STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

PORTLAND, OREGON

THE ORE.-BIN

VOL. 3 NO. 1 PORTLAND, OREGON January 1941

TO ALL EXCHANGE LIBRARIES

Announcement is made of the release of the following departmental publications:

BULLETIN No. 14-C, Volume I, "Oregon Metal Mines Handbook: Southwest Oregon--Coos, Curry, and Douglas Counties".

G.M.I. SHORT PAPER No. 4, "Beneficiation by Flotation of Willamette Valley Limestones of Oregon".

Copies of these publications were mailed from this office during the past month. If not received within ten days, advise this office immediately; otherwise replacement for copies lost in the mail or elsewhere cannot be made.

DEPARTMENTAL REPORTS

During December, the Department issued two reports as follows:

Bulletin #14-C, Vol. I, is the second volume in the mining catalog series to be published. This bulletin describes 194 mining properties in Coos, Curry, and Douglas Counties of southwestern Oregon. In addition to the description of the individual mining properties, the volume gives in condensed form information concerning the general and economic geology of the State, together with the value of mineral production of the counties concerned. Also an areal map - 34 inches by 35 inches in size - which outlines boundaries of mining districts in southwestern Oregon, an alphabetical list of properties, and a bibliography are included.

G.M.I. Short Paper #4, "Beneficiation by Flotation of Willamette Valley Limestone of Oregon", by J. B. Clemmer and B. H. Clemmons, metallurgists of the United States Bureau of Mines, gives the result of flotation tests made on samples of limestone from the deposits at Marquam and Dallas. These samples were sent to the United States Bureau of Mines experiment station at Tuscaloosa, Alabama, in order to check and supplement testing work done at the State Assay Laboratory at Baker. Results as given in the report are encouraging and show that in treating 40-50% carbonate stone, a concentrate up to 85% carbonate may be obtained.

Both of these reports are for sale at either the head office of the Department at 702 Woodlark Building, Portland, or at the State Assay Laboratories at Grants Pass and Baker. The price postpaid of Bulletin #14-C is 50¢, of G.M.I. Short Paper #4, 10¢.

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HIGHLIGHTS FOR 1940

The year 1940 has been noteworthy in Oregon mining.

Value of mineral production was considerably greater than for any previous year in the State's history.

Gold production, the mainstay of Oregon's mineral industry, showed a 20 percent increase. U.S.Bureau of Mines preliminary estimate places 1940 gold production at $3,944,500 compared to $3,268,000 in 1939.

The number of producing gold properties, both lode and placer, was greater than in 1939.

Quicksilver production - limelighted because of its strategic value - more than trebled in value compared to 1939.

Value of metals produced during 1940 was approximately $5,800,000. Value of non-metals was in excess of $5,500,000, making a total production of about $11,300,000 compared to about $9,000,000 in 1939.

A growing interest in Oregon mining during the year by outside capital has been shown both by letters received by the Department and by callers at departmental offices.

Metallurgical industries to use Bonneville power have been established in the lower Columbia River area, and the number will be increased in the near future.

The needs of national defense and the demand for Oregon strategic minerals will have a far-reaching effect on the State's industry.

All in all, Oregon's mineral industry is emerging into a new era. The foundation is solid. The structure shows a healthy growth. The future holds great promise.

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MERCURY PRODUCTION

The U. S. Bureau of Mines mercury report released January 2nd gives the domestic production of quicksilver for November as 3,400 flasks, 200 flasks below the rate reported for both September and October. Domestic consumption in November increased 200 flasks to 2,900, which was the largest since October, 1939. This is the smallest amount exported since last April. Consumers and dealers stocks at the end of November were reported as approximately 12,600 flasks compared with 13,200 flasks on hand at the end of October. Producers' stocks, as reported, were 979 flasks at the end of November compared with 855 flasks at the end of October.

Companies that were responsible for 98% of Oregon's total in 1939 reported that the November total was 139% higher than the monthly average for 1939 and was 3% higher than in October. According to the Bureau of Foreign and Domestic Commerce, there were no imports of mercury for consumption and no

general imports in November or October. Of the exports of 361 flasks in November, 205 flasks went to the United Kingdom, 37 to Canada, and 52 to Australia. Market prices were slightly lower in November. At the beginning of the month they were at $169-$171 a flask and $168-$169 at the close of the month. Current market quotations are about $165.

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EXEMPTION OF ASSESSMENT WORK FOR THOSE IN MILITARY SERVICE

Regulations governing suspension of work required on public land under the Act of October 17, 1940 (Public No. 861) known as the "Soldiers' and Sailors' Civil Relief Act of 1940" have been received by the Department from Senator Rufus C. Holman. The Act is to remain in force at least until May 15, 1945.

Sections especially relating to mining claims are quoted below.

"181.22 Claims protected from forfeiture. No right to any public land owned or controlled by the United States, initiated or acquired under any laws of the United States, including the general mining and mineral leasing laws, by any person prior to entering the military service will during the period of such service be forfeited or prejudiced by reason of his absence from the land or his failure to perform any work or make any improvements thereon, or for failure to do any other Act required by or under such laws. (Sec. 501, Soldiers' and Sailors' Civil Relief Act of 1940).

"181.24 Notice of military service. The claimant must give notice of his military service on Form 4-975, which is attached to and made a part of these regulations, or its substantial equivalent, to the land office for the district in which the land is situated, or, if there is no district land office in the State, to the General Land Office, Washington, D.C., on or before April 17, 1941, or within 6 months after his entrance into the military service, in order to obtain the relief and benefits extended by the Soldiers' and Sailors' Civil Relief Act of 1940, in connection with an application, entry, lease, permit or license, or settlement or other right or claim initiated or acquired under the public land laws prior to entering the military service (except a mining location). The notice should be sent by registered mail, unless it is filed in the proper office personally, by the claimant or his agent. The holder of a mining location must give notice of his military service before the close of the assessment year, which ends at noon of July 1 of each year, in accordance with paragraph (b) of section 181.29. (Secs. 504-507, 509, Soldiers' and Sailors' Civil Relief Act of 1940)."

"181.29 Mining Claims. The relief and benefits extended because of military service and the requirement as to notice of such service, made by section 505 of the Soldiers' and Sailors' Civil Relief Act of 1940, in connection with mining claims, are as follows:

(a) Claims protected from forfeiture. The provisions of section 2324 of the Revised Statutes, which require that on each mining claim located after May 10, 1872, and until patent has been issued therefor, not less than $100 worth of labor shall be performed or improvements made during each year, will not apply during the period of the claimant's military service, or until 6 months after the termination of such service, or during

any period of hospitalization because of wounds or disability incurred in the line of duty, to claims or interests in claims which are owned by such person and which have been regularly located and recorded. No mining claim nor any interest in a claim which is owned by such a person and which has been regularly located and recorded will be subject to forfeiture for nonperformance of the annual assessment labor during the period of such military service, or until 6 months after the termination of such service, or of such hospitalization.

(b) Notice of military service. The holder of a mining location who desires to obtain the relief and protection mentioned in paragraph (a) of this section, must, before the expiration of the assessment year during which he enters the military service, file or cause to be filed in the county recording office in which the location notice or certificate is recorded a notice that he has entered such service and that he desires to hold the mining claim under section 505 of the Soldiers' and Sailors' Civil Relief Act of 1940. The notice may be given on Form 4-975 which is attached to and made a part of these regulations. (Secs. 505, 509, Soldiers' and Sailors' Civil Relief Act of 1940). 1/

1/ If application for patent to the mining claim has been made, notice of the military service must also be filed in the proper district land office, or if there is no such office in the State, it must be filed in the General Land Office, in accordance with Section 181.24."

The Act is given in Circular No. 1481 of the General Land Office, U. S. Department of the Interior, Washington, D.C. The Table of Contents is as follows:

Information concerning the administration of the Act may be obtained from the district land offices at Roseburg, The Dalles, and Lakeview.

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INDEX

Press Bulletins, No. 1 to No. 14 (discontinued)

ORE. BIN, vol. 1 and vol. 2

Legend:
(p.b. 5; 2-6) means Press Bulletin no. 5, pages 2 to 6.
(I:3; 45-56) means Ore.-Bin, vol. 1, no. 3, pages 45 to 56.
* means out of print.

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CLEARING HOUSE

1-A: RECENT DISCOVERY, northern California adjacent to Oregon state line, large body of manganese ore, grab samples assayed 55.8% manganese. Insufficient development work to determine quantity. Owners interested in development with partner in cash, or for sale. L.W.Wipperman, Route 2 Box 314, Grants Pass, Oregon.
2-A: H. STEIN & Co., 714 Market St., San Francisco, Cal., desire to purchase the following minerals; black sand or black sand concentrates, chrome, manganese, cobalt, titanium minerals, scrap mica, uranium, and vanadium.
3-A: A. M. RIEDESEL, 523 Mining Exchange Bldg., Denver, Colo., is in the market for immediate delivery of quicksilver, sulphur, fluorspar, manganese, chrome, tungsten and various rare minerals.
4-A: P. L. YARBROUGH, Congress Hotel, Sacramento, Cal., represents a company controlling 14,000 acres of gold placer ground in Jackson County, stated to be about 50 miles north of Medford on both sides of the Crater Lake Highway. This company wishes to lease or sell on favorable terms all or part of the ground. Gold is stated to be finely divided, but no unit values are given.
5-A: WILDBERG BROS. SMELTING & REFINING CO., 742 Market St., San Francisco, Cal., is in the market for black sand for precious metals content, gold, iridium, jewelers' sweeps, osmiridium, osmium, palladium, platinum, quicksilver and silver.
6-A: FOOTE MINERAL COMPANY, 1609 Summer St., Philadelphia, is in the market for sillimanite and andalusite, and would be glad to have information of responsible sources of supply of these minerals.
7-A: Partially developed lode gold property in southern Oregon showing chances of profitable operation according to Department engineers now open to purchase of operating control. Property is in well-mineralized district, adjoining mine having large production record. Title is in possession of non-mining people as result of death of former principal. Inquirers interested in negotiating will be put in touch with the attorney for the property by the Department.
8-A: FRANK J. SEINSERI, 1366 So.Mansfield Ave., Los Angeles, is in the market for black sand.

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STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

PORTLAND, OREGON

THE ORE.-BIN

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TO ALL EXCHANGE LIBRARIES

Announcement is made of the release of BULLETIN NO.21 "Second Biennial Report of State Department of Geology and Mineral Industries, 1939-1940".

Copies of this publication were mailed from this office on January 30, 1941. If not received within ten days from the above date, advise this office immediately; otherwise replacement for copies lost in the mail or elsewhere cannot be made.

MINING NEWS

This is a mining news number - that is, news of what is going on at a lot of mining properties in Oregon. By "mining properties" we mean of course mines, pits, quarries, and dredges.

You may wonder how long it took us to accumulate all of the news items contained in the following pages. The answer is we didn't "accumulate" them - we just wrote them down, for this virtually is the story. We wrote letters to our field offices on January 15th to turn in brief reports on active operations in various parts of the State. Our two field men sat down at their typewriters, banged out copy, mailed it on to us, we added our bit, and here it is. We don't take any particular pride in keeping informed as to what is going on in the State - we just consider that as part of our job, and it's a small part at that. (We'd catch hell sometimes if we didn't know most of the answers). Obviously we couldn't render the service we think we do to the mining industry if we didn't keep close track of Oregon's mining activities.

In many cases, we could write a page as easily as a sentence on some mining operations mentioned below, but that was not the intent of this issue. We just wanted to tell you in a sentence of what is happening at each of a lot of properties in this State.

You won't find all Oregon operations listed. Some groups prefer no publicity and we have every reason to respect their wishes; some, we have probably overlooked.

Any mining journal, magazine, or newspaper is welcome to reprint the news contained herein. Credit our"sheet" if this is your habit. We like it.

Baker District

Alec Johnson Mine - 4 miles east of North Powder, Ore. Operated during summer of 1940 by P. A. Rockne of Baker. 2 cars gold ore shipped to Tacoma smelter during the year.

Northwestern Granite Co. - Located 3/4 mile east of Haines, Ore. Quarry operated on curtailed basis during 1940.

Davis & Thomas Placer - Located in Washington Gulch a dozen miles west of Baker. Joe Kelsch, Roy Davidson and associates operated the ground for 45 days during 1940.

Stices Gulch Placer - Located just north of Dooly Mine. C.E.Silbaugh of Baker carried out some exploration during fall of 1940.

Cornucopia District

Cornucopia Gold Mines - Located at Cornucopia, Ore., 75 miles northeast of Baker. Head office of company at Seattle, Wn. President, Richard E. Fuller, Seattle; A. V. QUine, Cornucopia, Manager. The following information furnished by Mr. Quine:

"During the past year Cornucopia Gold Mines has expanded both in tonnage milled and in gross production. A total of approximately 50,000 tons of ore was milled at the company plant producing a gross of $816,000. In this period 5159 feet of drifting, 6767 feet of raising, 193 feet of shaft sinking, and 1266 feet of 8x8 foot tunnel was driven, making a total of 13,385 feet of development work. Besides this, 835 feet of old workings were recaptured, and 17,320 cubic feet of work was removed in station construction and other widening work. Approximately 300 men are working in the Cornucopia, which figures includes company employees and lessees. The major piece of development work at present is the 4500 feet extension of the Clark Tunnel, which project is expected to be completed during the late summer or early fall. Its objective is the cutting of the Wallingford and Valley View Veins which from a geological standpoint should be equal to or better than the present Union Companion Vein in production and extent. The first dividend of the present company was paid on December 16, 1940."

Simmons Mine - Located on Pine Creek 1 mile above Cornucopia. Under lease to Leverett Davis, Cornucopia. During 1940 the mine was cleaned out and retimbered, a road made for operation, and a 3000 ft. aerial tram constructed. In late October a fire destroyed the compressor house and upper tram terminal. Operations suspended until spring of 1941. During 1940 120 tons of gold ore valued at $2,000 were treated at the Cornucopia mill.

Pebble Cold Springs Mining Co. - Located on Pine Creek 2 miles below Cornucopia. J. H. Gidney, Seattle, Mgr. A placer operation with 2 giants, hydraulic elevator, and one-yard dragline shovel.

Cracker Creek District

Cracker Creek Gold Mining Co. - Located on Cracker Creek above town of Sumpter. John Arthur, Baker, lessee. Properties include North Pole, Tabor Fraction, Columbia, and E&E. During 1940 a crew of about 40 men hand sorted and shipped about 5000 tons of ore to the Tacoma smelter. Reported value about $100,000.

Consuelo Oregon Mines Co. - Located on Cracker Creek 5 miles north of Sumpter. Max Hoffman, Baker, Mgr. Dragline dredge operation, operated until August 1940, with daily capacity of about 2000 yards.

Oregon Argonaut Mines Inc. - Located 7 miles north of Sumpter. H.C.Wilmot, Sutherlin, Ore., Mgr. During 1940 considerable cross-cutting and development work was done. 6 cars of ore shipped to smelter. Operations ceased in November 1940.

Eagle Creek District

Amalgamated Mines Co. - Amalgamated Mines located on head of Paddy Creek 5 miles west of Cornucopia. W. H. Burnham, Spokane, president; Claire Huff, Baker, lessee. Produced about 600 tons of ore during 1940; idle during winter months.

Roy & Sturgill Mine - Located at head of Goose Creek 12 miles north of Keating. Claude McIntyre, Baker, owner; J. G. Rice, Seattle, lessee. About 75 feet of development work was done in 1940.

Davis Mine - Located on Goose Creek near old Sanger Mine, northeast of Keating. Wilbur Davis, Union, is owner. About 100 feet development work done during 1940.

Greenhorn District

Triangle Construction Co. - Located on Snow Creek just above its junction with Burnt River. W.J. and E.H.Smith, Boise, Idaho, operators. Dragline dredge, uses Bodinson washing plant. 1½ yard dragline shovel. Started digging in June 1940; handled around 2000 yards per day until closed down in December by weather. Plant to resume this spring.

Log Cabin Mining Co. - Located on Antelope Creek 2 miles north of Whitney, Ore. W.E.Beckwith and C.Ranes, Baker, operators. Dry land placer operation, with 1½ yard shovel for digging and washing plant mounted on caterpillar tracks. Testing was done and water supply developed during 1940. Idle during winter months, but operators plan to resume work this spring.

Consuelo Oregon Mines Co. - Located on Three-Cent Creek 3 miles north of Whitney. Max Hoffman, Baker, manager. Dry land placer plant of about 800 yard capacity was constructed in 1940. After short operation plant was closed, due to lack of water. Operators expect to resume work this spring.

Listen Lake Mine - Located in McNamee Gulch, tributary to Burnt River. S. A. Marrotte and Jack Nash of Whitney put down 30 test pits during 1940 and plan to complete test work this spring.

Winterville-Parkerville Placer - Located on Bennett Creek, tributary of Burnt River, near the Bonanza Mine. Test drilling was carried on 2 months in the summer of 1940. Prospecting not completed.

Lower Burnt River District

Oregon Portland Cement Co. - This corporation's big lime plant at Lime, Ore., continued operation throughout the year, with a daily capacity of about 400 barrels of cement.

Little Hill Mine - Located on Hogback Creek on south slope of Lookout Mtn. Mrs.Ida M. Bowen, Baker, owner. Bob LaFran and sons, Durkee, lessees. During 1940 produced about 4000 tons high-grade ore, containing free gold.

Gold Cluster Mine - Located near the Little Hill Mine mentioned above, and about 15 miles southeast of Durkee. M.P.Gifford, Huntington, owner. Produced about $1500 in free gold during 1940.

Mormon Basin District

Colt Placer - Located on south fork of Dixie Creek, 14 miles west of Dixie. Carl

R. Suksdorf & Co., Huntington, operators. The plant is a dry-land mechanical placer - consists of bulldozer, carryall, stationary washing plant. Ground was tested and some intermittent operation done in 1940.

Rainbow Mine. Located 12 miles west of Dixie, Ore., near old Rainbow Mine. E. B. Young, Baker, owner and operator. About 250 feet underground development work done in 1940. Will be continued in 1941.

Humboldt Mine. Located southwestern part of Mormon Basin about 15 miles from Dixie. A substantial amount of surface trenching and testing was done during 1940. The camp was renovated and a pilot mill built and operated for a time.

New Paymaster Mine. Located on Pedro Mountain in the northern part of Mormon Basin area, formerly known as Reagan Mine. During 1940 there was development on this property, and a 5-stamp mill is understood to have been installed.

Sparta District

New Deal Mine - Located just north of the town of Sparta. Cecil Saunders, Richland, lessee; R. M. Saunders, Sparta, Mgr. During 1940 350 feet of underground development was finished, using only a small crew. Operators plan to construct a small mill during 1941 if ore conditions continue favorable.

Del Monte Mine - Located at town of Sparta. Clayton and Earl Robbins, lessees. During 1940 the 200 ft. shaft and the 100 ft. level drift were cleaned out and retimbered. 2 cars of gold ore were shipped to Tacoma smelter.

Macey Mine - Located on Maiden Creek 11 miles northwest of Richland. Glenn and Lloyd Anderson, Sparta, lessees. 2 cars of ore shipped during 1940. Mill was destroyed by fire in the spring, and a new 10-ton mill is now under construction.

Gem Mines Inc. - Located at town of Sparta. S.A.Matthews, Supt. During 1940 the shaft was dewatered and retimbered. Some ore was shipped in 1940 and the property is currently in production.

Sumpter District

Sumpter Valley Dredging Co. - W. H. Cullers, Portland, president; O. E. Combs, Sumpter, Supt. Dredge located 5 miles southeast of Sumpter. Standard bucketline dredge, hull 52x120x11 feet, stacker 96 feet, bucket line 72 buckets, 9 cu.ft.buckets dumping 25 per minute; screens 6x36. Capacity 10,000 yards per day. Operated continuously during 1940 and has several years' digging ahead.

Northwest Development Co. - Dredge located near town of Sumpter. K.R.Nutting, J.E.Little, and Harry Wolfinger, Sumpter, operators. Equipment includes 2 Bodinson floating washing plants, each of 2000 yard capacity, and one 2½ yard dragline. Above plant operated continuously during 1940.

Consuelo Oregon Mines Co. - Located on McCully Fork 3 miles northwest of Sumpter. Max Hoffman, Baker, Mgr. Dragline dredge operations with Bodinson washing plant, 2000 yard capacity, and 2 yd.dragline. During 1940 the ground was tested, the plant moved in and operated for a month. Closed because of winter conditions. Will resume soon.

Upper Burnt River District

Ferris Mining Co. - Located on Bull Run Creek 6 miles southwest of Unity. Mrs. Ann Ferris, San Francisco, owner; Robert E. Taffee, Unity, superintendent. Dragline dredge operation with 3000 yard Bodinson washing plant and 3-yd.

dragline shovel. Operation got going November 15, 1940; has been in continuous operation since.

Ancient Channel Project - Located about 2 miles southeast of Bridgeport. J. B. Porter and E. T. Knight of Bridgeport, operators. Mechanical dry land placer. Standard washing plant, 1500 yards capacity; bulldozer; caterpillar and LeTourneau, used for moving ground. Operated intermittently during 1940.

Elliott Placers - Located at mouth of Pine Creek, near highway, 7 miles east of Hereford. T.C.Hargrove and G.A.Ralyeah, Baker, operators. The equipment includes standard washing plant of 1000 yd. capacity, caterpillar, and 13 yd. carryall. The operation was active from July to November, 1940.

Wyant Placers - On Pine Creek 10 miles southeast of Hereford. John Wyant, Hereford, owner and operator. A drift mining and sluicing operation that was active throughout the year.

Virtue District

Hidden Treasure Mine - Located north of Virtue Flat, 12 miles east of Baker. W. F. Burns, Fred Kubon, and Miles Rombough, Baker, lessees. During 1940 underground development was carried out, then a small cyanide plant was constructed, late in the year. 100 tons of ore were milled before the plant was shut down, due to freezing weather. Several cars of ore have been shipped to the Tacoma smelter during the winter.

Columbian Mine - Located 1 mile west of the Hidden Treasure Mine. Robert T. Donald, Baker, lessee. The mine operated for 7 months during 1940, closing down in August. During the year, 15 cars of gold ore were shipped to the Tacoma smelter.

Gray Eagle Mine - Located 5 miles east of Baker. Formerly known as Koehler property. Pat O'Brien and associates, Baker, owners. It is reported that 100 feet of development work was done in 1940, and that 1 car of antimony gold ore is awaiting shipment to the smelter at Midvale, Utah.

Camp Carson District

Oro Plata Mining Co. - Located on Grand Ronde River 35 miles southwest of La Grande. S. K. Atkinson, La Grande, president and general manager. Dragline dredge operation. Equipment includes two 1000-yd.Bodinson washing plants and 2-yard dragline shovel. Has operated continuously since October 1940, when the equipment was moved from its former site on Granite Creek, near Granite.

Canyon City District

Western Dredging Co. - Located 1 mile east of the town of John Day. Sanford Lowengart, San Francisco, president; Walter Williams, John Day, dredge superintendent. Standard bucketline dredge, with 6-ft. buckets. The dredge, handling 5000 yards per day, operated continuously during 1940. A 2-to-4 year further operation is expected at the present site.

Ferris & Marchbank Placers - Located on the John Day River 4 miles west of John Day. J. H. Ferris and J. W. Marchbank of Daly City, Calif., operators. Dragline dredge operation. Equipment consisted of 6000 yd. capacity washing plant, fed by 4½ yd. Monighan dragline shovel. Property worked for 7 months during 1940, and closed down after exhausting its ground.

Miller Mountain Mine - Located about 5 miles south of Canyon City. Roba Bros. Canyon City, lessees. It is reported that the 5-stamp mill operated during the summer of 1940.

Granite District

Cougar-Independence Mine - Located on Granite Creek 3 miles north of the town of Granite. Operated by Cougar-Independence, lessees. G. P. Lilley, Baker, Gen.Mgr.; G. T. Vandell, Granite, Gen.Supt. Operated continuously during 1940, milling about 90 tons of sulfide ore per day in standard flotation mill. 46 cars of concentrates shipped during 1940. An average of 62 men are employed underground, in the mill and shops, and offices. The operation is second only to the Cornucopia among underground gold operations of the State.

La Belleview Mine - Located on Onion Creek 10 miles northeast of Granite. R. B. McGinnis, Gen.Supt. Mine and flotation mill operated continuously during 1940 on an average of 50 tons per day production. The operators report gross for the year of about $120,000. Flotation concentrates are shipped to the International Smelter in Utah. During 1940 the mine and plant were electrified after the construction of 3-mile power line to tie in with the Eastern Oregon Light & Power Co.

Buffalo Mine - Located 5 miles north of Granite. W.F.Allen Jr., Granite, superintendent. During 1940 a new 35-ton flotation mill was built to replace the one destroyed by fire. The property operated continuously during 1940. High grade ore is sorted and shipped direct to the smelter and lower grade ore is milled.

Porter & Co. - Located on Granite Creek one mile west of Granite. R. B. Brown, Baker, Gen.Mgr.; A. E. Murray, Baker, Supt. Standard bucket line dredge of 4½ cubic feet capacity, rated at about 3800 cubic yards per day. Dredge was operated continuously during 1940.

Oro Plata Mining Co. - Located on Granite Creek 3 miles northwest of Granite. J. K. Atkinson, La Grande, president and general manager. Dragline dredge operation. Worked continuously until August, when equipment was moved to its present location on Grand Ronde River, out of La Grande.

Intermountain Mining Co. - Located on Granite Creek 7 miles northwest of Granite. C. E. Silbaugh, Granite, Mgr. Dragline dredge operation of about 1500 yards capacity. Uses 1-3/4 yard dragline shovel for digging. The plant has been in production since June 1940.

Boulder Creek Placer - Located on Boulder Creek 1 mile north of Granite. Joe Davis, Baker, and Clarence Thomas, Granite, operators. Dragline dredge operation. Equipment includes floating washer rated at 2000 yards capacity, and 1-3/4 yard dragline shovel. It was moved onto the property during December 1940. Now operating.

Continental Mine- Located 10 miles northeast of Granite. J.A.Gyllenberg, Baker, owner and operator. 200 feet of underground development work was done on this gold lode property during 1940.

Greenhorn District (Grant County)

Golden Eagle Mine - Located on Greenhorn Creek 2 miles south of Greenhorn. Frank Klein, Baker, owner. During 1940 some 50 feet of underground development was done, and a few tons of very high-grade gold ore were mined.

Timms Gold Dredging Co.- Ground located on Middle Fork of the John Day River 10 miles from Bates. Chas.H.Timms, Bates, Ore., president and general superintendent. Diesel electric driven standard bucket line dredge of 4 cubic feet capacity. Dredge picks up about 2500 yards per day; operated continuously during 1940. Employs 20 men.

Owl Mine - Located 2½ miles north of the town of Greenhorn. E.E.Petty, Whitney, operator. During 1940 200 feet of underground development work was done and 30 tons of ore milled at the property.

Morning Mine - Located 3½ miles west of Greenhorn. W. W. Gardner, Whitney, owner and operator. During 1940 126 tons of $40 ore was shipped to Tacoma smelter, and 80 tons of $20 ore was concentrated in the mill.

Windsor Mine - Located 2 miles from Greenhorn. W. C. Fellows, Baker, and Don Lempfer, Unity, operators. 250 feet underground development work was done in 1940. The mine is idle during the winter months.

Ben Harrison Mine - Located on Clear Creek 15 miles southwest of Granite. H. H. Reed, Spokane, and George Doyle, Baker, operators. During 1940 a 50-ton flotation-concentration mill was built on the property to treat the Ben Harrison mill tailings. New mill operated on an experimental basis during November, and is now shut down for the winter.

North Fork District

Ralph Davis, Incorporated - Dragline dredge operation, located on North Fork of John Day River 16 miles east of Dale. Ralph Davis, Marysville, Mont., president. Equipment consists of 5000-yard floating washer, 4½ yard Monighan dragline. Ground was tested during the summer and fall of 1940, and the equipment moved in by the end of the year. Operation is expected to start this spring, and a 5-year life is estimated.

Quartzburg District

H. F. England Company - Dragline dredge operation on Dixie Creek, a few miles north of Prairie City. H. F. England, Prairie City, Mgr. Equipment includes 2500-yard floating washer (H.F.England design), and 1-7/8 yard dragline. Operated continuously during 1940. This operation is unique in that it is a resoiling type of dredge. It replaces the sand and silt on top of the boulders and leaves the ground in approximately the same condition as before it was dredged.

Dixie Meadows Mine - Located on Dixie Creek 12 miles north of Prairie City. R.C. Reese, Prairie City, lessee. Some reopening was done during 1940 and it is expected the work will continue during 1941.

Colorado Mine - Located on Dixie Creek north of Prairie City. R.C.Reese and others of Prairie City, operators. Small amount of underground development work was done, and a limited tonnage was milled, during 1940. The property is now active.

Susanville District

Bradley Mining Company - Located near the town of Susanville. Charles E. Baker, Susanville, resident superintendent. The Badger, Golden Gate, and Homestake group of claims are being reopened and prepared for a thorough examination by the Bradley Mining Company, San Francisco.

Princess Mine - Located on Deep Creek 2 miles northwest of Susanville. W.L.Merritt, Susanville, operator. A small amount of development work was done during 1940.

Ochoco District

Horse Heaven Mines, Inc. - Postoffice at Ashwood, Ore. This property is located 43 miles by road east of Madras. Subsidiary of Sun Oil Co. S. H. Williston, Portland, vice-president and general manager. This is next to the largest quicksilver operation in the State. The reduction plant consists of 6-hearth 10-foot diameter Herreshoff furnaces, handling 50 tons per day. The property operated continuously during 1940, and averaged 165-175 flasks of quicksilver per month.

Blue Ridge Mine - Located about 8 miles southeast of Ochoco Ranger Station. Central Oregon Quicksilver Co. Produced about 60 flasks of quicksilver during 1940 in an intermittent operation.

Number One Mine - Adjoins Blue Ridge Mine on the south. Ray Whiting, Prineville, and Louis L. Mills, proprietors. Shaft cleaned out but no activity to speak of during 1940.

Mother Lode Mine - Located about 10 miles south of Ochoco Ranger Station. Reconstruction Finance Corporation, owner. During 1940 Art Champion of Prineville did a substantial amount of exploration, revamped the Gould furnace plant, and is reported to have produced 54 flasks of quicksilver. Property is now inactive.

Towner Mine - Located about 4 miles southeast of Post, Ore. Frank F. Towner, Post, owner and operator. Was active during most of 1940, with a small crew, and produced about 50 flasks of mercury, which was retorted on the property.

Maury Mountain Mine - Located about 4 miles southeast of Post, Ore. F.C. and H.W.Eichemeyer, owners and operators. Property was active on a small scale throughout 1940. Production was reported as 40 flasks of quicksilver.

Taylor Ranch Mine - Located about 1 mile west of Ochoco Ranger Station on US Highway 28. Ray Whiting, Prineville, owner and operator. This is a new and promising property that is being developed. A small rotary retort for reducing high-grade ore from development work was installed in 1940. It produced about 50 flasks of quicksilver.

Staley & Barney Mine - Located about 20 miles east of Prineville on US Highway 28. J. E. Staley, Prineville, owner. A little development work was done in 1940, and about 30 flasks of quicksilver were retorted on the property.

Oronaga Mine - Located on Bear Creek about 25 miles south of Prineville. Oronaga Mining Co., R. E. Combs, Prineville, Gen.Mgr. During 1940 there was some development and it is reported that 6 flasks of quicksilver were produced. Property is now inactive.

Platner Mine - Located 32 miles south of Prineville near State Highway 27. Joe Werner, Prineville, operator. Some development work was done and a small furnace plant built during 1940. It is reported 16 flasks of quicksilver were produced.

O'Brien and Misner Mine - Located on Bear Creek south of Prineville. William O'Brien and Norman Misner, Prineville, owners. A little development work is said to have been done and a half dozen flasks of quicksilver produced in 1940. Property is currently stated to be active.

Swanson Quicksilver Property - Located about 12 miles east of Ashwood in the northern part of the Ochoco district. Swanson Bros. are operators. Considerable development was being done during 1940, and toward the end of the year a small Gould furnace belonging to W. J. Seufert was moved to the property from the Staley mine.

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Columbia Gold Dredging Co. - Located on the Columbia River gravel flats, about one mile north of Irrigon. Theo. Haakonson, operator. This is a standard type of dragline dredge operation, working in shallow ground along the Columbia River. The capacity of the plant is about 1500 yards per day. Installation was made early in December and worked only about 2 weeks until closed down because of freezing weather.

Pacific Placer Co. - Located on Basin Creek in Mormon Basin 19 miles northwest of Huntington. E. B. Seaver and George F. Lund, of Huntington, operators. Dryland mechanical placer consisting of two 500 yd.capacity standard washers,

one 20-yard and one 13-yard carryall, Diesel caterpillars and bull dozers, with special facilities to carry out repairs. Property operated continuously during 1940.

Opalite Mine - Located in southwestern Malheur County about 20 miles northwest of McDermitt, Nev. Bradley Mining Co. of San Francisco, operators. This is a quicksilver property that was in operation most of 1940.

Bretz Mine - This is a quicksilver property located in southwestern Malheur County about 13 miles northwest of McDermitt, Nev. William Bretz, owner. Property was in production during part of 1940. It is reported the ore was trucked to the Opalite Mine for reduction.

Squaw Butte Deposit - Located on Juniper Ridge 37 miles west of Burns. O. C. Selle and E. H. Hagey of Burns, operators. Wm. F. Hayden, Grants Pass, consulting engineer. During 1940 a modest surface trenching program was conducted on this property and a small pilot furnace constructed for testing ores for the production of tin.

Fisher Group - This is a quicksilver property located 9 miles north of Fields, near McClean's ranch. C. M. Doan and associates, Fields, owners and operators. During 1940 70 feet of underground development work in addition to numerous surface cuts and pits was completed. A small production of quicksilver is reported.

Chickamin Mine - Located on South Slough west of Marshfield, Oregon, in the Coos Bay district. Machinery is being shipped in to this property in connection with the plant to test the possibility of commercial recovery of precious metals and chromite.

Nesbit Mine - Located near the Oak Grove dam on the Clackamas River, about 30 miles southeast of Estacada. The property was developed and a small retorting plant installed in 1940. A modest production was reported. The property is inactive at present.

Santiam Zinc Mine - Located on the headwaters of the Little North Fork of the Santiam River about 9 miles east of Elkhorn. J. F. Hewitt, Portland, is proprietor. A small crew of men was maintained at the mine throughout 1940 doing development work and maintaining the mill and mine workings in condition for prompt active operation at any time.

Black Butte Mine - Located about 15 miles southeast of Cottage Grove. Quicksilver Syndicate, proprietor; Frank Taylor, president and manager. The property has been active throughout 1940, handling about 75 tons per day and employing about 30 men.

Champion and Musick Mine - Located in the Bohemia district about 35 miles southeast of Cottage Grove. These two properties have been undergoing development during 1940 by the Higgins and Hinsdale interests of Portland. Carl N. Anderson is consulting engineer in charge. Underground work includes drifting, crosscutting, and sampling.

Pumicite Property - Located near US Highway 97, a few miles south of Chemult, Ore. C. C. Ritchie, operator, Chemult. The property is active. It shipped a number of cars of pumicite to eastern Oregon during 1940.

Diatomite Property - Located 4 miles west of the town of Terrebonne, which is on US Highway 97. Operated by the Oromite Co., McKinley Stockton, Gen.Supt. This property operated during the year until a disastrous fire consumed the treating plant in early summer. Repairs have since been made to the plant and resumption of operations is expected this spring. The plant produced a high quality of refined diatomite for use by the filter trade.

Oregon King - Located about 26 miles east of Madras. Several carloads of ore were shipped from the dump on this property during 1940, and a small amount of sampling and development work was carried out. At present more thorough sampling is being carried on down to the 200 foot level and preparations are being made to unwater. This is a lode gold property that has not produced for a few years.

JACKSON COUNTY

Ashland Area

Ashland Mine is being reopened by P. D. Wickham, who moved in equipment and supplies during the late fall of 1940.

Dry Ice Corporation of Washington has investigated the Ashland lithia water and its carbon dioxide content and it is reported that they find the gas has quality and quantity that may justify its use in the manufacture of dry ice.

V. E. and V. G. Hughes are installing cyanide equipment at the Shorty Hope Mine near Ashland, in order to treat mill tailings.

Ashland Granite Quarry. Stone was produced during 1940. The company dressed stone quarried during 1939.

Jacksonville Area

Opp Mine. Mike Bright of Grants Pass is cyaniding a portion of the large mill-tailing dump at this property.

Gold Hill Area

Bristol Silica Company of Rogue River is quarrying silica from a large quartz deposit on Footes Creek. The material produced is ground for poultry grit and metallurgical use in the mill at the town of Rogue River.

Fred Bunce is placer mining on Upper Pleasant Creek. H. B. Scutt and others also are operating small hydraulic mines in the same area.

