STATE OF OREGON

DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

1069 State Office Building

Portland 1, Oregon

BULLETIN No. 45

Ninth Biennial Report

of the

State Department of Geology and Mineral Industries

of the

STATE OF OREGON

July 1, 1952, to July 1, 1954

To His Excellency the Governor
and the
Forty-eighth Legislative Assembly

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To His Excellency, Paul Patterson
Governor of the State of Oregon
and to
The Forty-eighth Legislative Assembly of the State of Oregon

Sirs:

We submit herewith the Ninth Biennial Report of the Department of Geology and Mineral Industries, covering activities of the Department for the period from July 1, 1952, to and including June 30, 1954.

Respectfully,

Mason L. Bingham
Niel R. Allen
Austin Dunn

Portland, Oregon
October 29, 1954

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Illustrations

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OREGON'S MINERAL INDUSTRY

Introduction

Value of Oregon's 1953 mineral production was $24,118,000 according to an advance summary of the U.S. Bureau of Mines compared to $26,675,000 in 1952. The reduction in value is reportedly due to smaller amounts of sand, gravel, and stone used in road building and hydroelectric projects. It seems likely that the total value of these materials would be substantially greater if all logging companies had reported the amount of rock used in building roads.

Nonferrous metal production in the State in 1953 was small, even though gold output increased to $297,000 from $193,000 in 1952. Only insignificant amounts of copper and lead were produced as by-products of precious metals from ore shipped to the Tacoma Smelter. Even so, metal miners felt more hopeful than for quite a while because of the start of construction of the Hanna nickel smelter at Riddle and also because of chromite production in southwest and central Oregon. Investigations of deposits of some nonmetallics, especially diatomite and asbestos, were made by large out-of-state mining companies. On the whole, construction continued at a fair level compared to 1952 which meant a good, if decreased, demand for sand, gravel, stone, and portland cement.

Value of Oregon's mineral production, according to U.S. Bureau of Mines estimates, is shown on the accompanying graph, and the breakdown for 1952 and 1953 is given in the following tabulation:

Mineral Production of Oregon, 1952 and 1953

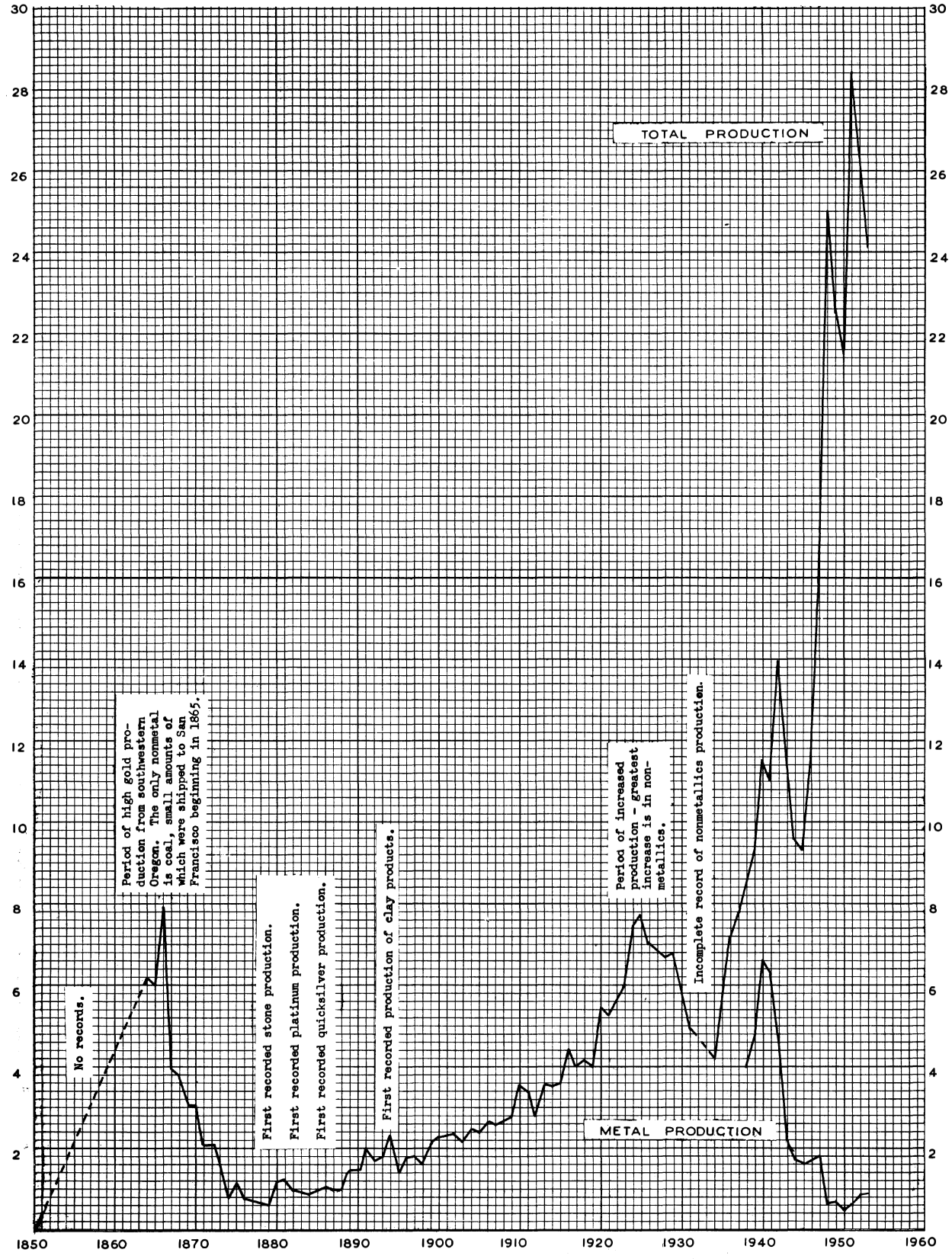
Commodity		1952 Quantity	1952 Value (thousand dollars)	1953 Quantity	1953 Value (thousand dollars)
Metals					
Chromite	short tons, gross weight	6,591	508	6,216	485
Copper	short tons	1	1/	9	5
Gold	fine ounces	5,509	193	8,488	297
Lead	short tons	1	1/	5	1
Manganese ore	short tons, gross weight	---	---	46	2/
Manganiferous ore	short tons, gross weight	2/	2/	271	2/
Mercury	76-pound flasks	868	173	648	125
Silver	fine ounces	4,037	4	12,259	11
Tungsten concentrate	short tons, 60% WO_3 basis	2/	2/	2/	2/
Zinc	short tons	1	1/	---	---
TOTAL		---	878	---	924
Nonmetals					
Clays (except for cement)	thousand short tons	214	507	231	235
Coal	short tons	1,179	9	---	---
Perlite (crude)	short tons	2/	2/	3,232	24
Pumice and pumicite	short tons	59,578	202	73,080	174
Sand and gravel	thousand short tons	12,219	8,556	3/	4/ 7,900
Stone (except limestone for cement and lime)	thousand short tons	6,251	8,893	3/	4/ 6,747
TOTAL		---	18,167	---	15,080
Undistributed: Cement, diatomite, gem stones, lime (1950-52), quartz, and minerals under footnote 2/		---	7,630	---	8,114
GRAND TOTAL		---	26,675	---	24,118

1/ Less than $500; 2/ Value included with "Undistributed";

3/ Quantity not yet available; 4/ Preliminary figure.

