Chromium Ore	64,500 Long Tons	\$2,106,250
Manganese	86,500 Long Tons	2,757,868
Quartz Crystals	11,800 Pounds	100,000
Pig Tin	6,124 Short Tons	6,084,828
Tungsten	449 Short Tons	500,944

- The Mining & Contracting Review, July 15, 1940.

IRON ORE

Magnetite iron ore of the Zeballos District on Vancouver Island is dealt with in a preliminary report by John S. Stevenson, British Columbia Department of Mines.

CHROME ORE INVESTIGATIONS

Results of an investigation of the concentrating characteristics of Oregon and Montana chrome ores were given by members of the staff of the U. S. Bureau of Mines Metallurgical Division at the dedication of the Bureau's new experiment station in Salt Lake City on May 21, 1940. (Engineering and Mining Journal, July 1940).

This investigation was undertaken to determine various data in small electric pilot furnaces: (1) chromium recovery, (2) power consumption, and (3) grades of chromium products possible by several electrothermal methods of reduction as applied to domestic high-iron ration chromium ores. Briefly summarized, the conclusions were:

1. Domestic high-iron chromite concentrates, when smelted and reduced with petroleum coke in the Boulder laboratory electric-pilot furnaces, require 2.9 kw.hr. per pound of ferroalloy. The analysis of the product is 54.3 percent chromium, 33.3 percent iron and 6.04 percent carbon. Chromium recovery was of the order of 94 percent.

2. Forty percent of the iron containing only 8 to 10 percent of the chromium, in the high-iron chromite charge, can be selectively reduced and separated from the chromium. This product, containing 75 percent iron, 20 percent chromium, and 2 percent carbon, makes heat-resistant castings.

3. An industrial-size electric furnace for the production of standard ferrochrome from high-iron domestic chromites, should be preferably the standard direct arc type used in steel making. It would be designed to tap from the bottom the high iron-chromium alloy. The molten chromium-enriched slag left in the furnace would then be reduced to standard ferrochrome without transfer and consequent loss of thermal energy.

4. Basic refractories of the chrome-magnesite type can be made from the domestic concentrates which compare favorably with the present commercial basic refractories.

This work has furnished enough data so that further study of slag composition, decarbonization, and possible products, is justified.

Because of stimulation of domestic production in some materials, the Army and Navy Munitions Board recently revised the Preparedness Materials list. Aluminum, optical glass, and wool have been moved from strategic to critical classification; while eight commodities, including cadmium, cryolite, fluorspar, and titanium were changed from critical to essential status. The strategic list now includes the metals antimony, chromium, manganese (ferrograde), mica, nickel, quartz, crystal, quicksilver, tin, and tungsten. The list of critical materials includes the metals and minerals aluminum, asbestos, graphite, platinum, and vanadium.

For interesting and timely information, peruse "Strategic Buying Planned" in Engineering and Mining Journal, July 1940.

MINERAL NOTES

According to Mineral Trade Notes (U. S. Bureau of Mines), July 20, 1940:

Aluminum: Production of bauxite in Yugoslavia declined 60%, due to inadequate transportation facilities to its principal consumer, Germany. However, it is reported an arrangement has been made whereby freight cars carrying bauxite to Germany will return to Yugoslavia loaded with coke.

Chromite: The Turkish Government has authorized the Eti Bank to give financial assistance to chrome producers by advancing funds against ores stored at ports of exportation.

Copper: Cancellation of French contracts with Chilean copper producers would have a catastrophic effect on Chile since copper provides the chief source of Chile's dollar exchange. Italy, unable to obtain Chilean copper, its chief source, has resorted to drastic measures for salvaging copper scrap and copper kitchen utensils. It is said Italy can hope to produce domestically only about 6% of its consumption of primary copper.

Iron and Steel: Germany and Italy are practicing rigid economies in the consumption of steel. Railings not essential to public safety or of historic value, of iron or other metals, are being confiscated.

Lead: A direct result of the war in Europe may be a chemo-electric storage system requiring no lead, if German inventors are successful in developing a storage battery which will dispense with or reduce the demand for lead, nickel, cadmium, and mercury.

Apatite: The concentration of apatite (tricalcium fluophosphate) by the Brazilian Government at Ipanema in an American-equipped plant is proceeding at a rate of 250 tons of ore per day, or 50 tons of concentrate per day. The concentrate will be converted into superphosphate and other fertilizers for Brazilian consumption.

United States Export Licenses: Included in the Presidential Proclamation of July 2, 1940, designating certain materials which may not be exported after

July 5, except when authorized by license, were the metals, ores and mineral products: aluminum, antimony, asbestos, chromium, graphite, manganese, magnesium, mercury, mica, molybdenum, platinum, quartz crystals, tin, tungsten, and vanadium. The Proclamation was designed to curtail the exportation of any military equipment and to insure the United States of adequate stocks.