Oregon Placer Mines Incorporated. C. L. Austin, manager, has a small dry-land washing plant on Gall's Creek.

Gold Hill Placers. Howell and Calhoun have discontinued their operations on Sardine Creek and have moved their dry-land washing plant out of the area.

Hazel Group is owned by Mr. and Mrs. Archie Bell and is located near Rogue River, Oregon. A small amount of development work has been done along a granite-limestone contact.

Work has been discontinued at the Sylvanite Mine. Imperial Gold Mines, Incorporated, built a mill on the property and opened most of the workings in 1940.

G. C. Irwin is working the Irwin Claim on Evans Creek. The ore is reported to contain molybdenite.

Lance Placer. The Southern Oregon Mining Company has discontinued the operation of their dryland washing plant on the Lance Placer and have moved their outfit to the Upper Applegate River.

Millionaire Mine has been acquired by the Rogue River Development Company of La Grange, Illinois. As yet no active development work has been done.

Mountain King Quicksilver Mine on Upper Evans Creek is being reopened by a group of Marshfield men. The old workings have been cleaned out and some 200 ft. of crosscuts have been opened on the No.2 level. Reports indicate good ore on the No.1 level and at the surface.

Murphy-Murray Dredging Company have been operating a bucket-line dredge on the middle fork of Footes Creek. They have dredged 1¼ miles of the creek channel and the boat is now near the upper end of the deposit.

Pleasant Creek Mining Company has a dredge on Pleasant Creek. Legal difficulties have kept the company from operating the dredge throughout most of 1940. A recent court decision will permit the rebuilding of the dredge, and it is expected they will continue their operations.

Pacific Portland Cement Co., which acquired the Beaver Portland Cement Company, has opened a quarry in a limestone lens south of Gold Hill. Some two miles

of road have been constructed to the quarry, and the operators plan to truck the limestone to the cement plant at Gold Hill.

War Eagle Mine. Development work was carried on during part of 1940; a mill to concentrate the ore was built and test runs made.

It was reported in September that the Lucky Strike Mine on the east fork of Evans Creek was optioned to the Cinnabar Mountain Mining Company of Medford.

Mansfield Placer plant just northeast of the Millionaire Mine, was operated during 1940.

Three men worked early in the year at the Mountain View Mine on Ditch Creek, 12 miles north of the town of Rogue River.

Neathamer Placer, located on Upper Graves Creek, was worked during the winter by 4 men, operating 2 giants. This property works every winter, and is one of the most active in the Upper Graves Creek area.

Red Oak Mine located on Galls Creek was reopened early in 1940, and good ore is reported to have been found.

Smuggler Mine is located on the north end of the Sylvanite property. A small amount of development work was done during the year.

Lucky Bart Mine located on Sardine Creek, has produced a small tonnage of ore which was milled on the property of W. T. Fasel and associates.

Gold Note Mine near King Mountain is owned by Crouch Bros. This mine has been operating on a small scale for the last 3 or 4 years. Gold is recovered by cyanidation.

Warner Mine near the head of Starveout Creek shipped a few tons of high-grade ore in the fall of 1940. Continued operation is expected in 1941.

Sam L. Sandry has an option on the Gold Chloride Mine on Ward Creek and is opening the property.

Bill Nye Mine on Galls Creek 3 miles south of Gold Hill was leased early in the year by Emery Abel, who is said to have removed one small highgrade pocket. Plans for a small cyanide plant were made.

Development work was done last year on the Chisholm quicksilver claims on Evans Creek. A small production was obtained by retorting hand-sorted ore.

Corporal G Mine on Sardine Creek was reported active during the year. A small mill is said to have been installed.

Quicksilver Producers Co. has done development work on the Dave Force Mine, south of the War Eagle on Evans Creek.

Dixie Placers, operating with 1 to 4 men and 2 giants, is reported to have been active during the winter of 1939-40.

Sniping was continued during 1940 on the Galls Creek Placer.

At the Gold Note Prospect on the King Mountain Road north of Upper Graves Creek, a small ball mill and cyaniding plant was in operation early in the year.

Greens Placer on Graves Creek 3 miles above the upper bridge has a gin pole, high-line and bulldozer in operation.

A cyanide plant was operated at the Kubli Mine on Galls Creek during January and February 1940. The plant was moved in March to the Robertson Mine in the Galice district.

Some development work was done early in the year on the Little Johnny on Galls Creek.

Upper Applegate Area

The operator of the Storm Bird Placer is Elmer Cantrell of Grants Pass. This placer is located 8 miles above Sterling Placer on Bailey and Palmer Creeks. Five men have been working for about a year testing the ground. Water is pumped from the creek and a hose is used for sluicing. Power excavation is contemplated. Some years ago a $600 nugget was reported to have been recovered from this placer.

The B-H dragline and floating washer has dredged Forest Creek above the mouth of Thorman Creek. The plant is now working on the left fork of Forest Creek.

Crescent Pacific dragline and floating washer is operating on the Applegate River about a mile below the mouth of Forest Creek. The washer is equipped with Ainley bowls. Resoiling is required by some of the property owners.

Southern Oregon Mining Company (formerly the Glide Foundation) moved their dry-land washing plant from the Lance Placer on Footes Creek to the Hamilton & Taylor ranches on the Applegate River. The washing plant has been rebuilt as a floating type plant.

Hayfork Exploration Company moved their dragline and floating washer from Thompson Creek to Forest Creek in April 1940. Work was discontinued during low water stage but recently rains have permitted them to resume operations. At present the plant is working alongside the Applegate Highway.

Lowry Stibnite Mine on the Upper Applegate is owned by Bert B. Lowry of Medford. Additional workings have been cleaned out and it is planned to drive a development tunnel to drain one of the winzes. Good showings of stibnite are reported in the winze.

Oregon Belle. J. H. Conrad of Jacksonville is reopening the Oregon Belle. Old workings have been cleaned out and the mine is being sampled.

Ruby Mines, Inc., have taken over the Red Feather Quicksilver Claims on Squaw Creek which is a tributary of the Applegate River. A road has been built to the property and some development work done along the granite-serpentine contact.

Tree Mining Company built a mill and began some development work on the east side of the Upper Applegate River.

M. E. Andres and G. V. Howard, using one giant on Ferris Gulch near the Old Layton Mine, moved several hundred yards of ground early in 1940.

Dick's Head Placer, located on the Applegate River bar a mile and a half south of McKee's Bridge, was worked by means of a small dry land washer type of plant.

McKee and Boyle have a dry-land washing plant, fed by truck, which is working placer ground located eight miles above the forks on main Applegate River.

Oregon Bonanza Mine, 12 miles south of Grants Pass, has operated during much of 1940 under the direction of A. J. Lundquist.

Sterling Placer Mine, located on Sterling Creek 7 miles south of Jacksonville, operated during 1940 season with three giants and washing plant. From 11 to 16 men are employed.

Williams Placer, located on Bishop Creek a mile east of the Applegate Highway, started work in March 1940 with a 5/8 yard gas shovel and dry-land washing plant.

Jackson County Unclassified

Al Sarena (Buzzard) Mine. Some work was done on this property in the fall of 1940. The company reopened the mine and made repairs preparatory to resuming milling operations.

Rogue River Mining Claims.- formerly known as the Red Chief, or Ash quicksilver property, located near Rogue Elk, has a 300 ft. tunnel, 50 ft. of which was driven by hand in 1940 by A. G. Rogers.

DOUGLAS COUNTY

Tiller-Drew Area

Plat-Norkea Mining Claims. A group of partners have built a mill at the Plat-Norkea property, formerly known as the Zinc Mine. They contemplate stripping the hillside and recovering gold and quicksilver. O.E.Walling is interested in the operation.

JOSEPHINE COUNTY

Galice Area

Black Bear Mine is located near Galice. R. W. Radcliffe is milling a small tonnage of ore and carrying on development work.

George Maddox and Charles Morser are mining across the river from the Argo mine.

Hellgate Mine on the Rogue River in Hellgate Canyon is being worked by Lou Robertson and Virgil Hull. One giant is being used.

Roy Hillis, owner of the Rand Placers, is building a storage reservoir.

Fred Leipold and Frank West have been repairing the flume and pipe line at the Cal-Ore Mine. A complete new set-up for piping has been made. On Jan.27 the men started to pipe with two giants working.

Almeda Mine is being operated by Mr. Holdsworth. The river level adit has been cleaned out and the shaft and lower workings have been unwatered. Development work is in progress at the present time.

Benton Mine, the largest operating gold mine in southern Oregon, is owned by the Lewis Investment Company. Forty men are employed. The 50-ton cyanide mill has been recently revamped.

R. M. Alden has taken over the Mountain Bear Placer from G. E. Thompson and is operating the property this season.

Oregon Placers Inc. moved their dry-land washing plant from the Illinois River to the Rocky Gulch Placer about a mile below Galice on Rogue River. It is reported that this operation has been recently discontinued.

Vindicator, Goff, Three-L, and Steam Beer Placers are operating on Graves Creek in the Galice and Greenback areas. At the Steam Beer Placer, John Alderson is working the upper part and J. J. Siemon and Tom Yarum are working the lower part.

Dan Carnegie worked the Archer Placer high channel on lower Graves Creek with a dragline outfit last spring.

Bunker Hill or Robertson Mine lived up to its reputation as a high-grade property during 1940. During the months of March, April and May the mine produced over $32,480, or 1,019 ounces of gold. Over $20,000 of this amount is said to have been the result of nine days' milling. The total 1940 production was $50,000. William Robertson and Virgil E. Hull are the owners of the property, which was first located by John Robertson in 1914. V. E. Hughes and J. B. Fanchini were reported to have moved their cyaniding plant to the Robertson from the Kubli Mine in order to cyanide tailings.

The California Mine underwent some development early in the year by the Hercules Mining Company.

The Dean and Dean Placer near Galice operated by the Dean family since 1895 was worked as usual during 1940.

The Fowler Placer, Leipold Placer, Columbia Placer, Old Rogue Channel Mine, Speaker Placers, Yankee Chief Group, Golden Bar Placer, and Golden Eagle Placers, were all active, when water was available, during 1940.

Development work and some milling with an arrastra was done at the Pyx Mine, located at the head of Drain Creek.

Grants Pass Area

Dale Prow built a small mill on the south bank of the Rogue River east of Grants Pass, and made several small runs of ore for miners.

Big-4 Placer, on Pickett Creek below Robertson's Bridge, is being operated by J. E. Bartlett. The ditch-line has been repaired and the recent heavy rains have given ample water for hydraulicking.

Rogue River Sand and Gravel Company's plant, located just east of Grants Pass on the Rogue River, operated off and on during the last year and produced most of the sand and gravel used in this district.

Development work on the Empire Mine, located 10 miles west of Grants Pass, was done during the year. Low-grade cinnabar in considerable quantities is reported to have been developed.

Hidden Treasure or Ten Spot Claims, located three miles southeast of Grants Pass, are reported to have been acquired from the county by N. A. Peterson of Bend.

Greenback Area

Dr. Fred W. Gould and Art Johns of Grants Pass and Homer Inman of Placer have bought the old Columbia Mine buildings.

Copper Queen Mine, located near Leland, is owned by Herman Schmidt, O.S .Blanchard and Phil Starr of Grants Pass, who leased it to a group that has begun development. Lon Shannon of Portland is the engineer. The property is being opened; machinery will be brought in to strip and mine a gossan. Underground work also is planned.

The Greenback Mine is being leased by H. Anderson and Jeff Wimer who have begun work. P.D.Wickham discontinued operations in the fall of 1940.

The Gray Eagle Mine, consisting of 3 claims in sec.17, T.33 S., R.4 W., is owned by G. V. Howard, Cap Verdin, Jim Bristow, and Harry Ellsworth, Grants Pass, Ore. Cuts and trenches expose the orebody across two claims. A 60-foot tunnel opens a serpentine dike that is reported as being a continuation of the McTimmons Mine.

Rogue River Gold Mining Company's dredge which operated for several years on Grave Creek near Leland has been dismantled and moved to southern Idaho. Mr. D. H. Ferry had charge of the operation.

W. C. Smith and Alex Watts have developed the Shot Mine, formerly known as the Dutch Girl, on St. Peters Mountain, and have had ore run in the Dale Prow mill near Grants Pass.

Anaconda Mine on Coyote Creek has been operated on a small scale by O. L. Moore and associates. Most of the ore is milled at the mine, although the heavy sulfide ore is shipped to a smelter.

Egger Placer, located 6 miles east of the highway on Wolf Creek, is reported to be working this year as usual.

Forsythe Placer located on Coyote Creek, with Melvin Davis in charge, has five giants working. Two giants are used to run a Ruble elevator.

Goff Placer operates about 2 months each year during the spring. One giant is fed by water pumped from Flume Gulch ditch.

Iverson and Pohlman operate the Miller Placer, located in Brimstone Gulch, with a small half-swing shovel. Gravel is trucked to a washing plant.

Jason Placer, or Payne's Mine, located near Foley Gulch on Coyote Creek, was operated by Mr. Shelley with one giant.

G. A. Fitzpatrick continued development on the Silent Friend Mine, located on the north slope of Post Mountain at the head of Wolf Creek.

Lem and Henry Speaker and Vern Strong operated the Speaker Placer, located on Wolf Creek six miles east of the highway.

Illinois River Area

Anderson Placer, located at the mouth of Deer Creek on the Illinois River, was leased recently to Bullpit and Barkman. They have taken over the dry-land washing plant that was built early in the year by C. W. Hickok. Mr. Barkman is managing the property.

George C. Foster is operating the Independence Placer at the mouth of Josephine Creek. He also has acquired mining rights on the Golden Princess upstream and east of the Independence.

McFarlane Brick Company have built a brick plant at the summit of Hayes Hill. Clay is being mined from a bed west of the plant. Brick will be marketed in southern Oregon.

Old Glory Mine near Silver Creek is being operated by Ben Baker and associates. A road has been built into the property and a small mill constructed. Several shipments of concentrates have been made.

Shade Chromite. Sherman S. Smith and associates of Grants Pass have taken over the Jack Shade chromite deposit and are doing the necessary development work prior to mining and shipping the chromite ore.

Revell Placer on Illinois River near the mouth of Deer Creek operated as a small placer during 1940.

Sig Dilsheimer and associates have been developing the Oregon Chromite Mine, located a mile above Oak Flat on the Illinois River. They expect to be shipping ore by the middle of March.

The Ray Placer, located 5 miles below Kerby at the mouth of Josephine Creek, was operated last year by the Oregon Placers, Inc., who recently moved their plant to Galice. C. W. Hickock moved his stationary washing plant to this property from the Anderson Placer, but did not get into operation during 1940.

Some work was done during the summer on the Norton Placer, located on Josephine Creek.

Over 100 feet of the old tunnel on the Calumet Mine, at the mouth of Rancherie Creek, was cleaned out early in 1940.

Lower Applegate Area

Harry Ellsworth of Grants Pass is managing the Red Rose Mine. A road has been built part-way into the property and old tunnels and cuts have been cleaned out. Some high-grade has been shipped and further development is planned.

Washington Brick Lime and Sewer Pipe Company has taken over the Oregon Lime Products plant and quarry on Powell Creek, a tributary to Willamina Creek. The plant is being reconditioned and the quarry cleaned up, pending the start of operations about February 1st.

The flume on the Horsehead Placer, located on Horsehead Creek 5 miles from Provolt, was washed out by heavy rains early in 1940. This was repaired and Ben Watts started operations again this winter.

During 1940 some development work was done at the Humdinger Mine, located 4 miles west of Williams.

The Oscar Creek Placer, located between Murphy and Provolt, was worked during the year by D. O. Hayes.

Waldo Area

Atlas Gold Dredging Company has a 4 cu.yd. Marion-Walker dragline and 6000 yard capacity floating Bodinson washer on Althouse Creek. Recently equipment was moved to the lower portion of the area to be mined.

Collard Chromite was investigated by the United States Geological Survey in the fall of 1940.

Harry Messenger and associates have done some work on the old Cowboy Copper Mine and recently have leased a portion of the Plataurica Placer Mine.

C. R. Stout of the Esterly Placer Mine has just opened a new pit on the Fry Gulch holdings.

Plataurica property which was managed by Fred Galeno, has been sold, and portions have been leased to local operators.

Pony Shoe Mine, operated by George LaMore and Fritz Jensen, is closed for the winter. The property is located near the California line near the Happy Camp road.

Turner-Albright Mine has been taken over by Gilbert Stuart and Paul Wright. They plan to mine a gossan deposit. A road is being built in to the property and as soon as weather permits, they expect to resume operations.

Gene Brown is reported to have signed a contract to deliver chrome ore in Grants Pass, according to the Illinois Valley News.

Rainbow Mine is located between Cave Junction and the Oregon Caves on Sucker Creek. Mr. Barr and associates optioned the property in October, 1940. The 25-ton mill has been repaired and about 60 tons of ore milled in a test run. Continued operation is planned.

Althouse Placer was leased during the 1939-1940 season to C. O. Taylor and Andy Wilson.

Prospecting was done during the summer on Logan's Sailor Gulch Placer, a part of the old Sailor Gulch Mine.

Tip Top Mine located on Sucker Creek is being purchased from Ray Denton by the Tip Top Mining Co., which plans to develop and start milling operations.

MISCELLANEOUS

Parker Methods Incorporated has a plant on Ophir Beach 12 miles north of Gold Beach. The operators, using an electromagnetic device, have been experimenting in the recovery of black sand and precious metal values in the beach deposit at the mouth of Euchre Creek.

Willamina Clay Products Co., Portland, with quarries at Hobart Butte and Willamina, operated throughout the year. Common brick, tile, and a high quality of fire brick were produced.

Columbia Brick Works. Plants at Salem, Gresham, and Sylvan, produced common brick, face brick, and various kinds of tile products.

Oregon Portland Cement Co, with quarries at Lime in Baker County and near Dallas in Polk County, operated throughout the year. Cement plants are at Lime and at Oswego just south of Portland.

Pacific Stoneware Co., with kilns in the Peninsula district, Portland, was active throughout the year, producing pottery and stoneware of various kinds.

Other plants in Northwestern Oregon producing common brick and clay tile products were Corvallis Brick & Tile Co., Corvallis; Monroe Brick & Tile Co., Monroe; Scholls Tile Co., Scholls; Molalla Brick & Tile Co., Molalla; McMinnville Brick & Tile Co., McMinnville; Forest Grove Clay Products Co., Forest Grove; Albany Brick & Tile Co., Albany. The Klamath Falls Brick & Tile Co. was active throughout the year, producing common brick, face brick, and various kinds of tile products.

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A large number of sand and gravel producers in the State were active throughout the year. Some of the more important of these companies are given below:

Ross Island Sand & Gravel Co., Portland.
Porter W. Yett, Portland.
Rose City Sand & Gravel Co., Portland.
Kern & Kibbe, Portland.
Bell Sand & Gravel Co., Portland.
Oregon City Sand & Gravel Co., Oregon City.
McVey Sand & Gravel Co., Newberg.

Charles H. Hoyt, Silverton.
Salem Supply Co., Salem.
Anunsen Co., Salem.
River Bend Sand & Gravel Co., Salem.
Van Aken Sand & Gravel Co., Forest Grove.
Gales Creek Sand & Gravel Co., Forest Grove.
Eugene Sand & Gravel Co., Eugene.
Intercity Sand & Gravel Co., Eugene.
McKibben Bros., Sheridan.
Clark Sand & Gravel Co., Corvallis.
Mid-Columbia Sand & Gravel Co., Dallas.
McGeorge Sand & Gravel Co., Marshfield.
Roseburg Sand & Gravel Co., Roseburg.
Rogue River Sand & Gravel Co., Grants Pass
M. C. Lininger & Son., Ashland.
Clifford A. Dunn, Klamath Falls.
J. M. Baker, Klamath Falls.
Bend Sand & Gravel Co., Bend.
Jones Sand Co., Umatilla.
Lofts & Son., Hood River.
Astoria Crushed Rock Co., Astoria.

In addition to the sand and gravel activities, stone was quarried for construction purposes at the Rocky Butte quarry, Portland, owned by Joe Marston; and from the Flat Rock quarries at Stayton. A considerable quantity of tufa was quarried in southern Baker County and used by the Oregon Portland Cement Co.

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CLEARING HOUSE

Minor Blythe, 1003 W. 35th St., Los Angeles, Cal., is in the market for kyanite, sillimanite, and andalusite.

James K. Little, 802 Hass Bldg., Los Angeles, Cal., wishes to buy the following minerals: Stibnite ore, 45% to 60% antimony; manganese ore, 48% manganese; tungsten ore, 60% or better tungstic oxide.

Bruce McKenzie, 237 Washington St., Eugene, Ore., wishes to sell refractory clay deposit. Tests by State Department of Geology & Mineral Industries.

Joe Mustard, Denio, Ore., wishes to interest capital to develop and ship ore from manganese deposit in northern Humboldt County, Nevada, about 60 miles east of Alturas, Calif. Also has cinnabar and gold ore claims, same district.

For Sale: Gold property, southern Oregon, Williams Creek district, about 25 miles south of Grants Pass; $25 per ton recovered from 30-40 tons of ore milled. Tailings said to assay $12 per ton. 3 full claims unpatented. Price $3000 in 3 equal payments, extending over 18 months. Address Box 31, Merlin, Ore.

QUICKSILVER PRODUCTION

According to the monthly Mercury Report of the United States Bureau of Mines issued February 5, 1941, domestic output of mercury amounted to 3,700 flasks in December - an increase of 300 flasks over November and the largest monthly production for the year. Reported consumption in December was 2,100 flasks, a decrease of 800 flasks compared to November consumption. Consumers' and dealers' stocks at the end of December amounted to 14,100 flasks, an increase of 1,500 flasks of that reported at the end of November.

There were no general imports in December, nor any imports for consumption. Total exports for the month amounted to 566 flasks, 375 flasks of which went to the United Kingdom. Producers' and dealers' stocks amounted to 607 flasks, a decrease of 372 flasks over the reported amount for November.

Quoted market prices for quicksilver were around $168-$169 a flask at New York at the beginning of the month, and were slightly lower at $164-$166 at the end of the month. Present market price is quoted at around $169.

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The ORE.-BIN
State of Oregon
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES
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STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

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GEOLOGIC MAP OF THE GRANTS PASS QUADRANGLE ANNOUNCED

Announcement is made of the publication by the State Department of Geology and Mineral Industries of the geologic map entitled: "Preliminary Geologic Map of the Grants Pass Quadrangle", by Francis G. Wells.

Geologic mapping of the quadrangle was begun as a part of a project by the United States Geological Survey to study manganese and chromite deposits in southwest Oregon. Mapping was completed under a cooperative arrangement between the Survey and the State Department of Geology and Mineral Industries. The Department paid for publishing the map.

Survey parties under the direction of Dr. Wells mapped the quadrangle during field seasons of 1938, 1939, and 1940. Because of the value of such a geologic map as a guide in studying ore deposits of the area it was the desire of the Department and the Survey to make the map available as promptly as possible.

The map, 26 inches by 27½ inches, is in colors and forms a 30-minute quadrangle. The scale is 1:96000. On the back is printed a condensed description of the petrology and geology of the area covered. A list of 134 mining properties with locations is given.

The price of the map is 30 cents postpaid; it may be obtained at the State Assay Laboratories at Baker and Grants Pass, and at the Portland office.

TO ALL EXCHANGE LIBRARIES

Copies of this publication will be mailed from this office about March 20, 1941. If not received within ten days from the above date, advise this office immediately; otherwise, replacement for copies lost in the mail or elsewhere cannot be made.

OUR RELATIONS WITH THE LATIN AMERICAS

by Earl K. Nixon

If I were to greet you as "Fellow Yankees", or as "Fellow North Americans", you would not take it as a matter of course, but you would suspect that I had some especially queer quirk of mind, or that I was a forgetful ex-member of a famous baseball club. Neither is the case. I would, as a matter of fact, have been addressing you with a degree of precision and accuracy.

I was considerably embarrassed once last summer on this matter of human classification. While in a certain South American capital, I was introduced to a Spanish gentleman, native to the country in which I was working. He said to me, "Are you English?"

I replied, "No, Senor. American".

His answer was, "I believe you mean 'North American'", and he emphasized the word north. It was a very stupid slip on my part. I should have known better.

I do not need to tell you that a Mexican peon, a Brazilian coffee-picker, a Chilean nitrate worker, or a Chollo Indian of the Peruvian Andes is just as much an American as you or I. And those chaps are proud that their country is one of the Americas.

Some Yankee tourists, especially male travellers making a trip below the equator on a cruise boat, occasionally exhibit the propensity - and I say this from personal observation - of making for the nearest bar or saloon on docking, and taking on a number of the alcoholic drinks that are most popular in the country in question. When, sometime later, a policeman has to intervene - and he usually does so apologetically since there is a foreign visitor involved - the Yankee tourist is apt to protest loudly, "Hey, funny-face, you can't push me around. I'm an American". You would be surprised how much influence the tourist has on the Latin American's conception of the average Yankee - unfortunately.

Sometimes I feel that our relations with the Latin Americas - and other countries - might be more cordial, and the average Yankee more highly regarded if our passport authorities had a two-weeks mandatory night school for prospective tourists where they taught courtesy and the appreciation of fellow human beings.

Look up your encyclopedia - if that is necessary - and you will find that "America" refers to the New World - the countries of the Western Hemisphere. We in the United States have acquired the unfortunate habit of thinking that anything American belongs to our United States; we seem to feel that we have some kind of copyright on the term American. We have, perhaps unfortunately, begun to take a national pride in what we call the "American Way". Even the President, I believe, in some of his fireside chats, has used the term loosely. We go the extreme length of singing "God Bless America" when we know that we refer to nobody else in the world than us here in the United States, our selfish selves. By inference, we are singing, "To hell with the other Americas and South America, we want all the blessings here, O Lord". The difficulty is not with the song. It's a great song, a stirring one; but it's what we think it means, or what we

mean by it. To a visiting citizen from another America, or to a southern listener at the short wave radio there is nothing obscure about our intent; we are misappropriating for ourselves a term commonly shared by all the Americas and all Americans.

We say "American" when we mean "Yankee", or "North American", or "We in the United States". In the Latin Americas we are called "Gringoes", not "Americans", and they have their own ideas about the term gringo. Anyway, in our use of the term "American" we take too much for granted, we take in entirely too much territory, and in our somewhat conceited but unconscious arrogance, we pour salt into the open wounds of our less fortunate Latin American brother. Our attitude has a bearing on our relations with the other Americas, too.

Before going further, may I say this? My intent is to give you an analysis of conditions, to point out salient facts that seem important in connection with some of our foreign relations. I wish really to give you a story - both sides of a story, an exposition, rather than to try to convince you or convert you to my way of thinking. I have no axe to grind. I shall give you my own conclusions, yes - and call 'em as I see 'em, but only as a part of the story. The story requires frankness, and I shall be frank, but I ask, please, that you construe none of my statements as a reflection of my views on personalities or politics.

The subject uppermost in the minds of most adult North Americans now is national defense - both military and economic. No one will deny that our relations with the Latin Americas fill the upper right-hand corner of our national defense picture. If you are not interested in Latin American affairs just now, you should be, because you are beginning to have a financial interest in Latin America - that is, the Federal Government is with money you have paid for taxes. As to whether or not you agree with the administration on its making of substantial loans to the South and Central American republics, you may want to form your own opinion. We in the United States fortunately can still form our own opinions, and thank God, we can still express them.

My own interest in Latin American relations dates from ten years ago. In July, 1930, I went to a country on the east coast of South America, and lived and worked there for nearly two years. Since April of last year, 1940, I have had occasion to make two round trips to the west coast of South America, and to spend about three months in Peru. My work was technical and pertained to the possible starting of two new industries within the republic - an iron and steel industry and an export coal industry.

My perspective since spending a part of the season on the other side of the equator, and mainly "on the go", differs substantially from what it was a year ago. Particularly, the military defense angle of our "back door to the south" is much clearer. This is perhaps because I made three passages by air between points in the United States and Peru. I am not proud of flying these thousands of miles; I'd somewhat rather go by slow boat, it is more fun. But I am deeply conscious of the possible significance from the military viewpoint of having dinner in Portland, Oregon, and lunch in New York the next day; or breakfast in Mexico City and breakfast 24 hours later in my home in Portland. I refer to the schedules of our regular commercial airliners rather than to the feats of modern 300- or 400-miles-per hour military fighting planes.

One conclusion I have reached is that our Panama Canal probably could not be successfully defended from attack by a strong enemy air force with military

bases in the northern countries of South America. The Canal, I think, is too vulnerable; I refer to its exposed locks, generating stations, and water supply dam, - not to mention the various points along the Canal where bombs or explosions would cause serious earth slides, the present incipient condition of which is obvious even to one not a geologist. In my opinion it is too much to expect that we can hope to defend those forty miles of big ditch and all its vital facilities. I say that after flying over the Canal from end to end several times, and after passing through it once by boat in the last several months.

To me the condition emphasizes forcefully the necessity not only of a two-ocean navy, but also of our taking whatever reasonable and peaceful steps may be necessary to guarantee that no strong enemy power shall obtain bases in the northern countries of South America.

Now I wish to touch on the two main divisions of our relations with the Latin Americas. I refer to (1) the Human and Cultural relations, and (2) the Political and Commercial relations. I want to say a little about what we think of them, something about what they think of us, and to dwell on and give some reasons for these reciprocal impressions. For in them may lie the remedies for many unfortunate misunderstandings.

Not infrequently, we hear or read the statement, "We should maintain close and friendly relations with our Latin brothers because we have so much in common". Horse feathers! We do not have many things in common, I am sorry to say. About the only common bond we have is geographical; we all happen to live on the same island. And if it had not been for old Balboa, and about 40 miles of Panamanian jungle, and a little geological slip back in Tertiary time, we would all live on the same two different islands - like England and France, only more so. - Wish I had space to discuss in some detail the ways in which Latins and Yankees - peoples and countries - could benefit by reciprocal donations and subsequent adoptions of selected characteristics. An understanding of the things which we do not have in common with our Latin friends is essential to a proper understanding of our relations.

In what ways do we not have things in common with our Latin American friends? Take the following: -

a. Literacy. In the southern countries, with exceptions that are local, there are great majorities of the peon class that are illiterate; in the United States, illiteracy, for all practical purposes, may be said to be negligible.

b. Classes. There is virtually no middle class in Latin America. There is the great lower, or peon, class, and the small upper or ruling class, composed mainly of relatively wealthy people of old-country stock - landed gentry. In the United States the "dwellers on Main Street" - the great Middle Class, is the United States of America.

c. Culture. In the United States it is widespread and it is denied almost to no one. - And it is very young, a few generations. In the Latin Americas it is confined to a few spots only, mainly capital cities; it is available to but relatively few, and it is very old. There was some real culture in some of the Latin Americas before the Yankee tourist was invented.

d. Democracy. The United States is a democracy with all that implies. The Latin Americas are republics in form but their presidents in some cases are

virtually dictators so far as their power to rule is concerned. I am personally inclined to think that in the case of a great sprawling country such as Brazil - larger than the United States, containing Portuguese, Spanish, German and Italian people, each kind more or less segregated as to location - a really strong man and one of average righteousness like President Getulio Vargas, is preferable, and certainly more effective in holding the country together, than would be a fuddy-duddy, professional politican type of executive properly elected in a typical democracy.

e. Living. The average standard of living in the Latin Americas is relatively low. In the United States it is the highest of any country in the world - if that is something worth bragging about. I think the question is debatable. When we confuse our standard of living with culture, and frequently judge both on the basis of the length of our automobile, or the amount of our worldly goods; when the basis of our standard of living is the matter of "keeping up with the Jones's"; when, if Bill Jones is sent to college, our youngster must go too - whether or not either has enough brains to absorb what he is taught; when, under our standard of living and education everyone is looking for white-collar jobs and there are not one-fourth enough to go around - and when 90% of college graduates have no conception of how to do anything useful with their hands; when we live in a psychological mire in which we are more concerned with the possibility of buying a dollar article for 89 cents, than with whether the article has honest value; when craftsmanship is almost an obsolete form, and is being replaced by a get-it-by-the-inspector complex -- when this very high standard of living in which we take such pride, is the basis of our inability to carry on a normal foreign commerce with any countries in the world with depreciated currencies - it seems to me that our very high standard of living becomes a diminishing asset.

f. Industry. The United States is truly an industrial country; the Latin Americas are mainly agricultural, with mining (mainly under foreign control) important, and manufacturing negligible.

g. Wealth. The United States is a very wealthy country; the Latin Americas are poor, when measured by the same standards.

h. Products. The products and exportable surpluses - the real basis of world trade - of the United States are very numerous and diversified; the principal products and exportable surpluses of the Latin Americas are very few - about a dozen. They are: bananas, coffee, copper, cotton, gold, nitrates, tin, meat, hides, sugar, wool and oil. Five are minerals and seven are agricultural.

i. The Latin Americas represent old system like the parent countries. In many ways they are replicas of the old countries transferred to a new world; the United States represents a new system, or the slowly evolved outgrowth of a new political and economic system.

(to be continued)

CHROMITE IN SOUTHWESTERN OREGON

In the fall of 1939 a field party under Francis G. Wells, of the United States Geological Survey, studied and mapped chromite deposits in the Sourdough area in Curry County and the Briggs Creek area, Josephine County. A report of the studies has just been issued as Geological Survey Bulletin 922-P, CHROMITE DEPOSITS IN THE SOURDOUGH AREA, CURRY COUNTY, AND THE BRIGGS CREEK AREA, JOSEPHINE COUNTY, OREGON, by F. G. Wells, L. R. Page, and H. L. James. The bulletin contains 36 pages, several figures,and tables of chemical analyses, together with two geologic maps in a pocket. The report will be of great help to anyone seeking information concerning chromite in these districts. The price is 30 cents; it may be obtained from the Superintendent of Documents, Washington,D.C.

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OREGON'S FOUNDATIONS SOLID

C. C. Chapman, in the OREGON VOTER, page 5 of issue of March 8, 1941, presents a strong, clear-cut statement of Oregon's progress, based on sound public policies, in comparison with her sister states to the north and south. Under the heading "State Belittled, Yet Oregon Leads Neighbors", Mr. Chapman writes:

> "Judged by every index of employment, unemployment, applications for relief, applications for old-age pensions, WPA certifications, volume of business, volume of production, volume of sales and other indices of economic change, Oregon has done better during the last ten years than either of her sister states. Temporarily, with defense programs placed in Washington and California in tremendous volume, those two states are making relatively a greater showing, even as they did during the World War, but in the permanent peace-time occupations Oregon has been making real and substantial progress in excess of its enterprising neighbors; it has avoided their deficits; its fiscal affairs are in good shape; it has avoided the heavy taxes which in those states have been necessary in their attempt to finance their huge expenditures."

The facts that Oregon's financial standing is so excellent and her reputation for sane handling of fiscal matters is so good should be given due weight by those investigating locations for industrial sites in the Northwest.

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QUICKSILVER STATISTICS

The U. S. Bureau of Mines Monthly Mercury Report released March 8th gives statistics on quicksilver production as follows:

Approximate production in January was 3100 flasks compared to 3700 flasks in December. Domestic consumption was 2900 flasks in January, compared to 2100 flasks in December. It is pointed out that operating conditions, due to the winter season, were largely responsible for the drop in production, but indications are that the decline was due in part at least to exhaustion of ore reserves at some properties. Consumers' and dealers' stocks at the end of January were 14,100 flasks, the same figure as was on hand at the end of December. This amount is equivalent to nearly 5 months' requirements. Producers' stocks of 412 flasks at the end of January would amount to less than another week's supply.

The principal producing states, California, Oregon, and Nevada, all showed declines in output as compared with the preceding month. The reduction in California output amounted to 22% below December, 1940. Oregon's production was 10% lower than in December. Exports of quicksilver amounted to 455 flasks in January, compared to 566 flasks in December. 326 flasks of the January exports went to the United Kingdom and 65 flasks to Australia. Because of the decrease in output and increase in consumption, the market prices have continued to show an advance. At the beginning of January the quotations were $164-$166; at the end of the month quoted prices were $167-$169. Present price quotations are $176-$178.

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NEW CHROMITE RESEARCH EQUIPMENT AT OREGON STATE COLLEGE

Two machines of particular interest have recently been installed in the Chemical Engineering Laboratory of Oregon State College. This equipment is to be used in testing ores to determine if they are amenable to concentration because of their magnetic and electrostatic properties, and will be used particularly in testing work on low-grade chromite. Such work may point the way to commercial concentration of chromite sands in certain back-beach deposits of the southern Oregon coast.

The first unit is a Stearns four-inch, three-roll, high intensity magnetic separator. It is equipped with a variable ore feed and generator for D.C. power. The generator is mounted direct-connected to the driving motor. Rheostats and meters are carried upon a separate control panel to regulate current and voltage. The rolls and feed mechanism are driven from the motor through a variable speed drive. Spacing of the magnetic poles with respect to the laminated rolls and the position of the splitters complete the variables upon the machine.