OREGON MINERAL PRODUCTION

(IN MILLIONS OF DOLLARS)



Metallics

Gold, silver, copper, lead, and zinc

A major proportion of the gold produced in Oregon in 1953 came from the dredge of the Powder River Dredging Company which is working the gravel close to the town of Sumpter, Baker County. Small quantities of placer gold came also from some small hydraulic operations including about ten in Josephine and Jackson counties which were active when water was available. The principal lode gold producer was the Buffalo mine in eastern Grant County which, following its usual procedure, shipped some sorted high grade and ran the flotation mill when sufficient milling grade was accumulated in the stockpile. A small lode gold operation was started at the Sanger mine in Baker County.

Gold mining in the State continued its anemic course with little hope of survival under present conditions of rigid price and high operating costs. Now, as in World War II, the United States is the only gold-mining country that considers gold mining expendable. The small amount of silver produced resulted from production of gold and other nonferrous metals.

Copper and lead output in 1953 was very small and came principally from the smelting ore shipped from the Buffalo mine. Late in 1953 a new discovery of copper ore was made at the old Standard mine on Dixie Creek in Grant County and a shipment of high-grade copper ore was sent from the discovery to the Tacoma Smelter. Some exploration was started at the Queen of Bronze copper mine, Josephine County, including diamond drilling by the U.S. Bureau of Mines. A diamond drilling campaign was conducted during the year at the Almeda gold-copper mine on the Rogue River near Galice. A small amount of development work was done at the Noonday (Thompson) mine on the West Fork of Cow Creek in eastern Coos County, at the Hamlin copper prospect on Onion Mountain in Josephine County, and at the East Eagle Mining Company in Baker County. A small quantity of zinc was produced by the Buffalo mine, Grant County, in 1952.

Chromite

Chromite mining and prospecting activity continued active throughout 1953 and 1954 when weather conditions permitted, owing to the government's incentive price program and the government chromite purchasing depot at Grants Pass. In southwestern Oregon twelve chromite concentrating mills shipped concentrates to the purchasing depot. These mills are as follows:

Ashland Mining Company, Ashland, Jackson County
Bristol-Baker mill, Curry County
Bowers mill, Josephine County
Waldo Milling Company (was Chrome Milling Company), French Flat, Josephine County
Foster mill, Josephine County
Freeman and Twombly mill, Curry County
Grants Pass chrome mill, Grants Pass, Josephine County
Six-mile chrome mill, Josephine County
Thompson Milling and Manufacturing Company, Ashland, Jackson County
Radcliffe mill, Galice, Josephine County
Fitzpatrick mill, Douglas County
McCaleb mill, Curry County

Several new chrome deposits were discovered, the most important of which appear to be the Lucky L & R mine, the Sad Sack mine, and some deposits at "Chrome Flats," all on Chrome Ridge, Josephine County. Some new prospects were

opened in the Illinois River area but very little is known about their possibilities at present. A new body of chrome was found by diamond drilling in the Oregon Chrome mine, Josephine County.

Chromite concentrates were shipped to Grants Pass from the town of John Day, Grant County, by Zanetti Brothers of Wallace, Idaho, who had leased the Dry Camp mine and the mill of the Tri-County Mining Company. Other shipments of concentrates were made by Burt Hayes from the Haggard and New property near Canyon City. U.S. Bureau of Mines technicians took a 30-ton sample of chromite ore from the Chambers and Iron King mines near Canyon City, Grant County. Metallurgical testing work designed to study possibilities of producing commercial ferrochrome from this ore was undertaken at Albany, Oregon.

According to Bureau of Mines' statistics, receipts of chrome at the Grants Pass purchasing depot during 1953 totaled 35,000 short tons. Of this amount, Oregon produced 6,216 short tons from 47 shippers. This amount was slightly less than in 1952. California had 75 shippers. General Services Administration reports in the Federal Register that the total amount of chrome received under the program is 46,640 long tons (52,237 short tons) up to January 1, 1954.

The purchase program for chrome at Grants Pass expires on June 30, 1957, or when 200,000 long tons has been purchased, whichever comes first. It is easy to see why exploration campaigns are not undertaken to prove tonnages of chrome sufficient to warrant a substantial plant. The termination of the program would come before capital expenditure could be returned. Hence the program encourages only surface prospecting and gouging out of ore and nothing on which a permanent industry may be founded.

The Department has given assistance to chrome miners and to the chrome purchase program whenever and wherever possible. A Department geologist stationed at Grants Pass has been giving all of his time to chromite studies of genesis designed to result in a report that will help in prospecting for chrome.

Mercury

The Bonanza quicksilver mine near Sutherlin, Douglas County, owned by the Bonanza Oil and Mine Corporation produced continuously throughout 1953. A Defense Minerals Exploration Administration loan of $50,056 became available in the middle of the year to be used in exploratory drifting on the 830 and 1050 levels. Some new ore was developed but not of sufficient grade or in sufficient quantity to warrant continuing operations at the then market price and the mine closed February 15, 1954. The mine was reopened on June 1, 1954, because of the high price for metal, and production was getting back to normal in August. The management is making plans to increase production.

Small-scale quicksilver prospecting with some production was conducted at the Maury Mountain and Towner mines in Crook County, at the Roba and Westfall property in Grant County, and at the War Eagle mine and Ruby claim group in Jackson County.

In the national scene the quicksilver market was strong and prices highest of the year ($217-$219 per flask) at the end of 1952. Prices declined steadily throughout 1953 and reached $183-$185 in October. At the end of the year the quoted price was $187-$189. Early in 1954 prices began to strengthen because of shortage of spot metal and spiraled during the first half of the year. On June 17 the quotation was $275-$280. A record high of $290 per flask for spot metal was reported during the week beginning July 15. High prices may stimulate domestic production but experienced operators will be wary. Imports during 1953 amounted to 85,780 flasks, the greatest on record except for 1949. Domestic production totaled 14,330 flasks and consumption was 52,400 flasks.

On July 6 the government announced a purchase program for quicksilver that, in effect, guarantees a price of $225 per flask through December 1957 or until 125,000 flasks of domestic and 75,000 flasks of Mexican metal have been purchased.

Nickel

At Riddle, Douglas County, construction of the nickel smelting plant under contract by the Bechtel Corporation for the Hanna Nickel Smelting Company started early in 1953 and progressed satisfactorily throughout the year. Mining of the nickel silicate ore body on Nickel Mountain was started late in May 1954 and construction of the aerial tramway was completed in June 1954. In July the company started ore through the furnaces. About 400 men are employed. This project which involves expenditure of about 35 million dollars is of outstanding importance to the State and nation. It will be the first commercial production from domestic ore in the United States.