OREGON EXHIBIT ON TREASURE ISLAND

Maurice Brady, the attendant at the mineral display, reports that during the month of July over 1700 persons stopped at his table to ask specific questions. This figure does not include the thousands of people who were "just looking" and had no questions.

Opal, agate, petrified wood, and black marble specimens are attracting most attention, with specimens of the strategic metal (nickel, chromium, manganese, and quicksilver) ores receiving a smaller share. One of the most frequent comments is "I didn't know they did any mining in Oregon", and a surprising number think the Cascades form the state boundary.

So after visiting the small but comprehensive mineral exhibit, Fair-goers ought to be "Oregon-Mining" minded as well as hep to all the other attractions and features of our state.

DEPARTMENT PERSONNEL CHANGE

Mr. Leslie C. Richards, recently of the U. S. Engineers and formerly with various mining companies in Idaho and Montana, has filled the vacancy caused by the resignation of W. T. Burns, assayer at the State Assay Laboratory at Baker. Mr. Richards, a graduate of O.S.C., comes to the Department with several years of practical assaying, mining, engineering experience. Hugh Lancaster continues as field engineer operating from the Baker office.

28-1 Copper property in southeastern Coos County composed of four unpatented claims. Property developed by 1000 feet of tunnels. Ore averaging \$30 per ton is claimed. Owner will sell on reasonable terms.

W. L. McAboy, administrator, Brockway, Oregon.

Mr. D. E. Decker, 507 N. 19th St. and 341 N. Commercial St., Salem, states he is conducting an assaying school and is giving a course in practical mineralogy. Two nights a week are devoted to these courses. He states that he also has a course in photography which is given three nights a week.

Var-Lac-Oil Chemical Co. of 116 Broad St., New York City, buys ores, minerals, concentrates, residues, sludges, fume dust, and by-product materials containing most of the metallic elements. Of particular interest are ores of chromium, tungsten, vanadium, titanium, etc.

H. L. Coombs, 1765 W. 25th St., Los Angeles, states he "will contract for large tonnage of manganese, tungsten, chromium, antimony, quicksilver, vanadium, or beryllium ores. Will also purchase desirable properties, or a well-developed gold property".

(The following is a simplified claim location notice advocated by the Washington State Chamber of Mines. If locators would put all distances and directions on the claim drawing, the usually confusing volume of descriptive matter on the common form would thus be eliminated).

Locaters shall indicate on attached claim drawing approximate distances and general direction of Discovery from one or more natural features in adjacent territory. An arrow should be drawn to indicate North.

Distance	Discovery Line	
	Distance	Distance

Locaters shall mark point of discovery on Discovery Line and indicate distance of discovery from each end line and how all corners are marked with the direction of each from Discovery Line which shall correspond with the vein formation.

NEW APPROVED FORM

MINING CLAIM LOCATION NOTICE

Name of Claim _____
 Date of Location _____
 Name of District _____
 Name of County _____
 Name of State _____

Notice is hereby given that the undersigned have complied with the Federal and State Acts governing the location of mineralized land and have this day of above date filed on the area described by attached diagram. All right and title to any minerals in said area is claimed by the locaters.

Signed _____
 Partners _____
 Witness _____

OREGON
MINERAL LOCALITIES MAP

0 10 20 30 40 50 60 MILES
1939

REFRACTORY CLAY
POTTERY CLAY
COAL
IRON ORE
ROAD METAL
CLAYS
SAND & GRAVEL
LIMESTONE
GOLD SILVER LEAD ZINC
QUICKSILVER
PUMICE
OBSIDIAN
SEMI-PRECIOUS GEMS
HORSE HEAVEN MINES
DIATOMITE
CHROMITE
COBALT
MONUMENTAL STONE
ASBESTOS
LIMESTONE
TUNGSTEN MOLYBDENUM
MARBLE
CORNUCOPIA MINES
COPPER
ANTIMONY
SUMPTER VALLEY DREDGE
GOLD & SILVER, LODE & PLACER
BORAX
SALINES
GOLD
COPPER
NICKEL
MANGANESE
SILICA
LITHIA WATER
MONUMENTAL GRANITE
DIATOMITE

Columbia Co.
Washington Co.
Multnomah Co.
Hood River Co.
Sherman Co.
Gilliam Co.
Morrow Co.
Union Co.
Walla Walla Co.
Columbia Co.
Yamhill Co.
Marion Co.
Polk Co.
Lincoln Co.
Benton Co.
Linn Co.
Deschutes Co.
Lane Co.
Douglas Co.
Josephine Co.
Jackson Co.
Klamath Co.
Grant Co.
Crook Co.
Harney Co.
Malheur Co.

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