In operation, the magnetic field at each roll can be varied by spacing and the separation varied by the splitters so that a concentrate of different permeability is obtained from each roll. Generally, after scalping the highly magnetic material (magnetite) on the first roll, the second and third rolls are set so that material from the second roll is concentrate and material from the third roll middlings which can be recirculated. The tailings pass entirely thru the machine to be collected in a pan at the bottom. Due to the magnetic particles adhering to iron pans, it was necessary to make all collecting pans of copper.

Operating at 4 amps. through the magnetic winding at 110 V., the machine has separated classified material at a rate of 100 lb./hour. Since it is only a laboratory unit, it is not to be expected that the capacity would be high; however, relatively large samples can be treated without the expenditure of any appreciable amount of time.

The second machine is an electro-float (electrostatic) separator made by Sutton, Steele and Steele of Dallas, Texas. The unit is entirely encased except for the 0 to 20,000 volt D.C. power source which is a vacuum tube, full wave rectifier. The machine is equipped with both needle and gas electrodes which can be adjusted to space from the grounded roll over which the ore passes. The roll is fed from a vibrating feeder and over a heated plate so that the surface moisture is eliminated from the ore prior to charging. Regulations upon the machine include voltage, feed, roll speed, electrode spacing and position of slices. The latter are so arranged that a concentrate, middlings, and tails are produced. Practice has been to recirculate the middlings fraction.

The equipment cost $1953.00. The purchase was made possible by a gift of this amount to the Department of Chemical Engineering by the Martin Dennis Company of Newark, New Jersey.

In the investigation of back-beach chromite sand deposits to be made by the State Department of Geology & Mineral Industries during 1941, samples obtained by drilling will be tested in these machines under a cooperative arrangement with Oregon State College. Professor George W. Gleeson, head of the Chemical Engineering Department, will have charge of this testing work.

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STRATEGIC MINERALS

Recent inquiries at the State Assay Offices show that there is a widespread misunderstanding of the Federal government's policy in regard to strategic mineral deposits.

The Strategic Minerals Investigations Enabling Act passed by Congress in 1939 provides for the common defense by acquiring stocks of strategic and critical materials essential to the needs of industry for the manufacture of supplies for the armed forces and the civilian population in time of national emergency and to encourage, as far as possible, the further development of strategic and critical minerals within the United States.

Following is a list of strategic and critical materials issued by the Army and Navy Munitions Board Commodities Division.

LIST OF STRATEGIC MATERIALS

Aluminum
Antimony
Chromium
Coconut Shell Char
Manganese, ferro-grade
Manila fiber
Mica
Nickel
Optical Glass
Quartz Crystal
Quicksilver
Quinine
Rubber
Silk
Tin
Tungsten
Wool

LIST OF CRITICAL MATERIALS

Asbestos
Cadmium
Coffee
Cork
Cryolite
Flaxseed
Fluorspar
Graphite
Hides
Iodine
Kapok
Nux Vomica
Opium
Phenol and Picric Acid
Platinum
Scientific Glass
Tanning Materials
Titanium
Toluol
Vanadium

In the above tabulation, "strategic materials" are defined as those "essential to the national defense for the supply of which in war, dependence must be placed in whole, or in part, on sources outside the continental limits of the United States, and for which strict conservation and distribution control measures will be necessary". "Critical materials" are defined as those "essential to the national defense, the procurement problems of which in war, while difficult, are less serious than those of strategic materials because they can be either domestically produced or obtained in more adequate quantities or have a lesser degree of essentiality, and for which some degree of conservation and distribution control will be necessary".

The United States Bureau of Mines and the Geological Survey are not charged with any duties whatsoever in connection with such purchases. Producers in a position to supply minerals for stockpile purposes, therefore, should address inquiries to the Treasury Department, attention of the Procurement Division, or to the Metals Reserve Corporation of the R. F. C., Washington, D.C.

The Director of the United States Bureau of Mines in discussing this act stated: "It should be noted that the Act does not authorize loans or grants to owners of deposits of strategic minerals. This is emphasized because of an apparent general misunderstanding on this point. The intent of the Act is that certain facts regarding such deposits be determined by the Bureau of Mines and the Geological Survey as they relate to the needs of the United States and that the Government is not concerned with the development of the property of any individual or corporation for his or its benefit. On the other hand, it is hoped that, as a by-product of the investigations, private enterprise may be stimulated".

Government loans for development and other purposes are handled by the Reconstruction Finance Corporation.

In December 1940 the Mining Congress Journal printed an article entitled "Development and Production of Domestic Supplies of Strategic and Critical Minerals" by Samuel L. Dolbear, consulting mining engineer of New York.

This paper gives an up to date, concise and very instructive report of present position of strategic minerals in relation to government buying as well as complementary matter relating to government loans and other government activities.

Originally, only one government agency, that of the Procurement Division of the Treasury Department, had jurisdiction over the purchase of strategic minerals for stockpile purposes as specified by the Army and Navy Board. Under the law which gave authority for these purchases, materials acquired by the Government for its emergency stockpile may not be sold when the present emergency passes. The stockpile must be held indefinitely unless supplies in private hands have become exhausted. In that case, provision is made so that industry could then requisition a supply from the Government stockpile. The result is that only high grade supplies which are available normally only from foreign sources were considered desirable.

In order to make available certain supplies of domestic strategic minerals which means relaxing to some degree the rigid specifications set up by the Procurement Division of the Treasury Department, the R.F.C. organized the Metals Reserve Corporation for the purchase of the following:

Manganese
Tin
Tungsten (and under certain conditions chromium in grades below metallurgical and domestic metallurgical if the producer is unable to conform to terms of the Treasury Department)
Asbestos (foreign amosite and Blue fiber) and graphite may be included.

The Reconstruction Finance Corporation is not bound by the regulations which govern Treasury purchases and may therefore purchase specified minerals below the grades required by the Army & Navy Munitions Board. Also the R.F.C.

is not required to hold these stocks any specified time; they may be liquidated when the emergency is over. Purchases authorized are chrome ores classified as "chemical" and "refractory".

The plan advocated in some quarters to establish purchasing agencies at various western points conveniently located to potential producing areas, at which locations quantities from a truckload to a carload would be sold, has not so far met with favor.

The point of delivery for ore purchased by the Procurement Division of the Treasury are at New Cumberland, Penna., for chromium; at Columbus, Ohio, for tungsten and quicksilver; at Baltimore, Md., for manganese. Points of delivery for ore purchased by the Metals Reserve Corporation (R.F.C.) have been established at Baltimore, Md., for manganese, and at Columbus, Ohio, for pig tin. The Metals Reserve Corporation may, however, take delivery at any point deemed expedient. It is stated that neither the Treasury Department nor the Metals Reserve Corporation make available schedules or prices which will be paid for the various ores. "The intended operator is advised to estimate his cost of production and submit a fair offer based on this estimate". It is obvious that there are obstacles in the way of negotiations conducted along these lines.

The Procurement Division of the Treasury Department is authorized to pay somewhat higher prices for domestic minerals than for those of foreign origin. Government specifications of the various minerals which both the Procurement Division and the Metals Reserve Corporation may purchase, will be furnished by these agencies upon request.

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CLEARING HOUSE

Herbert W. Smead, 15th & Highland Ave., Clarkston, Wash., wishes to sell or lease Eureka Mine, located in Wallowa County, on Snake and Imnaha Rivers, about 54 miles south of Lewiston, Idaho. Property consists of 46 patented claims. Large amount of work done 35 years ago. Owner states that dumps contain between four and five hundred thousand tons of ore containing gold, silver and copper.

C. D. Reeves, 10257 SE Pardee St., Portland, wishes to do assessment work or to obtain a lease on a mining property from which he could ship ore.

C. C. Weidemann and associates, 911 SE 26th Ave., Portland, are endeavoring to interest capital to operate their placer claims on Indian Creek, Siskiyou County, Calif. The property is in a good producing section. Would like to discuss same with parties who have idle equipment or wish to become financially interested.

E. L. Moyer, Canyonville, Ore., wishes to sell his talc property or to contract for the sale of the product. Deposit is located about a mile from Canyonville.

J. W. Goggin, 111 NE 2nd Ave., Miami, Fla., states that he has buyers for beryllium ore, antimony ore, and chalk.

Minor Blythe, 1003 West 35th St., Los Angeles, is in the market for tonnage shipments of the following ores of good grade: ferberite, wolframite, scheelite

in the form of either mine run or concentrates, and andalusite.

R. H. Russell, 227 Hutter Bldg., Spokane, Wash., states that he has for sale a number of placer properties suitable for either dragline or bucket line dredges. Two of these properties are stated to be extensive. Several deposits are suitable for hydraulic operations. A list of properties is available.

C. S. Smith, 2114 SW 1st Ave., Portland, telephone BE 3536, desires to sell 8 unpatented mining claims showing chromite assaying 42% to 47% chromic oxide. Location is between the North Fork of Smith River and Bald Face Creek in Curry County. 28 miles of Forest Service road connect property to Redwood Highway at O'Brien, Oregon.

Pyrophyllite is a soft mineral and occurs in fibrous, lamellar and foliated masses. The colors are white, greenish, grayish yellowish, and brownish. It is similar in appearance both to talc and asbestos. The fibrous variety is composed of curved and distorted often radial fibers. Some varieties are distinguished by the ease with which small fragments when heated spread out into fan-shaped fibrous forms several times the size of the original fragment. Pyrophyllite is in demand, and anyone having a deposit for sale should submit samples to Department offices.

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The Oregonian of March 8th reported an AP dispatch as follows:

"Nickel was placed on the mandatory priorities list to assure defense production of first call. Unprecedented demand for the metal forced imposition of the priority system despite estimates that imports from Canada were running at nearly 15,000,000 pounds a month, at least double any previous monthly rate on record.
The United States bureau of mines announced it would start experiments in Pullman, Wash., which it believed would lead to the commercial production of magnesium. A new process was under consideration to pad out present manufacturing methods, which extract the light-weight metal from sea water.
From Washington came word a zinc pool would be started in April by setting aside 5 percent of production for allocation in case shortages occurred in defense work. Statistics showed stocks in the hands of producers at the end of February had dropped below 5000 tons, equal to less than three days' supply.
Another blast of buying forced lead sellers to resort to foreign mined pig lead.
Information in the trade indicated details were virtually complete for release to domestic consumers of copper purchased in Latin America to bolster inadequate domestic supplies.

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VOL. 3 NO. 4 PORTLAND, OREGON April 1941

INDEX OF GEOLOGIC MAPS ISSUED

An 8½x11 inch index map with the title "Published Geological Maps in Oregon" has recently been issued by the State Department of Geology and Mineral Industries. A complete bibliography is given on the back. Maps from a total of 41 different publications cover over half the area of the state, although only about a sixth of the state has been covered in detail, the rest being of reconnaissance accuracy.

This index, which is of value to anyone seeking published information on the geology of a certain area in the state is on sale for 5 cents at the State office, 702 Woodlark Building, Portland.

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The Oregonian of March 30th gave pertinent facts concerning the Defense Commission's recent activities in various metal categories. Some of the items were given as follows:

Aluminum: Defense Commissioner Henderson fixed maximum prices on scrap aluminum and secondary ingots. An allocation formula must be followed by producers, fabricators and secondary smelters. The measure went far beyond controls imposed a month ago. Henderson said price ceilings were found necessary in part because of failure of primary production to meet demands.

Copper: Defense authorities prepared to allocate supplies for April delivery. Additions to domestic production were expected to forestall possibility of a shortage. About 30,000 tons of foreign metal were expected to arrive, and there were reports that 20,000 tons destined for France might be added to the total.

Tungsten: A shipment valued at $3,000,000, one of the largest in recent months, arrived at New York. The ore weighed 1900 tons, or 20 percent of the quota set for 1941 defense needs. The office of production management established a general priorities system.

Quicksilver: Leon Henderson charged the current price of $180 for a 76-pound flask was too high and said domestic production plus imports exceeded demand.

Lead: The price was lifted $2 a ton to a basis of 5.85-5.90 cents, highest since September, 1937. Buying continued at a fast clip and major sellers dipped into foreign supplies of pig lead.

Zinc: One of the most severe shortages in all metals prevailed. Henderson predicted a price ceiling for scrap.

Steel and Iron: Steel quarters heard a pig iron shortage was in prospect despite active production. Labor problems overshadowed other factors but demand and production continued at record rates.

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OUR RELATIONS WITH THE LATIN AMERICAS

by Earl K. Nixon
(continued from March 1941 number)

Now what do we think of the Latin American countries and peoples? By and large, we do not know much about their people, and we do not think we care a great deal about their countries - South America, at least. We understand it is unsanitary, that there are mosquitoes and lizards, that the servants and local officials are tricky, that they have revolutions, and that "Oh, it's terribly hot down there". The answer, of course, is, "Yes and no - depending".

As to sanitation, I seem to have heard a rumor that citizens of Portland, Oregon, U.S.A., are not in the habit of lying down on their bellies and drinking their fills out of the Willamette River, either, although I have drunk my fill many times out of the Orinoco River in South America. As for mosquitoes, I've lost more blood in a month doing geologic work in Wisconsin and Upper Michigan or in a week in Alaska or the Yukon, than I did in two years living in the Orinoco jungle - and that is known for its mosquitoes. As for tricky servants and local officials and revolutions, I sometimes think they are pikers down there compared with Huey Long, Prendergast of Kansas City, the Kelly-Nash outfit of Chicago, "Pretty Boy" Floyd and some of the riots and rackets we have in this country. I understand that there have been times when $5,000 would put on a beautiful "revolution" in some Latin America - that is, a "revolution" as classified and described with lurid abandon and banner headlines by Yankee newspapers - whereas in the U.S., $5,000 would hardly pay for the rubbing out of a tinhorn racketeer who don't even rate the title of "Public Enemy No. umty-umpth".

I happened to be in Venezuela during one of those so-called revolutions. The newspapers, of course, played it up - there wasn't anything else just then to play up. They sent a "gunboat" up toward San Fernando de Apure. The gunboat as I recall resembled a big Portland harbor tug and carried a platoon of soldiers. On the fourteenth day in late afternoon, someone noted the "gunboat" steaming back down the 3-mile wide river out of the setting sun. All the flags were waving. From that we knew that the enemy had been conquered and the revolution put down. Cheers went up as the hilarious soldiers disembarked and paraded up the Avenida. The next day was declared a holiday in the city (the largest within hundreds of miles within the republic). I got the story. After 10 days of heat on the river and steaming against the swift current, the food began to get a little low. They must be in enemy territory - they surely had come far enough. Suddenly an Indian family, three or four men, a couple of women, and two or three children, all in a big dugout canoe were seen cutting across the river a bit upstream. The gunboat gave chase, finally fired a volley. A man and a woman were killed, according to my informant, the others escaped. That would teach them to respect the government. Anyway, it was quite a "revolution" - in the United States. The U.S. newspapers reported that things were reported. After reading some of the worse write-ups, one could almost smell the smoke of battle and hear the gurgle of blood from well-slit throats. Bushwah!!!

Now what do they think of us? They have, at least until recently, harbored considerable suspicion and resentment of us. Why? Well, here briefly are some of the reasons.

1. North American corporations operating in South America and Mexico have been rather arrogant in some cases. They have been in the habit of having pretty much their own way, even in this country. In the Latin Americas, they could push

around the peons - they were used to that - but when it came to the minority or wealthy, ruling class, it hurt. The latter are dignified and sensitive. Resentment toward us was the result.

2. It appears that the U.S. State Department at times has brought pressure to bear on the Presidentes or ruling families to gain certain ends or to favor certain industrial interests. That also has been the basis of resentment.

3. Goods of U.S. manufacture imported into the Latin Americas usually cost considerably more than corresponding items made in Europe or elsewhere. Our costs are higher because our living standards are higher and our laboring classes are higher paid.. The quality and style of our goods are usually better, and are preferred, but how these people hate to pay the price. The condition is sometimes construed as an affront to them. They are not concerned with how many bathtubs or radios per capita we have; they are concerned with the cost to them of a good axe or hoe or auto tire.

4. The masses in some of the Latin American countries may be said to have been kept down at times by the minority ruling classes or families that more or less control the elections. There have been well-known instances of U.S. banking houses putting millions into some of the ruling hands in order to maintain the regime. That, according to the protectors of the peon classes, has had the effect of keeping the latter down - of making the poor people poorer and the rich people richer - and they resent it. I do not think any of that is going on now, but it has been a cause of resentment in the past.

So human and cultural relations between the U.S. and the Latin Americas are not on a basis of full understanding, unfortunately.

Now what about political and commercial relations? First, what about the Monroe Doctrine? Contrary to what you may think, the Monroe Doctrine has not been so popular in the Latin Americas. Why? Because sometimes our methods, at other times our motives, and frequently our sincerity have been subject to doubt. Some of our acts have looked quite different to one on the other side of the Rio Grande or the Isthmus than to the rank and file of us who live here.

Recall that the Monroe Doctrine came about mainly as a result of suspicion of possible action by Russia in the Bering Sea area, and because of the ideas of the Holy Alliance and Spain in South America. President Monroe, in 1823, stated his famous doctrine that the United States would henceforth not allow European or other foreign powers to establish colonies in or meddle in the affairs of the Western Hemisphere countries. This magnanimous edict seems to have carried the added implication that the United States out of sheer modesty and righteousness was prepared to play big brother-defender for the Latin Americas, and had no idea of increasing its sphere of influence, adding territory, or otherwise of embarrassing or complicating the existence of the Latin Americas. Anyway, that is the way they seemed to have accepted the Monroe Doctrine. They were tickled pink - at least, they were at first. Later, some of the Little-Red-Ridinghood-republics had some reason for thinking they were living in the same forest with a big bad wolf. Let us look at the record.

Take the Panama Canal zone. Theodore Roosevelt grabbed that back about 1902. I think it actually took him about three days - the real maneuver. Did you ever read the details of how it happened? You should. It's great stuff. The republic of Colombia hasn't got over it yet.

And Teddy Roosevelt's famous "corollary" to the Monroe Doctrine .. a question of our taking over certain police powers in the Caribbean area, though I don't recall that the area to be affected was so carefully stated. Under the corollary we sent marines to Nicaragua, Haiti, Santo Domingo, etc. - and never pulled them all out until 1935.

And there was the Spanish American war. We got all hot and bothered about atrocities being perpetrated in Cuba. The newspapers fanned the fire. I think they even poured a little gasoline on it. Anyway we got worked up to such a pitch that we just had to have blood. We sent our battle wagons around the Horn. The dear old battleship Oregon, now resting down near the Hawthorne Bridge, was one of those that went. The battleship Maine sank in Havana harbor. No one could ever explain how it happened - whether it was an accident or an enemy mine, but so far as we were concerned it was enemy foul play. You know the end as well as I: we came out of the war not only with Cuba and Puerto Rico, but also with the Philippine Islands 10,000 miles away - over in the East Indies. Did that look like we didn't want any more territory?

And even farther back, how about the Mexican War? That wasn't too long after the Monroe Doctrine was announced. Some Yankee settlers and others settled on grants of land from the Mexican Government in territory that is now Texas. In a few years the settlers got together and decided they wanted to be admitted to the Union. We later admitted them - 1845. Mexico hit the ceiling and we went to war - 1847-1848. We wound up, as you probably recall, with much of California, Arizona, New Mexico, and what is now Texas. We paid Mexico $15,000,000 whether she liked it or not. Presumably that cleared our conscience. But did our action agree with the spirit of the Monroe Doctrine? And didn't England colonize British Honduras without interference from us?

Now I agree with you that all these acts were doubtless for the good of humanity, all of them - from our viewpoint - well justified in the light of present conditions and knowledge, but some of them surely looked mighty queer to the citizens living on the other side of the Rio Grande and beyond the Isthmus. Can you blame them for having been suspicious at times of the Simon pureness of our motives?

And then there were the Pan-American conferences. At the first one in Washington in 1889 James G. Blaine, then Secretary of State, was frank enough to say that his idea was to improve our trade relations with the Latin Americas. We have been pretty much on a Dollar Diplomacy basis ever since. Not too much has been accomplished at those Pan-American conferences. This last summer at Havana, Argentina, the most important country in South America just now, came near taking her ball and glove and going home. And in the Lima conference of 1938, Alf Landon tried to ring the Monroe Doctrine into the picture and almost wrecked the party. The conferences have been great places for the exchange of information, platitudes, and noble sentiments, but not so much with real meat in it has come from the conferences.

Since the depression of 1930 and 1931, our trade relations with the Latin Americas have changed for the better. The collapse of our foreign and European trade caused us to appreciate more our Latin American markets. Another reason for our appreciation of our Southern markets was the fear of losing them through trade penetration by the totalitarian states.

President Roosevelt's Good Neighbor policy has borne a considerable amount of fruit. Of course, we have planted a considerable number of golden plums in

Latin American soil. I am inclined to believe, at that, that the soil down there may be apt ultimately to be just as fertile for growing things like dividends, as the soil in our own Kentucky. However, I do not think that too much can be expected of the Good Neighbor policy in a short length of time. We have had too many years of Dollar Diplomacy. We cannot in one golden gesture atone for decades of suspicion. I can say from personal observation that the present feeling of the thinking class in at least a part of South America is very favorable to the present administration.

What is the difficulty with trade between the United States and the Latin American countries? In a sentence: We cannot absorb their surplus commodities in our regular trade channels. Why? Because, first, we produce - with the exceptions of tin, coffee, and bananas - the same products they do; and second, we refuse to let their surplusses - cotton, copper, meats, etc., come freely into this country (except over high tariff barriers) to embarrass our higher paid labor and reduce its standard of living. Vigilant pressure groups in the United States see that our laboring class is protected. Yet, the Latin Americas can't buy our manufactured goods unless they can establish credits with us through sale of their raw materials. Argentina can't buy our automobiles unless we buy her wheat and meat and hides. And obviously, as a Latin American country's currency depreciates it becomes increasingly difficult for her to establish gold credits in the United States. Instead of it requiring a thousand bags of coffee to buy a U.S. motor truck, say, it may take two thousand bags. There has been little change in the cost of producing coffee, but the product only realizes, say, half as much as before. It doesn't make so much difference to the peon or laboring class. He lives off the country, earns little, spends little, owns little, has neither debts nor credits. But to the landowner or planter, the man who supports labor, who pays the taxes to the government, who produces and ships the hides, cotton, wine, or what, - the depreciation of currency is painful. He is the fellow who has to buy the truck, the auto tire, the gasoline engine, the corrugated iron, the barbed wire, the galvanized pipe, etcetera, all made in a foreign country. He pays through the nose - if he buys from us or any country whose currency is at par. I happened to be in Port-of-Spain, Trinidad (an English colony) on the day early in 1932 that England went off the gold standard. A friend of mine in charge of a large wholesale hardware and equipment establishment, came puffing into his office and said to me, "Well, I have just come from the cable office. I cancelled somewhat more than $100,000.00 worth of orders for merchandise in the United States". A few months later he took me through the establishment and showed me rooms and shelves of merchandise filled with goods from England, Czechoslovakia, and Japan, that had replaced goods formerly purchased from such firms as General Electric and Westinghouse, Fairbanks-Morse, etc., in the United States. This time, my friend said to me, "This stuff (referring to his stocks of non-U.S. goods) is rather junky, items are not uniform - nor is quality, but the trade just can't pay the premium for U.S. merchandise".

Last summer while driving with a Peruvian Government official across a relatively new steel bridge in the outskirts of Lima, I remarked, "This bridge is a credit to any city. Was it built by an engineer from the States?"

The official replied, "No, I'm sorry. We called for bids on materials and construction and a German firm's bid was 25% lower than any bids by U.S. firms".

Is it any wonder that we cannot compete with European countries that have depreciated currencies and totalitarian methods of production? No collective bargaining there; labor is told what it shall do and what wage it shall receive.

Then what will be the situation when the present world conflict is over and the fight for world trade and commerce becomes a free-for-all? Will we get any of it? What will foreign countries buy from us? Only the things that they can absolutely not get along without - unless our living standard comes down.

What expedients have been taken in recent years to improve our trade relations with the Latin Americas? Several:

1. Loans by our Reconstruction Finance Corporation to industries in South America.
2. Trade Act of 1934. The Reciprocal Trade treaties.
3. Inter-American Financial and Economic Advisory Commission.
4. The Inter-American Bank.
5. The Import-Export Bank.
6. The Pan-American Marketing Cartel - under consideration.

There seems to be little point in going into detail regarding the expedients named above. The acts of the RFC, the Trade Treaties, and the Import-Export Bank have got some results so far as the Latin Americas are concerned. The marketing cartel, for several reasons, probably would not be successful. However, the promulgation per se of the expedients mentioned above has had a leavening influence on the recent attitudes of the governments of some of the Latin Americas.

What about Nazi Germany's and Facist Italy's standings in the Latin Americas? There are certain spots, particularly in Brazil, Argentina, Uruguay, Paraguay, and perhaps Mexico, where pro-German or pro-Italian feeling is very strong, but as to the persons or groups that are leaders of the countries themselves, I believe the feeling is much more friendly toward the United States at the present time, than it is toward any European country. Reasons? Fear by the leaders or groups in question of the commercial and political effects of totalitarian infiltration; and the effect of our Good Neighbor policy. True, the U.S. is subsidizing some of the Latin republics with gold . . . something that no European country is doing.

Some of the South American countries have had sour experiences bartering with Germany and Italy. Argentine raw materials were traded for German marks, exchangeable only for goods of German manufacture or origin. German machinery mainly was taken in exchange. Much of it turned out to be of "export" grade - sub-standard, and now, due to war conditions, parts cannot be obtained. I discussed with the Commandante of a large military aviation training school in one of the southern republics, the matter of a substantial number of Italian military aircraft his government had purchased. (The planes were out of commission). I learned that none of the planes had come up to - or closely approached - speed representations, that none of them had gone more than about half of the guaranteed time before engine overhaul was necessary, that repair parts and replacements had not been shipped from Italy even when that was possible, and that now the Commandante was just "stuck" with the planes.

Brazil and Argentina - and perhaps other countries - have quantities of German marks on their hands, and a rather bad taste in their mouths. This in spite of Germany's offering nearly two dollars for one, - that is, two of her depreciated currency.

What conclusions shall we draw from all these ideas? The writer is prone to draw the following:

1. The Latin American people have in the past been somewhat suspicious and also resentful of us and our motives; they are now beginning to change their opinions.

2. Their countries are mainly rich in natural resources, but undeveloped.

3. They (now) are principally capable of producing raw materials, and these at low cost because of their lower standard of living.

4. We can never trade for their surplus commodities unless they reduce the cost to us - which is virtually impossible, or unless we lower our tariffs and trade barriers - which is improbable.

5. If Germany gains control of the Atlantic she will effect trade penetration in South America that will be very difficult or impossible for us to overbalance without conflict.

6. If Germany does effect trade penetration (and trade penetration and commercial control will certainly be accompanied by political control) all our investments in the Latin Americas will be lost and our future safety will be jeopardized - unless we fight back. (I don't think that we will see our investments go without a scrap).

7. The South American republics seem plainly to be playing the United States off against the Axis Powers. Why shouldn't they? It's good business from their viewpoint. Every Nazi outbreak in Uruguay is apt to be worth a 10-million dollar loan to that or some nearby country.

8. The southern countries aren't fooling us at all. We understand their strategy but we still think they are a good gamble. If the war in Europe breaks right for us, we are on the ground floor - we hope - as regards valuable trade; if it breaks wrong, it shall have been a good "ride" nevertheless.

9. Times do change though. Wall Street used to loan money - your money - to the Latin republics; now they have to borrow their money - your money - from the Federal government. Last year, Senhor Aranha, Brazilian Foreign Minister, talked the Administration out of sixty-nine million dollars by telling a story about Nazi penetration in Brazil. Personally, I believe the yarn, and think the money was better spent thus than it would have been, say, in completing the ship canal across the state of Florida with WPA labor.

10. - and this is mainly a comedy of inconsistencies - the United States and England are the two remaining important democracies. We swear by the democratic system. Yet, based on results we have seen in Poland, France, Denmark, etc., the dictatorships can sometimes accomplish what the democracies can't. (I don't need to tell you that Churchill is virtually as powerful in England as Hitler is in Germany. But we'll take the English brand of "dictatorship", w'ot?) Then, the least we can say is that <u>democracy is surely on trial</u>. Now... coming across the Atlantic, democracy, at least off the record, is somewhat of a laughing stock in much of South America. And their "dictator-republic" systems are laughed at and frowned on equally by us. Now our very own administration in Washington is subsidizing and maintaining these very ruling families, rulers, and systems that basically we disapprove of. But we personally at least the great majority of us (including myself in this regard) agree thoroughly with the U.S. foreign policy in the Latin Americas.

It's all a hell of a mess, isn't it? I think the world <u>is</u> cockeyed!

Well, what are the answers as regards Our Relations with the Latin Americas? In my humble opinion, the answers are as follows:

1. We must increase substantially our human and cultural relations, and ease off slightly on the gold subsidies. You may buy a man's soul with gold, but he will not respect you.

2. We must offer more personal services, especially of a technical nature, to the Latin American countries. Let us lead them soundly in general principles, but let them work out the details. In that way they will save their faces.

3. Let us help them with industrial methods so they can stand on their own feet and use up their own raw materials. As their industries and payrolls increase their desire and necessity for foreign subsidies decrease.

4. Let us deflate some of the pressure groups who are misleading us in regard to some foreign commodities, such as the Argentine corned beef matter.

5. Let organizations, societies, industrial groups and universities - as well as the government itself - send representatives - many more than at present - to the Latin Americas, to promote in a modest and easy-going way, a better understanding between the two peoples. When they really understand us, they will have faith in us.

As someone, who is smarter than I, has said, "A man or a country that is really busy with its own peaceful affairs, is too busy to make war on someone else".

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CLEARING HOUSE

H. Stein, 530 Golden Gate Ave., San Francisco, wishes to acquire a deposit of chalk.

Hayes Schermerhorn, 3611 SE Division St., Portland, Oregon, wishes to sell his gold property on Upper Forest Creek, Jackson County. There are two unpatented mining claims, area 40 acres. It is stated that 250 feet of tunnel shows vein $2\frac{1}{2}$ feet to 3 feet wide which pans free gold. Also property contains about 150,000 yards of placer gravel containing $1.00 and up per yard. Price $4000; one half interest $2,000.

H. L. Marsh, care of C. C. Buck, Jacksonville, Oregon, wishes to sell operating fully equipped hydraulic gold property, consisting of 140 acres, located in Upper Applegate district. Cash or terms.

Minor Blythe, 1003 West 35th St., Los Angeles, would be interested in securing deposit of chalk.

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OREGON NONMETALLICS USED IN 1940 CONTRACTS

During 1940 major Oregon contracts awarded, involving the use of nonmetallics of the State in construction, amounted to over $6,950,000. These contracts were for highway construction and for dam, levee and jetty work. The figure does not include building construction or contracts for bridges and approaches. The total was compiled from statistics published in the Feb.15th issue of Mining and Contracting Review of Salt Lake City.

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NOTES ON METALS IN FOREIGN COUNTRIES

Mineral Trade Notes, issued monthly by the U.S. Bureau of Mines, gives information on current items relating to the mineral industry in various countries. In the issue of February 20th consular reports give illuminating side lights on the condition of the industry in several countries. Some of the items are given below.

FRANCE

Stocks and seizure of nonferrous metals. - It is reported that the Groupement d'Importation et de Répartition des Métaux, which was at Bordeaux at the time of the German invasion, was able to effect the reshipment of 85,000 tons of copper, zinc, lead, and nickel then in customs or warehouses at Bordeaux. These reshipments were made to Great Britain, Morocco, and the United States. Of this total about 75,000 tons was copper. Between 25,000 and 30,000 tons of copper was seized by the Germans at the ports of Bordeaux, Saint-Nazaire/Coueron, and Havre. At the time of the German invasion stocks at nonferrous plants were respected as the property of the French industrialists, but since then numerous requisitions on these stocks have been made by the German authorities. At a plant at Vitry, near Paris, 1800 of the 2400 tons on hand were requisitioned; 11,000 tons from a plant on the Normandy coast and the entire reserve from a plant in the east were taken. The French smelting industry is now faced with the following problems: (1) Supplies from abroad cannot be received because of the British blockade; (2) no further supplies can be received from the Groupement d'Importation et de Répartition des Métaux, as the stocks of this organization were seized as war booty upon the signing of the terms of the armistice; and (3) the progressive reduction of the stocks at the plants through German requisition. It is estimated that reserves on hand will permit production on a very reduced scale to continue only for 2 or 3 months.

No data are obtainable with regard to existing stocks of nonferrous metals in the unoccupied zone, but, with the exception of aluminum they are believed to be very small. It is probable that the temporary restriction on aluminum production to 100 percent of the 1938 output will be raised in view of the need for replacing other metals, particularly copper, with aluminum. It is understood that the Germans have been negotiating with Pechiney, the French aluminum trust, for delivery of 25,000 to 30,000 tons of aluminum.

An estimated 30,000 tons of unrequisitioned copper is in the hands of importers, dealers, or at plants. The normal annual peace-time consumption of France is 120,000 tons, and at full-time operations the reserves on hand will last only 3 months; but under the restricted schedule of 25 percent of the 1938 basis it will last much longer. Unseized copper scrap at French arsenals is estimated at 50,000 tons. Copper cannot be obtained from the French-owned Bor mine in Yugoslavia because the Germans, in an agreement with the Yugoslav Government, have placed German commissaires at the mine, and the entire monthly output of 3,500 to 4,000 tons is being sent to Germany. German interests are reported endeavoring to obtain control of the stock of this company.

YUGOSLAVIA

The British-owned Trepca mine in Yugoslavia, with an annual output of

(continued on page 49)

METALLIC MINERAL PRODUCTION STATISTICS

(compiled from Engineering and Mining Journal, and U.S.B.M.Minerals Yearbook 1940)

Metal	Domestic Production 1939	Domestic Production 1940	World Production 1939	World Production 1940	Domestic Imports 1939	Domestic Exports 1939	Average Unit Price 1940	Market Price Mch.1941
Gold	5,611,000 ounces (incl.Philippines)	5,883,000 ounces	39,697,000 ounces	41,936,000 ounces	x	x	$35.00 per oz.	$35.00 per oz.
Silver	57,808,000 ounces	66,500,000 ounces	258,917,744 ounces	277,500,000 ounces	x	x	$0.71 0.3477 per oz.	$0.71 0.3475 per oz.
Copper	728,320 sh.tons	923,354 sh.tons	2,382,641 sh.tons	2,650,000 sh.tons	336,287 sh.tons	427,517 sh.tons	$0.11296 per lb.	$0.125 per lb.
Lead	420,427 sh.tons	460,000 sh.tons	1,898,968 sh.tons	x	86,883 sh.tons	74,392 sh.tons	$0.05179 per lb.	$0.0575 per lb.
Zinc	538,198 sh.tons	643,386 sh.tons	1,849,712 sh.tons	x	36,100 sh.tons	14,360 sh.tons	$0.06335 per lb.	$0.0725 per lb.
Tin	34	x	183,900 lg.tons	233,100 lg.tons	70,102 lg.tons	1,997 lg.tons	$0.49827 per lb.	$0.515 per lb.
Mercury	18,633 flasks	36,000 flasks	x	x	3,499 flasks	1,208 flasks	$176.865 per flask	$176-$178 per flask
Antimony	2,031 sh.tons	x	35,300 met.tons	x	10,894(1) sh.tons	58 sh.tons	$0.14 per lb.	$0.165 per lb.
Manganese	29,307 lg.tons	40,000 lg.tons	x	6,000,000 long tons (est.)	627,131 lg.tons (2)	-	$0.56 per long ton unit 46% to 55%	$0.45 to 0.56 per long ton unit for 46%-55%
Chromite	3,614 lg.tons	x	1,125,000 metric tons (in 1938)	x	317,511 lg.tons (3)	-	x	$34-$36 per long ton
Tungsten	3,603 sh.tons 60%	4,600 sh.tons 60%	37,718	x	1,372 sh.tons (4)	-	x	$23-$24 per unit WO_3
Arsenic as As_2O_3	22,341 sh.tons	x	55,700 (in 1936)	x	14,674(5) sh.tons	3,200 sh.tons	$0.03 per lb.	$0.035 per lb.
Bismuth	(6)	x	In excess of 3,000,000 lbs.	(7)	182,840 lbs.(8)	x	$ x	$1.25 per lb.
Cadmium	5,090,000 lbs.	6,800,000 lbs.(est.)	4,200,000 lbs.in '37	x	309,874 lbs.(9)	52,149	x	$0.80 per lb.