The Department was closely associated with Hanna geologists in some of their exploration work on Nickel Mountain whenever help could be given. In addition, previous exploration of some nickel laterite outcrops in southwestern Oregon by Department geologists provided the incentive for further work on nickel by public and private groups.

The U.S. Bureau of Mines has been making smelting tests on low-grade nickel laterite from the Red Flat deposit in Curry County to determine if it is metallurgically feasible to produce ferronickel from this material.

Manganese

Seven car lots of manganese oxide ore were shipped to the Geneva Steel Company, Utah, from prospects in Pleasant Valley south of Baker in 1953. Mining and shipping were done by the Ketell Investment Corporation, Portland.

The U.S. Bureau of Mines conducted a study of manganese deposits in southern Oregon and did some bulldozer trenching on the Neathamer deposit in the Lake Creek district east of Medford, Jackson County. The Bureau also did some exploratory diamond drilling on a rhodonite prospect on Upper Evans Creek in Jackson County. Some exploration work is said to have been done at the Long Ridge manganese deposit in southern Curry County by Oliver and Earl Boyd and M. E. Porter. Reportedly about 30 tons of manganese oxide was mined but not shipped.

Iron

A small amount of limonite from the Scappoose district, Columbia County, was mined by the Orr Engineering and Chemical Company in 1953 and 1954 and processed at Scappoose for use in desulphurizing manufactured gas at the Portland Gas and Coke Company plant in Portland. The Orr plant also produced mineral stock feed and mineral pigment.

Aluminum and bauxite

A pilot plant to produce aluminum-silicon alloy from clay by electric smelting was built at Springfield in Lane County during 1953. Initial shipments of the metal were made during the first half of 1954. Reportedly clay from Bishop, California, was used.

During 1953 and 1954 a small amount of drilling and sampling was done by Alcoa Mining Company as assessment work on unpatented mining claims containing bauxite

deposits in Washington and Multnomah counties. An Alcoa company office is maintained at Hillsboro. No information concerning plans of the company to put the deposits into production is available.

Field investigations to indicate quantity and quality of Salem bauxite and laterite were started in 1953 by the Department and continued in 1954. This work included reconnaissance geological mapping, principally in the Salem Hills, together with auger-hole drilling and sampling. Some research on the petrology of the bauxitic material was done in Department laboratories. Results of these investigations will be published. Laboratory research was conducted also on Salem laterite by Harvey Machine Company at the Salem alumina-from-clay plant which had been purchased from the government by Harvey. Early in July 1954 it was reported that this research pointed to a process for successful treatment of the material to produce alumina, and a company spokesman said that a pilot plant would be built.

Nonmetallics

Sand, gravel, and stone

Construction remained at a fairly steady level throughout 1952 and 1953, although there was a leveling off from the high rate in 1951 when value of sand, gravel, and stone was $19,948,000. Value in 1952 was about $17,450,000 and the preliminary figure for 1953 is $14,647,000. The largest proportion of cement aggregate was produced in the Willamette Valley where about forty sand and gravel companies dig river gravels. Some dimensional stone is being produced from a quarry near Willowdale in Jefferson County, and also from a basalt quarry at Rocky Butte in Portland. During the period covered by this report, volcanic tuff was sawed at a quarry near Sublimity in Marion County and sold mainly for building in the Willamette Valley.

Limestone

Portland cement and limestone were produced at near capacity in 1952 and 1953. In southern Oregon the Ideal Portland Cement Company was active throughout the period. This company quarries limestone at the Marble Mountain quarry in Josephine County and produces cement from this stone at the plant at Gold Hill in Jackson County. A newspaper article reported the following statement by a company official: "Although the smallest of Ideal's cement operations, the Gold Hill plant has had $200,000 worth of modernization and its Marble Mountain quarry is one of the best sources of lime rock in the United States. . . .The Gold Hill plant has an annual payroll of more than half a million dollars . . .and another half million goes for plant materials."

In Baker County the Oregon Portland Cement Company initiated a modernization and expansion program at its quarry and plant at Lime, and the Morrison-Knudsen Company started large-scale exploration of limestone near Durkee. The objective of Morrison-Knudsen is to prove sufficient reserves so that a large-scale operation for supplying stone to sugar mills, paper mills, and for metallurgical and agricultural purposes may be carried on. Mr. Anthony Brandenthaler announced plans for a new burned-lime plant at Baker to be supplied from the property of the Chemical Lime Company owned by Messrs. Brandenthaler and Lilley on Marble Creek west of Baker.

Pacific Carbide and Alloys Company continued quarrying high-grade limestone at their deposit near Enterprise in Wallowa County in 1953 and 1954 for use in making calcium carbide in Portland. A change in furnace design at the Portland plant was made in 1953 which will result in increased production of calcium carbide. Undersize material was sold for agricultural use.

Agricultural limestone spread on Oregon farms in 1953 under the Production and Marketing Administration program was somewhat less than the 46,744 tons spread in 1952. More than half of the lime originated in the State of Washington. Bad weather, which prevented spreading during the liming season, was largely responsible for the decline. Oregon agstone quarries are located near Lime, Grants Pass, Roseburg, and Dallas.

Perlite

The perlite quarry and plant of Dant and Russell, Dantore Division, at Dant on the Deschutes River in Wasco County, optioned by Kaiser Gypsum in 1952, was closed down in 1953. Late reports were that the equipment was being sold.

Diatomite

The operation at Lower Bridge near Terrebonne on the Deschutes River by Great Lakes Carbon Corporation was continued at capacity throughout 1953 and 1954. Reportedly the company is seeking new reserves in central Oregon. Strong interest in Oregon diatomite deposits has been shown by other large mining companies who have been investigating occurrences in central and eastern Oregon. A new corporation, Wunder Earth, Inc., leased diatomite deposits in the Harper area of Malheur County.

Silica

The only producer of silica in Oregon, the Bristol Silica Company, Rogue River, continued to ship crushed quartz for metallurgical use, chicken grit, etc., in 1953 and 1954. A specialty, catalytic silica for the petrochemical industry, was marketed during the year. An overall increased demand was reported by Mr. F. I. Bristol, owner of the company. It is also reported that operations of the nickel smelter at Riddle will create a large market for high-grade quartz as the smelter requires ferrosilicon in the smelting process. Crushed granite was shipped by the Bristol Company for poultry grit.

Lightweight aggregates

Two producers at Bend, L. A. Williamson, Cascade Pumice Company, and William E. Miller, Central Oregon Pumice Company, were active throughout the year. Harney Concrete Tile Company, operated by Don Robbins near Burns, produced cinders and pumice. A considerable quantity of pumice was sold for road metal to logging companies.

Volcanic cinders found increased use in 1953, particularly for aggregate used with asphaltic paving. Leroy Grote produced cinders from Tetherow Butte near Redmond and L. A. Williamson operated a quarry near Tumalo. William E. Miller also produced cinders from the Bend area.

Expanded shale continued to be produced by Northwest Aggregates and Smithwick Concrete Products Company in the Portland area.