Cobalt	-	x	6,000 metric tons (est.)	x	Ore 611,083 Metal 2,130,296 Salts 757,308 lbs.	x	x	$1.50 per lb.
Nickel	394 sh.tons	x	127,000 sh.tons (in 1938)(10)	x	64,795	x	$0.35 per lb.	$0.35 per lb.
Magnesium	10,650,121 lbs.	12,500,000 lbs.(11)	32,800 met.tons	x	66 lbs.	x	$0.27	$0.27
Molybdenum	15,162 sh.tons	x	16,500 sh.tons	x	13 sh.tons	21,777 sh.tons	x	$0.45 per lb.$MoS_2$ contained in 90% conc.
Aluminum	163,545 sh.tons	x	713,600 sh.tons (est.)	x	9,290 sh.tons (12)	36,609 sh.tons	x	$0.17 per lb.
Vanadium	992 (13) sh.tons	1,250 sh.tons	2,816 met.tons	x	1,066 sh.tons	-	x	$0.275 per lb. contained V_2O_5
Beryllium	x	100-150 sh.tons beryl	x	x	459 sh.tons beryl	-	x	$30-$35 per ton beryl of 10-12% BeO
Platinum Metals	35,060 oz.	x	537,000 oz.in 1938	x	306,627 oz. (14)	50,370 oz.	x	Platinum $36 Palladium $24 Iridium $275 per oz.

x Figures not available.
(1) Imports of 14,167 tons for first 11 months 1940.
(2) " 1,443,225 long tons for first 11 months 1940.
(3) " 582,399 " "
(4) " 7,000 short tons "
(5) " 9,520 " "
(6) Domestic consumption in 1939 estimated at 500,000 lbs.
(7) World consumption in 1939 estimated at 2,500,000 lbs.
(8) From Peru - Gain of 98% over 1938 imports.
(9) Imports of 27,491 lbs. for 11 months 1940
(10) Figures for 1939 and 1940 not available, but 1940 production in Canada greatest in history.
(11) Estimated that production will be more than doubled in 1941.
(12) Exports of 6,300 tons first 11 months 1940.
(13) Vanadium contained in products shipped.
(14) 166,075 oz. imported first 11 months 1940.

1 metric ton = 1000 kgm. = 2,204.6 lbs.
1 long ton = 2240 lbs.

35,000 tons of lead and 10,000 to 15,000 tons of zinc, has also been the subject of an agreement between the German and Yugoslav Governments for the delivery to Germany of the major portion of its product, thus depriving France of this source of supply for its lead and zinc ore. (First Secretary of Embassy Maynard B. Barnes, Paris, Oct.26, 1940).

FINLAND

The undersecretary to the Ministry of Economic Warfare stated on November 19, 1940, that the nickel mine at Petsamo was being kept under careful observation, that the mine was not producing, and that there was no reason to believe that any Finnish nickel has been reaching Germany. The Financial Times (London) of November 20 stated that arrangements were being made to sell the entire nickel output of the Petsamo mine to Soviet Russia. (Asst.Commercial Attache James Somerville, London, Dec.3, 1940).

ITALY

Requisitioning of iron fences and railings has been extended to include all iron, steel, tin, and tin-plated scrap, and articles out of use containing these materials, in excess of 200 kilograms per person. It is obligatory to declare such scrap or articles to the local podesta (mayor) who will notify the Endirot (Scrap Distribution Institute). Government measures for requisitioning copper scrap are more severe, with only negligible exemptions allowed to private individuals and only slightly more elastic exemptions to industries able to prove the need of retaining copper recipients or machine parts. The sale of copper recipients has been strictly forbidden for the duration of the war except to the Endirot. (Consular Clerk Raymond Hall, Milan, Dec.6, 1940).

The Cogne Co. is building a new plant for the manufacture of metallic magnesium from local dolomite to be used in special alloys. The capital of this concern is reported to have been raised to 250,000,000 lire. (Consular Clerk Raymond Hall, Milan, Dec.6, 1940).

Gold production has progressed from a few dozen kilograms annually to a total of 240 kilograms in the last fiscal year. (Note: 1 kilogram= $1125 @ $35 an ounce).

GERMANY

A new and promising use recently developed in Germany for nitrogen is as an alloying element in the manufacture of special stainless and acid-resisting steels. The use of nitrogen in chromium-manganese steel stabilizes the austenite and gives the steel better processing properties. It also can be used in a ratio of 0.1 percent in place of the 3 to 4 percent of nickel in chrome-nickel steels without affecting their quality. Through the addition of nitrogen in steels with, for example, 18 percent chromium and 3 to 4 percent nickel, or with 25 percent chromium and 4 percent nickel, entirely new industrial materials have been created that possess the same mechanical and chemical properties as the well-known chrome-nickel steels. The use of chromium in recent years as an alloying element in stainless steels greatly reduced the consumption of nickel formerly required for the manufacture of these steels. The use of nitrogen as an alloying element will further lessen Germany's dependence on imported nickel. (Consul Sydney B. Redecker, Frankfort-on-Main, Dec. 7, 1940).

Recently conducted researches have established that losses of iron due to corrosion in Germany and the world are not as great as formerly believed. Studies conducted by the Reich Railways and private iron and steel companies show that such losses of iron due to rust amount to only about 125,000 metric tons annually, or 1/2 percent of Germany's current production. Iron losses due to rusting of water pipes are negligible in Germany and are said not to exceed 2400 tons annually. Previous estimates have placed the world's losses of iron and steel due to corrosion at 46 million metric tons annually with a total loss of 718 million tons during the period 1890 to 1923. The data now available show that these estimates exceeded the actual rust losses more than 35-fold. These earlier data gave Germany's losses in warm water and refrigerator installations at more than 100,000 tons annually, whereas actual losses do not exceed 2½ percent of this amount. (Consul Sydney B. Redecker, Frankfort-on-Main, Dec.2, 1940).

STRAITS SETTLEMENTS

During the first half of 1940 exports of refined tin from Penang were 32,779 tons to the United Kingdom, Europe, and the United States, compared with 14,709 tons for the same period in 1939. Total exports of tin from Penang to all destinations totaled 36,186 tons, compared with 17,715 tons for the first half of 1939. The price of refined tin at the beginning of 1940 was S$125.62½ (US$59.04) per picul. This price was maintained until the middle of May, when it reached S$135.25 (US$63.57), advancing to S$146.75 (US$68.97) on June 14, the high for the first half of the year. Thereafter it took a downward trend closing June 29 at S$129.50 (US$60.86). The lowest price was S$118.00 (US$55.46) on April 1, 1940. The average price during the period was S$127.42 (US$59.89) compared with $S111.15 (US$52.24) during the first half of 1939.

The International Tin Restriction Scheme remained in operation throughout the period, and the standard tonnages of the Signatory Countries were as follows:

	Long tons per annum
Belgian Congo	13,200
Bolivia	46,490
French Indo-China	3,000
Malaya	77,335
Netherland India	39,055
Nigeria	10,890
Thailand	18,500
Total	208,470

(Note: In Penang 1 picul = 142.6 lb. or 64.96 kg.)
In Dutch East Indies 1 picul = 136.16 lb.)

YUBA BECKER-HOPKINS DREDGE

A new type of mining dredge known as Becker-Hopkins, is of considerable interest because of its adaptability in working shallow properties, in limited areas, or in narrow canyons where it would be impracticable to operate bucket-line dredges or other types of equipment to advantage.

Becker-Hopkins dredges are "single bucket" excavators mounted on a self-contained floating unit. The digging unit consists of a bucket built integral with a sluice-type boom, which conveys the dredged material from the bucket to the screen. The dredge operates from a fixed position on the pond surface, being moored by bow and stern lines. The bucket is dropped vertically at the rear end of the well and a cut made horizontally by pulling the bucket forward into and through the material being dredged. The boom being telescoping, extends in length automatically, permitting the horizontal bottom cut. When the bucket reaches a point under the bow of the dredge, a latch is released and the bucket is elevated radially to a point where the dredged material slides down the sluice-type boom, evenly distributed to the screen. A patented device provides for a large volume of water, which is discharged into the dredged material in the elevated bucket, aiding the downward movement. This is an important feature, and contributes much to the success of this method of dredging.

Large boulders can be successfully dislodged and in many cases put through the screen and disposed of over the stacker. Boulders too large for the bucket can be brought to the surface readily and cast aside by use of a tractor, usually available on dredging properties. The ready control, which the operator has of the sluice-type boom, makes it possible for him to lower a large boulder into the screen gently; this avoids wear which might result from dropping heavy boulders at high speeds. Control of the slope of the boom also prevents heavy intermittent overloading of the screen; even distribution being assured because the movement of dredged material down the boom can be accelerated or retarded easily.

Each cut follows the previous cut, until the desired depth has been reached. The horizontal cutting action and ease with which the bucket is controlled makes it possible to clean bedrock thoroughly. The dredge can be moved to any desired digging position on the pond by use of the sidelines, and from its new position the digging cycle starts again.

A 1-cu.yd. dredge weighing about 90 tons is reported to have a capacity of about 2000 yards a day. Operating cost is estimated to be under 9¢ a cubic yard. Price for an electrically operated dredge is $45,000 f.o.b. cars shipping point.

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An article, Gold Dredging in Southwestern Oregon, by Ray C. Treasher, field geologist of the Department, is in the March issue of the Engineering and Mining Journal. Condensed descriptions of various dredge operations are given and the article is illustrated by a map and several photographs.

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A NEW GEOLOGIC MAP

A colored geologic map of the Butte Falls quadrangle has just been released by the State Department of Geology and Mineral Industries. The map area in general is in the western Cascades of southwest Oregon, about midway between Roseburg and Medford. More particularly, it covers the territory between the villages of Trail and Tiller. A rectangular section of the country twenty-five miles east and west and thirty-four miles north and south was mapped. The Butte Falls quadrangle is bounded on the west by the Riddle quadrangle and on the south by the Medford quadrangle. Colored geologic maps of the latter two areas were previously issued - the Riddle map many years ago by the United States Geological Survey.

On the new Butte Falls map just issued, the various geological formations are outlined areally in different colors and an explanation of the type formations with their letter designations is given on the margin. The scale is 1/96,000, or about 7/10 of a mile to the inch.

This map constitutes the work of the Oregon Geological Survey carried out during the summer of 1940 by the Department. The field work was supervised by Dr. W. D. Wilkinson of the Department of Geology, Oregon State College. A bulletin to which this map is supplementary and which will describe in detail the geology and petrography of the area is in preparation. It will be published this summer. A short report, GMI Short Paper no.3, published late in 1940, gives brief descriptions of some quicksilver prospects found in the western part of this quadrangle.

THE PRICE OF THE MAP IS 45¢. Copies may be obtained at the State Department of Geology and Mineral Industries, 702 Woodlark Building, Portland, Oregon, or will be sent postpaid to any address upon receipt of price. Copies of the map are available also at the State Assay Laboratories at Baker and Grants Pass.

TO ALL EXCHANGE LIBRARIES

Copies of this publication were mailed from this office April 30th, 1941. If not received within ten days from the above date, advise this office immediately; otherwise, replacement for copies lost in the mail or otherwise cannot be made.

REAL CONSERVATION

Announcement has been made that the Portland Gas & Coke Company will install additional equipment costing $1,500,000 at its Portland plant. The new facilities will enable the company to meet the large demands made on it for supplying its products to various new industries engaged in, or to be engaged in, national defense work. Incidentally, Curran-Knowles ovens are to be installed. These ovens represent the latest development in by-product manufacture. They have been installed in a St. Louis plant, and have been successful in coking Freeport (Illinois) coal -- something not heretofore accomplished in ordinary coking ovens.

We quote from COMMERCE, published by the Portland Chamber of Commerce, in the issue of April 19th:

"First chemical and gas plant of its kind, the new works will produce large quantities of petroleum coke of the type used for electrodes in aluminum plants and in foundries working on national defense orders; benzol for high-test motor fuel; toluol for munitions factories; solvent napthas and xylol for the rubber and paint industries; and tar for airport runways, highways, streets".

It is of great interest to know that these valuable products will be available to defense industries of the northwest; also that the construction of these facilities reflects industrial growth of the community, which means creation of new wealth and various allied beneficial results. But the thought behind these comments goes somewhat further.

This company has aimed at converting all waste products obtained from the manufacture of gas into various commercial forms. This is real conservation.

To any thinking person, especially to the engineer, the thought of industrial waste is repugnant. This country is notoriously wasteful of its natural resources. Although they seem inexhaustible, they are being consumed very rapidly indeed. Theoretically at least, one of the worst examples is the burning of natural hydro-carbons for fuel. By so doing many potentially useful things are dissipated -- gone up in smoke. Therefore, when a project is designed to process a raw material so that there will be no industrial waste from such hydro-carbons -- so that everything but the "squeal" is recovered in usable form -- it deserves commendation. By intelligent and skillful scientific methods the Portland Gas & Coke Company is producing from petroleum and will produce on a greatly enlarged scale, valuable by-products from the manufacture of gas distributed for household and industrial heating. These by-product processes have been developed to a commercial stage only after careful and expensive research work. Great credit for results is due Mr. E. L. Hall, Vice-president and Chief Engineer of the company, for planning and supervising this work. The company has reason to be proud of the technical results obtained, and Oregon should be proud of an industry that has constantly worked for the elimination of industrial waste.

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MINERAL PRODUCTS BROUGHT TO OREGON

In its study of markets for Oregon mineral products, the Department has obtained some figures from the National Research Council which show outgoing and incoming tonnages of mineral products. These figures are illuminating in showing the large tonnages of a great variety of mineral products brought in, many of which could be produced in Oregon. It is self-evident that, in the case of chemicals produced from mineral products, treatment plants would be necessary in this area in order to prepare Oregon raw materials for the market. The unique combination of low-cost power, deep water shipping facilities, and rapid increase in population offered by this area, will surely attract chemical industries. In addition, by-product manufacture from metallurgical industries to be established, as well as demand for ores and fluxes from local sources, will provide an increasing outlet for Oregon raw materials.

STATEMENT OF OCEAN GOING FREIGHT
Port of Portland
Calendar Year 1940
Ocean Going Only

COASTWISE RECEIPTS	SHORT TONS	COASTWISE RECEIPTS	SHORT TONS
Abrasives and Mfgs.	67	Lead arsenate	119
Aluminum and Mfgs.of	168	Lye	20
Asbestos and Mfgs.of	169	Titanium Dioxide	275
Shingles	241	Zinc Oxide	131
Roofing	25	Chinaware	22
Asphalt	23,964	Coal Bituminous	1,473
Brick	56	Coke	110
Cement	60,820	Cork (Insulation?)	310
Cement Pipe	42	Earthenware	87
Acid		Glassware	1,395
Unclassified	479	Glass Bottle	1,692
Aluminate	21	Granite	320
Calcium Compounds		Grits	100
Chloride	277	Infusorial Earth	21
Cyanamide	20	Insulating Material	350
Copper Sulphate	92	Kalsomine	599
Cadmate	25	Lime and Plaster	400
Potassium		Limestone	89
Potash	131	Lithophone	352
Muriate	418	Mineral Wool Cement (?)	100
Sodium Bicarbonate	918	Bauxite Ores	455
Bichromate	34	Pigments	69
Bisulphate	75	Pot Scourers, Pumice Stones	
Borate	311	and Mfgs.	108
Carbonate	541	Salt	20,016
Chlorate	83	Sand (no classif.)	266
Chloride	106	Slate	28
Hydrated	87	Slate (crushed)	3,337
Hydrosulphite	67	Soapstone	66
Nitrate	103	Stone and Mfgs.of	38
Phosphate	21	Tile	134
Silicate	131	Wallboard	258
Trisodium Phosphate	442	Zinc	218
Aluminum Sulphate	745	Misc.	127
		TOTAL	123,885

Under Miscellaneous are alkali, antimony, carbon, charcoal, sulphuric acid, barium sulphate, calcium arsenate, calcium molybdate, calcium sulphate, copper chloride, magnesium sulphate, argols, potassium bichromate, potassium nitrate, potassium permanganate, sodium cyanide, sodium sulphate, sodium sulphite, sodium thiesulphate, arsenic sulphide, cyanide salts, acetone, iron sulphate, zinc sulphide, red oxide, and graphite.

TOTAL FREIGHT TONNAGE CARRIED BY RAILROADS IN 1939.

Class No.	Commodity	NET SHIPMENTS OUT-GOING TONS (Oregon)	NET RECEIPTS IN-COMING TONS (Oregon)
	PRODUCTS OF MINES:		
290	Anthracite Coal		72
300	Bituminous coal		145,336
310	Coke		3,723
320	Iron ore		30
330	Copper ore and concentrates		-
331	Lead ore and concentrates		1,504
332	Zinc ore and concentrates	59	-
333	Ores and concentrates, n.o.s.	5,665	-
350	Gravel and sand		13,910
351	Stone, broken, ground or crshd.	27,371	-
352	Stone, rough, n.o.s.		2,757
353	Stone, finished, no.o.s.		23,406
360	Petroleum, crude		807
370	Asphalt, (nat.,byprod.,or petroleum)		37,372
380	Salt		29,295
390	Phosphate rock, crude (ground or not ground)		122
391	Sulphur (brimstone)		13,592
392	Products of mines, n.o.s.		109,020
820	Products of Mines, Total	33,095	359,986
	MANUFACTURES & MISCELLANEOUS (C.L.):		
490	Iron, pig		1,377
491	Iron & steel, rated 6th class, n.o.s.		14
520	Copper: Ingot, Matto and pig		2,747
521	Copper, brass, bronze: bar, sheet, pipe	249	
522	Lead & zinc: Ingot, pig, bar	5,293	
540	Cement, natural or Portland (building)		44,756
550	Brick, common		1,964
551	Brick, n.o.s., & bldg.tile		8,237
552	Artificial stone, no.s.		45
560	Lime, common (quick or slaked)		7,800
561	Plaster (stucco or wall) & dry kalsomine		11,035
570	Sewer pipe & drain tile (not metal)		1,422
661	Sulphuric acid		157
692	Furnace slag		30
693	Scrap iron and scrap steel	790	-
699	Glass, flat, other than plate		1,772
700	Glass: Bottles, jars & jelly glasses		5,922
	TOTAL	6,332	87,278

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TALE OF A ROCK-HOUND

"Pescado"

I opened my eyes a degree at a time to recognize a palm-thatched roof above me, wriggled a bare toe in the cords of my web hammock, recoiled from a nearby ear-splitting "Hanw-a-a-a-a" of a burro, and called, "Arturo?"

"Si, senor?"

"Donde estamos?" - (where are we?)

"In la iglesia, senor". (In the church).

"My God", and I rolled out on the flagstone pavement of the courtyard.

The previous afternoon, six native peons and I in a 30-foot dugout canoe had paddled or drifted lazily 40 or 50 miles down the Orinoco and tied up an hour after dark at the village of Los Castillos. It is (or was in 1931) a garrisoned town with perhaps 300 soldiers, 600 dogs, and probably 50 women that God forgot. To Los Castillos are banished from all over Venezuela prostitutes who are beyond redemption morally or medically. A ducky place for a self-respecting mining geologist to be caught in! We had pulled our big canoe well up on the sand among other similar craft and carried our duffel up through the crooked cobblestone streets looking for some place to sleep. The streets, even in the dim glow of a dying flashlight, seemed filthy, until we came to this thatched courtyard next to the pavement. Arturo, my native foreman, and I had merely hung up our hammocks and turned in. One can always explain one's presence if necessary. It developed that we had chosen the rear yard of the big Catholic church. The other peons had scuttled off to brighter parts of the town.

Early morning passers-by looked on as Arturo and I dressed, for who but an "Americano" would hang his "chinchora" up in a church? Breakfast consisted of a can of sardines and a handful of crackers, some bananas, and a bottle of warm beer. One doesn't drink local water.

Within an hour we were in the canoe and coasting along in the slow shore current. Somewhere below us, iron formation had been reported. An examination of it was the point of my trip.

For some time we cruised along the jungle-bordered shore of the 3-mile wide river, passing an occasional open, grassy bayou or lagoon. From some of the latter, beautiful white egrets creened their perky necks or circled warily. Then we began to pass rocky shores rising abruptly into the jungle, and to worry about the canoe hitting a submerged rock. This was the rainy season - July - and the river was 25 feet above low stage. Some of the rocks were plainly iron-stained, but I could not get the two hired paddlers to steer close enough to shore to permit a fair examination.

Seeing what looked like a partly-submerged log near the shelving bank a few rods below, I signalled the stern paddler to head in so we could land. He swung the long, slim boat a little to the right, and I got up on my knees ready to grab a root as we came abreast. But the big "log" silently vanished a dozen feet ahead of the boat, just as the bow paddler shouted "Caimon!" (alligator) and back-paddled with all his might. My stomach came into my throat! The boy in the stern swung the canoe out away from the shore, the paddlers amidships paddled in assorted directions as we, helped by the 7-mile current of the river, passed

virtually over the spot where the 'gator had been.

At times, one can do a tremendous amount of thinking in a few seconds. I probably recalled every Stanley-in-Africa story I had ever read about alligators crushing a boat with a mere flick of their tails, and "drawing the terror-struck native slowly and inexorably under the surface", or something. Then, it seemed, Hell did break loose! A God-awful splash and threashing of the water not four feet from me, but on the side of the canoe away from the shore. I did a sitting broad jump toward the prow of the boat that probably will remain as a record for all time. I landed in the canoe, fortunately, but in such a position as practically to capsize the boat. That would have been easy, because the sub-surface topography of an Indian dugout canoe is exactly that of a steel oil barrel - cylindrical.

The bow paddler turned and actually laughed at me. How the 'gator had missed us was what I couldn't understand. The peon pointed toward the water with a grin and uttered a word in Spanish that I couldn't get. He repeated, and it began to dawn on me that the animal might not have been an alligator. The native then said "Pescado", and I realized it was a fish that had all but frightened me to death. The fish, a tornilla, then came up ten feet away and showed a big dorsal fin and four or five feet of scaly back as he played about. It was a fresh water variety of porpoise, I understood. For half an hour, while my heart gradually eased back to normal, the big fellow cruised around the dugout, usually keeping a dozen yards away, and then finally wandered off.

From the river men I learned that these tornillas are their friends. The legend is that if a canoe capsizes in 'gator-infested water, the big tornillas gather in, thresh about, and frighten the 'gators away until the swimming natives can get to shore. I hope never to have to demonstrate the veracity of the legend.

And that is my best fish story -- and it happens to be true!

- Earl K. Nixon

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QUICKSILVER PRODUCTION

According to the monthly mercury report of the United States Bureau of Mines released April 30th, domestic output of mercury amounted to 3,500 flasks in March, an increase of 600 flasks over the 2,900 flasks reported for February. Reported consumption in March was 4,000 flasks, a decrease of 700 flasks reported for February. It is stated that the high rate of use in March was due principally to the manufacture of mercuric oxide ordered by the Navy. The high consumption of 4,700 flasks in February was due principally to the same cause. As in previous months there were no imports for consumption. Data on March exports are not yet available. In February exports were given as 347 flasks. Consumers and dealers stocks at the end of March amounted to 11,600 flasks, a decrease of 500 flasks from stocks reported at the end of February. Producers stocks amounted to 350 flasks at the end of March as compared to 503 flasks at the end of February. Companies that were responsible for 98% of Oregon's total in 1939 reported that the March total was 105% higher than the monthly average for 1939 and 16% higher than that reported for February 1941. Quoted market prices advanced in March from $174-$176 a flask for spot metal to $180-$182 at the close of the month. During April the price remained fairly steady at around $180-$182 per flask. There has been little variation so far during the present month.

BORAX

An interesting article on borax by Vincent Morgan was published in the December 1940 issue of the Pacific Mineralogist. Following is an abstract:

The twilight period between historic and prehistoric man hides the origin of the use of borax. Before the time of Marco Polo it was obtained from the high semi-dry lakes of Tibet and used in China and India. Transportation by coolie-back from the high lakes of Tibet to the great ancient cities of the Orient made the cost so great in European markets that new sources closer to markets were sought. Borax was then considered a precious substance used only by the silversmith and the maker of fine porcelain and china.

The first production of borates in Europe was from the boric acid found in the steam jets of Tuscany in Italy. Expanding industries made a demand so great that a new source was developed in Panderma, Asia Minor. The mineral pandermite (priceite) produced here was the principal source of borates in Europe for a great many years.

Industrialization of the New World created a demand for various raw materials, many of which were first imported, but gradually domestic sources for most of these were discovered. For many years borax was imported, and then in 1856 came the epochal discovery of borax at Little Borax Lake in Lake County, California. A small refinery was operated here from 1864 to 1868.

About this time a teamster at a Nevada silver mine took a vacation from his job in order to satisfy his curiosity as to a white patch on the desert which showed up in the distance as he drove his team between the mine and the railroad. The white material proved to be borax made up mainly of ulexite, and the teamster who acquired the title of "Borax" Smith quite his job and took up as much of the land as he could. This region is known as Teale's Marsh. Smith and associates organized the Pacific Coast Borax Company and Smith became its president. Operations begun at Teale's Marsh were later expanded to Columbus Marsh.

A little after Smith's discovery became known (borax was then worth about $400 a ton) a prospector named Aaron Winters discovered borax in Death Valley. Still later W. T. Coleman, a commission merchant of San Francisco, hunted for and found borax on the salt flats of Death Valley. Both Winters and Coleman built small refineries, and both later sold out to Smith. It was from these Death Valley properties that the famous Twenty-Mule Teams hauled the borax to the railroad.

More profitable sources of mineral shifted production to Borate in the Calico Mountains, then to Death Valley Junction where a concentrating plant was built. The Tonapah and Tidewater Railroad was built by the Borax Company to haul ores from Ryan, overlooking Death Valley, to Death Valley Junction for treatment.

During the last World War potash was extracted from the brines of Searles Lake, California, and borax was produced as a by-product. It is still being extracted from this source.

About 1927 sodium borate was discovered near Kramer on the Mojave Desert by a well driller at horizons from 400 feet to 1000 feet below the surface. No surface indications were found. The Pacific Coast Borax Company purchased the ground

which upon development proved to contain probably the largest dry deposit of sodium borate in the world. Production was discontinued at Death Valley and concentrated at Kramer. The minerals mined are mainly tincal and rasorite (kernite).

Southern California produces 98% of the entire world production of borax. In ancient times when the mineral was transported from Tibet on coolie-back, a ton or two was consumed. Now several hundred tons a day are produced.

Naturally, the vast increase in production reflects the multiplicity of uses for borax. Originally used only by skilled workers in some of the arts, borax is now used in some form each day by everyone in the civilized world. The facility of molten borax to dissolve metallic oxides leads to its use as a flux in welding and brazing; the same properties promote its use in making glazes for pottery, tile, porcelain and china, and in making special heat resisting glassware. Other important uses of borates are in soaps; medicinal use as boric acid; photographic uses in development of films; as a fireproofing material; as a dryer in paints; and as boron carbide (norbide), an abrasive harder than silicon carbide.

The important borax minerals are listed as follows:

Priceite ($5CaO.6B_2O_3.9H_2O$)
Ulexite ($Na_2O.2CaO.5B_2O_3.16H_2O$)
Colemanite ($Ca_2B_6O_{11}.5H_2O$)
Tincal ($Na_2B_4O_7.10H_2O$)
Rasorite ($Na_2B_4O_7.4H_2O$)

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LONGEST POWER CABLE

According to Western Mining News, San Francisco, the longest power cable span in the world will soon cross the Snake River between Idaho and Washington, about nineteen miles south of Lewiston. The horizontal distance between towers is 6,804 feet, making a free swinging span 7,000 feet long.

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BONNEVILLE DAM DRILL RECORDS

Through the cooperation of the War Department and Dr. Walter H. Bucher, Chairman of the Division of Geology and Geography of the National Defense Council, the State Department of Geology and Mineral Industries has secured copies of the Bonneville Dam drill records together with supplementary geologic reports resulting from foundation studies. These records are on file at the Portland office of the Department.

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MINING NOTES

North Fork Placers, operated by Ralph Davis, Boise, Idaho, has started operations on the North Fork of the John Day River. Ground covering about 17 miles of the river up to the mouth of Big Creek has been acquired. Equipment consists of a 4½ yard Monighan dragline and proper recovery equipment.

Ray Whiting has been developing ore on the 130 foot level of the Whiting quicksilver mine located about 25 miles east of Prineville. A new electric centrifugal pump has been installed. Ore is being treated in a small Champion furnace.

At the Strickland Butte Mine on Mill Creek, northeast of Prineville, Page Brothers are driving a new tunnel to intersect at depth a vein outcrop showing cinnabar.

Eichemeyer Brothers are mining a new orebody at the Maury Mountain cinnabar mine southeast of Prineville.

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Of the energy available from the fuel, the modern airplane gasoline engine delivers about a third to the propeller. Somewhat more than a third escapes through the cooling surfaces, and the remainder is discarded in the exhaust. The engine designers find that they must pay just to lose energy: cooling systems add materially to weight and cause a very substantial drag; exhaust manifolds add weight, create a hazard, and cause some drag. As engines get bigger, speeds higher, and planes cleaner, the radiator surfaces become an increasingly important source of air friction. Perhaps 5 to 10 percent of the power of a fast plane may be spent in dragging the radiator through the air.

- Technology Review, May 1941
Cambridge, Mass.

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CLEARING HOUSE

FOR SALE OR LEASE: Lode mining claim in Boulder County, Colorado, patented and recorded. Claim has nearly a mile of transportation tunnel under the rich Magnolia Mining District. Cuts many unexplored veins besides rich known veins. Write F. R. Carroll, c/o C. C. Buck, Jacksonville, Oregon.

FOR SALE OR LEASE: 120 A. patented land covered with a blanket of rich bentonite, running from 85% to 96% pure bentonite, most of it with no overburden, easily accessible, close to a railroad. Write H. L. Marsh, c/o C. C. Buck, Jacksonville, Oregon.

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ELECTROLYTIC ZINC

(Extracts of an interesting article by C. R. Ince on electrolytic zinc operations during 1940, and published by the American Zinc Institute, are given below).

During 1940, electrolytic zinc operations reflected the heavy demand for high grade metal which developed particularly during the last half of the year. The three electrolytic zinc plants in this country operated practically at capacity all year, and the production during the first five months was sufficient to not only take care of domestic demand, but permit the export of metal to some of the countries cut off from their usual sources of high grade zinc by the war. However, during the second half of the year following the fall of France, the situation rapidly changed. The regular domestic uses picked up strongly and the defense program with its requirements for the higher purity metal, created a demand that soon exhausted smelter stocks and practically precluded the possibility of further exports. By the end of the year it was no doubt true that electrolytic smelters had minimum stocks and were shipping metal out as fast as cast. . .

The electrolytic zinc production in 1940 was 187,538 tons, or 29% of the total primary metal production of the country, as compared to 127,056 tons, or 24% of the total of the previous year. These were both the highest production and highest percentage of the total ever reached by the electrolytic smelters. Of this tonnage, the Sullivan Mining Company's plant in Idaho produced 37,477 tons or a monthly average of 3,123 tons. This was 208% of the original contemplated capacity of the plant as the first two cell units built in 1928 had a production of only 1,500 tons a month. In 1937 the plant was enlarged 50% but was not operated at full capacity, because of unfavorable demand and zinc price, until December 1939. 1940 was the first full year of capacity operation for the enlarged plant. Shipments during the year also reached an all time peak of 38,150 tons as compared to 21,842 in 1939.

In Montana the Anaconda and Great Falls plants of the Anaconda Copper Mining Company produced 150,061 tons, of which 35,077 was toll zinc returnable. Of this production 26,292 tons were made by use of the insoluble lead-silver anode. Deliveries of zinc, including metal sent to the manufacturing and zinc oxide plants of the Company amounted to 126,194 tons compared to 100,514 tons in 1939. . . .

The die casting industry continued to be the largest consumer of special high grade zinc, in which category most of the electrolytic metal falls. It is estimated that between 105,000 and 110,000 tons were used by die casters, a substantial increase over the 84,000 tons reported for 1939. The brass industry, with its requirement for low-leaded metal necessary in the hot rolling of cartridge brass, took more than its proportionate share of high grade metal, but no exact figures are available. About 20,000 tons of the metal went into the manufacture of French Process oxide.

It might seem incongruous to talk of new uses for high purity metal when it is difficult to supply the current demand, but one application is worthy of note at this time. Special high grade zinc containing aluminum, copper and magnesium as alloying ingredients, is being used as a die material in the stamping of wing and fuselage assemblies for aeroplanes. The advantages of this alloy appear to be greater strength and toughness and an increased hardness, which makes possible the production of about ten times as many stampings as could be produced with the previous die material. There is little doubt that when metal becomes more available, the success aeroplane makers are having in producing stampings with dies and punches of this alloy, will extend the usefulness of the material in other industries confronted with similar problems.

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DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

PORTLAND, OREGON

THE ORE.-BIN

VOL. 3 NO. 6 PORTLAND, OREGON June 1941

The Department of Geology and Mineral Industries announces publication of its Bulletin no.12 entitled "Geology and Physiography of the Northern Wallowa Mountains, Oregon". The authors are Dr. Warren D. Smith, professor of geology at the University of Oregon, and John Eliot Allen, geologist, State Department of Geology & Mineral Industries. In this bulletin various phases of the study are covered in separate chapters by different authors. A detailed technical description of the rocks and their petrography with a number of photomicrographs is given by Dr. Lloyd W. Staples. The chapter on glaciation is by Wayne R. Lowell.

In his chapter on Scenic Resources of the Wallowas, Dr. Smith refers to them as the Switzerland of America, and points out a number of scheduled trips or hikes that might be of interest to parties or tourists.

Other sections of the bulletin give special attention to structural and economic geology.

This bulletin is believed to be the first comprehensive coverage of this most unique and little-known part of Oregon, the northern Wallowa Mountains. Various photographs of the rugged mountain scenery are included in the 65-page bulletin. In addition--and this is perhaps the most interesting feature of the report--a large geologic map of the entire quadrangle in a number of colors is incorporated as a part of the bulletin. Tourists, prospectors, and miners can see by a glance at the colored map the general distribution of rocks and formations they encounter on the numerous trails that traverse these mountains.

The study of this area by the State Department of Geology & Mineral Industries was made in the summers of 1938 and 1939 mainly because of the Department's desire to determine the economic importance of the region for future mining purposes, since a movement had been started to set aside this great region as a national park or primitive area. The bulletin contains all of the results of the study in question.

The price of the bulletin is 65 cents postpaid. Copies may be obtained at the State Department of Geology & Mineral Industries, 702 Woodlark Building, Portland, Oregon, and are available also at the State Assay Laboratories at Baker and Grants Pass.

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TIMING AND BULL

Let's don our house slippers, light up the old smoke nuisance, and do a little plain and fancy mental meandering. (Some people call it "thinking", but let's be less formal).

Our blatting about Hitler the beast, the inhuman, the atheist, the despoiler of men and nations; - about how his oil will soon play out, how the sane people of Germany will rise up and throw him over, and how he is bound to lose in the end because his motives and methods are criminal -- is so much moronic patter and wasted time. The facts are that Hitler has conquered Europe and wrecked the British Empire in the last three years, while the world looked stupidly on and merely "Oh'd" and "Ah'd" at the daily headlines that depicted the inexorable method of a fiendish war machine.

Let no one think that England is not beaten, shattered, right now. Only her indomitable will remains; her body is gone. Britain is like a bull in the ring. his shoulders full of darts, exhausted from loss of blood, bewildered by the crowd, woozy from dashing this way and that, always pitted against an opponent that is smarter and faster. He knew only one way of fighting, this big white fellow - let's call him Johnny Bull -- to rush and kill by main strength; that had been the tradition of this land fighting of which we are speaking, carried down through all his ancestors. The method had always won. True, the method had wobbled at times, looking back through the centuries, but the Johnny Bull colors had always muddled through. But this fight was a different kind of contest,- against a wiry matador dressed mainly in red clothing - who didn't play the game according to rules. His rule of fighting was no rule, and he had no traditions. Nothing "had to be" because it "had been before". The matador had this time beaten Johnny Bull down, taken all his strength, much more than matched Johnny's cunning, and now the end may not be far off. After all, unless help comes, the coup de grace, the final touch of death is a mere perfunctory gesture, the battle is already lost; the animal is insensible to pain.

But now a strange thing happens. Into the ring walks a strange new bull - a great, huge fellow, mainly white in color, but with spots and streaks of red and yellow and black. Let's call this new entry Sammy Sitting Bull. The matador had not counted on him but pays no attention anyway as he is busy finishing off Johnny Bull. Sammy Sitting Bull sniffs the air and it smells of blood - of his own blood!! Sammy looks across the ring and there sees his half-brother Johnny He raises a little cloud of dust with a front hoof. He glances at his blood relative making feeble rushes, each slower than the last. Johnny is surely in a bad way. Well, it wasn't Sammy's squabble anyway. He never cared too much for Johnny Bull either. Always belittlin', always thinking of his own pastures, always winning any business deal, always rather arrogant - but now in a terrible jam and calling for help. He helped Johnny Bull once before and Johnny never paid the bill nor even thanked him - called him Uncle Shylock. After this fracas would Johnny thank Sammy?