Clay

Brick plants were busy throughout the year as demand for building brick continued good. Most of the brick clay was produced in northern Willamette Valley, although the plant at Klamath Falls continued active as in previous years.

Asbestos

The Canadian Johns-Manville Company finished prospecting for chrysotile asbestos in Grant County and shifted activities to Josephine County where several prospects were examined. In 1953 three diamond drill holes were put down on a prospect on Josephine Creek owned by George C. Foster. Representatives of other asbestos companies made examinations in southern Oregon.

Oil and gas

Only a small amount of test drilling for oil and gas has been done during 1953 and early 1954. Northwestern Oils, Inc., continued work on the test started in 1952 until the winter of 1953 when operations were suspended. A new test was started by W. F. Kernin at a location just west of Dillard in Douglas County. Early in June a new test was started by Roderick A. Stamey of Houston, Texas, at a location just west of Vale in Malheur County. At the latest report, August 23, 1954, depth of the hole was 4,337 feet.

All oil and gas drilling must now be done according to rules of the oil and gas conservation law passed by the 1953 Legislature and administered by the Department.

It is reported that a large amount of leasing has been done by major oil companies both in northwestern as well as in central and southeastern parts of the State.

Gem stones

The Oregon gem stone industry has continued active throughout the past two years. It probably has increased in number of collectors as well as value of raw and finished products. Oregon is famous for its agate materials and a great many people in the State are avid collectors. Also people from all over the West come to the State in order to seek semiprecious gem stones. The Oregon industry is a combination of commercial lapidaries and hobbyists. Therefore it is impossible to determine the dollar value of this business but it is fairly large. Probably the raw stone sold commercially would be valued in the order of many thousands of dollars. The value of the cut and polished stones, if they could be appraised commercially, would be of the order of several hundred thousand dollars.

Coal

A small amount of coal was produced from the Coos Bay field in 1952 and 1953 and some prospecting was done at other properties, especially at the Vernonia mine, Columbia County.

SET-UP OF THE DEPARTMENT

Duties of the Department, as set forth in the law which created it (Chapter 516 ORS), are outlined as follows:

(1) Conduct geological and mineral resource studies.

(2) Carry out economic studies pertaining to utilization of mineral raw materials.

(3) Cooperate with Federal and other agencies in studies of value to the State.

(4) Serve as a bureau of mineral and geological information, compile and keep up-to-date a mines catalog, prepare and publish reports of investigations, mineral statistics, etc.

(5) Conduct a State geological survey.

(6) Collect specimens and develop a museum of mineral and geological specimens, maps, and other objects representative of mineral industry activities.

(7) Collect a mining and geological library.

(8) Make qualitative mineral determinations.

(9) Study minerals and ores as well as processes for improved ore treatment.

(10) Make quantitative determinations of ores and minerals.

(11) Make spectrographic analyses.

(12) Administer act regulating drilling, prospecting for, production, and conservation of natural gas and oil (Chapter 520 ORS).

The Department is administered by a Governing Board of three citizens who serve for 4-year periods. The Governor of the State selects the Governing Board, subject to the approval of the State Senate. The Board members serve without compensation but are reimbursed for actual expenses incurred in the performance of official duties. They meet at least four times each year. The Board may make contracts with Federal and State agencies and may receive gifts and legacies and make use of them for the best interests of Oregon.

The Board causes to be published a biennial report of departmental activities, as well as reports of investigations and surveys as required under the law. It selects the Director of the Department who has charge of the work of the Department and who subscribes to the same oath of office as other State officers. The Director employs assistants with the approval of the Governing Board. Money received from sale of maps and bulletins and from other sources is paid to the State Treasurer to be credited to a "departmental fund." The accounts of the Department are audited annually.

A head office of the Department is maintained at Portland and field offices are at Baker and at Grants Pass.

PERSONNEL

The Governing Board of the Department was composed of the following members on July 1, 1954:

Mason L. Bingham, Portland, Chairman, reappointed 1953.
Niel R. Allen, Grants Pass, reappointed 1952.
Austin Dunn, Baker, appointed 1953.

Mr. Austin Dunn, Baker, was appointed as a member of the Governing Board on June 29, 1953, for a term ending on March 16, 1955. Mr. Dunn was named to succeed Mr. H. E. Hendryx who resigned because of ill health. The Senate Committee on executive appointments to the Geology Board confirmed Mr. Dunn's appointment on July 10, 1953.

The regular personnel of the Department on July 1, 1954, was as follows:

F. W. Libbey, Director

Raymond E. Corcoran, Geologist

Hollis M. Dole, Geologist

L. L. Hoagland, Assayer and Chemist

Ralph S. Mason, Mining Engineer

Thomas C. Matthews, Spectroscopist

Lenin Ramp, Geologist (Grants Pass)

Max Schafer, Geologist (Grants Pass)

Margaret L. Steere, Geologist

R. E. Stewart, Geologist

Norman S. Wagner, Geologist (Baker)

R. P. Zobl, Accountant

June A. Roberts, Secretary

Lillian F. Owen, Multigraph Operator

Loris M. Killian, Stenographer

Arline M. Sims, Stenographer (Grants Pass)

Marguerite L. Beedon, Stenographer (Baker)

Some temporary employees have been hired during the period covered by the report for chemical laboratory work and geological field work.

POLICIES

Under the law which created the Department, certain duties are specified. Supplementing and implementing these duties, the Governing Board must determine and promulgate general policies and rules for the conduct of the Department.

There are large areas of ultrabasic rocks in the State and because such rocks are the source rocks for chromite and nickel deposits, the Board believes that studies of such deposits already begun should be pressed and expanded. These minerals are highly important in national defense especially as the United States has relied on imports for these supplies and in a war emergency they might be cut off.

As has been pointed out in previous reports, industrial minerals are becoming more and more important in the State's economy. The Board realizes, as it has always realized, that there is an ever-increasing need for industrial mineral studies both of sources of supply and of markets. Industries are constantly making inquiries of the Department concerning possible sources of industrial minerals, and the Department should be in a position to answer such inquiries fully. At the same time it is recognized that in order to give complete answers exploration is usually required, and any extensive exploration is beyond the available facilities and funds of the Department. This applies to metallic as well as nonmetallic investigations. Insofar as personnel has been available the Department has studied markets and technology of industrial minerals known to occur in Oregon with the end in view of encouraging new industries to establish operations in this State. These activities will be continued.

Although the Board recognizes that there is an increasing need for industrial mineral studies, it does not believe that there should be a decrease in geological surveying or strictly scientific studies, since these usually form the necessary foundation for economic studies.

MINERAL INDUSTRY INFORMATION SERVICE

One of the most important duties of the Department is to provide information on the mineral industry of the State, as well as to answer inquiries concerning a wide range of subjects relating to mineral occurrences and the geology of Oregon and other states. Requests for information are continually received by letter, telephone, telegraph, and personal calls. Although the largest number of inquiries comes from residents of the State, many are received from people living outside the State and not uncommonly from residents of foreign countries. Federal Government departments and bureaus frequently make use of this departmental service.