And then Sammy Sitting Bull began to note that this matador was just about the length of a pasture fence better and faster than any matador that ever came down the lane; and it began to dawn on Sammy that after finishing off Johnny Bull, this darting cyclone in the red outfit might decide to clean up everything in the ring. Then Sammy began to shiver. The more he thought of it the more frightened he became, and madder at the matador. He gave a great bellow and

kicked up another little cloud of dust with a front foot - but the matador went right on working on Johnny. Sammy lowered his head to make a charge, but just then one of the red spots on his belly started to burn and itch, so Sammy had to stop and scratch the red spot with a hind foot. He let out another bellow and got braced again for a charge to help Johnny when another spot, a yellow menace this time, on his left flank started bothering. So he stopped again and swung his shaggy head and gouged the offending flank with the tip of his horn . . .

That's enough bull for the moment; let's get back to where we started. . . The causes--not of the war, but of Hitler's success--were obscure for many months. We never gave much thought, as a matter of fact, to the causes of Hitler's successes. Our advices through the press have been almost altogether the EFFECTS of his actions: the bombing of cities, the sinking of ships, the splitting of empires, and the conquering of nations in a matter of days. Our senses have been numbed by the shock of news the like of which never occurred in a former war, until we have floundered without trying to assay WHY or HOW any human combination could bring about such almost inconceivable effects or results.

Now it is becoming clear that Hitler's success is due to a superlative combination of perfect timing and split-hair balance in planning and execution.

We must reason not from cause to effect but from effect backward. We can see the effect. The proposition of Hitler's conquering a country, any one of several, in a few days by blitzkrieg indicates his reasoning must have been something like this: "Since the time of Caesar war on land has been principally "main strength and awkwardness" except in a few outstanding cases in history where lightning thrusts won. Since we are starting from scratch with no rules, no traditions, no carry-over from the old school- either of officers or methods, our cue is to speed up war as we have speeded up industry; develop a defense against which our adversaries, burdened down with orthodox armies and equipment and traditions, will have no prepared defense. The essence of our strategy and operations will be TIMING, because it is something we can control absolutely, since we control every ounce of human effort in the Reich and every resource. We can eliminate all red tape, can coordinate all effort regardless of factional objection. Our plan must win because no other country can follow it, since their equipment and training are not right. No democracy can act with the celerity we can. They must listen patiently to the protests of the loyal opposition before voting on the issue. We don't vote; we act. By the time they learn our style and can match us at our own game, we may change style because we have no inhibitions as to thoughts or action." Anyway, some such reasoning has brought results such as the world has never seen before.

Now, the pattern of Model 1941 War is perfectly clear to us. It's streamlined; it's based entirely on speed and coordination of properly selected units which requires PERFECT TIMING; it's quick paralysis of vital points, NOT slow major pushes with shock troops. The old fashioned infantry soldier with rifle and heavy pack, the boys who knew close order and extended order fighting - are gone forever, so far as offense and primary conquest are concerned. The new soldier will conquer with planes and tanks of all sizes and armored trucks and motor cycles. Our old fashioned smooth parade and drill grounds will (or should be) roughed up liked golf courses for mechanized unit manouevers. It's an engineer's war now.

And what about Democracy? Well, it's got to be streamlined for speed, too. We can't stop to scratch the red spots that ruin our timing. That's fatal. We've got to eliminate the spots. We may have to have a one-man government for a few years to fight fire with fire. Okay, let's have it. We've virtually got it now! Then let's make the very best of it. And let's remember, England slept at the switch four years. Her timing was slow. It may cause her complete ruin. We've seen Hitler's machine work - do the impossible. The Western Hemisphere is vulnerable - terribly so. A German panzer-battalion probably could take any South American capital (or very likely, any U.S. city either) in a couple of hours. Then would Uncle Sammy be embarrassed! It needn't happen if we plan right and act quickly - watch our TIMING.

- E. K. NIXON

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APRIL MERCURY PRODUCTION

According to the monthly mercury report by the United States Bureau of Mines, domestic production for April amounted to 3,500 flasks, the same amount as reported for March. Consumption for April was 3,200 flasks, a decline of 800 flasks from the 4,000 reported for March, which in turn had shown a decline of 700 flasks compared to the 4,700 reported for February. Consumers and dealers' stocks at the end of April increased to 11,700 flasks from the 11,600 flasks reported at the end of March. This amount on hand at the end of April would be equivalent to almost four months' requirements at the present rate of consumption. Producers' stocks on hand at the end of April were reported as 459 flasks compared to 350 flasks on hand at the end of March. Of the principal producing states, California production increased in April as compared with the preceding month, while Oregon production showed a slight decrease. Statistics on imports and exports for April as compiled by the Bureau of Foreign and Domestic Commerce were not available at the time of the release of the Bureau of Mines report. Price quotations ranged from $179 to $184 in April. On March 28th the Price Stabilization Division of the Advisory Commission issued a warning that the price was too high. The softening tendency of the market price in April was attributed in part to this warning.

Present market prices, however, are quoted as $183 to $185 per flask.

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CUTTING THE LARGEST DIAMOND.

In U.S.Bureau of Mines Mineral Trade Notes, dated May 20, 1941, is the following information concerning the cutting of the largest known rough diamond in the world - the Presidente Vargas.

"This particular cutting operation is unusual in that it involves the removal of a small segment of the stone before cleaving. According to information available to the Bureau of Mines the cutting follows more than a year of study by experts and three weeks will be required for the first cut. A phosphor-bronze cutting disk fed with olive oil and diamond dust is being used.

"The Presidente Vargas supplants the Jonker as the third largest diamond discovered so far. Largest was the Cullinan, 3,024.75 carats, followed by the Excelsior, 971.75 carats. The Vargas is third, 726.6 carats, and the Jonker fourth, 726 carats. These stones, while free of the murder and intrigue that have stalked famous gems of earlier centuries, nevertheless have provided excitement. The Cullinan, sent overseas by registered mail, was cleaved by Edward Asscher, a Netherlands gem expert, after months of study. It is said that Asscher had two nurses and a doctor in attendance and fainted immediately after delivering the cleavage stroke. Despite the successful work, he spent three months in a hospital recovering from a nervous breakdown. The Cullinan provided the Star of Africa (516½ carats) and the Cullinan II (309-3/16 carats). These two gems, the largest in existence, together with 103 other stones cut from the Cullinan, were presented to King Edward VII on November 21, 1908.

"The Excelsior, found in 1893 in the Jagersfontaine mine in South Africa likewise was cleaved by a member of the Asscher firm in 1903, and later it was cut into ten stones ranging in size from 13 to 68 carats.

"The cleaving of the Jonker provides another interesting episode in diamond history. Discovered by a Pretorian native in 1934, it was purchased for about $750,000 by the same New York jewel merchant who now owns the Vargas and was shipped to New York by ordinary registered mail. When the stone was being studied for cleaving, Edward Asscher, supported by virtually all other European experts, contended that it should be split along one plane, whereas Lazare Kaplan, who had been engaged to perform this vital step, believed that the blow should be struck in quite a different plane. A fortune hung in the balance, for if the hammer blow were struck "against the grain" the stone would fly into shards of little value. Expert opinion ran so heavily counter to the Kaplan plan that even Lloyd's refused to insure it. The owner, however, backed his judgment and Kaplan proved he was right, for the stone split perfectly. From the Jonker was cut a gem of 143 carats - the third largest cut diamond extant - and 11 smaller jewels.

"The Presidente Vargas, named for Brazil's Presidente Getulio Vargas, was discovered in October 1938 in Coromandel, Brazil, by a "garimpeiro" or digger. By prearrangement with the farmer on whose land he was prospecting the digger was to receive a half share in the stone. He relinquished his share, however, for $8,000, whereas the farmer got $60,000 for his half. This great gem, according to present plans, should yield 23 smaller stones ranging in size from 5 to 50 carats, worth $2,000,000. Half the stone will be reduced to fine chips and dust. But even dust, when it is diamond dust, is worth about $3,100 a pound. (Charles L. Harness, Bureau of Mines)".

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SEVENTY-FIVE YEARS AGO

In Mineral Resources of the United States, issued in 1868 - the second report made by J. Ross Brown, Mineral Commissioner, to the Secretary of the Treasury on the mineral resources of the states and territories west of the Rocky Mountains, the following brief picture of Portland in 1866 is given in a chapter on Oregon resources.

It would be trite to comment on the changes time has wrought, but we cannot but observe that in the table showing the population the proportion of males to females indicates that there must have been a strong "seller's market" those days in the marriage mart.

"Portland.- The principal town on the Willamette river is Portland, situate on the west bank about 12 miles from its mouth. The location is excellent, and the city presents an appearance of thrift and prosperity indicative of the steady progress of the State. Many of the public buildings would be creditable to the best cities of the east of equal population. The new court-house, completed in 1866, the buildings of the Oregon Steam Navigation Company, and other public and private edifices, are among the neatest and most substantial specimens of architecture on the Pacific slope.

"Population.- Another evidence of the prosperity of Portland, says Mr. McCormick in his valuable diretory, may be found in the annually increasing population of the city, which has increased in ratio almost equal to any city in the Union. In 1863 the population of Portland was 4,057. In 1864 it amounted to 5,819; in 1865 it was estimated at 6,068. In 1866 it increased to 6,508, according to a census taken especially by canvassers for this work. The following table shows the population according to the several classifications:

"Males 21 years and upwards	2,017
Males under 21 years	1,104
Females 21 years and upwards	1,330
Females under 21 years	1,108
Colored, males	82
Colored, females	43
Chinese, males	208
Chinese, females	116
Floating population, estimated from hotel registers, etc.	500
	6,508

"Being an increase of 440 inhabitants during the year just closed. These figures do not exhibit a very rapid growth, but they denote a steady progress, which must prove not only interesting but even satisfactory to the well-wishers of Portland.

"The present population of Portland is estimated at 8,000, and a rapid increase is expected during the ensuing year, owing to the reduced rates of passage from the east, and the recent gratifying progress in the development of the iron, coal, and agricultural interests of the State.

"Assessable Property.- Mr. McCormick says:

'The assessable property in Portland is valued at $4,200,000. Taxes levied and collected during 1866, $400,000. Of this amount $91,000 was collected for

State, county, school, and road purposes; $150,000 was collected by the officers of the United States for federal purposes, and $159,000 (including licenses and fines) was collected by the city of Portland. Of this amount $75,000 was expended for street improvements, and $84,000 for general and special purposes. The salaries and fees of city officers during 1866 amounted to $15,000. The expense of city surveys, $3,700. The cost of boarding city prisoners, $950. Salary of the city attorney, $1,000. Expense of the recorder's court and city police, $6,000. The amount expended in the improvement of the Willamette river last year exceeded $30,000. Of this amount $20,000 was raised by loan, and $10,862 was obtained by special tax. The expense of lighting the city with gas was $3,000, and for furnishing the engine house and city offices with water, $600. The city printing during the year just closed cost $700. From the foregoing figures a crude idea may be gathered of the approximate expenses of the several departments of the municipal government of Portland."

A summary of produce shipped from Portland during the year 1866 is given. The value of the specified merchandise, produce, etc., shipped was $455,457. Added to this is "value of gold dust, bars, etc., given as $8,070,600."

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GARNET SAND IN SAWING STONE

In Mining Technology for May 1941, published by the American Institute of Mining and Metallurgical Engineers, Oliver Bowles and P. deVitry describe a new type of wire used in a single strand for high-speed sawing of structural stone. Sand grains are the "teeth" of the saw and silica sand is the usual abrasive used. However, tests substituting garnet sand for silica sand have given highly satisfactory results. These tests indicate that by the use of garnet the speed of sawing was about doubled, while the direct cost was reduced 50 percent.

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FIRST PRIZE TO DR. BOOTH

At the recent convention of Federated Mineralogical Societies held at Oakland, Calif., early in May, Dr. Courtland L. Booth of Portland was awarded first prize for his display of fluorescent minerals.

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INDUSTRIAL DIAMONDS

Usually we think of the diamond as the precious stone - the beautiful gem. The industrial use of the diamond, not generally fully appreciated, is essential for certain abrasive purposes. No substitutes are satisfactory. Diamonds are the hardest substance known, natural or artificial, and their unique qualities are illustrated by the following extract from U.S.Bureau of Mines Mineral Trade Notes of April 19, 1941:

"In January some of the London papers commented on the operations of the Nazi diamond organization in Brazil and said that it had been reported recently that if Germany were unable to continue to corner the Brazilian market its war machine would have to cease work within six months. (Acting Commercial Attache James Somerville, London, Feb.27, 1941)".

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BUYERS OF CHROME AND MANGANESE ORES

The U.S.Vanadium Corporation, a unit of Union Carbide Co., is interested in purchasing manganese and chromium ores and has an engineer in the field in southern Oregon. Owners of manganese and chrome properties interested in contacting this company may do so through the State Assay Laboratory in Grants Pass.

The Rustless Iron and Steel Corporation, Baltimore, Maryland, is in the market for chrome ore. Producers or prospective producers who wish to market chrome ore should write H. F. Byram, 924-22nd Street, Sacramento, California, or inquire at the State Assay Laboratory, Grants Pass, Oregon.

The Ohio Ferro-Alloys Company, Tacoma, Washington, is in the market for chrome ore. A schedule of prices paid may be obtained by addressing James F. Magee, 544 Tennyson Avenue, Palo Alto, California.

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MINERAL MARKET QUOTATIONS

The market quotations of certain ores is given in price per unit of metal or metallic compound contained. Inquiries received at the Department show that such quotations are not always clearly understood.

A unit is one percent.

The market quotation for a certain grade of manganese ore may be 70 cents a long ton unit for ore assaying 55 percent manganese (Mn). This means that the ore is quoted at $0.70x55 or $38.50 a long ton (2240 pounds).

An antimony ore may be quoted at $1.50 per unit for ore assaying 50 percent antimony (Sb). This means that the ore is quoted at $1.50x50 or $75.00 per ton (2000 pounds).

A tungsten ore may be quoted at $24.00 per unit for concentrates assaying 65 percent tungstic oxide (WO_3). This would mean a value of $24.00x65 or $1560 a ton (2000 pounds). Tungsten concentrates are always graded according to the percent of tungstic oxide (WO_3) present.

For ores of base metals not quoted at a value per unit, the price is usually given at a price perpound of metal or metallic compound contained. For example : Molybdenum ore is graded as to the amount of molybdenite (MoS_2) it contains. Thus quotations at present are 45 cents per pound of MoS_2 contained for concentrates containing 90 percent of MoS_2 or better. 90 percent would be 1800 pounds; therefore, the value would be $0.45x1800 or $810 per ton of concentrate.

Iron, manganese, and chrome ores are sold on a long ton basis (1 ton = 2240 pounds). Most other ores are reckoned in short tons (2000 pounds).

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NON-METALLICS IN OREGON

Oregon's 1940 non-metallic mineral production was valued at over $5,750,000, according to a report just issued by the State Department of Geology & Mineral Industries. This report, GMI Short Paper no.5, gives results of a survey made by C. P. Holdredge, consulting geologist, who was employed by the Department to do the field work and compile the report. Non-metallic minerals produced were sand, gravel, crushed rock, limestone, clay, silica, coal, diatomite, pumice, semi-precious gem stones, and mineral water.

The report analyzes the survey statistics and contains much information on Oregon's non-metallic mineral resources. The production of non-metals according to geographical districts of the state is discussed, and the statistics are summarized in a table.

The price of the report is 10¢. Copies may be obtained at the State Department of Geology & Mineral Industries, 702 Woodlark Building, Portland, Oregon, or will be sent postpaid to any address upon receipt of price. Copies of the report are available also at the State Assay Laboratories at Baker and Grants Pass.

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1940 PRODUCTION OF METALS IN OREGON

A preprint of the chapter on production of metals (except quicksilver) in Oregon, to appear in U.S. Bureau of Mines Minerals Yearbook for 1941, has just been released. Total value of production of gold, silver, copper, and lead in the State for 1940 was $4,148,271, representing an increase of 24 percent over 1939. Of the above metals, gold accounted for 96 percent of the total.

As in previous years, Baker County led in production of gold, silver, copper, and lead, followed by Grant, Jackson, and Josephine counties in the order named. Of the total, Baker County produced 43 percent, Grant 29 percent, Jackson 15 percent, and Josephine 9 percent.

Approximately 63 percent of the total gold production came from placers and 37 percent from lode mines. Dragline dredges recovered 49 percent of the total placer gold produced, connected-bucket dredges recovered 35 percent, 6 percent each by wet small-scale hand methods and non-floating washing plants

with mechanical excavators, and 4 percent by hydraulicking, drift mining and dry small-scale hand methods combined. The number of producing properties was 304. Of this number 10 accounted for 62 percent of the total gold production. These were, in order of value of output: Cornucopia Gold Mines, Sumpter Valley Dredging Co. (bucket-line), Northwest Development Co. (dragline dredge), Porter & Co. (bucket-line), Cougar Independence Lessees, Murphy Murray Dredging Co. (bucket-line), Ferris Mining Co. (dragline), Benton Mine, Timms Gold Dredging Co. (bucket-line), the B-H Co. (dragline).

According to reports received, Oregon placer mines consumed 1317 pounds of quicksilver during 1940. Average number of ounces of gold recovered per pound of quicksilver used was, according to the several classifications: for connected bucket dredges, 61 ounces; for dragline dredges, 51 ounces; non-floating washing plants with mechanical excavators, 13 ounces; hydraulic mines, 22 ounces; small-scale hand operations, 5 ounces.

Concentrating mills, most of which used flotation, treated 69 percent of the total ore and old tailings (105,469 tons, of which 3,219 tons was old tailings); amalgamation and cyanidation mills treated 23 percent; and 8 percent was shipped crude to smelters. 11,139 pounds of 91 percent sodium cyanide were reported consumed in recovering 3,811 ounces of gold and 305 ounces of silver from 16,420 tons of ore and 579 tons of old tailings. Indicated cyanide consumption would be approximately $1\frac{1}{2}$ pounds of the above grade cyanide per ton of ore and old tailings treated. 34 pounds of quicksilver were used in recovering 1,007 ounces of gold and 242 ounces of silver from 659 tons of ore and 250 tons of old tailings. A recovery of 29.6 ounces of gold recovered per pound of quicksilver used is indicated.

A table showing production data at various Oregon mines follows.

OREGON MINING OPERATIONS, 1940

Compiled from preprint of U.S.B.M. Minerals Yearbook Chapter on Oregon

County	Mining District	Name of Operation	Lode or placer	Tons or cu.yds. treated	Gold ozs.	Silver ozs.	Copper lbs.	Lead lbs.	Remarks
Baker	Baker	Midas Mine	hydraulic	20,000	304	22	-	-	
Baker	Bull Run	Ferris Mining Co.	dragline dredge	124,820	529	56	-	-	Production from Oct.3 to Dec.31
Baker	Cornucopia	Cornucopia Gold Mines Inc.	lode	49,060	22,570	120,743	122,448	24,650	2266 tns.conc., unit value based on net metal recovery as given in annual report
Baker	Cracker Creek	Consuelo Oregon Mines	dragline dredge	-	-	-	-	-	No production data given
Baker	Cracker Creek	Oregon Argonaut Gold, Inc.	lode	509	643	128	630	-	Operated 10 mos. then suspended
Baker	Cracker Creek	Lessees at Bourne	lode	3,948	2,173	5,992	7,211	-	Group incl.No.Pole, Columbia,Tabor Fraction, E&E
Baker	Greenhorn	Triangle Constr. Company	dragline dredge	-	--	-	-	-	No production data
Baker	Mormon Basin	Ancient Channel Syndicate	dryland plant	-	-	-	-	-	No production data
Baker	Sumpter	Sumpter Valley Dredging Co.	bucket line	3,311,112	7,697	1,663	-	-	
Baker	Sumpter	Northwest Development Co.	dragline dredge	1,210,080	6,934	1,776	-	-	Operated two draglines
Baker	Virtue	Columbian Mine	lode	822	320	74	1,363	-	
Douglas	Riddle	Lobicasa Co.	dragline dredge	220,586	-	-	-	-	Operated from 5/24 to 10/14; values not disclosed
Grant	Canyon	Ferris Mining Co.	dragline dredge	1,152,210	4,065	416	-	-	Operated 1/1 to 9/21 also prod.14 oz.Pt group
Grant	Canyon	Western Dredging Co.	bucket line	-	-	-	-	-	No production data
Grant	Granite	Porter & Co.	bucket line	-	-	-	-	-	No production data
Grant	Granite	Oroplata Mining Co	dragline dredge	-	-	-	-	-	No prod.data. Moved to Union Co. 8/20

County	Mining District	Name of Operation	Lode or placer	Tons or cu.yds. treated	Gold ozs.	Silver ozs.	Copper lbs.	Lead lbs.	Remarks
Grant	Granite	Intermountain Mining Co.	Dragline dredge	110,000	1,719	403	-	-	Operated from 5/10 to 12/31
Grant	Granite	Bellevue Mine	lode	4,800	811	40,444	8,243	33,732	1,001 tons conc.
Grant	Granite	Constitution Gold Mining Co.	lode	-	-	-	-	-	Shipped small quantity hi-grade gold ore. No detailed data
Grant	Granite	Cougar-Independence	lode	18,427	6,560	8,169	3,471	817	Includes 664 tns. shipping ore & 2066 tns. conc. from 17763 mill ore
Grant	Quartzburg	H.F.England Co.	dragline dredge	650,000	3,119	525	-	-	
Grant	Susanville	Timms Gold Dredging Co.	bucket line	-	-	-	-	-	No production data
Jackson	Elk Creek	Al Sarena Mines Inc	lode	-	-	-	-	-	No production data. Shipped lead conc. during January
Jackson	Gold Hill	Gold Hill Placers	dryland plant	-	-	-	-		No production data
Jackson	Gold Hill	Lance Mine	hydraulic & non-floating wash.plnt.	-	-	-	-	-	No production data
Jackson	Gold Hill	Murphy-Murray Dredging Co.	bucket line	627,261	4,253	616	-	-	
Jackson	Gold Hill	Pleasant Creek Mining Corp.	bucket line	-	-	-	-	-	No production data Operated short time
Jackson	Gold Hill	Lucky Eagle Mining Co.	lode	-	-	-	-	-	No production data. Suspended May 10. Opened to leasing
Jackson	Upper Applegate	Chas.C.Stearns	dragline dredge	-	-	-	-		No prod.data-worked Alaska of Ore., Belle, Holzang & Mee prop.
Jackson	Upper Applegate	B-H Co.	Dragline dredge	-	-	-	-		No production data
Jackson	Upper Applegate	Crescent Pacific	dragline dredge	-	-	-	-		Oper.on Matney, Offenbacher & Smith ranches

Jackson	Upper Applegate	Sterling Mine	hydraulic	-	-	-	-	-	No production data
Jackson	Upper Applegate	So. Oregon Mining Co.	dragline dredge	-	-	-	-	-	No prod. data. Worked Taylor property 11/14 to 12/31
Jackson	Upper	D. A. Wright	lode	50	678	170	-	-	Worked Steamboat Gr.
Jefferson	Ashwood	Oregon King Mines	lode	1,062	329	20,313	6,169	29,474	Started work 9/1
Josephine	Galice	Lewis Inv. Co.	lode	-	-	-	-	-	No prod. data. 3rd largest lode mine, 60 ton cyanide plant
Josephine	Galice	W. S. Robertson	lode	-	-	-	-	-	No prod. data. 5th largest lode mine, Amalgamated high grade
Josephine	Greenback	Blue Channel	hydraulic	-	-	-	-	-	no prod. data. Operated Jan. 1 to May 20
Josephine	Greenback	P. B. Wickham	lode	-	-	-	-	-	No prod. data. Worked Greenback Mine 1/1 to 9/10
Josephine	Waldo	Esterly Mine	hydraulic	-	-	-	-	-	No prod. data. Worked 1/1-7/1 and 10/20-12/31
Josephine	Waldo	Atlas Gold Dredging Co.	dragline dredge	-	-	-	-	-	No production data
Malheur	Malheur	Pacific Placers Eng. Co.	non-floating plant	-	-	-	-	-	No production data
Malheur	Snake River	J. M. Rhodes	non-floating plant	36,039	-	-	-	-	No further prod. data. Worked 4/28-8/3 Shovel & trucks
Union	Camp Carson	Oroplata Mining Co.	dragline dredge	-	-	-	-	-	No prod. data. Moved from Grant Co.; started work 9/23
Union	Camp Car.	F.M. Kronkhite	hydraulic	-	-	-	-	-	No production data

TALE OF A ROCK-HOUND
"Damp Landing"

by Earl K. Nixon

The big, twin-motored "bird of the Andes" zoomed in over a volcanic rim and settled nonchalantly astride the equator at Quito, Ecuador. We passengers hopped out. I retrieved my camera from the air-steward's locked pouch, and snapped a team of red bulls hitched to an American-made mowing machine that was trimming the grass of the airport.

Two hours later we dropped down at Cali, Colombia, for gas, and for a smoke under the trellis at the little airport, and for a cup of the coffee for which Colombia is famous. Then the big mainliner plane wheeled off across the bumpy field, kicked into the air, tucked its wheels back under its tail feathers, and headed nearly due north for the Panama Canal zone.

It was a mite under four hours' non-stop to Cristobal Colon at the north or Atlantic end of the canal. For three hours, coming down from the high plateau country, we had skimmed through broken clouds and bright sun, over mountain-and-jungle terrain peppered here and there with coffee plantations where the red volcanic soil peered up boldly as rents in Mother's emerald apron. Then we reached the deep jungle, the coast, and weather. Rain spattered on the thick windows. The coastline, sometimes invisible, cut in and out. We, following the controlled whim of a tiny needle, bored straight on, now out of sight of land.

The trim little steward brought our luncheon trays, - soup, mixed pickles, turkey sandwiches, celery, salad, coffee, and dessert; took away the trays again and stacked them in a cupboard at the rear of the cabin. I sat talking with John Dos Passos with whom I had travelled before. We spoke of books, of Spanish refugees, of a sunset at Guayaquil that he had captured with words, I only with color film. I wondered when he would buy a respectable-looking hat; he doubtless wondered why I went chasing all over Nature's rump looking in obscure places for mines and minerals.

Panama City and the Pacific end of the canal slid under us, vaguely outlined through the 5000 vertical feet of murk. Blasts of rain still rattled at the windows and an occasional gust of wind swung the big plane a few degrees off line to give a glimpse of green jungle and canal ribboned below. I turned back to finish a short story I had started the day before. Only two paragraphs remained.

The signal light at the front of the cabin flashed on. "Please fasten safety belts." The plane had started its long glide toward the Cristobal landing field. The latter, I had noted as we circled, was bounded on two adjacent sides by the jungle, on the other two by the water of the bay, now leaden because of the rain. I braced myself from unconscious habit as the landing wheels of the plane touched the rain-soaked ground, and glanced out the window at the airport buildings flitting by.--- Still a short paragraph remained of my story; I'd have time to finish that before the big plane could slow down, turn, and taxi back to the airport -- I thought!

It must have been only a matter of seconds later that the big plane "hit a mountain". I sunk a foot into the seat cushions as the ship bounced high in the air; then rose to the limit of my safety belt on the rebound. The tail of the

ship went up-- 60 degrees, it seemed-- as the nose went down. Then the ship leveled a bit as it surged forward under "gunned motors". In a split-second glance out the window I noted that we cleared only by yards, it seemed, the rip-rapped stone seawall, and that our speed had slackened but little since we first touched ground in landing.

Things happen so swiftly under such circumstances that time is not given for ordered thought. I do recall distinctly that there flashed through my mind the old remark "Things that go up must come down", and intuitively I braced my feet and stiffened the muscles across my abdomen under the tight seat belt.

We DID come down - with a hell of a splash - about 100 feet out in the ocean! There was a shower of hats, magazines, brief cases from overhead racks, and dirty pasteboard dishes and uneaten food from the opened cupboard at the back of the plane. No one had enough wind to scream; the jerk of seat belts into our stomachs on landing had taken care of that. I wriggled out of my seat belt and squeaked - of all the inane things -- "Well, folks, here we are!" One does crazy things under stress. Someone giggled, senselessly; someone hawhawed; and the spell was broken. Of the three women aboard, the one across the aisle was beginning to dig a big gob of potato salad out of her hair, another a few seats ahead was whimpering in Spanish; then all was confusion.

Would the plane sink? No, because the tail wheel was still on the bottom, the front of the ship floating. (The level floor of the cabin proved that). The little steward was cool as a cat's nose. He had been standing behind my seat, the farthest one back, and holding to Heaven knows what. Immediately he got the door open some way, and started kicking litter out into the sea. The tropical downpour continued.

The Captain (chief pilot), hair flying, and without neat cap or jacket, came charging back through the cabin. His lips were quivering as he grabbed me by the arm and said, "Why don't you start getting off?" But the woman still tussling with portions of the potato salad had brought me back to normal. I made some remark about not wanting to get out in the rain, and besides there were women to get off first. The Captain grinned, then remarked that he must have been a little excited. Who in his place wouldn't have been?

By that time some native peons had gathered on shore and began wading out. The water came almost to their armpits at the door of the plane as they carried us, partly on their shoulders and partly on their heads, back to land. I recall thinking what a bedraggled mess we were, dressed in tropical whites, clawing our way one at a time up over the seawall in the blinding rain, and into one of the waiting cars that had come down from the airport.

Then the payoff came! Ahead of me in the car into which I dived was a little Japanese woman, who with her husband had been on the plane since I got on at Lima. She was still quivering from fear and shock. She said to me in Spanish, "Do you speak English?" I replied that I did. She went on in Spanish, "Please tell the driver to go very carefully on the way to the airport for I am about to have a baby!" I carried out her request, the while wanting to say to her, "What a wonderful chance you missed ten minutes ago when the plane landed in the ocean!"

(The foregoing happened July 29, 1940. Although shaken up, none of the air passengers was injured. One of the crew went to the hospital with a crushed knee. $3000 or $4000 damage was done to the plane. Gunning of the motors by

the quick-thinking pilot doubtless kept the plane from turning over on its back. Had that happened the result would have been serious. I learned that the plane's brakes failed to work. We overran the short field, hit a drainage ditch, kicked into the air, then plopped into the sea.)

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SOMETHING ABOUT TALC

(The following was abstracted from an article by R. Crawford Lees in COMPRESSED AIR MAGAZINE for June 1941).

The United States produces annually around 200,000 tons of low-grade talc, and in addition it imports about 50,000 tons of high quality talc for cosmetics and other special uses.

Until recently the principal source of supply of high quality material was Italy. Since 1935 the higher grade product of India has come into our markets. The price of high grade talc ranges from $45 to $80 per ton wholesale.

Talc is a hydrous silicate of magnesia and is a definite mineral, consequently it should not be classified with soapstone which is a rock containing talc and other minerals. Talc from Dagotha, Jaipur State, India, the source of the high grade talc for importation into this country, has the following characteristics: hardness 1.2; sp.gr. 2.7; color, white to pale green; luster, pearly; chemical analysis, silica 61.8%; magnesium 31.4%; aluminum 0.8%; iron (as ferrous oxide) 0.7%; water of hydration and traces of alkalies, etc., 5.3%; lime, negligible.

The talc in the Dagotha deposits occurs in large pockets in limestone belonging to the Rialto series of rocks of pre-Cambrian age. Rialto limestone is a dolomite containing more than 42% of magnesium carbonate. The talc has been derived from dolomite by metamorphic processes resulting in the conversion of the carbonate into hydrous silicate.

The principal workings at Dagotha are in a large pit measuring about 300x150 feet at the surface and gradually tapering to the bottom, which is now about 200 feet below ground level. Until recently all operations - stripping, drilling and hauling - were done by hand. The broken material was carried away in baskets holding about 20 pounds each, on the heads of coolie women. The economic depth of manual operation has been reached and machinery including air compressor, jackhammers, hoist, track and cars is now used.

From the pit workings the talc is transported by truck to the mill at Dausa. The material is first hand-sorted and the various grades put in stock sheds. The talc is withdrawn from storage as required and pulverized in a Raymond mill. The pulverized product is air-classified into three grades: grade 1 is 100% through 300 mesh; grade 2 is 100% through 200 mesh, and 97% through 300 mesh; grade 3 is 100% through 100 mesh and 30% through 200 mesh.

Uses According to Grade

Grade I	Grade II	Grade III
Cosmetics	Paper manufacture	Roofing material
Creams	Textile processing	Leather industry
Lotions	Rubber filler	Ingredient in special cements
Pastes	Paint filler	Wall tile and ceramic bodies
Toilet powder	Soap filler	Filler for sprays
	Facing foundry molds	Floor wax
	Food industry	Putty ingredient
	Packing for pharmaceuticals	Insulating compounds
	Filtering medium	

Massive talc is used for electrical insulation, gas burner tips, and in spark plugs. For these services it must have a fine-grained structure, have no cracks or cleavage planes, be devoid of iron and grit, and be easily machinable. Other uses for massive talc are in crayons and pencils; also molds for bottles, watch crystals, iron, brass, copper, and other metallic castings.

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DOMESTIC MERCURY PRODUCTION

Production of mercury amounted to 3600 flasks in May compared to 3500 flasks in April according to the U.S. Bureau of Mines MONTHLY MERCURY REPORT released July 3rd. Consumption was 3500 flasks compared to 3200 flasks in April and 4000 flasks in March. Consumers' and dealers' stocks at the end of May were 10,700 flasks, a reduction of 1000 flasks compared to the stocks on hand at the end of April. Producers' stocks amounted to 661 flasks at the end of May as against 459 flasks at the end of April. Exports in April amounted to 217 flasks; imports were 25 flasks.

Statistics on exports and imports for May were not available at the time of the release of the report. Market quotations in May ranged from $180.00 to $183.00 a flask; present market quotation (July 9th) is about $190.00 a flask.

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CLEARING HOUSE

H. L. Coombs, 1765 W.25th St., Los Angeles, Cal., states that "Unlimited capital available for the development or purchase of properties or tonnage of manganese, tungsten, antimony, quicksilver, beryllium, mica, fluospar, aluminum clays. Will also consider a well developed high or low-grade gold property".

H. Stein,530 Golden Gate Ave., San Francisco, Calif., states that he has responsible buyers for a large copper property.

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GOVERNMENT STOCKPILES

An act of Congress, approved by the President June 25th, 1940, caused the Metals Reserve Co. to be organized by the R.F.C. with a capital of $5,000,000 for the purpose of acquiring reserves of strategic and critical minerals. The following table gives information released in a report by the Federal Loan Administrator, concerning activities of the Metals Reserve Co. in acquiring metals and minerals as of April 30th, 1941.

	Tons delivered	Tons afloat	Tons on order	Amount
Antimony:				
Chinese	6,796	-	-	$1,903,000
Domestic	250	-	2,750	780,000
Asbestos	-	-	1,560	215,000
Chrome Ore:				
South African, etc.	12,457	11,950	138,593	4,039,000
Philippine	-	-	148,000	3,166,000
Copper:				
Latin American	106,722	-	1/ 393,777	140,110,000
Graphite:				
Madagascar	411	-	4,500	486,000
Manganese ore:				
Far Eastern	172,866	48,450	393,940	20,533,000
Latin American	16,149	-	439,945	15,023,000
Domestic	-	-	1,490,000	53,155,000
Mica	-	-	489	400,000
Tungsten trioxide, domestic	-	-	1,250	2,875,000
Tin:				
Far Eastern	30,375	6,275	2/ 113,350	168,000,000
Bolivian	-	-	90,000	100,000,000
Zinc	-	-	50,000	8,250,000
Antimony, wolframite, and tin, Chinese (respective quantities undetermined)	-	-	-	90,000,000
				$608,935,000

1/ Includes 198,160 tons for which purchase contract has not yet been executed.

2/ Includes 93,024 tons for which purchase contract has not yet been executed.

- U.S. Bureau of Mines
Mineral Trade Notes
June 20th, 1941.

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DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

PORTLAND, OREGON

THE ORE.-BIN

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WHAT WE ARE DOING

This issue of the Ore.-Bin is devoted primarily to a report of Departmental activities. Since production of strategic and critical minerals is all-important, the Department has tried to do everything possible to promote their production. From the very beginning of work of the Department in 1937 the importance of strategic minerals production was realized and investigations were made which in 1938 resulted in publication of the Department's bulletins on quicksilver and chromite. Widespread demand for these reports is good evidence of their usefulness; they have surely contributed to development of these essential minerals in Oregon.

In 1938, 1939, and 1940, the Department investigated tungsten and molybdenum in the Wallowa Mountains of northeastern Oregon, cinnabar deposits in the Ochoco Mountains of central Oregon and in the Tiller-Trail area of southwestern Oregon, and chromite in beach deposits. Results of some of these investigations have been published in the form of a bulletin on the Wallowas accompanied by geologic map, and in geologic maps of the Round Mountain and Butte Falls quadrangles.

Current investigations of the Department continue to be concerned primarily with the State's strategic and critical mineral resources. The national situation makes it essential that all actual and potential sources of these minerals be catalogued and evaluated. Some of the projects are on a cooperative basis with the U. S. Geological Survey and Oregon State College. Certain of the Departmental activities such as its summer geological survey are continuing projects, while others are special studies which will be contributions to the State's areal, historical, and economic geology.