During the past two years, perhaps the most frequent inquiries have been concerned with sources and markets of industrial minerals, but there have been many questions received on mining regulations relating to location and assessment work, coal deposits, oil possibilities, economic geology of specific mines and areas, mineral localities in the State, and publications. In spite of the depression in gold mining, prospecting for gold has a widespread attraction, and persons often inquire of the Department concerning the most favorable localities for gold prospecting. Many inquiries have been received and answered regarding chrome and nickel because of the Government chrome-buying program and the Hanna nickel-production project in Douglas County.

ORGANIZATION WITHIN THE

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

Director

- **Laboratory Division**
  - Assay and chemical laboratories (Heagland)
  - Spectrographic laboratory (Matthews)
  - Petrographic examination (Dole, Corcoran, Schafer)
- **Mines Division**
  - Info. service on mines (staff)
  - Metallurgy and mineral economics (Libbey, Mason)
  - Mine investigations (Libbey, Mason, Dole, Wagner, Ramp, Schafer)
  - "The Ore.-Bin" (Libbey, Owen, staff)
  - Annual production data (Libbey, Mason, Wagner)
  - Editorial and publication (Libbey, Steere, Mason, Dole, Owen)
  - Industrial surveys (Libbey, Mason)
  - Student mineral sets (Mason, Killian)
- **Geologic Division**
  - Info. service on geology (Dole, Stewart, Wagner, Ramp, Schafer, Corcoran)
  - Geological surveys (Dole, Wagner, Ramp, Corcoran)
  - Petrology (Dole, White, Ramp, Schafer)
  - Stratigraphy (Stewart, Dole, Wagner, Ramp, Corcoran)
  - Paleontology (Stewart)
  - Map making (Mason, Dole, Wagner, Ramp)
  - Editorial & publication (Libbey, Steere, Mason, Dole, Stewart, Owen)
- **Oil and gas Administration**
  - Libbey, Stewart, Wagner
- **Reference Division**
  - Library and catalog (Steere)
  - Museum (Steere)
  - Map collection and index (Mason)
  - Mine reports and card files (Mason, Killian, Steere)
  - Thin section file (Dole)
  - Photograph file (Killian)
- **Cooperation**
  - Negotiations and cooperation with USGS, USBM, State agencies (Libbey)
- **Clerical Division**
  - Secretarial (Roberts, Killian, Beedon, Sims)
  - Bookkeeping (Zobl)
  - Purchasing (Zobl)
  - Property (Zobl)

APPROPRIATIONS

The Department's activities are supported by money appropriated by the Legislature out of the State's general fund. Appropriations received by the Department are divided into accounts classified as follows: Salaries and wages; general, operating, and maintenance expense; capital outlays; and special requests. Funds appropriated for use under one classification may not be used for expenditures in a different classification. All departmental expenditures are evidenced by warrants drawn on the State Treasurer and are audited by the office of the Secretary of State.

In addition to funds appropriated by the Legislature, the Department maintains a separate account with the State Treasurer called the Geology and Mineral Industries Account to which are credited receipts from the sale of publications, from gifts, income from the spectrographic laboratory, and from oil and gas drilling permits. Allowable expenditures from this account are budgeted by the Legislature and approved by the State Budget Director. A statement showing receipts and expenditures of this account is given on a succeeding page.

The following table gives appropriations made by the last two Legislatures as well as funds requested for the 1955-57 biennium:

Department of Geology & Mineral Industries	1951-1953 July 1 - June 30	1953-1955 July 1 - June 30	Requested 1955-1957 July 1 - June 30
Salaries & Wages	$ 135,028.00	$ 156,245.60	$ 178,852.20
Gen., Oper., & Maint.	50,225.00	52,425.00	56,621.00
Capital Outlays	3,100.00	4,100.00	6,900.00
Special Requests	10,000.00	13,500.00	13,500.00
Totals	$ 198,353.00	$ 226,270.60	$ 255,873.20

Salaries and wages are governed by the State Civil Service and Budget Division regulations. The budget request for 1955-57 includes a request for an additional Geologist II to be stationed at Baker so that the Department may expand its geological investigations in eastern Oregon. The Board believes this expansion is warranted in order to encourage new mineral industries to locate in the State. One new clerical employee is requested because of greatly increased clerical work of the Department during the past ten years. The increase in General, Operating, and Maintenance is because of increased cost of operation. Under Capital Outlays the increase is needed if our spectrographic laboratory is to maintain its high standard of work. The amount under Special Requests is for compilation of the State Geologic Map, now needed more than ever because of the increase in oil and gas investigations.

HEAD OFFICE AND ASSAYING SERVICE

The administrative office of the Department is at 1069 State Office Building, Portland. Included at this location are a spectrographic laboratory, a chemical laboratory including fire assaying equipment, a petrographic laboratory, crushing and grinding equipment, drafting room, museum, multigraphing equipment, library, and offices for the staff.

Principal duties at this office are, aside from clerical, taking care of the information service; preparing, editing, and multigraphing reports for publication; analytical and testing work on mineral samples; cataloging publications and specimens for the library and museum; and preparation of student mineral sets for which a large demand both inside and outside the State has developed.

A free assaying service is maintained by the Department. Samples are received at either the field offices or the head office and are assayed at the head office laboratory. According to the law establishing the Department, a single person or group of persons may submit no more than two samples in a 30-day period. Such samples must be from an original prospect or property within the State, and the service is given without charge in return for information on the origin of the sample including the location from which it was obtained. This service may not be given to engineers in the sampling of properties for the purpose of evaluation nor to operating mines which are milling or shipping ore.

Statistics of activities at this office for July 1, 1952, to June 30, 1954, as well as comparable figures in parentheses for the previous biennium, July 1, 1950, to June 30, 1952, are given below:

	1952-1954 July 1 - June 30	1950-1952 July 1 - June 30
Number of visitors at the Portland office	4,899	(4,240)
Pieces of mail received at Portland office	21,459	(19,775)
Pieces of mail sent out of Portland office (not including new publications or Ore.-Bin)	18,926	(15,343)
Number of qualitative determinations made	201	(292)
Number of quantitative determinations made	6,035	(5,496)
Petrographic examinations (excluding thin sections)		(202)
Number of thin sections analyzed	293	(19)
Microscopic examinations for State Board of Health		(80)
Mineral sets sold for biennium (July 1, 1952 - June 30, 1954)	442	
(Value)	$522.80	

FIELD OFFICES

Two field offices are maintained, one for eastern Oregon at Baker and one for western Oregon at Grants Pass.

Each field office is staffed with a field geologist and a part-time stenographer and receptionist. Duties of the geologist include obtaining information on mines and prospects for the Department's mines catalog; supplying information on geology, minerals, and mineral properties; advising prospectors concerning their problems; and inspecting mines and prospects at owners' requests as a part of mineral resource studies. Geological field mapping has been done by geologists from both field offices.

Pertinent statistics concerning the work of these field offices for the two-year period July 1, 1952, to June 30, 1954, as well as comparable figures for July 1, 1950, to June 30, 1952, in parentheses, are as follows:

	Qualitative Determinations	Business Callers	Business Letters
Baker	671 (794)	2,472 (2,450)	472 (678)
Grants Pass	1,450 (1,066)	5,461 (5,195)	793 (571)
TOTAL	2,121 (1,860)	7,933 (7,645)	1,265(1,249)

SPECTROGRAPHIC LABORATORY

The spectrographic laboratory has three principal functions from the standpoint of division of work of the spectroscopist: (1) Qualitative analysis of mineral samples to determine presence or absence of specific elements. Such determinations can usually be made much more quickly and dependably with the spectrograph than by any other method. (2) Quantitative analysis of samples in which all elements are determined in percentages within the accepted limits of accuracy, and in a small fraction of the time required for quantitative chemical analysis. (3) Research work on specific problems, usually in determining minute quantities of diagnostic elements.

During the biennium the principal use of the spectrograph has been for qualitative determinations of all kinds of mineral substances. It has been especially valuable in determining presence or absence of rarer metals, notably uranium, thorium, columbium, tantalum, and lithium in which interest has been greatly increasing. Custom analyses included semiquantitative control work on alloys for casting and heat-treating operations as well as a large number of analyses for rare metals in concentrates. Considerable work was done for both the State and Portland Police crime detection laboratories.

The Department has Geiger-Müller counters as regular laboratory equipment and all samples received are tested for radioactivity. In March 1954 a "Radioassayer" was installed in a Department laboratory on loan from the Atomic Energy Commission. This instrument makes accurate quantitative determinations of radioactivity in the low ranges up to 0.15 percent U_3O_8 equivalent. Periodic reports on assay results of this instrument are made to the Atomic Energy Commission.

The Governing Board has set up rules for the commercial analysis of samples by the spectrograph. These rules are given in detail in a Department publication describing the spectrographic laboratory. Statistics covering the work of the laboratory for July 1, 1952, to June 30, 1954, together with comparable figures for July 1, 1950, to June 30, 1952, in parentheses are given below:

	1952-1954 July 1 - June 30	1950-1952 July 1 - June 30
Total number of analyses made	2,095	(1,330)
Custom analyses made	1,096	(326)
Total number of samples tested for radioactivity	3,135	(3,109)
Receipts from custom analyses	$4,812.50	($1,316.80)

MINERAL DEPOSIT INSPECTIONS

In making mineral resource studies, it is at times necessary to make an inspection of property at the owner's request. Frequently such requests are received from persons who have had no experience in mineral matters and who wish to obtain advice on whether or not their land contains commercial minerals. Sometimes advice may be given based on samples submitted. At other times an inspection is necessary in order to obtain reliable technical information and to advise the owners concerning the need and kind of work required for preliminary exploration. Limited time and personnel do not permit prospecting a considerable area unless evidence is plain that such work might bear on and be a part of regional investigations designed to develop the State's mineral resources.

Inspections of active and inactive mines, as well as undeveloped prospects, are frequently made in order to provide information for the Mines Catalog. In all regional geologic mapping, examination of mine openings and development work is necessary in order to obtain all available geological evidence.

It is felt that one of the most important duties of the Department is to keep in close touch with prospecting activities, for prospecting is basic to the existence of a mineral industry. To this end the free assaying service is maintained as given under "Head Office." Also rock and mineral determinations are made which often include petrographic study of thin sections. In addition, new discoveries are inspected whenever they are brought to the Department's attention in order to give all technical assistance possible to the prospector.

OIL AND GAS CONSERVATION LAW

The 1953 Legislature passed a new oil and gas conservation law (Chapter 667, Oregon Laws, 1953, Chapter 520 ORS) and directed the Governing Board of the Department to administer it. The law, which became effective July 21, 1953, provides that the Board shall set up reasonable rules and regulations for the guidance of oil and gas operators after a public hearing. The hearing was held in the State Office Building, Portland, on September 15, 1953, and final rules and regulations were adopted by the Board at a regular meeting in Portland on December 7, 1953. A Department publication, Miscellaneous Paper No. 4, contains the rules and regulations, as well as the law itself.

PUBLICATIONS

A complete list of Department publications is given at the end of this bulletin. The following publications have been issued during the biennium covered by this report:

Bulletin No. 14-C, "Oregon Metal Mines Handbook" for Josephine County, Oregon, 1952, (Second Edition). A catalog of records and reports of known mines, prospects, and deposits. The first edition of this bulletin was out of print by 1949. Because of the continuing demand, increased by resumption of chromite mining in southern Oregon, it was decided to prepare and issue a second edition. An appendix has been added which contains some up-to-date information on chromite.

1095 copies cost $1,431.31.

Bulletin No. 16, "Field Identification of Minerals for Oregon Prospectors and Collectors," 1954, (Fifth Printing). A continuing demand for this publication exhausted the fourth edition in 1952 and made a fifth printing necessary. Changes in the Oregon minerals scene made it desirable to add some minerals and to revise some of the text. The minerals added are also tabulated in the addendum.

1073 copies cost $999.49.

Bulletin No. 37, "Geology of the Albany Quadrangle, Oregon," 1953, by Dr. Ira S. Allison, Chairman, Department of Geology, Oregon State College. This publication is the first of a number of geological quadrangle reports covering central Willamette Valley which the Department hopes to publish. A geologic map of the area is included in the bulletin.

1056 copies (exclusive of map) cost $267.08.

Bulletin No. 43, Eighth Biennial Report of the Department.

650 copies cost $236.14.

Bulletin No. 44, "Bibliography of the Geology and Mineral Resources of Oregon" (Second Supplement), 1953, by Margaret L. Steere. This bulletin is the second supplement to "Bibliography of the Geology and Mineral Resources of Oregon" compiled in 1936 by Ray C. Treasher and Edwin T. Hodge. The first supplement, compiled by John Eliot Allen and others, carried the bibliography on through the year 1945, and the present supplement covers the material that was published during the 5-year period from January 1, 1946, through December 31, 1950.

1047 copies cost $571.82.

G.M.I. Short Paper No. 18, "Radioactive Minerals the Prospector Should Know" (Revised Edition), 1952, by David J. White. Continued demand for this pamphlet depleted the first edition in 1952 and made necessary the issuing of a second edition. A few revisions in the text were made by the author. The second edition was out of print by 1954 making reprinting necessary.

860 copies of second edition cost $98.48.

1282 copies of second printing of second edition cost $143.18.

Miscellaneous Paper No. 1, "A Description of Some Oregon Rocks and Minerals," 1950, (Reprint), by Hollis M. Dole. This paper was prepared to accompany school mineral sets composed of rocks and minerals most commonly found in Oregon. The text includes a classification of rocks and a description of specimens in the sets together with an outline of their uses, occurrences in the State, and other pertinent information.

In 1953 it was necessary to reprint 757 additional copies which cost $211.30.

Miscellaneous Paper No. 3, "Facts about Fossils," 1953. Reprints of papers on paleontology published by the Department. In response to the demand for information from students and collectors, the Department has published articles on fossils from time to time in The Ore.-Bin. Because the supply of these articles was exhausted, a collection of most of them has been assembled to make up this miscellaneous paper.