This would seem to be an opportune time to express the Department's appreciation for the fine cooperative spirit of geologists of the United States Geological Survey, Oregon State College, and the University of Oregon. The Department wishes also to record the active assistance of the Chemical Engineering Department of Oregon State College in chromite beach sand research.

STRATEGIC MINERALS HEARING

On July 15th and 16th, a hearing was held in Portland by United States Senator Rufus C. Holman, presiding for the Sub-committee of the Committeefor Military Affairs of the United States Senate. Hearings of this sub-committee for the investigation of various matters concerned with production of strategic minerals had been held previously in Washington over a period of about two months. Senator Holman's opening statement in the Portland hearings indicated his desire to obtain information on the accessibility and availability of strategic ores and minerals in the Oregon country. He expressed a desire to bring out information on why the strategic minerals phase of the national defense program, including the accumulation of stock piles, had been far from successful. Mr. Earl K. Nixon, Director of the Department, was a witness and also assisted in bringing out evidence by questioning other witnesses. At the conclusion of the hearing he was asked to make a summary of his recommendations which would embody steps the Federal authorities should take in order to speed up production of strategic

and critical minerals necessary for national defense. Following is a list of such recommendations made by Mr. Nixon and forwarded to Senator Holman:

1. Ore prices:
A higher price must be paid for these strategic minerals or there will be an insufficient incentive to bring about adequate production by the multitude of small operators. (This applies primarily to chromite and manganese). For chromite, we would suggest that the following minimum base price for ore at the mine should start some ore coming out:- Seventy-five cents per long-ton unit for ore running 45% chromic oxide, and one cent per ton unit additional for each increase of one percent of chromic oxide. Thus 45% ore would bring $33.75 at the mine, and a 50% Cr_2O_3 ore would bring $40.00.

2. Roads:
The prompt completion of a mine-to-market accessory road program by the Federal government will be essential in getting out a satisfactory tonnage of some of the strategic minerals. It is as important to provide roads to get mining machinery and even equipment for exploration in, as it is to get the product out of the many inaccessible localities.

3. Purchasing System:
The present Federal purchase system has been demonstrated as wrong. Individual producers are unprepared to go back to Washington, sit down with the Metals Reserve Corporation and try to work out contracts for relatively small tonnages of ore. In other words, Federal buyers, each with full authority to negotiate, must go into the field and deal directly with the producers, stock-piling the ores obtained in whatever quantities are supplied.

4. Ore Specifications:
Specifications for strategic minerals must be made more lenient in order that domestic producers can produce the types of domestic strategic ores that exist, rather than the types that consumers have been in the habit of receiving in the past mainly from foreign sources. The present specifications for screening, maximum sizes of chunks, and amount of fines could well be stricken out in the cases of chromite and manganese, at least. The specification for metallurgical grade of chromite ore might well be reduced to 44 or 45 percent Cr_2O_3.

5. Guarantees:
Insurance in some form--short term amortization of plant, relief from certain taxes, or otherwise, must be given to domestic producers in order to assure their interest in producing strategic minerals. Past experience involving cancellation of contracts is not a pleasant memory.

6. Import Tariffs:
Federal government must recognize that its import tariff policy may act as a strong incentive for, or deterrent against prospective strategic mineral production. The maintained tariff on quicksilver, for example, has been a factor in placing the domestic quicksilver industry in the strong position in which it is today. Import tariff cuts on manganese in recent years have had a disturbing effect on some who would

have been domestic manganese producers. To remove import tariffs on all strategic commodities at this time in order to save a few dollars to the government on their possible purchase of foreign ores would be false economy in the light of the effect that such a move would have upon domestic producers.

7. Priority Red Tape:
The Federal government, in allowing interminable delays through red tape in priorities, is handicapping especially the quicksilver producers who have great difficulty getting machinery and maintenance supplies. All strategic mineral producers should have the same priorities as consumers-A-1-A ratings.

8. Facts Lacking:
There is a lack of facts on the part of officials and consultants of the OPM and others in Washington in regard to the supply of zinc ores in the Pacific Northwest. Furthermore, it was brought out at this hearing that there seems reason to believe that the wishes of a handful of large eastern zinc smelter people have more weight with the OPM in regard to authorization of an electrolytic zinc smelter for the Pacific Northwest than do the real needs of this section, as well as the critical need for new zinc smelting capacity in the United States. We have been unable, so far, to break down the erroneous impression by OPM that we have any important quantity of zinc in the Pacific Northwest. Whereas, as a matter of fact--it was brought out at the hearing that at no point in the United States at this time does there appear to be a more favorable point than the Portland area for a zinc smelter, considering cheap power, transportation, and availability of zinc concentrates.

9. Power Needs:
It was brought out forcefully at this hearing by Dr. Raver, Bonneville Power Administrator, who gave facts and figures, that the power program at Bonneville and Grand Coulee must be stepped up to meet industrial demands within the next three years.

10. Stock-Piling Sub-grade:
It is our opinion that the government would be justified in stock-piling chromite ores at or near their points of production, that run as low as 25% chromic oxide. Private interests will not do this. However, the government could afford to, in order to anticipate the utilization of such ores by processes now completed or under study. We make the same recommendation for sub-grade manganese ores of oxide type, running as low as 25% elemental manganese.
We further recommend that serious consideration be given to the matter of stock-piling zinc concentrates. They would have to be stocked under shelter to protect them from wind loss. Zinc shipping ore of smelting grade could similarly be stock-piled, although sub-grade materials to be concentrated could not be stock-piled more than a year or two owing to their tendency to oxidize. A program of purchase and stock-piling by the government of zinc concentrates in the Pacific Northwest would offer a strong incentive for the development of many mines now idle, and at the same time the accumulation of such reserves would help justify the installation of an electrolytic zinc smelter on deep water in this area.

11. Pilot Plant:
The matter of processes for utilization of sub-grade domestic strategic

minerals must be given serious and prompt attention. We haven't needed processes because in the past we could obtain ample supplies of high-grade foreign ores. Now we must utilize lower grade domestic ores. Money should be appropriated for use not only by the federal agencies but also by the State or even private agencies that have already gone some distance in developing such processes.
Appropriations for pilot plants and metallurgical process work should be promptly forthcoming to justify continued attention to the development of domestic sub-grade strategic minerals.

12. Cooperation:
There has been too little cooperation and exchange of ideas between the Federal technical agencies and the OPM in Washington, and the local State and private agencies in the strategic mineral producing areas. Whereas the local Portland officials of the Bonneville Administration cooperated excellently with the local and State agencies in the Pacific Northwest, there is a distinct lack of such cooperation between the Washington headquarters of other Federal agencies and the western groups. Local agencies are usually well informed and can furnish acceptable information and details which should receive serious attention in Washington.

13. Freight Services:
Rail freight rates in some of the western strategic mineral producing areas are among the highest in the United States. It was brought out at the haring that a complete review and study of freight rates as they apply to the movement of raw materials should be made. Since the disparity in ton-mile freight between manufactured goods moving west and raw materials moving east has a bearing on the logical location of industry, this matter is an added reason for a review of freight structure.

14 Timing:
We had better get serious on the question of timing on the entire strategic minerals program. Some remedial measures must be taken now--not three months or six months from now. Conditions must be anticipated much farther in advance. In this connection the master minds in charge of the defense program are handicapped by lack of facts on the conditions in regions remote from Washington. Many of these facts could easily be obtained if the opinions of individual producers, engineers, and public agencies, located in the area, were sought.
Throughout this hearing the question of giving better attention to the element of timing has been stressed by various witnesses. In the production of strategic minerals the time element is an especially important factor. We recommend that red tape be eliminated and short cuts taken at every possible point.

MANGANESE SURVEY

Since the study was made under the supervision of J.T.Pardee of the United States Geological Survey during the last World War, very little work has been done in the way of investigation of manganese deposits in Oregon. In 1937 the Department made a short reconnaissance survey of a few deposits in southwestern Oregon. Early this year it was recognized by the Department that the domestic

manganese situation would, in all probability, become acute and a survey was planned which would catalog and attempt to evaluate the known or reported deposits of manganese ore in the State. Geologists of the Department have visited and, in most cases, sampled all reported deposits upon which no previous reports have been made. Information has been assembled in manuscript form and will be published as a bulletin in the near future. In addition to descriptions of properties, there will be chapters in the report descriptive of the economics of manganese and also of the problems involved in prospecting and developing manganese orebodies. The probabilities are that bodies of manganese ore in Oregon may not be mined so that metallurgical grade manganese may be produced directly in any large amounts. In some cases small tonnages of acceptable grade may be made available by hand-sorting methods, but, in general, beneficiation will be necessary to produce any large tonnages of commercial grade material.

INVESTIGATION OF SOURCES OF ZINC

For many months the Department has been bending every effort to encourage and promote the establishment of an electrolytic zinc smelter in the lower Columbia River area, believing that such a location is extremely attractive because of the combination of especially favorable factors, namely: deep water transportation, low-cost electric power, and sources of supply of zinc concentrates immediately available for such a plant. Various difficulties have arisen to retard carrying out the plan. Most of these difficulties have been caused by lack of definite information which OPM representatives have had concerning zinc resources in the Pacific Northwest. Although much evidence has been presented, there continues to be an unwillingness on the part of OPM experts to believe that adequate sources of supply of zinc concentrates would be available in this part of the country. While such a plant in this area would, at the start, be mainly dependent on zinc concentrates from the Pend Oreille district of northeastern Washington, a material tonnage could be supplied from Western Oregon. Development of new zinc deposits in Oregon would undoubtedly be stimulated.

The situation in domestic zinc supplies is such that increase in zinc smelting capacity is essential. In order to assemble more definite information on Oregon's zinc resources, during the past two months the Department has made a survey of the best-known zinc deposits of the State. The complex sulphide ores of the Cascade Range are well-known, but in only a few properties has development progressed far enough so that zinc ore reserves could be estimated. These properties have been examined and, in addition, engineers' reports have been obtained. The information is being assembled and will be published as a GMI Short Paper in the near future.

GEOPHYSICAL WORK.

In cooperation with the United States Geological Survey the Department has started a geophysical survey in a section of the Ochoco Mountains east of Prineville. A geophysicist and equipment are being furnished by the United States

Geological Survey. The Department is furnishing an assistant as well as funds to be matched by the U.S.G.S.

For a considerable period the Department has wished to try out geophysical methods in tracing shallow geologic structures which are known to bear a close relation to ore deposition. The area selected for the initial experiment is the so-called Johnson Creek fault zone in the northern part of the Round Mountain quadrangle. Along or near this zone are the cinnabar deposits of the Mother Lode, Blue Ridge, Independent Quicksilver, and Number One properties. The first instrument work has been with the magnetometer. A grid of cross-sections at right angles to the zone is being made. By means of the anomalies shown by the magnetometer, an attempt will be made to trace the zone under areas covered by overburden and also to outline relationships between structure and orebodies in the zone. Resistivity methods will probably supplement magnetometer work. Certain other areas of the State can probably be tested by similar methods. It is hoped that some concrete facts will be obtained which will be helpful in prospecting and development work. It is too early, however, now to state whether or not definite evidence will result. A report by the Geophysical Branch of the United States Geological Survey, in cooperation with the Department, will be made as soon as results are available.

BEACH SAND INVESTIGATION

For the past two and one-half years the Department has been active in studying the commercial possibilities of producing chromite from the back beach deposits of the southern Oregon coast. Two major problems are involved: first, that of treatment in order to make a commercial separation and, second, to determine whether or not chromite occurs in economic deposits. In 1939 and 1940 considerable sampling was done by the Department and samples were sent to a laboratory in the East for electrolytic separation tests. Results of these tests, together with results from much more extensive research work by Professor George W. Gleeson of Oregon State College, indicated that a commercial separation was feasible, at least for a chemical grade of chromite.

In 1940 the Department made application for a small W.P.A. grant to be used for drilling and test-pitting in selected areas principally north of Bandon. The application was approved and work was actually started in June of this year. The project provided for a joint supervision by the United States Geological Survey and the Department. As sponsor, the Department contributes equipment as well as providing for analytical work on samples. Coos County has very materially assisted by furnishing transportation for workmen.

Various delays have occurred from time to time to slow up the work, and probably the amount of ground which will be prospected will be less than the amount it was hoped would be covered. However, it is felt that the work of this project would compare favorably with most other W.P.A. projects, and a material quantity of commercial chromite sand has been proved in two localities. About 40 test pits, 25 Empire drill holes, 3 churn drill holes, and several small pipe drill holes, have been put down, so far. It would appear that enough chromite has already been indicated to provide sufficient incentive for private operators to do more detailed development work. The present project will end about the middle of August.

STATE GEOLOGICAL SURVEY

As in 1939 and 1940, the State geologic survey is in charge of Dr. W. D. Wilkinson of Oregon State College. Mapping is being done this summer in the St. Helens quadrangle. This area was selected because it contains the limonite deposits located, generally, west of Scappoose. As soon as the necessary areal geology is completed, Department geologists will cover the area and study the economic geology, paying particular attention to the iron ore deposits. Because these deposits are very favorably situated as regards transportation, they would be especially important to a steel plant on the lower Columbia River.

The Department feels that because of the present emergency all information pertaining to the economic geology of the deposits should be assembled and made available as soon as possible, even though development work is insufficient for making definite estimates of total ore reserves.

SPECTROGRAPHIC LABORATORY

Spectrographic equipment has been ordered for the laboratory authorized by the 1941 Oregon Legislature. Because of national defense needs deliveries of equipment will be somewhat delayed, but it is believed now that installation can be completed some time in October. Dr. H. C. Harrison, formerly in charge of the spectrographic laboratory of the New York State College of Ceramics, has been employed as spectro-analyst for the Department laboratory. Dr. Harrison has arrived from the East and is now at Oregon State College engaged partly in the work of designing some accessory equipment necessary for the spectrographic laboratory and partly in a laboratory investigation of the reported occurrence of tin in the Juniper Ridge area west of Burns.

UNITED STATES GEOLOGICAL SURVEY

As in previous years, a United States Geological Survey party is doing geologic mapping in southwestern Oregon, under the supervision of Dr. Francis G. Wells. Work is in the Kerby quadrangle which adjoins the Grants Pass quadrangle on the west. The Kerby quadrangle contains some of the most inaccessible and difficult terrain yet mapped in southwestern Oregon by United States Geological Survey geologists. Use of pack trains is necessary since a great deal of the country surveyed is many miles away from passable roads. This work is being under a cooperative arrangement between the U.S.G.S. and the Department. When completed the map will be published by the Department.

SPECIAL GEOLOGIC STUDIES

During June, Dr. Ira S. Allison of Oregon State College was employed by this Department to complete geologic mapping of the Salem, Stayton, Albany, and Lebanon (15-minute) quadrangles. Most of the total area included in these quadrangles had been mapped previously. The work done by Dr. Allison will make it possible for the Department to publish these maps which in the aggregate cover an area of about 900 square miles.

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The Oregon State College geological summer survey under the supervision of Dr. W. D. Wilkinson, assisted by Mr. Herbert Harper, was in the Molalla quadrangle. Work was completed in June. The map will be prepared by Mr. Harper for his Master of Science thesis and will be published by the Department.

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The Ironside Mountain (30-minute) quadrangle, which adjoins the Sumpter quadrangle on the south, is being mapped this summer by Wallace Lowry, who is a graduate of Oregon State College and has a fellowship for graduate work at the University of Rochester. Mr. Lowry is doing the areal geology of the Ironside Mountain quadrangle toward his Ph.D. degree. Part of the expenses of his field work is being paid by the Department, and the geologic map of the quadrangle will be published by the Department when completed.

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Wayne Lowell, formerly with the Department and now doing graduate work at the University of Chicago, is making a study of the paragenesis of southwestern Oregon gold and copper ores. When completed, the study will be the subject of a thesis leading to his Ph.D. degree. Many samples were taken in the field during June and part of July. These samples have been sent to Chicago where a large number of thin and polished sections will be made for detailed microscopic study. The Department has paid part of the field expense for this work and the thesis will be available for Departmental publication.

GEOLOGIC STUDIES IN OREGON BY OUT-OF-STATE GEOLOGISTS

Dr. Conrad Krauskoptf of Stanford University is studying contact relationships of the granite batholith of the Wallowa Mountains. The work is of a much more detailed nature than ever before done in the Wallowa Mountains.

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During June, Mr. Beverly Wilder of Berkeley, California, collected and studied fossil plants in the Molalla quadrangle as a part of his doctorate work at the University of California.

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For the past several months Dr. Ralph W. Chaney of the University of California has been directing the work in Eastern Oregon of a party of paleontologists, headed by Dr. Robert LaMotte. Studies have been made especially of fossil plants in the John Day beds. An extensive collection of leaves has been made and this work will be an important contribution to the paleobotany of the State.

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TOPOGRAPHIC MAPPING

Topographic mapping in Oregon by the United States Geological Survey is being done this summer in the Euchre Mountain quadrangle located near the coast and extending on the west from a point a little north of Devil's Lake south to a point about 3 miles east of Otter Rock. The east boundary of the quadrangle extends south from Saddle Mountain.

The whole current program of topographic mapping in Oregon by the U.S.G.S. includes five 15-minute quadrangles named Euchre Mountain, Toledo, Tidewater, Roman Nose, and Panther. The first three adjoin in a line north and south with Euchre Mountain the most northerly and with the Toledo quadrangle adjoining it on the south. The last two adjoin east and west and are located west and south of Eugene in an area approximately half-way between the Pacific Highway and the Coast. The aggregate area of the five quadrangles is something in excess of 1,000 square miles. It is not now known when the program will be completed.

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2000 WILLOWS DOING FINE, DREDGED LAND

Forest Reports Porter Ground Rehabilitated.

A project aiming at the rehabilitation of land over which gold dredges have passed was begun this year on tailings of the Porter and Company operating near Granite, a report from the Whitman National Forest headquarters indicates.

According to the information on the project, the work is done under an agreement as to dredging federal forest land and involved the planting of 2000 willow trees on the leveled tailings piles. In addition, the dredging company is said to have planted crested wheat grass directly in the rock and that a stand was obtained. The company has done similar planting in Montana, it is said.

The willows, native to the district, were cuttings from 18 to 24 inches in length and were set out during the spring under the supervision of Mel Burke, forest service staff member. Ninety percent of the trees were growing, he indicated Tuesday. Plantings were made along the winding creek channel reconstructed by the company over the ground mined.

The official indicated that while the willows are apparently doing fine, they may not grow tall enough to affect the whole area. He suggested that cottonwood trees may prove an ideal planting for dredged-over ground in eastern Oregon.

- Baker Record Courier, July 24, 1941.

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EXCESS PROFITS TAX ON STRATEGIC MINERAL PRODUCTION

The House Ways and Means Committee in Washington recently eliminated from the 1941 Federal tax measure the excess profits tax exemption for producers of the strategic minerals. The bill, we understand, is now in the United States Senate for consideration.

If this knocking out of the excess profits tax exemption for strategic mineral producers in the United States sticks and the law passes without the exemption, it will be a slap in the face for every mining group in this country producing strategic minerals or even considering opening up strategic mineral properties. It would remove one of the most important incentives that mining people have for producing strategic minerals in this national emergency. It would mean that strategic mineral producers, who have been and are continuing to be urged by the Federal government for patriotic reasons to extend themselves to the utmost to produce the mineral products of which the government is sorely in need, will be apt to lose their shirts unless they happen, in their mining development, to strike orebodies of bonanza size.

The elimination of the profits tax exemption would gain for the government in taxes about one-half million dollars in the quicksilver industry and another half-million dollars in the tungsten industry. If the domestic strategic minerals production is adversely affected, as it doubtless will be by this removal of the incentive to develop new mines, the government itself may have to get into strategic minerals production and produce the materials urgently needed in this emergency. In the latter event, it would probably cost the government twenty-five times as much as the million dollars a year they would save by eliminating the excess profits tax exemption .

To remove one of the principal inducements for the production of sorely needed strategic minerals in the United States would be a very stupid move indeed, therefore we urge that a Senate amendment be incorporated in the bill that would provide an exemption from excess profit taxes for all domestic strategic mineral producers.

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THE HOPPER

We welcome to our small group of monthly news publications "The Hopper", of the Oklahoma Geological Survey. Dr. Dott writes that the name and idea of our own Ore.-Bin may have helped in starting The Hopper. Thanks for the compliment. Our very best wishes to The Hopper for its future growth and success.

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DOMESTIC PRODUCTION OF GEM STONES

From the 1909 peak output of gem stones valued at $534,280, the domestic industry dwindled to only $3000 in 1934. Since then the production has increased markedly and in 1940 was valued at $340,000 to $750,000; the first figure is a rough estimate of the amount used in jewelry and the second an estimate of the total, including that treasured by collectors or sold to tourists, collectors, and rock gardeners. The rise is due largely to the growth of lapidary work as a hobby (particularly in the Pacific Northwest and notably in Oregon and Washington). Stones of the agate family comprise about 87 percent of the amount used in jewelry. Gems are produced largely by individuals or partnerships, and as there are no official returns exact figures are not available.

The war has shut off, at least in part, the country's normal sources of supply of colored gems; their place, to some extent, has been taken by gems of American origin.

- Preprint of Chapter on Gem Stones
from U.S.B.M. Minerals Yearbook for 1940.

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SUMPTER GEOLOGIC MAP

A colored geologic map of the Sumpter quadrangle covering a part of western Baker County and including the extreme northeastern part of Grant County, will be issued by the State Department in the very near future. Mapping was done by geologists of the U.S. Geological Survey. The cost of reproduction is to be paid by the State Department.

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SUMPTER QUADRANGLE GEOLOGY RELEASED

A four-color geologic map of the Sumpter Quadrangle, the mining region twenty miles west of Baker, Oregon, which has been in the past and still is one of the foremost gold producing areas in Oregon, has just been issued by the Oregon State Department of Geology and Mineral Industries.

The field work, upon which this publication is based, was done by members of the U.S.Geological Survey in 1908-1909 and 1914-1915, but the map remained unpublished until joint funds were supplied last year by the Oregon Department. The map is on a scale of about 3/4-inch to the mile, and depicts the various geologic formations in an area of some 600 square miles of one of the most prolific gold mining regions in the state. Fifteen different types of formation are outlined, and the thirty-three most important mines in the area are located.

On the reverse side of the map is printed a description of the geologic formations and deposits of economic value. Besides the gold lodes and placers, deposits of chromite, quicksilver, limestone, iron ore, diatomite, volcanic ash, building stone and road metal are mentioned.

The map is for sale for 40 cents at the State Assay Laboratories in Baker and Grants Pass, as well as the head office of the State Department of Geology and Mineral Industries in Portland.

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FEDERAL SURVEY REPORTS SUBSTANTIAL NICKEL ORE RESERVES IN OREGON

The U. S. Geological Survey has issued the following report of a survey made in 1940:

As a part of the investigation of domestic deposits of strategic minerals by the Geological Survey, United States Department of the Interior, two of the Survey's geologists, W. T. Pecora and S. W. Hobbs, have examined a nickel deposit about 5 miles northwest of Riddle, Douglas County, Oregon. The town is 230 miles south of Portland by highway and is on the Southern Pacific Railroad. There is a dirt road between the town and the nickel deposit.

The nickel deposit is a rather irregular blanket on the western, southern, and southeastern slopes of Nickel Mountain. It was formed as a result of the concentration by weathering agencies of the small quantities of nickel originally present in the silicate minerals that compose the peridotite underlying the mountain. The peridotite is a dark igneous rock made up largely of the minerals

olivine and pyroxene: it is commonly altered to serpentine along its contacts with the sandstones and greenstones into which it was intruded. The concentrations of nickel, however, appear to be limited to the ores underlain by the peridotite and not to overlie the serpentinized masses.

The nickel-bearing blanket is best developed on terraces and gentle slopes above an altitude of 2000 feet, where its thickness reaches a maximum of 60 to 70 feet. Within the blanket, nickel is present chiefly in the mineral garnierite, a hydrous silicate of nickel and magnesium. The garnierite varies in nickel content, the darker varieties having the larger amounts. Three layers or zones may be distinguished in the blanket; a thin upper brick-red soil layer at the surface, which is relatively low in nickel; a thick intermediate layer, richer in nickel and composed of limonite cut by a network of quartz and garnierite veinlets; and a bottom layer in which thin veinlets of quartz and garnierite occur in unaltered peridotite. The network of veinlets in the second and third layers is thought to have formed along the blocky jointing in the unaltered peridotite.

Messrs. Pecora and Hobbs believe that the concentration of the nickel originally present in the peridotite, which is in the order of 0.2 percent, into the higher-grade garnierite-bearing material of the blanket deposit was the result of two successive long-continued climatic cycles. During the earlier cycle the minerals of the peridotite were decomposed, forming an aggregate of hydrous iron oxides and nickel-poor garnierite. The more recent temperate and humid cycle resulted in the solution of the nickel-poor garnierite and its redeposition in veinlets as quartz and nickel-rich garnierite.

No comprehensive sampling program of the entire deposit has been undertaken; such sampling as has been done indicates that the great bulk of the deposit contains from 1 to 2 percent of nickel, and a much smaller part contains from 2 to 3 percent of nickel. Should emergency conditions result in a substantially higher price for nickel or stimulate the development of a practicable method of treatment for low-grade nickel silicate ores, the deposits on Nickel Mountain would provide a reserve of some 6,000,000 tons of material with an average nickel content of 1 to 2 percent and in addition possibly 250,000 to 300,000 tons that contain 2 to 3 percent of nickel, of which 80,000 tons in the vicinity of the Discovery workings can be regarded as proved ore.

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MARKETING CHROME ORE

The only commercial ore of chromium is the mineral chromite. There are three classes of chrome ore, namely, metallurgical, chemical and refractory, and specifications vary for each class.

Metallurgical chrome ore is used in making the various ferro-chrome alloys; the critical specifications are a high chromic oxide content and a ratio of chromium to iron that is not less than 3 to 1. Specifications are less strict under emergency conditions of national defense needs.

Chemical chrome ore is used in the manufacture of chromates and bichromates used in tanning and dyeing, for pigments, and in production of other chemicals as well as chromium plate. In chemical chrome ore a high chromium content is the desirable factor.

Refractory chrome ore is used to make chrome brick or, together with a small amount of bonding substance, to make a refractory cement. These refractories are used in furnace linings mainly in the basic open hearth process for making steel. Lower chromium content can be used; a low silica content is desirable.

Metallurgical chromite is much the most important class economically since ferro-chrome is essential in national defense, and in normal times practically all of the metallurgical grade chromite used in this country is imported.

Chromite is considered to be a chemical combination of iron and chromium oxides and is usually written as $FeO.Cr_2O_3$ or $FeCr_2O_4$, but, as it occurs in nature, other oxides, ferric oxide (Fe_2O_3) and alumina (Al_2O_3) may in part take the place of chromic oxide (Cr_2O_3); ferrous oxide (FeO) may be replaced partially by magnesia (MgO). Thus, besides ferrous oxide and chromic oxide, natural chromite usually contains alumina and magnesia.

Theoretically, pure chromite would contain approximately 68% chromic oxide (46.5% chromium), 32% ferrous oxide (25% iron), which gives a chrome-iron ratio of 1.86 to 1. The chrome-iron ratio of natural chromite almost never approximates the theoretical ratio. The desirable metallurgical grade chromite is one which contains three times as much chromium as iron, and at the same time contains a minimum of 48% chromic oxide (32.8% chromium).

The first step in the utilization of metallurgical chromite is to make ferro-chrome- an alloy of iron and chromium - by smelting the chromite. Ferro-chrome is used to supply the chromium in the various ferro-chromium alloys, mainly the so-called stainless steels. Ferro-chrome should contain a minimum of 65% chromium. This would mean that the chrome-iron ratio in the ferro-chrome would be approximately 1.86 to 1. Since in the smelting process chromium has a tendency to slag more easily than the iron, it is necessary to start with a chromite which has a much higher chrome-iron ratio than this and it has been found that a 3 to 1 ratio is necessary in order to obtain a ferro-chrome having a minimum of 65% chromium.

Chromite is sold on the long ton basis, that is, per ton of 2240 pounds. Present market quotations are $42-$45 per long ton for chromite assaying 48%-50% Cr_2O_3 delivered at Atlantic Coast points. Market quotations are given delivered in the East since until recently all ferro-chrome plants were located there. Now two plants are located in the Northwest and chromite produced in Oregon may be sold at the railhead. Prices for such ore will be quoted producers by the following companies:

Rustless Mining Corporation, 505 Farmers & Merchants Bldg., Sacramento, Cal.
U. S. Vanadium Corporation, 114 Sansome St., San Francisco, Cal.
Ohio Ferroalloys Corporation, Tacoma, Washington.

Purchases of chromite for stockpiling purposes are made for the Federal Government by two agencies, namely, the Procurement Division of the Treasury and the Metals Reserve Co., organized under the Reconstruction Finance Corporation. Price to be paid and points of delivery are subject to negotiation. Procurement Division specifications are as follows: chromic oxide (Cr_2O_3) content (minimum) 48%; iron (Fe) (maximum) 1/3 of the chromium content;

sulphur (S) (maximum) 0.5%; phosphorus (P) (maximum) 0.2%. Specifications also provide that all ore shall pass a six-inch screen, and that not more than 10% shall pass a 1/2-inch screen. Specifications for purchases by the Metals Reserve Co. have been liberalized and the minimum on Cr_2O_3 for metallurgical lump ore has been lowered to 45%. Purchases of both refractory and chemical grades of chromite have been made by the Metals Reserve Co.

The demand for chromite is such that grades at least as low as 40% Cr_2O_3 may be marketed. It should be realized however that the low price commanded by the lower grades warrants a profitable operation only where large scale production and low transportation costs may be had. Careful sampling should be done so that ore shipped will not fall below the grade guaranteed by the producer. Hand sorting is usually necessary.

If large enough deposits of low grade ore occur (in which chromite particles are disseminated throughout the country rock) they may sometimes be treated economically by gravity concentration (tabling, jigging, etc.), so that the concentrates may be marketed. Only very large deposits in which several tens of thousands of tons of ore are well developed, justify the installation of such a mill.

Usually 15-25% chromic oxide content for these low grade ores is the minimum that could be economically handled.

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The following notes on Monazite and Sea Water are from the U. S. Bureau of Mines Mineral Trade Notes, July 19th, 1941:

MONAZITE

General: - Imports of monazite, the commercial source of the rare-earth metals cerium, lanthanum, didymium, and thorium, achieved an all-time record of 2,967 short tons in 1940, compared to the previous peak of 2,914 short tons in 1917. During the first 4 months of 1941 imports totaled 1,247 short tons. The record imports for 1940 do not indicate current consumption, because a substantial tonnage was stockpiled by some of the large consumers for use on orders already received. A few years ago monazite seemed about to be dropped from the field of useful minerals when world output dropped to less than 100 tons in 1925 from a peak production of 7,392 tons in 1909. The sharp decline in world production resulted from the decreased use of incandescent gas mantles, in which considerable quantities of thorium nitrate and smaller quantities of cerium nitrate had been consumed.

The oxides and fluorides of the rare-earth elements contained in monazite are used in the cored carbons of searchlights, motion-picture machines, and therapy lamps to increase the lighting intensity and are therefore important in both peace and war. It is estimated that about 50 percent of the total domestic consumption of monazite goes into carbons and about 25 percent into the manufacture of pyrophoric alloys (misch metal), many of which are exported to the Dutch East Indies and to other countries having humid climates, where the use of matches is less satisfactory. The remaining 25 percent is consumed in various products, including cerium oxide for coloring glass (cerium gives a yellow color) and in glasses for ophthalmic and scientific lenses, where absorption of ultra-

violet light is desired. Cerium acetate is used for mildew-proofing. Lanthanum compounds are used by a large optical concern in scientific lenses. Thorium is used in tungsten filaments to increase luminosity and reduce brittleness, and in radio tubes to emit electrons, which cause the tubes to function. Monazite is still employed to manufacture the nitrates of thorium and cerium, which are exported directly and consumed in the manufacture of incandescent mantles, domestic producers of which continue to do a good export business with the Far East.

Appreciable quantities of mesothorium, a radio-active element that is preferred to radium for painting airplane dials, is recovered as a byproduct in processing monazite to obtain the various rare-earth constituents. Mesothorium is currently worth about $24,000 per gram.

Monazite is imported chiefly from British India, where the mineral is recovered as a byproduct in processing beach sands for ilmenite. Brazil supplied but 7 percent of the total imports in 1940, but would become a more important producer if the present price of $60 a ton was increased. Monazite was mined in the United States from 1890 to 1910 and again in the war years, 1915-17, but domestic deposits are submarginal at less than $300 a ton, and even at that price it is doubted if they could supply war-time requirements. (Leo J. O'Neill, Bureau of Mines).

SEA WATER

Utilization in the United States: - When one considers that more than 70 percent of the earth's surface is covered by sea water it is not surprising that so many people are interested in knowing what is in the sea water itself, not considering the fish, crustaceans, coral, and other animal and vegetable growths that subsist on it.

The Bureau of Mines is often asked how much salt is contained in sea water. For a long time salt has been recovered from sea water by solar evaporation on the Pacific coast, subsequently other compounds, and in recent years magnesite in this same area. Much interest has been evinced in the utilization of sea water on the Atlantic coast to produce bromine, and the sea water in the Gulf of Mexico has recently become the source of a large output of magnesium metal.

Innumerable analyses of ocean salts and ocean water have been made that show some slight differences in different localities, but Dittmar's average seems to be accepted generally as being typical. His analysis, which gives only the main constituents and omits numerous other elements present only in minute traces, is quoted by F. W. Clarke (The Data of Geochemistry, Geological Survey, United States Department of the Interior, Bull.770, 1924) as follows:

Composition of oceanic salts	
NaCl	77.76
$MgCl_2$	10.88
$MgSO_4$	4.74
$CaSO_4$	3.60
K_2SO_4	2.46
$MgBr_2$	.22
$CaCO_2$	.34
	100.00

Composition of ocean	
O	85.79
H	10.67
Cl	2.07
Na	1.14
Mg	.14
Ca	.05
K	.04
S	.09
Br	.008
C	.002
	100.00

From the foregoing tables it can be seen that of 100 percent sea water and constituents, hydrogen and oxygen make up 96.46 percent, leaving 3.54 of all other minerals. There are less than 10 principal constituents (and many minor elements, more than 40 of which are known) in sea water. Sodium chloride alone comprises about 2.75 percent of raw sea water and almost 78 percent of the total solids. The ratio of oceanic salts to one another is fairly constant, but the total content of salts in ocean water (i.e. the degree of dilution) varies slightly in different parts of the earth and also at different depths from the surface of the water.

Since the salts are ionized in the sea-water solution they may be separated and then recombined in many ways to form a wide range of chemicals. The following analysis is arranged by ions.

	Basis	
	Dry solids 1/	Sea water 2/
Cl (Chloride)	55.292	1.958
Br (Bromine)	0.188	0.007
SO_4 (Sulfate)	7.692	0.272
CO_3 (Carbonate)	0.207	0.007
Na^+ (Sodium)	30.593	1.083
K^+ (Potassium)	1.106	0.039
Ca^{++} (Calcium)	1.197	0.042
Mg^{++} (Magnesium)	3.725	0.132
H_2O (Water)	-	96.46
Total	100.00	100.00

1/ Dittmar's average (from U.S.G.S.Bull.770)
2/ Basis: Sea water contains 3.54 percent salts.

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NEWS NOTES

Robert G. Bassett, who was assayer and sampler at the Cornucopia Mine for a number of years, has been appointed to fill the position of analyst at the Grants Pass State Assay Laboratory. He succeeds Albert A. Lewis, who resigned to become engineer with the Denver Equipment Company.

The Murphy-Murray Dredging Company has moved the bucketline dredge formerly on Foots Creek to Pleasant Creek. The dredge will mine ground known as the Williams Placer on the channel of Ditch Creek. George Murphy of Portland is president of the company and Hal Young of Rogue River is superintendent.

The Jackson Mining Company is operating a dryland dredge east of the town of Jacksonville. The washing plant is mounted on caterpillar track and has four Anley bowls in addition to sluice boxes. A Lima 1½-yard dragline with a 75-foot boom is used to dig the ground and move the washing plant. E. B. Skeels of Auburn, California, is in charge of the operation.

The Hayfork Exploration Company's dredge which has been operating on Forest Creek has been moved to the Applegate River. Low water in Forest Creek made it

necessary to suspend operations and temporarily to take up new ground. C. C. Stearns is in charge of the operations.

The Northern California Dredging Company started operations on the upper end of Jump-off Joe Creek near the county line. A 1500-yard Bodinson washing plant, a 1½ Lima Diesel dragline with a one-yard bucket, and a TD40 Diesel cat comprise the equipment. J. C. Boyle and J. E. Ely are the operators. Digging started about August 11th.

The Southern Oregon Mining Company's dredge on Forest Creek near Ruch has temporarily discontinued operations due to low water. J. D. Bowdish of Medford is in charge.