1125 copies cost $297.19.

Miscellaneous Paper No. 4, "Rules and Regulations for the Conservation of Oil and Natural Gas," 1954. An Appendix (Chapter 520 ORS, Gas and Oil Wells; also Section 516.090 ORS) is included. This paper was published as a result of the new oil and natural gas law (Chapter 520 Oregon Revised Statutes) passed by the 1953 Oregon Legislature.

742 copies cost $174.69.

Miscellaneous Paper No. 5, "Oregon's Gold Placers," 1954, compiled by the Department staff. To answer many requests received by the Department for information on location of gold placers and placer mining in Oregon, this paper has been published. Material contained therein is mainly from The Ore.-Bin, but a portion of U.S. Geological Survey Circular No. 8, "Beach Placers of the Oregon Coast," by J. T. Pardee, is included to cover the subject of gold placers on present beaches and ancient elevated beach terraces. A bare outline of small-scale placer mining techniques is given. The paper contains two maps of placer mining areas; also a short bibliography.

885 copies cost $170.36.

Geologic Map of the Albany Quadrangle, Oregon, 1953, by Dr. Ira S. Allison, Chairman, Department of Geology, Oregon State College. This map, covering an important segment of the Willamette Valley, is included in Bulletin 37.

1500 maps cost $465.

Geologic Map of the Galice Quadrangle, Oregon, with descriptive text and list of placer and lode deposits, 1953, by Francis G. Wells and George W. Walker, geologists with U.S. Geological Survey.

2,000 maps cost $609.86; freight, $40.14.

Index to Geologic Mapping, 1952. 864 cost $7.74. (Multigraphed by the Department on 8½ by 11 sheets.) (Two colors.)

Index to Topographic Mapping, 1952. 1,422 cost $10.82. (Multigraphed by the Department on 8½ by 11 sheets.)

Small Mineral Locality Maps, 1952. 1,409 cost $7.84. (Multigraphed by the Department on 8½ by 11 sheets.) (Two colors.)

Small Gem Stone Maps, 1954. (Reprinted from The Ore.-Bin, July 1952.)

1,460 cost $26.25. (Multigraphed by the Department on 8½ by 11 sheets; text on opposite side.) (Two colors.)

Reprints:

"Diatomite." Reprinted from The Ore.-Bin, July 1946. 500 cost $4.13.

Paper on miscellaneous minerals to accompany small mineral sets, 1954. 450 cost $17.33.

Lists:

List of active mines, 1954. 300 cost $17.21.

List of commercial sand and gravel producers, 1954. 500 cost $67.73.

The Ore.-Bin. This small monthly periodical is prepared and multigraphed in the office of the Department. Monthly circulation is 970, 382 of which are sent free to legislators, Oregon libraries, educational institutions, and a restricted exchange list. A yearly subscription charge of 50 cents is made to cover cost of assembling and mailing. The principal value of such a publication is to present the mineral industry viewpoint on problems affecting that industry, and to provide pertinent information on Oregon mining and geology. The Ore.-Bin serves also for announcement of new publications, and publishes statistics on Oregon mineral production as soon as they are available.

STUDIES IN PROGRESS

State Geologic Map

Activities in connection with producing a State Geologic Map, now in great demand, have been stepped up. The work is in cooperation with the U.S. Geological Survey. One Department geologist has devoted practically all of his time to this work during the biennium. Several U.S. Geological Survey geologists are engaged in the project.

Chromite studies

A Department geologist has been assigned the project of studying chromite deposits being worked in the State in order to obtain information on genesis that may be helpful in prospecting. Practically all of the geologist's time for the past two years has been spent on this work. He has been stationed at Grants Pass.

Salem bauxite and high-alumina clays

One Department geologist with a part-time assistant has been engaged in studying the geology and ore occurrence of bauxite and laterite in the Salem Hills. Auger-hole drilling has been done. Some further work on this material is planned and the studies will be extended to include high-alumina clays in an area east of Mehama.

Bibliography

A card catalog containing lists of geological publications for the interval 1951-1956 is being kept up to date in the Department library. Bibliographies which cover the years previous to 1951 have been published.

Stratigraphic studies

Micropaleontology studies which will result in the third volume of the Department's Bulletin 36 have been continued. These studies are designed to set up a stratigraphic section of the Tertiary of western Oregon and will be extremely valuable for investigators in the field of geology, especially oil geologists.

Dry hole tabulation

A publication which will contain a list of holes drilled for oil and gas in the State insofar as the records of the Department allow is being prepared and will be published during the fall of 1954. Several holes have been drilled of which there is no authenticated record.

Geologic quadrangle maps

A geologic map of the Dutchman Butte quadrangle by Hollis Dole, Department geologist, is nearly ready for publication.

Geologic maps of the Lebanon, Stayton, and Salem quadrangles are being prepared by Dr. Ira S. Allison, Oregon State College, and will be published by the Department in 1954 and 1955. These maps were originally parts of Masters theses of geology students at the college.

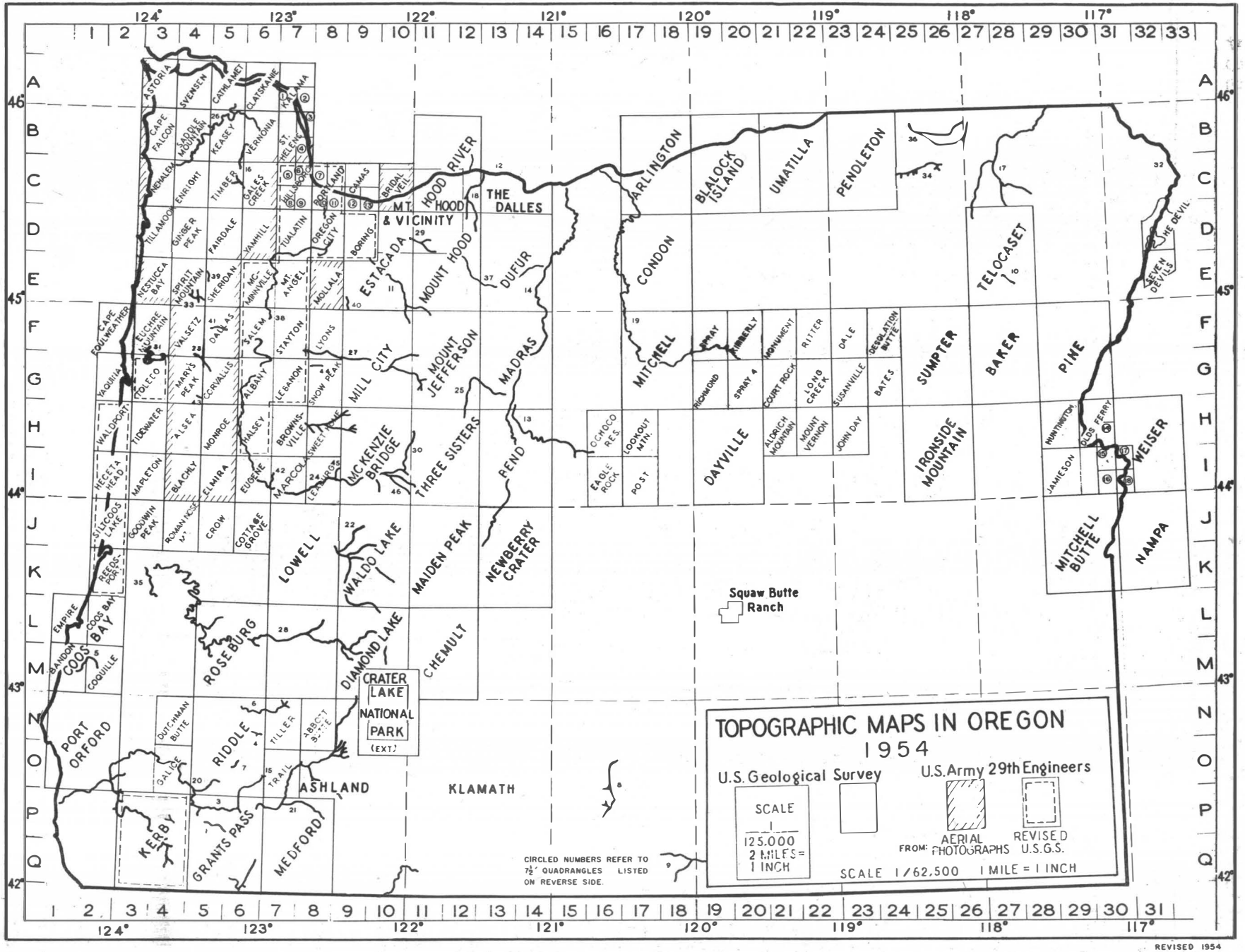
The text for the geologic map of the Telocaset quadrangle in Baker County has been revised. A bulletin including a geologic map will be published in 1955.