The Mountain King Cinnabar Mine on Evans Creek has started development, and it is planned to instal a 40-ton Gould furnace. J. W. Deemy is in charge.

The Silica Brick Company of Chemult has its plant in operation for the manufacture of brick made of pumice. This lightweight brick has many advantages in the building industry.

The Oregon Belle Mine is located on the headwaters of Forest Creek near Jacksonville, Oregon. Operations started originally in 1890, and there is a reported production of $250,000. Mr. Conrad is mining in the tunnel and is doing considerable work along the Roberts Vein.

The California Mine in the Galice District has temporarily suspended operation. This mine is well known for its 7200-foot Wheeler tunnel.

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CHROMITE DEVELOPMENTS

Mr. F. I. Bristol of Grants Pass has been moving chromite from the Snowy Ridge Chrome Mine, through which the Oregon-California state line passes, south west of Ashland. The chromite is being trucked via the Applegate Highway to Grants Pass where it is being stocked by one of the buyers.

Both Rustless Mining Corporation and the U.S.Vanadium Corporation are stockpiling chromite at Grants Pass. U.S.Vanadium has also established a stockpile at Crescent City. One company has stated that it now will accept chromite of 40 percent grade at a price of 40 cents/unit; there is an increase of 1 cent/unit per percent increase in grade f.o.b. stockpile. This is equivalent to $16 for 40 percent, $20.25 for 45 percent, and $25 for 50 percent ore.

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SALT WATER MADE FRESH WITHOUT DISTILLATION

An equivalent of "distilled water" can be made with patented substances known as cation and anion exchangers.

Cation Exchangers are made by heating carbonaceous materials such as coal, peat, and lignite with concentrated sulphuric acid. The most satisfactory

anion exchanger is made by the use of metaphenylene diamine with formaldehyde.

A simplified explanation of the reactions involved may be summed up as follows: Any salt in solution is composed of a cation and an anion; the cation is the negative radical or the non-metallic constituent of the salt and the anion is the positive or metallic constituent. A cation exchanger replaces the negative radical of the soluble salt forming an insoluble compound and an acid. The resulting acid then reacts with the anion exchanger which makes another insoluble compound and water. The following example, in which "Z" represents the cation exchanger and "An" the anion exchanger, illustrates the reactions:

$2\ NaCl - H_2Z \text{ -- } 2\ HCl - Na_2Z$ (insoluble) Cation exchange)
$2\ HCl - An(OH)_2 \text{ -- } AnCl$ (insoluble) $- 2H_2O$ (Anion exchange)

In this way, salt is removed from solution and the water becomes fresh. The insoluble salts settle or are filtered out.

- Abstracted from U.S.Bureau of Mines' Report of Investigation 3571.

****

OF POSSIBLE INTEREST

At the Friant Dam at the Central Valleys Project, California, equipment was installed to recover gold in the gravel to be excavated and used in the concrete structure. In one year's operation $100,000 was recovered. The equipment cost $18,500.

***

An authority states that by means of the spectrograph it is possible to measure the increase in the lead content of the blood of a person who has slept for one night in a newly painted room. In fact, the spectrograph can measure as little as one atom of lead to a million molecules of blood.

***

According to the U.S.Bureau of Mines, domestic sales of costume jewelry increased substantially in 1940, amounting to nearly $34,000,000 in value. Retail sales of all jewelry amounted to $416,000,000. Domestic production of gem stones in 1940 was estimated at from $340,000 to $750,000; the first figure is a rough estimate of the amount used in jewelry and the second is an estimate of the total including that produced by collectors.

***

In MINING AND METALLURGY, July 1941, George C. Branner, State Geologist of Arkansas, makes an estimate of reserves of bauxite ore in Arkansas, Georgia, Alabama, Mississippi, and Tennessee. Practically all known commercial bauxite deposits occur in those states. The grade usually considered as ore contains 55% or more of alumina, and it is estimated that reserves of this grade total 11,000,000 long tons. Lowering the grade to 50% makes an additional 9,000,000 long tons available. The OPM has stated that we should produce 800,000 tons of aluminum annually to fill all military and civilian needs (average annual consumption of aluminum 1936-1938 was 146,000 tons). The higher grade ore would last about $3\frac{1}{2}$ years at a production rate of 800,000 tons of aluminum a year. Including the 50% ore the time would be extended another three years.

****

WORLD PRODUCTION CRUDE OIL 1940 (x)

	Bbls.a day	Percent of total
United States	3,692,000	63.0
Other Western Hemisphere	866,000	14.8
Russia	593,000	10.1
Near East	335,000	5.7
Netherlands East Indies	166,000	2.8
Rumania	188,000	2.0
Germany, Poland, Albania, Japan, Hungary and France	43,000	0.7
Rest of world	49,000	0.9
	5,862,000	100.0

(x) Table compiled from WORLD PETROLEUM, February 1941. Germany produced also in 1939 probably about 65,000 bbls. a day of synthetic oil and gasoline. It is estimated in TECHNOLOGY REVIEW, June 1941, that Germany's present capacity for synthetic petroleum products may be of the order of 100,000 barrels a day - reduced an unknown amount (but perhaps less than 20 percent) by British bombing attacks.

****

SAFETY CONFERENCE AT SEATTLE

The Western Safety Conference will hold its seventh annual convention September 22-26, Seattle,Washington, Convention headquarters will be the Olympic Hotel. The object of the Conference is to exchange ideas and standardize on safety methods in industry, home and traffic. The mining group discussion leader is A. H. Zeilinger of the Colorado Fuel and Iron Co. Dr. R. B. Sayers, director of the U. S. Bureau of Mines, will take part. An attractive recreational program is also planned.

****

AMERICAN MINING CONGRESS CONVENTION

The American Mining Congress will hold its 8th Annual Metal Mining Convention and Exposition in San Francisco September 29th-October 2nd. Headquarters will be at the Fairmount Hotel. A most comprehensive program, including technical papers, discussions, and field trips, has been planned. Particular attention will be given to metals and minerals necessary in national defense as well as to operating methods and problems. Most of the operators of the larger mines of the western states or their representatives will take a leading part. Various manufacturers of mining machinery are to have exhibits.

****

PRIORITIES

The office of Senator Rufus C. Holman has notified the Department that the Priorities Division of the OPM is preparing to grant preference ratings to manufacturers of mining equipment which should assist mine operators in procuring equipment. A project number may be assigned if the operation is sufficiently substantial and important from the standpoint of national defense. The corporate owner of the mine should address a letter to Mr. Ward Freeman, Director of Priorities Plant Expansion Unit, 462 Indiana Avenue, Washington, D.C., requesting a project number and stating nature of the project, location, and particularly value and importance to national defense. By this means operators may, as we understand it, get a priorities rating for the whole project and will not be required to get such a rating for each piece of equipment desired.

****

CLEARING HOUSE

Andrew Hawkins, Mill City, Oregon, and W. M. S. Risley, Albany, Oregon, wish to sell or lease their property known as the Vandalia or Savage Mine, located in the Quartzville Mining District, eastern Linn County. There are 8 unpatented claims. Several hundred feet of development work. It is stated that the average width of vein is 14 feet and that the average value is $15 per ton, mostly in gold, but carrying some lead and zinc. 2-stamp mill and 10-ton Gibson mill. Location 2½ miles by trail from Quartzville highway.

****

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PORTLAND, OREGON

THE ORE.-BIN

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BUILDING BRICK

Historical Notes

Doubtless Neanderthal children made "mud pies" or their equivalents They surely were fascinated by the velvety smoothness, the plastic qualities, of wet clay, and began moulding it in shapes just because of the sensation of working it with their hands. From such beginning the utility of dried clay shapes was discovered at a much later period, probably, when clay forms were baked by accident in a camp fire. Thus is indicated the antiquity, certain, if vague, of the ceramic arts. More ancient, more easily and widely applicable to early human needs than metallurgy, the working and moulding of clays for brick making, firing, manufacturing of pottery and use of glazes was very early discovered, developed and brought to a high state of perfection.

***

Bricks made by the Egyptians, Assyrians, and Romans were considerably larger than the modern brick and were commonly in the form of slabs. (Some Roman bricks were triangular in form). Some ancient Roman bricks had dimensions as great as 23.5" x 23.5" x 2.2".

***

Brick making goes far back beyond historical record. Fired bricks that must have been made over 10,000 years ago have been found in excavations in Egypt. All down through ancient times the use of brick and wall tilings in dwellings and ornamental work in other structures is shown by records and evidences left by the Egyptians, Chaldeans, Assyrians, Persians, Chinese, Indian races, Phoenicians, Greeks, Romans, Arabs and Moors.

***

The aborigines of America, notably in Mexico and Central America, made outstanding terra cottas, the origin of which dates back at least 1000 B.C.

***

In England probably more buildings have been built of brick than of any other material.

Building brick may have been introduced into England by the Romans, but claybaking had its origin there at a much earlier time. According to Nathaniel Lloyd in "A History of English Brickwork", baked clay spoons were made in Sussex a thousand years before Caesar landed. Among Celtic remains which date before 100 B.C., brick loom weights have been found. They were burnt brick, but softer than the well-burnt Roman brick.

Many old English structures, dating back to the 13th century, contain a large number of Roman wall bricks re-used from earlier buildings. These Roman bricks vary considerably in size. Some are square, but 18" x 12" x 1½" is a common size. Thickness ranges from 1" up to 3½".

The Roman Empire collapsed in the fifth century and during the following Dark Ages arts, crafts, and industries sank into obscurity. In England, the Saxons built few permanent buildings. There is no evidence that they made

either brick or tile; in fact, there is no record of brick-making between Roman and Mediaeval times.

Resumption of brick-making came in about the 12th-13th century. Buildings known to have been constructed in 1200-1220 contain bricks which are not Roman. In Sussex is the oldest brick dwelling house in England. It dates 1260-80 and contains bricks of Flemish or low country type, measuring 9" x 4½" x 2". The colors are cream and greenish yellow with some pinks and reds.

***

At the beginning of the 19th century the manufacture and use of building terracotta had progressed little since the Renaissance. It was still mainly influenced by the traditions of the Romans who used it, covered with glaze, in buildings subordinate to stone. Gradually but surely brick and tile began to replace stone, and finally buildings in the north of France, the Netherlands, England, and the United States were constructed wholly of brick.

***

Even though the quality of the modern brick is, other things being equal, not greatly different from those of ancient times, modern methods of manufacture are a far cry from the crude hand methods used up to fifty years ago. Machine moulding, drying in tunnel kilns, temperature control, and careful inspection all combine to make a uniform superior product. In ancient times bricks had the quality of indestructibility. Today they are beautifully indestructible.

***

Lloyd 1/ quotes an epitaph on a tablet in Iver Church commemorating the name of a bricklayer named Venturus Manday: "Below this place lies interred the body of Venturus Mandey, Bricklayer, and grandson to Venturus Mandey of this parish, Bricklayer, who had the honor of being Bricklayer to the Honbl.Society of Lincoln's Inn from the year of Our Lord 1667 to the day of his death. He was studious in mathematics and wrote and published three books for Public Good: one entitled Mellificium Mensionis or the Marrow of Measuring, another of Mechanical Powers or the Mystery of Nature and Art Unvayled; the third An Universal Mathematical Synopsis. He also translated into English Directorium Generale Uranometricum and Trignometrica Plana Et Spherica, Linearis Et Logaritmica. . . and some other tracts which he designed to have printed if Death had not prevented him. He died the 26th day of July, 1701, aged 56 years and upwards. He also gave five pounds to the poor of the parish."

Bricklayer, mathematician, author, and philanthropist combined! Certainly that type has long since disappeared.

References: Nathaniel Lloyd, A History of English Brickwork; London, 1925;
New York agent, William Helburn, 418 Madison Ave., New York City.

****

USE BRICK

Are you thinking about building a home and wondering about shortages in lumber, labor, and nails? Why not consider brick construction in all or part of the walls? For appearance, for permanence, for overall economy, a brick house has everything to recommend it.

Did you ever stand on a hill and look off across an expanse of green lawns and rest your gaze on a brick house with white trim and green shrubbery? It's a picture that beckons; it holds the mind as well as the eyes. The neatness and color are striking, but you feel that behind these are substance and permanence.

In addition to use in the main structure of a house, brick and tile are being used more and more for beautification and for utilitarian purposes in grounds and yards. Bricks are attractively adaptable for steps, walks, garage runways and walls; they lend themselves easily to the forming of geometric designs and patterns which can add charm to the general plan. Terraces can be formed of brick; the garden spot can be an adjunct of an out-of-doors living room floored with brick in which the tea and card tables may be placed. The out-of-doors fireplace is especially useful not only for the family but also as a first aid to hospitality.

Out-of-doors entertaining makes for a successful hostess.

Incidentally there is no shortage in brick and tile; the price has advanced but moderately during the past two years as compared to lumber. Today brick construction compares more favorably with lumber construction in point of cost than at any time in many years. In addition, brick and tile are now made in many different colors and shapes so that the home builder has a wide variety from which to choose, either from the artistic or utilitarian viewpoint.

Following is a list of Oregon brick and tile dealers:

Columbia Brick Works
1320 SE Water St., Portland

Monmouth Brick Tile Co.
Monmouth, Oregon

Forest Grove Clay Products Co.
Forest Grove, Oregon

McMinnville Brick & Tile Co.
McMinnville, Oregon

Monroe Brick & Tile Co.
Monroe, Oregon

Needy Brick & Tile Co.
Needy, Oregon

Willamina Clay Products
0132 SW Mill St., Portland

Tillamook Clay Works
Tillamook, Oregon

O K Brick Yard
Sherwood, Oregon

Corvallis Brick & Tile Co.
Corvallis, Oregon

Molalla Brick & Tile Co.
Molalla, Oregon

F. E. McFarlane,
Grants Pass, Oregon

Klamath Falls Brick & Tile Co.
Klamath Falls, Oregon

Albany Brick & Tile Co.
Albany, Oregon

Donald Brick & Tile Co.
Donald, Oregon

Silica Brick & Tile Co.
Klamath Falls, Oregon

Klamath Concrete Pipe Co.
Klamath Falls, Oregon

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METAL AND MINERAL SHORTAGES AND SUBSTITUTION IN NATIONAL DEFENSE 1/

According to Zay Jeffries, chairman of the OPM Advisory Committee, it is very difficult to get a picture of the exact requirements for defense. There are two inherent difficulties to overcome. One, the natural tendency of each man to overestimate metal requirements--based on the perfectly human assumption that it is better to be safe than sorry. This overestimate is pyramided within-within the departmental unit, within the department, and finally within the larger branch of national defense, viz: Army, Navy, or OPM itself. Two, the difficulty of discovering how large a tonnage of the scarce metals and minerals is hoarded as excess inventory. The metal inventories of thousands of companies are still not known and remain unreported, and the countrywide tendency for the past eight months has been toward further hoarding.

Steel

Bottlenecks in steel production are (1) shortages of scrap and pig iron, and (2) the multiplicity of specifications for steel and shapes. Blast furnaces are being built to increase pig iron production. The United States should and probably will, somewhat belatedly, follow Canada's example in reducing the number of structural shapes and so increase rolling mill capacity. Canada has reduced the number of standard structural shapes from 265 to 65.

Aluminum

The critical situation regarding aluminum is partly due to the Defense Commission's erroneous estimates last fall. The error in these estimates was due to two causes: (1) Defense requirements rose much faster than was anticipated a year ago, and (2) some branches of the Government greatly underestimated their needs.

The present program calls for 3½ times the 1940 production of 200,000 tons per year. Critical factors in the program are the availability of satisfactory ore and availability of power. Most of our high grade bauxite now comes from Surinam. A small amount of Arkansas' high-grade ore is being exploited, but the most likely domestic source for the additional ore needed for the enormous expansion program is the low-grade Arkansas bauxite. A method for using this material must be developed or the aluminum shortage may remain critical even after all the proposed plant-expansion programs are completed. At the moment, the power situation is satisfactory; defense officials, however, expect a shortage within the next year, even in the Tennessee Valley, and in the Northwest.

1/ Abstracted from F.T.Sisco's report in Mining and Metallurgy, October 1941.

Asbestos

Canada is the world's principal producer of asbestos; therefore no immediate shortage is likely, with the exception of three special varieties which have been imported. These three are: a low-iron asbestos used for insulating tape, a fluffy variety valuable for light insulation, and a so-called blue fibre used in gas masks. Substitutions for these special varieties are possible.

Magnesium

In June, 1940, the productive capacity for magnesium was about 3500 tons a year. Requirements are now 200,000 tons, or approximately 60 times the 1940 rate, an increase that will require a half-million kilowatt hours of power, indicating a shortage of power capacity at least until 1944.

Chromium

Chromium is one of the danger spots of national defense. Ore now being imported comes from East Africa, Portuguese Africa, the Philippines, and New Caledonia. Stocks of ore on hand are enough for a year, but if present sea lanes are blocked the steel industry would feel the shortage relatively soon. Consumption in 1941 will be about 750,000 tons, increasing probably to 900,000 tons in 1942. No appreciable increase in imports can be expected from the Philippines, New Caledonia, or the Transvaal.

Copper

The domestic annual production of copper is about 1,000,000 tons. An additional 600,000 tons will be imported this year. Approximately 1,200,000 tons per annum will be absorbed by defense industries. Drastic sacrifices in use of copper by the civilian population are likely in the near future. One of the greatest mysteries of the war is how Germany carries on without any supply of new copper.

Manganese

A manganese shortage was one of the vital problems of the first World War; this time the problem of securing sufficient manganese to produce high grade steels is serious but not vital.

Intermediate manganese steels are being replaced to some extent by molybdenum steels. No great reduction in the amount used for the deoxidation of plain carbon steels has yet been made. Foreign sources are available but shipping is scarce. Imports just about equal present consumption. Most processes for the development of a manganese producing industry in this country are in the test-tube stage; a few have reached the pilot plant stage; but the domestic production of an appreciable, consistent production delivered at a reasonable price is still relatively far in the future.

Mercury

Mercury production is approximately double the pre-war rate. The supply of mercury will be ample for all needs unless the price goes down. Present consumption is at the rate of 40,000 to 45,000 flasks a year.

Nickel

In general the picture for nickel is not a reassuring one. The total world production in normal times is about 125,000 tons annually. The consumption in the United States may rise to 90,000 tons in 1941. Next year it should be more than normal world production. At present the current demand exceeds the supply by 2500 tons per month. Considerable nickel is being replaced by other alloying elements. About 60 percent of the nickel available is used as an alloy in steel.

Apparently there is little nickel on hand. The amount on hand is decreasing as inventories are being used up. Conservation is difficult. Specifications have been revised so that low-alloy steels can contain less nickel; and a material saving has been made by reducing the amount used for plating, for table wear, for domestic heating appliances, and other non-defense uses.

Platinum-Group Metals

No shortage of platinum may be feared. Canada produces a large amount (Sudbury nickel ores) and large stocks are on hand in the United States. The only metal in the platinum group causing concern is iridium, most of which formerly came from Russia. Only a small amount is produced in the United States and Canada. However, a sizeable deposit of iridium ores exists in Canada, and production will be increased there.

Tin

All tin is imported. The original estimate for a satisfactory stockpile was 75,000 tons. A large part of this amount has been accumulated, and imports are steadily coming in. Trouble in the Far East could cut off the supply. There is about 18 months' supply on hand in the Government stockpile and in consumers' inventories. The first tin smelter in the United States, now under construction in Texas, will be in operation early in 1942, but will have a capacity of only 20,000 tons a year, all to come from imported ores.

Tungsten

Not enough tungsten is in sight to satisfy the demand. Molybdenum is being substituted for considerable tungsten especially in high speed steel. Next year approximately 25,000 tons of tungsten will probably be needed, with potential supplies of 8,000 tons from domestic sources, 6,000 tons from South American ores, not more than 1,000 tons from Portuguese ores, and none to speak of from China and Burma.

Vanadium

Vanadium is an almost vital element in high speed steel, and substitution or elimination of the material will be difficult and perhaps impossible. Four and a half million pounds will be available in 1942. Present demand is much greater than this. No vanadium will be available for civilian use.

Zinc

Annual zinc production at present is about 900,000 tons, of which 730,000 tons is from domestic ores. There is no shortage at present, but new brass mill

requirements will probably develop a shortage in 1942. Conservation is under way, especially in die castings; the average amount of zinc in an automobile has dropped from 50 to about 16 pounds. A considerable saving can be effected by using black sheet instead of galvanized low-carbon steel.

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SOME HIGHLIGHTS FROM PAPERS
Presented at the Annual
AMERICAN MINING CONGRESS CONVENTION
(October 1941)

Taxes--An Operating Problem: by Louis S. Gates (President, Phelps Dodge Corporation)

To write an Excess Profits tax law that will equitably treat all the vast and varied businesses of the country so as to avoid serious and unintended economic harm in individual cases, is no small undertaking, if not impossible.

Earlier this year, the Ways and Means Committee of the House with the latter aspect in mind said:

"Experience with excess-profits taxes...has demonstrated...that relief in abnormal cases cannot be predicated on specific instances foreseeable at any time. The unusual cases that are certain to arise are so diverse...and unpredictable that relief provisions couched in other than general terms are certain to prove inadequate."

In spite of the acknowledgment no such provisions are now in the excess profits tax law.

The excess profits taxes for the five years 1917-1921 contained the kind of relief provisions which cannot be found in the present law.

Reports from Washington indicate there has been some doubt on the part of persons concerned with taxation policy as to whether there is a general demand for such provision.

Every business subject to excess profits tax needs to make sure right now that the members of Congress understand that there is a demand for enactment of broad relief provisions such as the other excess profits tax laws have contained.

Only by immediate and intelligent interest on the part of everyone of us can proper legislation be expected.

***

Effect of Present Federal Tax Policy on Mine Valuations:

The following was abstracted from an address presented by Herbert C. Jackson at the Annual Metal Mining Convention, Western Division, The American Mining Congress (October 1941):

The present and prospective heavy taxation of earnings by the Federal Government operates to decrease the value of practically all capital assets,

especially those assets which possess worth chiefly because they may be expected to yield future income, as for example, mines.

There are relatively few sales of active and producing mines, therefore for assessing purposes a theoretical formula is used for evaluation. "Generally speaking, I would say the actual sale price of the mines (iron ore mines in the Lake Superior district) was about 50% of the value used as the basis of assessment by the States". Valuations computed on a theoretical basis are apt to be excessive, and where insufficient allowance is made for the present and prospective high Federal taxes, the valuations are becoming increasingly excessive.

When mines are assessed on a formula basis of discounting estimated future profits, mine owners should insist on the inclusion of Federal taxes as an item of cost. The inclusion of Federal taxes at the present rate would decrease mine valuations 15% to 25% under those computed without reference to Federal taxes.

****

NON-METALLICS NEEDED FOR DEFENSE 1/

Nitrates

Chemical nitrogen is a vital factor in agriculture and in the national defense programs, since it plays an important part in the production of food and explosives.

There are three primary sources of chemical nitrogen for this country: (1) imports from foreign nations; (2) fixation of atmospheric nitrogen by synthesis of ammonia, and (3) by-products of the coke manufacturing industry. From 1936 to 1939 approximately one-half of the chemical nitrogen consumed in the United States was produced synthetically, about one-third imported, and the remainder obtained as a by-product of coke manufacture.

In 1939 (the latest year for which accurate figures are available) the production of "air" nitrogen in the United States was about 280,000 tons of fixed nitrogen or about 74% of plant capacity. New plants under construction will bring the combined production capacity up to about 600,000 tons a year.

By-product chemical nitrogen depends largely on the production of iron and steel rather than the demand for nitrates. By-product nitrogen will increase approximately 140,000 to 190,000 due to increases made recently in the capacity of coke oven plants. Therefore total potential capacity of both synthetic and by-product nitrogen soon will reach 800,000 tons a year.

1/ Condensed from U.S.Bureau of Mines Information Circular 7170.

TABLE 1: - Sources of chemical nitrogen for the United States, 1936-1939.

	1936	1937	1938	1939
Imports:				
Gross weight, short tons 1/	1,034,537	1,190,090	1,133,653	1,174,892
Nitrogen content: 2/				
Short tons	182,600	204,200	196,400	202,000
Percent of total United States supply	33.73	32.79	33.93	32.28
Domestic Production:				
Synthetic:				
Gross Weight, short tons 3/	257,500	314,700	331,500	340,700
Nitrogen content				
Short tons	211,800	258,900	272,700	280,300
Percent of total United States supply	39.12	50.54	47.11	44.79
Byproduct:				
Gross weight, short tons 4/	694,341	753,216	518,383	676,802
Nitrogen content:				
Short tons	147,000	159,600	109,800	143,500
Percent of total United States supply	27.15	16.67	18.96	22.93
Apparent New Supply:				
Gross weight, short tons	1,986,400	2,258,000	1,983,500	2,192,400
Nitrogen content, short tons	541,400	622,700	578,900	625,800

1/ Compiled from records of the Bureau of Foreign and Domestic Commerce.
2/ Based upon estimated average nitrogen content of the various compounds as imported.
3/ In terms of NH_3 (since this is the primary form in which all synthetic chemical nitrogen is produced in this country).
4/ Bureau of Mines data; ammonium sulfate equivalent of all forms.

The chief chemical nitrogen imported into the United States is sodium nitrate which comes from Chile. Other chemical nitrogen products imported, in order of importance, are calcium cyanamide, ammonium sulphate, ammonium nitrate fertilizer mixtures, and sodium-potassium nitrate. The five materials named make up more than 92 percent of chemical nitrogen imports. While Chile supplies the greatest quantity, appreciable amounts come from Canada.

In 1937 about 6½ percent of the total domestic supply of chemical nitrogen was exported to various nations. Relatively large quantities went to Canada, the Philippines, and the Netherlands Indies.

In 1937 fertilizers consumed nearly three-fourths of the domestic supply of chemical nitrogen and more than one-third of the remainder was used in the manufacture of explosives. Especially during 1940 the use of chemical nitrogen in the manufacture of explosives has increased substantially.

Ammonia is the principal raw material for chemical nitrogen in this country. Adequate capacity for production of ammonia is in sight, but until plants now under construction are completed, a considerable part of domestic requirements will need to be imported. The sodium nitrate used in industry is derived from ammonia because of the greater purity of the synthetic product. The imported Chilean nitrate is used in fertilizers, for which the contained impurities are beneficial.

****

NOTICES

John R. Suman, president of the American Institute of Mining & Metallurgical Engineers, will be in Portland Monday, October 27th. He will be the speaker at a meeting of the Oregon Section at the Multnomah Hotel Monday evening on certain phases of national defense. Mr. Suman is vice-president in charge of operations of the Humble Oil and Refining Co., chief producing subsidiary of the Standard Oil Company of New Jersey.

***

Professor George W. Gleeson, head of the Chemical Engineering Department of Oregon State College, will be speaker at the meeting of the Geological Society of the Oregon Country at the Public Service Building, Portland, Friday, October 24th, at 8:00 p.m. His subject will be on the technique and chemistry of processes at the plant of the Portland Gas & Coke Company. This company has been a pioneer in research on production of commercial products from oil refinery residues and many of these products are of great importance in this time of emergency. Professor Gleeson has acted in a consulting capacity for the gas company and is thoroughly conversant with the subject.

***

In Chemical and Metallurgical Engineering for September, practically the entire issue is devoted to processing industries in the West. Among the articles featured are: Aromatics, Gas and Coke from Heavy Petrolium Residues, by E. L. Hall, vice-president of Portland Gas & Coke Co.; Western Wastes as Materials for Alcohol Production, by William C. McIndoe, chemical engineer for the Bonneville Administration; Products from Diatoms, by Paul V. D. Manning (describes deposits and processes at the diatomite deposit of the Oromite Company at Terrebonne, Oregon). In addition there are articles of great interest to northwestern readers on production of aluminum and magnesium. An editorial statement in this issue is as follows: "Portland, unless we miss our guess, is shortly to become the chemical and metallurgical capital of the West-certainly of the Pacific Northwest."

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THE ORE.-BIN

VOL. 3 NO. 11 PORTLAND, OREGON November 1941

CROSS-CURRENTS IN COPPER

According to Zay Jeffries in Mining and Metallurgy, November, 1941, the estimates of the Office of Production Management indicate an acute shortage of copper.

Nearly all available metal will be required for defense. This shortage will cause serious dislocations in civilian use since copper appears in a myriad of appliances and materials common in everyday life. This shortage is caused, in part by earlier substitution of copper for metals which were scarce, such as aluminum, nickel, and zinc. For example, large savings in General Motors 1942 cars were made in aluminum, nickel, magnesium, and zinc. However the average General Motors 1941 car required 51.9 pounds of copper; the 1942 car requires 55.1 pounds of copper.

***

According to a recent news item in the Los Angeles Times, the Walker Mine in Plumas County, California's leading copper producer for many years, has closed down. The reason given for the action was that rising costs made it impossible to operate profitably with the price of copper fixed at 12 cents a pound. About 450 men were employed. Equipment included a cencentrating plant with a daily capacity of 2500 tons. During 1940 the mine produced 10,524,345 pounds of copper, 237,891 ounces of silver, and 14,176 ounces of gold from 437,450 tons of ore which gave 20,881 tons of concentrates. The mine was controlled by the Anaconda Copper Mining Company.

***

Over a month ago the Quincy Mining Company, the Copper Range Company, and the Isle Royale Company, all operating in Michigan, were certified as being eligible to receive 1 cent a pound for copper over out-of-pocket costs, after increasing the pay of miners $1.00 a day. Now, according to the Mining Journal-Phoenix, Arizona, Representative Hook of Michigan has stated that the price to be paid the Quincy Mine is 16 cents a pound, and both the Copper Range and Isle Royale will receive 15 cents.

***

During the first 7 months of 1941, the United States received the following quantities of copper from Chili: from ore, 306 tons; standard copper, 98,311 tons; electrolytic, 115,144 tons; total, 213,761 tons. (U.S.B.M. Mineral Trade Notes, October 20, 1941).

***

Metals Reserve Co. has recently raised the price for South American copper from 10 cents to 11.25 cents a pound.

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ZIRCON AND ZIRCONIUM

Introduction

The most abundant zirconium mineral zircon, occurs in the "black sands" of the Oregon coastal area, and may be in such concentrations, in certain sections, as to be of commercial importance. Even if zircon does not, by itself, occur in commercial concentrations, possible operations for the recovery of chromite from these sands may recover zircon as a valuable by-product. The increased use of zirconium compounds and the cutting down of imports make domestic sources of the mineral take on added economic importance.

Historical

During the latter part of the last century zirconium compounds were used in incandescent mantles,but the quantity consumed was relatively small. Early in the present century large quantities of the natural zirconium oxide were found near Sao Paulo, Brazil and soon thereafter German manufacturing concerns began extending the uses of the material, especially as refractories and in ceramics. At about this time the Germans were reported to be using zirconium in making a steel alloy possessing remarkable qualities.

During the first World War period considerable research work was done, both by the United States Government and some private companies, on the use of zirconium in alloy steel. Following the war American companies began producing zirconium compounds in commercial quantities; and, particularly in refractory products such as brick, crucibles, and high-temperature cements production increased steadily. The various uses of zirconium compounds given below, illustrate the widespread use today.

Mineralogy and Distribution

Zirconium Minerals

U. S. Bureau of Mines Information Circular 6455 gives a list of minerals which contain material amounts of zirconium, together with a commercial classification, as given below:

Mineral	Composition	Inclosing Rock	ZrO_2 Per cent
Oxide:			
Baddeleyite (Brazilite)	ZrO_2	Igneous rocks deficient in silica, and in gravels derived from them	100
Zirconates:			
Zirkelite	$(Ca,Fe)_{0.2}(Zr,Ti,Th)O_2$	Magnetite-pyroxenite (jacupirangite)	52.89
Polymignite	$5RTiO_3 . 5ZrO_3 . R(Cb,Ta)_2O_6$	Elaeolite syenite	29.71
Silicates:			
Zircon	$ZrSiO_4$	Variable, Described below	67.2
Cyrtolite	Some cyrtolite is probably hydrated zircon	Granite, Pegmatite	66.93
Catapleiite	$H_2(Na_2,Ca)(Zr(OH)_2)(SiO_3)_3$	Elaeolite syenite	28.8
Elpidite	$H_6Na_2ZrSi_6O_{18}$	Elaeolite syenite(?)	20.48
Eudialyte (Eucolite)	$Na_{13}(Ca,Fe)_6 . Cl(Si,Zr)_{20}O_{52}$	Elaeolite syenite	16.88

Mineral	Composition	Inclosing Rock	ZrO_2
Hainite	Related to lavenite, wohlerite, etc.	Phonolite	Unknown
Hjortdahlite	$4Ca(Si,Zr)O_3.Na_2ZrO_2F_2$	Elaeolite Syenite	21.48
Lavenite	$(Na_4,Ca_2,Mn_2,Zr)((Si,Zr)O_3)_2$	Elaeolite- or augite Syenite	31.65
Lorenzenite	$Na_2Si_2(Ti,Zr)_2O_9$	Pegmatite	11.92
Rosenbuschite (Zircon pectolith)	$Na_2Ca_3((Si,Zr,Ti)O_3)_4$	Elaeolite syenite	20.10
Wohlerite	$(Na_2,Ca)(Si,Zr)O_3.RCb_2O_6$	Zircon syenite	22.72

Commercial Ores of Zirconium

Name		Formula	Per cent ZrO_2
Baddeleyite	(distinct crystals)	ZrO_2	96.5-98.9
Brazilite		ZrO_2	71.93
Zircon		$ZrO_2.SiO_2$	67
Zirconia ore:	1. Favas (alluvial pebbles)	ZrO_2	59-92.4
	2. "Zirkite" (Brazilite	ZrO_2	71.93
	2. "Zirkite" (Zircon	ZrO_2SiO_2	67
	2. "Zirkite" (unnamed		
	2. "Zirkite" (Mixture (Zr silicate		
	2. "Zirkite" (Mixture (Orvillite(?)		

Zircon occurs in greater quantity and is more widely distributed than any other zirconium mineral. As noted above, it is the orthosilicate with the formula $ZrSiO_4$. The theoritical composition is 67.2 percent zirconia (ZrO_2) and 32.8 silica (SiO_2). It occurs as crystals and grains in rocks and sand. The usual color is a shade of brown, but, less commonly; the colors are various. The crystals are tetragonal, commonly in square prisms. Zircon has a hardness of 7.5 (harder than quartz) and a specific gravity of 4.7 (about the same as Ilmenite and chromite). It is classed as infusible, is insoluable in most acids, but is attacked by concentrated sulphuric acid. Zircon from some localities is fluorescent. From the Oregon marine sands it fluoresces a beautiful yellow.

Zircon is found in all classes of crystalline rocks. Because of its hardness and specific gravity it collects in sands and gravels and hence occurs in many sedimentary rocks.

In only a relatively few places in the United States does zircon occur in commercial concentrations. Probably the greatest production has come from the Florida beach sands at Mineral City near Jacksonville. Other beach deposits are known on the Atlantic Coast as well as in the marine sands of the three Pacific coast States.

The only domestic deposit in rock that has produced on a commercial scale is near Tuxedo, Henderson County, North Carolina, where zircon occurs in pegmatite and gneiss.

The best known foreign deposits are in Brazil, Australia, Ceylon and the tip of the Hindustan Peninsula, Norway, the Ural, and some other European countries.

Baddeleyite, the name given the natural oxide (ZrO_2) crystals, is found in commercial quantity, only in Brazil. When the oxide occurs in fibrous or botryoidal form it is termed brazilite. The trade name "Zirkite" is applied to a mixture of baddeleyite and brazilite. Baddeleyite crystals are yellow, brown, black or colorless. Hardness is 6.5 and specific gravity 5.5 to 6.0.

Concentration

Commercial deposits of zirconium usually contain the titanium minerals, ilmenite and rutile, as well as monozite. In Brazil, screening and electromagnetic separation are employed in obtaining a concentrate. In Florida the process employed has been to make a wet concentrate on shaking tables. After drying, electromagnetic and electrostatic methods are used to separate zircon, rutile, ilmenite, and monazite.

Preparation of Zirconia

Zirconia is the most important commercial compound. While the native oxide contains some impurities it may be used without further treatment for some refractory purposes. For enamels and salts in which purity is essential a chemical treatment is necessary to obtain the pure oxide. A number of processes have been patented for this purpose. One method outlined in U.S. Bureau of Mines IC 6455 is as follows:

"The ore is heated with excess of lime and an amount of carbon insufficient for the reduction of the lime. Calcium carbide may be used in the place of the carbon. The product is treated with hydrochloric acid, the silica removed, and the zirconyl chloride then purified."

To obtain pure oxide from zircon the powdered material may be treated in the electric furnace in which the silica and other oxides are volatilized leaving the pure zirconium oxide as a residue. Other methods involving chemical treatment may be employed.

In order to give a comparison of zirconia with other refractories the following table is given (taken from U.S. Bureau of Mines Bulletin 186):

Melting Points of Refractories

Substance	
Magnesia (pure)	2,800 degrees C
Zirconia	2,500-2,950
Lime (pure)	2,570
Carborundum	2,200
Alumina (pure)	2,050
Silica	1,700

Preparation of Zirconium

Early investigators described three forms of the metal, i.e., amorphous, graphitic and crystalline. More recent work has cast doubt on the purity of the so-called graphitic and crystalline forms. Because of its affinity for oxygen, nitrogen, carbon, and silicon, the pure metal is prepared with considerable difficulty. Briefly, the metal powder is obtained by reduction with calcium, sodium or potassium. Various methods of production are discussed in U.S. Bureau of Mines Bulletin 186.

Prices

Prices quoted from Engineering and Mining Journal Metal and Mineral Markets.

Zircon ore: Latest quotation October 9, 1941

Per ton, f.o.b. Atlantic seaboard, minimum 55% ZrO_2 $60 @ $70

Zircon ore, carload lots: Latest quotation February 6, 1941

Per ton, f.o.b. Atlantic seaboard, minimum 55% ZrO_2 $70

5 ton lots $75

Zirconium: Per pound, commercially pure, powdered $ 7.

Zirconium alloy: 12 to 15% zirconium, 39 to 43% silicon per gross ton $102.50 @ $107.50

35 to 40% zirconium, 47 to 52% silicon per pound 14 @ 16¢

Prices of zirconium and zirconium alloy latest quotations October 30, 1941.

The prices quoted are unchanged since the beginning of the year, and therefore represent a stable market demand, and stable source.

Imports (from U. S. Bureau of Mines Minerals Yearbook Review of 1940)

Zirconium	1938		1939		1940	
	Quantity	Value	Quantity	Value	Quantity	Value
	lbs.		lbs.		lbs.	
Zirconium ore	4,183,506	$ 62,111	6,865,026	$ 49,919	33,690,506	$252,749
Ferrozirconium, Zirconium Ferrisilicon	244,126	13,520	799,269	50,169	533,055	37,126

Uses of Zirconium Compound

1. Clear and perfect zircon crystals are used as gem stones, exceeded in brilliance and fire only by the diamond.

2. Zirconia is used in the preparation of very refractory cruicibles, brick for furnace lining, cement for coating other refractories because of its high strength, hardness, freedom from spalling resistance to chemical and physical wear, all of which are most pronounced in precious metal refining and in electric furnaces.

3. Zircon is used in vitreous porcelains where the addition of 30 to 70% zircon gives a long firing range, exceptional mechanical strength, good heat shock resistance and remarkable dielectric strength at high temperatures. It has been used as the refractory in spark plugs.

4. Zircon is used in heat resisting glass - a use which may become of greatest importance for this versatile mineral. Zircon gives great impact strength and thermal endurance, chemical durability and resistance to such chemicals as caustic soda.

5. It is used as an opacifier in all kinds of vitreous enamel ware, replacing tin oxide and antimony oxide. It is also used in many laquers and automobile enamels as an opacifier. These enamels are non-poisonous and the same opacity is obtained with 2 percent zirconium, as with 6 percent antimony.

6. Zirconia is used in place of lime in the calcium oxide cylinders in Drummond's lamp. Mixed with magnesia, thoria and yttria it is used as the glower filament in Nernst's lamp. It is also used in the Bleriot lamp, extensively used abroad.

7. Zirconia is used in incandescent mantles.

8. Zirconium carbide is used as a filament in incandescent lamps.

9. Zircon is used in sand molds for stainless steel and alloy castings.

10. Zirconium carbide has been experimentally used as an abrasive, and has a hardness of that of topaz. (8)

11. Zirconium gives increased tensile strength, toughness and some malleability to alloyed metals.

12. Zirconium added to steel is a powerful deoxidizer, reduces metallic oxides and scavenges nonmetallic inclusions but does not remain in the steel as an oxide as does aluminum. It combines with nitrogen and sulphur, removing them from the melt. The minute nitride crystals have no effect on the mechanical properties of the alloy. The resulting zirconium sulphide is malleable.

13. "Cooperite" is a zirconium-nickel alloy for edge tools, machine tools, knives, razors, etc. It is unaffected by acids and can be worked at a red heat. It is also used in toasters, irons, etc. The addition of 25-30% zirconium gives a high speed cutting tool.

14. Zirconium is used in photoflash bulbs, as ammunition primers and for spot welding electrodes.

15. It is used as a flashlight powder, when combined with 40% magnesium.

16. Zirconium substitutes for platinum in chemical laboratories, in dental laboratories and in scientific apparatus.

17. Zirconium is used in thermocouples in pyrometers and various heat measuring instruments.

18. Zirconium oxide produces a nonpoisonous, nondiscoloring white paint. The oxide is also used in ink and water color paints.

19. Zirconia is a substitute for bismuthyl nitrate as a lining for the stomach in X-ray photographs.

20. Finely divided zirconia is incorporated with rubber before vulcanization, and increases the toughness and accelerated the process of vulcanization.

21. Zirconium nitrate is a food preservative; it is used also in incandescent mantles.

22. Zirconium acetate has been used in the place of stannic salts for weighting silk.

23. Zirconium hydroxide has been considered for the purification of water.

24. Zirconium compounds are used as mordants in dyeing and in the preparation of lac dyes.

25. Zirconyl tannate may replace sodium tungstate or stannate in rendering cloth noninflammable.

26. Zirconium tetrachloride has been suggested for a chlorinating agent.

27. Zirconia has been used as a polishing agent and for toilet powders because of its hardness, chemical stability and volume.

28. According to the U.S.B.M. Minerals Year Book, 1941; zirconium "has a unique combination of high corrosion resistance and ability to absorb large volumes of certain gases. Below 100° C the metal is immune to attack by some of the most corrosive agents known. At 500° to 860° C. it can absorb great quantities of hydrogen, and at higher temperatures oxygen, nitrogen, carbon monoxide, carbondioxide, and other gases. Zirconium, accordingly is particularly well suited as a "getter" in vacuum tubes and chemical processes to improve and maintain high vacuum."

29. Also from the Minerals Yearbook - "An interesting property of zirconium and of titanium metal is that, when drawn across glass or a glazed ceramic surface, they leave a brilliant, silvery adherent streak. This affords a means of decorating high-grade glassware and pottery without the present necessity of using platinum compounds, followed by a special firing operation.

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List of Possible Buyers

Abel Bros. & Co. (Inc.), 16 Maiden Lane, New York, N.Y.
Jerome Alexander, 50 East 41st St., New York, N. Y.
Eimer & Amend, 201-209 East 13th St., New York, N. Y.
The Exolon Co., Commercial Ave. and Erie R. R., Blasdell, N. Y.
Foote Mineral Co., 1609 Summer St., Philadelphia, Pa.
The Harshaw Chemical Co. of New York, 150 Nassau St., New York, N. Y.
(Successors to the Superfos Co., Inc.)
O. Hommel Co., 209-211 Fourth Ave., Pittsburgh, Pa. (Buyer of ore)
Juergens & Anderson Co., 53 East Washington St., Chicago, Ill.
Levere Co., 94 Canal St., New York, N. Y.
A. D. Mackay, 26 Cortlandt St., New York, N. Y.
F. E. Morse Co., 218 South Wabash Ave., Chicago, Ill.

National Sales Corporation, 31-35 East 13th. St., Cincinnati, Ohio.
Norton Co., Worcester, Mass.
Philipp Bros. (Inc.), Woolworth Bldg., New York, N. Y.
The Roessler & Hasslacher Chemical Co., 10 East 40th St., New York, N. Y.
Rogers Brown & Crocker Bros. (Inc.), 21 East 40th. St., New York, N. Y.
Wm. H. Taggart, 17 South Desplaines St., Chicago, Ill. (Buyer of silicate)
Titanium Alloy Manufacturing Co., 94 Fulton St., New York, N. Y.; 6007 Euclid Ave., Cleveland, Ohio.
Varlacoid Chemical Co., 15 Moore St., New York, N. Y.
Vitro Co., 928 Fulton Bldg., Pittsburgh, Pa.

(from I.C. 6455 p.28)

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ONE BILLION

The following illuminating comment is copied from the Oregon Voter, issue of Nov. 8, 1941.

"HOW BIG IS $1,000,000,000?--"'It is beyond our ability to comprehend," commented a speaker recently at a Portland meeting; "we are only familiar with small sums, and our experience supplies no measuring rod." We suggest two ways of figuring it. We all know something of the vastness of the United States and the great number of its population. All of us know what one dollar is. One dollar to a billion dollars is in the same proportion as two city blocks in Portland compared with the entire area of the continental United States. Perhaps we know what $10,000 is; such a sum is reasonably within our comprehension. Compared with one billion dollars, it bears the same proportion as the population of one of Portland's election precincts does to the entire population of the continental United States. By that same comparison, if our national debt gets to be $100,000,000,000 as predicted, the proportion of that debt which would rest on this one election precinct would be $1,000,000. That would average $2,000 for each registered voter in the precinct."

Incidentally, as to "bigness" (but far less illuminating), a billion dollars is equivalent to approximately 1,626.5 cubic feet of pure, solid gold, or a cube measuring 11.8 feet on a side, and weighing approximately 981 tons.

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NEWS NOTES

Baker County

Cornucopia Gold Mines, Inc.- According to reports from Cornucopia the Cornucopia Gold Mines, Inc. ceased operation on October 31, 1941. Future plans are indefinite.

Cracker Creek Gold Mining Co.-Located on Cracker above the town of Sumpter. Under lease to John Arthur of Baker. Properties operating under this lease are the North Pole, Tabor Fraction, Columbia and E. & E.

Burnt River Division, Sunshine Mining Co.-The new bucket line dredge of Sunshine mining Co. began operation on October 20, 1941. It is located 4 miles northwest of Whitney on Burnt River. Its capacity is 2500 yards. Harry B. Murphy, Boise, President. J. F. Gunn, Dredgemaster.

Granite County

Porter and Co.- Located at the mouth of Clear Creek, 2 miles west of Granite. Bucket line dredge. 3800 yards capacity. R. B. Porter, Baker, General Manager. A. E. Murray, Baker, Manager.

Cougar-Independence Mine- The mine is located three miles north of Granite. Ninety tons of ore are mined and milled per day. Latham Flanagan, and H. S. and L.S. Van Kirk, all of Pittsburg, Penn., owners. G. T. Vandel, Manager.

Ralph Davis, Inc. - Located on North Fork of John Day River, 16 miles east of Dale. Dragline and floating washing plant. 4000 yard capacity. Ralph Davis, Pres.

Western Dredging Co.-The bucket line dredge (capacity 5000 yards) is being moved from its present location at John Day to new ground near Mt. Vernon. Walter Williams, dredge superintendent.

Malheur County

Sunday Hill Mine - The Sunday Hill Mine located in Mormon Basin is being opened up for examination by Jack Isgrig, Ben O'Frary and Claude Lawton, all of Baker. William Phelan, Huntington, Owner.

Colt Placer- Located on South Fork of Dixie Creek. Has been operated by Carl R. Suksdorf and Co., Huntington, Oregon, during the summer. Dry land washing plant of 1000 yard capacity.

Jefferson County

Oregon King Mine- Located four miles east of Ashwood, Oregon. At present shipping ore to Tacoma smelter. Fifty ton flotation mill has been ordered from Denver Equipment Co. E. Rohlfing, Manager. C. J. Young, Superintendent.

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QUICKSILVER PRODUCTION

In the Monthly Mercury Report released November 6, the U. S. Bureau of Mines gives domestic production for September as 4,200 flasks compared to 4,100 flasks in August. This is believed to be the highest monthly rate since the days of large production of the New Almaden and New Idria in California during the period 1875 - 1883.

Domestic consumption in September amounted to 3,700 flasks.

Consumers and dealers stocks on hand at the end of September were reported as 12,100 flasks, and producers stocks were at least 616 flasks, compared to 11,600 and 557 flasks respectively at the end of August.

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CLEARING HOUSE

Mr. L. E. Klump, 719 Lawnridge St., Grants Pass, Oregon, owner of the Greenback Mine in the Graves Creek section, desires to sell or lease this gold mine. The owner states that the mine is in good physical condition; that the main workings are open for inspection, and that two new ore bodies parallel to the Greenback vein have been opened up.

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Mr. C. P. Spence, 814 Columbia St., Hood River, Oregon wishes to sell or lease quicksilver property consisting of two mining claims near the Nesbit mine on the Oak Grove Fork of the Clackamas River.

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DEFENSE PROGRESS

The following statistics are taken from Defense, Official Weekly Bulletin of Defense Agencies In The Office For Emergency Management, issue of November 4, 1941.

Manpower	
United States Army, Oct. 9	1,588,500
Navy and Marine Corps, Oct. 1	366,629
Nonagricultural workers, Sept.	*40,065,000
Percent increase since June 1940	13.1
18 defense industries, Sept.	*2,660,500
Percent increase since June 1940	64.8

Finance (June 1940 to latest reporting date)	(In millions of dollars)
Authorized program Oct. 31	*63,962
Contract awards Oct. 15	*39,263
Total disbursements Sept. 30	10,745

Production	
Paid on contracts, June 1940-September 30, 1941	$8,464,000,000
Military aircraft, September	1,914
Combat vessels in September	*6
Merchant ships, September	*9

(Week ended October 25)	Strikes	Workers
Significant defense strikes in progress during week	11	13,900
Number settled	6	11,400

*Preliminary.

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The ORE.-BIN
State of Oregon
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THE ORE.-BIN

VOL. 3 NO. 12 PORTLAND, OREGON December 1941

LET'S STICK TO FACTS

The California Mining Journal, J. P. Hall, publisher, has made several statements in the December issue which are not in line with the facts, and we wish herewith to refute them so that the record will remain straight.

The statements refer mainly to the Oregon Department's connection with the Burns Tin situation. The California Mining Journal and its editor have gone off the "deep end", misquoted us-- deliberately or otherwise-- and have accepted and published statements as news without, apparently, checking the origin or veracity of the statements; and in addition have maligned the U. S. Geological Survey, the U. S. Bureau of Mines, and other Federal agencies as well as the Oregon Department of Geology and Mineral Industries, accusing these groups of conniving with foreign tin monopolies in an effort to suppress development of domestic tin deposits. This latter accusation presumably makes interesting reading for prospectors, miners, and uninformed laymen, but in our opinion it is unsound and untrue -- one hundred percent misinformation.

On page 1 of the December issue of the California Mining Journal in the editorial column appears the statement, "It's true the Oregon counties are getting very little help from the State Department. . . ." This is the first statement that is contrary to fact. In the second paragraph appears the statement, "despite the fact that its (Oregon Department of Geology and Mineral Industries) mining department definitely found one to five percent tin in the Burns ore. . . ." This is the second statement which is absolutely false. On page 3 in bold-face type at the bottom of the first column is a quotation from our letter dated January 14, 1941, which is the Journal's "evidence" that this Department got one to five percent tin from the ore. It will be perfectly obvious, merely from the quotation, that this Department did <u>not</u> get one to five percent tin. These results were obtained in one of the independent commercial laboratories, a number of which have been working on the tin problem. In the 4th paragraph of Mr. Hall's tirade on page 1 he infers that the Government and State mining agencies "are committed to and held down by those same Washington policies". This is perfectly silly and so far as this Department at least is concerned is absolutely untrue. On page 3, at the bottom of the first paragraph, is a quotation from our letter of January 14th to Mr. Hall written at his request for information and written by us <u>in confidence</u>, the letter being marked "confidential", inasmuch as we felt that the best interests of all would not be served by publicizing anything on the tin matter until many more facts were at hand. According to our code, publication of this letter is an infraction of ethics. Following the above quotation, Hall states, "The Oregon state officials will back up and take program from those who want us to preserve democracy with British tin . . . ." This accusation, based on a wild-eyed assumption, is absolutely untrue. The policies of this Department are formulated by its Governing Board and Director, and we do not "take program" from any pressure group, foreign interests, or other agencies. We follow policies designed to encourage sound mining and mineral development in Oregon and nobody can buy or swap for our opinions.

The Journal's last paragraph, in the second column of page 3, referring to Dr. Harrison, is a deliberate misinterpretation of the contents of Mr. Burch's letter, which incidentally was in no sense a criticism of Dr. Harrison, but rather an indication that there is some interfering condition in the Burns rock that affects some standard analytical techniques.

At the top of the third column, page 3 of the Journal, we find the statement, ". . . . Government mining authorities, both State and Federal, found plenty of tin in the ore. . ." -- referring to the Burns deposits. This is untrue to the best of our knowledge, at least as regards published statements of results obtained by the U. S. Geological Survey, U. S. Bureau of Mines, and our Department.

We do not accuse the Editor of the California Mining Journal of dishonesty; we do accuse him of inexcusable carelessness in not checking the sources of his information; also of printing information that may make interesting reading to someone, without regard to whether or not the effect will be favorable to sound mining in general; and we accuse him further of drawing inferences and publishing them as conclusions that are not substantiated by the facts.

Mr. Hall appears to take the attitude that if it makes good reading, it is worth printing. This attitude could result in a great disservice to the mining industry.

Earl K. Nixon, Director.

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WELL - WHAT ARE WE GOING TO DO ABOUT IT?

We're in a war! A real, sea-going, man-sized, knock-hell-out-of-'em-kind of a contest in which men and machines and fuel for the machines and ammunition and BRAINS will win. That's all it takes. The planning, strategy, timing, co-ordination, and direction of effort all come out of the 'brains' part of the recipe. The effort - the main, driving, smashing force delivered by the machines of war, comes mainly from gasoline and diesel oil and from high explosives. These latter three are earthy, inert substances or entities- as are the machines of war, until 'brains' produce them and give them the spark and direction they need.

Our man-power can be inventoried easily; the machines, facilities of war, and the ammunition can be produced in relatively few months by putting man-power to work with materials already at hand. Some of those raw materials, we find, are <u>not</u> at hand in sufficient quantities to last many months. There is a weak link. On this weakness special emphasis must be placed.

All the smelters, all the machine shops, all the factories, all the skilled workmen, and all the money in the land, - can't turn out a fighting plane or a battleship unless all of the various essential raw materials are on hand to start with. True, we are taking nitrogen out of the air and making ammunition out of it; we are taking iodine and bromine and even magnesium out of sea water, - but nobody has ever taken quicksilver or chromite, or manganese or tungsten or antimony out of air or sea water. They have to be first found and then dug out of the earth. And you can't turn on a flow of chromite, manganese, etc...as you turn on water from a spigot.

Let us all - and the Congress - remember that we can order planes, tanks and boats 'till Hell won't have it, - and we can raise taxes to pay for them, - but they can't be produced without raw materials. We must supply those raw materials. That's our job - and THAT'S WHAT WE ARE DOING ABOUT IT.

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FORTY YEARS OF GEOLOGIC MAPPING IN OREGON

The story of the earliest years of geologic mapping in Oregon is, with one notable exception, the story of the work of Joseph Silas Diller, indefatigable pioneer field geologist of the United States Geologic Survey. Working as he did in areas which even today are relatively inaccessible, and covering hundreds of square miles of the most rugged part of the State on foot and on horseback; the amount and high quality of his work is constantly a wonder to geologists who have later followed in his tracks.

His Roseburg quadrangle, the first standard scale (two miles to the inch) geologic map to be made in Oregon, was published in 1898. It was followed in quick succession by the Coos Bay (1901), Crater Lake (1902), and Port Orford (1903) maps, altogether comprising an area of over 3000 square miles, in which geologic features were mapped in such detail that only minor readjustments have been made by later workers.

At the same time that Diller was working in the southwest, Waldemar Lindgren, also a member of the United States Geologic Survey, was compiling his classic volume "The Gold Belt of the Blue Mountains of Oregon" (1902), which has continued to be, to the present day, the "bible" of the miner in the northeastern part of the State. The reconnaissance geologic map covering over 4000 square miles accompanying the study of the mines and minerals of the region outlined the major divisions of the area and has served as a general guide to prospectors for nearly half a century.

Publications were few between 1903 and 1914, although Waring covered large areas (over 15,000 square miles) of the southeastern desert for the Water Supply division of the Survey, the reports and maps being published in 1908 and 1909.

In 1914 the newly instituted Oregon Bureau of Mines and Geology published maps of central Oregon and of the Baker area in northeastern Oregon, followed in 1916 by a reconnaissance of 1600 sq. miles of Curry County.

Between 1916 and 1932 published geologic maps were relatively few. Diller's last map in Oregon, the Riddle quadrangle, was published in 1924, and a few Water Supply Papers in which small areas were mapped came out between 1928 and 1932. Hodge's reconnaissance of nearly 8000 square miles in north central Oregon, published in 1932, was the only noteworthy contribution of that period.

A renewal of work by the Federal survey was ushered in during 1933 by the publication of a series of surveys of small areas in various mining districts in the State. Further studies followed in 1934.

Gilluly's study of the Baker quadrangle published by the U. S. Geological Survey in 1937 was the first complete and detailed survey to be made since the folios of Diller, and to that year, perhaps, may be referred as the date when geologic mapping in Oregon came of age. In July of the same year the State Department of Geology and Mineral Industries was established, and since that time over 12,000 square miles in Oregon has been mapped in detail. A reconnaissance map of an additional 12,000 miles of the Cascade range was published in 1938 by Callaghan for the United States Geological Survey.

The total area of the State is 96,981 square miles (of which water covers about 631 miles). About 40% of this area (38,634 sq. mi.) has been mapped by reconnaissance methods and about 15% (14,804 sq. mi.) has been mapped on a

large scale (2 miles to the inch or better). Of this nearly 15,000 square miles, the State Department of Geology and Mineral Industries, has mapped 52 percent, or a total of 7784 square miles, in less than five years. Besides the geologists of this Department, there are now actively mapping in the field,during field seasons, men from the Federal surveys, from the State College, and also men from several universities outside the State. It is probable that there will be at least twenty five geologists engaged in field work in Oregon during the summer of 1942. Most of these will represent State and federal agencies and institutions of higher learning.

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NEWS NOTES

The Southwestern Oregon Minerals Association has been organized with membership composed of miners and others interested in the development of the mineral industry in Coos and Curry Counties. The officers are as follows:

R. J. Hillstrom, President, Marshfield.
Harry Emmons, Vice President, Gold Beach.
Harry Shulz, Secretary, North Bend.
John Fosnacht, Treasurer, Bandon.
Arthur Jones, Director, Myrtle Point.
Gilbert E. Gable, Director, Port Orford.
Collier Buffington, Director, Gold Beach.

The purposes of the organization are to develop the mineral industry in order to supplement and replace revenues derived from timber; to cooperate with miners and prospectors in opening and exploring mineral deposits; to work for new roads into mineral areas; and to secure metallurgical reduction plants. In connection with this last objective, the association feels that the excellent port facilities at Marshfield justify a reduction plant which would treat both local and foreign ores.

The association is actively sponsoring a plan known as the Deemy Plan backed by the Marshfield Chamber of Commerce. In outline under this plan, a County Officer is designated to assemble mineral information submitted by prospectors. At frequent intervals, a geologist or engineer from the State Department would confer with the County Officer designated, make inspections of the properties, and advise with property owners concerning proper methods of procedure.

In order to make the plan operative, the association met with the Coos County Court, Judge Ervin L. Peterson presiding, on November 26. Besides officers of the association, those present included Mr. Baker, Secretary, and Mr. Coe, Chairman of the Minerals Committee of the Marshfield Chamber of Commerce, R. C. Treasher and F. W. Libbey of the State Department of Geology and Mineral Industries. After discussion of the matter, Charles Forrester, County Assessor, volunteered to act as the County Officer designated in the plan.

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Austin McAdams and John Winters are mining manganese ore on the McAdams ranch close to the Coos-Curry County line, east of Langlois. Two carloads of manganese ore were shipped from Coquille during the fall of 1941. At present, weather conditions have interferred with trucking the ore. Development, mining

and stockpiling are continuing. Manganese ore was shipped from this property during the first World War.

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Washington Brick and Lime Co., which is producing high-grade limestone for manufacture of burned lime from quarry and kiln near Provolt in Josephine County, has opened a new quarry on an apparently new lens 100 feet higher in elevation than the old quarry. Wolf Bauer is in charge. This property was formerly operated by the Oregon Lime Products Co.

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The Murphy-Murray bucket-line dredge, formerly on both Ditch Creek and Foot's Creek in Jackson County, has been dismantled and moved to Eastern Oregon.

The Hayfork Exploration Company's dragline dredge has been moved back on Forest Creek north of Ruch. During the summer months, this company worked on the Applegate River because of insufficient water in Forest Creek. Charles Stearns is in charge.

The Southern Oregon Mining Company's dragline dredge on Forest Creek at Ruch has resumed work after being shut down during the summer months because of water shortage. J. D. Bowdish is Superintendent.

The B-H dragline dredge on the Left Fork of Forest Creek has moved upstream to the Black property where work will be continued during the winter and spring.

Charles Stearns and others have put in a dragline dredge on the Applegate River upstream from Applegate post office, on what is known as the Kubli ranch. Mr. Stearns is in charge of both this and the Forest Creek operation.

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DOMESTIC QUICKSILVER STATISTICS FOR OCTOBER

According to the monthly mercury report of the United States Bureau of Mines, released December 6, 1941, domestic consumption of quicksilver reached a new monthly high of 4,800 flasks. The previous record of 4,700 flasks was made in February of this year. The large October requirements were caused mainly by munitions purchases. Domestic production of quicksilver during October was 4,000 flasks, a decrease of 200 flasks compared to September production. It will be seen that there was, therefore, a considerable spread between domestic production and consumption for October.

Information on imports of quicksilver in October are not as yet available, but it is reported that receipts from foreign countries gained in October. Imports for consumption during September amounted to 275 flasks. Statistics on exports in October are not available; in September, 143 flasks were exported. Stocks in consumers' and dealers' hands at the end of October amounted to 12,800 flasks as against 12,100 flasks at the end of September. Producers' stocks are reported as 546 flasks at the end of October, compared to 616 flasks at the end of September.

Companies that accounted for 98% of Oregon's total production in 1940 reported a 7% reduction below the monthly average for 1940, but the October total was 16% above that in September. California's production in October was 11% less than in September, but was 38% higher than the average monthly rate for 1940. Nevada's production increased in October and was a small amount above the 1940 monthly production rate in 1940. Production in Texas increased in October, while that in Arkansas and Arizona decreased.

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MONAZITE

Monazite, formerly a "has been" among minerals, has become increasingly important in the last ten years. With the coming of the electric light and tungsten filaments, monazite, used for the most part in incandescent gas mantles, was nearly forgotten. Since 1932, production and consumption have increased owing to the increased use of pyrophoric alloys, of ceria and other rare earths in glass, of cerium compounds in specialized carbon light cores, and (relatively new) of cerium acetate as a water- and mildew-proofing compound.

Monazite is an interesting mineral. It is stated to be an anhydrous phosphate of the rare cerium metals, essentially $(Ce,La,Nd,Pr)PO_4$, but nearly all specimens contain thoria and silica. Thoria, formerly desired for incandescent gas mantles, is present in amounts up to 18 percent, probably in solid solution as a silicate. Ceria constitutes from 25 to 35 percent of the mineral, and the phosphate radicle from 25 to 30 percent. The mineral is honey-yellow to reddish to brown in color, resinous in appearance and subtransparent. It has a hardness of 5 to 5.5 (harder than a knife but softer than quartz) and specific gravity of 5 (about the same as pyrite and magnetite). It is difficultly soluble in hydrochloric acid.

Monazite occurs as tiny flattened or elongated, occasionally prismatic, crystals in gneisses which have been soaked in pegmatitic solutions, as large crystals in pegmatites (largest known crystal reached a weight of 30 pounds) and in granites and the associated aplites. No primary deposit rich enough to exploit has been found. Monazite is very resistant to weathering, and as its occurrence is much the same as zircon, ilmenite, magnetite, and garnet, it is frequently found with these minerals in some "black sands". Monazite has been found in the sands of Oregon coast region, but as far as is now known, the quantity of monazite available is small. Possible operations for the recovery of other minerals in the beach sands may however yield monazite as a valuable by-product.

Monazite has thus far been mined successfully in North America in the Piedmont region of the Carolinas, at Centerville, Idaho, and in Florida. No production figures have been published since 1925 although the Florida beach sands at Jacksonville Beach were again mined for monazite in 1940. Monazite has also been found in Colorado associated with gold placer deposits south of Denver.

The State of Travancore, British India, is the dominant producer of monazite owing to the high-grade beach deposits which contain 50 percent monazite and yield, after concentration, a product containing 95 percent monazite. Brazil, for a long time the only producing area, Ceylon, New South Wales and the Netherlands East Indies have produced monazite from sands worked principally for rutile, ilmenite and zircon.

Prospecting for Monazite

Prospecting for monazite is similar to a search for gold. Monazite, because of its high specific gravity, is easily concentrated with the heavier sands and can be easily detected by its peculiar luster and color. Monazite possesses radioactive properties strong enough to affect a photographic plate and to be measured in the electroscope. The rare earths in monazite can be easily detected by the use of a spectroscope, a pocket or hand spectroscope being sufficient (U.S. Bureau of Mines Tech. Paper 110).

Concentration

Commercial deposits of monazite usually contain ilmenite, rutile, magnetite, zircon, garnet and occasionally gold and a trace of platinum. Treatment consists in rough concentration to reject the lighter sands, followed by careful separation of the heavier sands by gravity concentration, or electrostatic or electromagnetic methods. Gold, zircon and rutile can be separated from the tailing by shaking tables.

Extraction of the Rare Earth Metals

A number of processes, many of them secret, for the extraction of the rare earth metals have been adopted. Before the last war one of the commoner methods widely used for the separation of thorium from the monazite is as follows: The monazite concentrate is heated in a cast-iron pan with two times its weight of concentrated sulphuric acid until the monazite is thoroughly decomposed, giving a white mass of insoluble sulphates. The mixture is run into cold water in a lead-lined vat and stirred until the sulphates have dissolved and the insoluble residue of quartz and feldspars has settled. The solution with the rare earths and the phosphates is then decanted. The free acid is partially neutralized and the thorium phosphate is precipitated because of its low solubility. The thorium phosphate is filtered, dissolved and the fractional precipitation is repeated to purify the product. (Liddell, "Handbook of Non-Ferrous Metallurgy", vol. 2, 1926).

Cerium, the metal now most desired in monazite, is obtained by the electrolysis of the fused salts from the residue of the thorium precipitation. The initial separation involves the addition of sodium acid sulphate to throw down a double sulphate of the cerium group metals and sodium.

Mesothorium, a disintegration product of thorium, is extracted from monazite by the addition of a small quantity of barium sulphate to the monazite sand during its treatment with sulphuric acid, whereby the mesothorium is separated with the insoluble material left after the treatment of the product with water.

Prices

Quotation from Engineering and Mining Journal Metal and Mineral Markets.

Prices of monazite are based on the thoria content, in spite of the fact that the thoria is now a by-product of the process of extraction of ceria.

Price per ton of monazite, 8% thoria $60.

The lowest price at which the Carolina deposits can be worked has been estimated at 15¢ per pound. Other deposits in the country cannot be worked at this price unless ilmenite, magnetite, rutile, zircon or gold are present in sufficient quantities to carry part of the mining cost.

Production

In 1938 world production was about 6,000 tons. Domestic imports for that year amounted to 456 tons valued at $18,210. In 1939 domestic imports were 1,560 tons valued at $52,016.

Buyers of Monazite
(from U.S. Bureau of Mines)

Blackwell's Metallurgical Works, Ltd., Speke Road Works, Garston, Liverpool, England.
Foote Mineral Co., Inc., 1610 Sumner St., Philadelphia, Penn.
Henry A. Golwynne, Golwynne Magnesite and Magnesia Corp., 1532 Chrysler Bldg. New York City.
Harrison Mfg. Co., Rahway, New Jersey.
Harshaw Chemical Co., 1933 E. 97th St., Cleveland, Ohio.
Industrial Minerals Corp. of America, 220 Delaware Ave., Buffalo, New York.
Lindsay Light Co., 161 East Grand Avenue, Chicago, Illinois.
Maywood Chemical Co., Maywood, New Jersey.
A. D. Mackay, 198 Broadway, New York City.
Varlacoid Chemical Co., 116 Broad St., New York City.
Welsbach Co., Gloucester City, New Jersey.

Uses of Monazite

The mineral monazite is used only as a source of the rare earth elements, particularly cerium, thorium, lanthanum, neodymium, praseodymium. In the past, thorium was the principal metal desired and obtained, but because of technical advances the demand for thorium decreased while the demand for cerium increased, until now the thorium produced from monazite considerably exceeds the demand.

1. Pure cerium oxide, called "opaline" is used for the production of gray nickel or cobalt ground enamels for sheet metals. It is characterized by a remarkable opacity and is unaffected by furnace atmospheres.

2. Optical glass, containing cerium, praseodymium and neodymium, possess indices of refraction midway between flint glass and diamond, combining low dispersion and a high index of refraction. They are used in camera lenses with a greater light-gathering power and a better correction for chromatic aberration.

3. Alloys of cerium and iron are used in military signaling, as an illuminant in photography and for the ignition of explosives.

4. Alloys of cerium and magnesium are used as flashlight powders.

5. Cerium alloyed with iron, acts as a reducing agent and when alloyed with cast iron it opposes graphitization.

6. Cerium is used in small amounts from time to time in cerium glass, in tanning, in dyeing, and as catalysts.

7. Ceric oxide is one of the best opacifiers known for enamels, yet is seldom used even in Europe.

8. Cerium acetate is used as a mold preventive for cloth and as a water proofing agent.

9. Cerium is used to a small extent in flaming arc lamps. Cerium fluoride and oxide is used in searchlight cores, motion picture and therapy lamp carbons.

10. After the removal of thorium from the monazite, the residue of cerium, didymium and lanthanum is reduced as an alloy of iron and used as a spark producer in lighters for cigarettes and carbide lamps. (didymium is a mixture of neodymium and praseodymium)

11. The reduced alloy of the residual rare earth metals, known as "misch metal" has been used in a small way in steel making and in cast iron.

12. Thorium is used as a nitrate in incandescent mantles for gas, gasoline and kerosene lamps. Some mantles are used in heat and light therapy.

13. Thorium is used in the elsbach gas mantle.

14. Thorium is used to eliminate brittleness in ductile filaments. It is added in about 1% to tungsten filaments. It is used for filaments in the 3 electrode vacuum tubes.

15. Thorium is used in neon sign electrodes (U.S. Patent 2,136,918, November 15, 1938).

16. Thorium is used in high quality refractories.

17. Thorium is used as a catalyst in the Fischer-Tropsch benzine synthesis.

18. Mesothorium, a disintegration product of thorium is a substitute for radium both in luminous paint and in therapeutic work.

19. Lanthanum has been considered for loading silk and rayon.

20. Neodymium is a physical decolorizer for glass.

21. Didymium (neodymium and praseodymium) colors glass a neutral gray color.

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CLEARING HOUSE

50-CH

A copper property in the Little North Santiam District, Oregon, is for sale or lease. Underground development work amounts to 1200 - 1400 feet. Two good-sized ore shoots have been opened up. The ore is 6 inches to 5 feet wide and runs 3 to 4% copper, a few ounces of silver, and a little gold. The property has a 30-ton mill. Owner is Fred W. Andrews and address may be secured from the State Department's Portland office, 702 Woodlark Bldg.

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51-CH

Dr. A. J. Walcott, 4029 N. E. Seventy-ninth Ave., Portland, Oregon has established a school with courses of instruction in gems and crystals. In addition Dr. Walcott is open for engagement as an expert gem consultant. His service in the Field Museum of Natural History in Chicago as well as private research fully qualifies him to undertake consulting work in the field of gems and crystallography.

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52-CH

W. M. Briner, Coquille, Oregon desires to sell or lease mineral and timber property in Pistol River, in sec. 10, 11, and 22, T. 38 S., R. 14 W., in Curry County. Mineral property as explored by 3 opencuts is stated to contain large tonnage of material containing 61% hematite and assaying $18.90 per ton in gold together with 11% to 27% manganese. Owner states that property contains 8 million feet of merchantable timber. Purchase price, $50,000.

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53-CH

Anyone desiring to sell antimony ore should communicate with Mr. H. J. Bishop, care of the Harshaw Chemical Co., 631 South Inglewood, Redondo Road, El Secundo, California. The company will quote prices delivered at railhead in Oregon.

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54-CH

Mr. R. Reierson, 1952 Market Street Drive, Portland, Oregon, wishes to sell a lode property containing mainly copper values, but also carrying gold and silver. Location is in the Mount St. Helens district. There are five groups of claims with 1,080 acres patented. Substantial tonnage is claimed to be blocked out by several thousand feet of development work. It is necessary to construct four miles of road.

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55-CH

Mr. W. L. Brennan, 1528½ North Hudson, Hollywood, California, desires to sell a slightly used Sullivan Diamond Core Drill, equipped to drill 500 feet. The owner states that the price asked is less than ½ of the cost price.

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