Geologic map of Umatilla County

This work was started by Norman S. Wagner, Department geologist, in 1951. The work was continued in subsequent years as a part-time project and field work was completed in 1953. A preliminary map and text were published in The Ore.-Bin and a final text for a Department bulletin is in preparation.

Fossil localities

In response to many requests for information about fossils in the State, a description of the best known and most easily accessible type localities is being compiled by a Department geologist. Some field work has been done and more is scheduled before a bulletin may be published.



REVISED 1954

TOPOGRAPHIC MAPS OF OREGON — 1954

15-MINUTE QUADRANGLES (Scale 1:62,500)

Name	Location	Cont. Int.	Date
Abbott Butte	N- 8	50	1947
Albany	G- 6	25	1944
Aldrich Mountain	H-21	50	1943
Alsea	H- 4	50	1942
Astoria	A- 3	20	1939
Bandon	M- 1	50	1944
Bates	G-24	40	1951
Blachly	I- 4	50	1942
Boring	D- 9	25	1944
Bridal Veil	C-10	100	1942
Brownsville	H- 7	40	1952
Camas	C- 9	25	1942
Cape Falcon	B- 3	50	1940
Cape Foulweather	F- 2	50	1944
Cathlamet	A- 5	20	1941
Clatskanie	A- 6	25	1942
Coos Bay	L- 2	50	1945
Coquille	M- 2	50	1945
Corvallis	G- 2	50	1942
Cottage Grove	J- 6	25	1921
Courtrock	G-21	40	1951
Crow	J- 5	50	1945
Dale	F-23	40	1951
Dallas	F- 5	50	1942
Desolation Butte	F-24	40	1953
Dutchman Butte	N- 4	50	1948
Eagle Rock	H-16	50	1948
Elmira	I- 5	50	1942
Empire	L- 1	50	1944
Enright	C- 4	100	1941
Euchre Mountain	F- 3	50	1943
Eugene	I- 6	5&25	1949
Fairdale	D- 5	100	1942
Gales Creek	C- 6	25	1943
Galice	O- 4	50	1948
Ginger Peak	D- 4	100	1942
Goodwin Peak	J- 3	50	1943
Halsey	H- 6	10&25	1941
Heceta Head	I- 2	50	1944
He Devil	D-32	50	1922
Hillsboro	C- 7	25	1943
Huntington	H-29	40	1951
Jamieson	I-29	40	1950
John Day	H-23	50	1943
Kalama	A- 7	20	1943
Keasey	B- 5	100	1943
Kimberly	F-20		B
Leaburg	I- 8	40	1951
Lebanon	G- 7	25	1944
Long Creek	G-22	40	1951
Lookout Mountain	H-17	40	1953
Lyons	F- 8	40	1951
Mapleton	I- 3	50	1945
Marcola	I- 7	40	1952
Marys Peak	G- 4	50	1942
McMinnville	E- 6	25	1943
Molalla	E- 8	25	1943
Monroe	H- 5	50	1942
Monument	F-21	40	1951
Mount Angel	E- 7	25	1943
Mount Vernon	H-22	50	1943
Nehalem	C- 3	100	1943
Nestucca Bay	E- 3	100	1942
Ochoco Reservoir	H-16	50	1950
Olds Ferry	H-30		B
Oregon City	D- 8	25	1945
Portland	C- 8	25	1940
Post	I-17	40	1951
Reedsport	K- 2	50	1942
Richmond	G-19		B
Ritter	F-22	40	1952
Roman Nose Mt.	J- 4	100	1945
Saddle Mountain	B- 4	100	1943
Salem	F- 6	25	1940
Seven Devils	E-32	50	1920
Sheridan	E- 5	100	1942
Siltcoos Lake	J- 2	50	1942
Snow Peak	G- 8	40	1951
Spirit Mountain	E- 4	100	1942
Spray	F-19		B
Spray #4	G-20		B
Stayton	F- 7	25	1944
St. Helens	B- 7	25	1943
Susanville	G-23	40	1951
Svensen	A- 4	20	1940
Sweet Home	H- 8	40	1951
Tidewater	H- 3	50	1945
Tillamook	D- 3	100	1942
Tiller	N- 7	50	1946
Timber	C- 5	100	1941
Toledo	G- 3	50	1946
Trail	O- 7	50	1945
Tualatin	D- 7	25	1943
Valsetz	F- 4	50	1942
Vernonia	B- 6	25	1943
Waldport	H- 2	50	1942
Yamhill	D- 6	100	1942
Yaquina	G- 2	50	1946

30-MINUTE QUADRANGLES (Scale 1:125,000)

Name	Location	Cont. Int.	Date
Arlington	C-18	50	1941
Baker	G-28	100	1934
Bend	I-14	50	1940
Blalock Island	C-20	50	1944
Chemult	M-12	50	1941
Condon	E-18	50	1916
Coos Bay	M- 2	100	1937
Dayville	I-20	100	1936
Diamond Lake	M-10	100	1926
Dufur	E-14	100	1945
Estacada	E-10	100	1938
Grants Pass	Q- 6	100	1930
Hood River	C-12	100	1940
Ironside Mountain	I-26	100	1908
Kerby	Q- 4	200	1942
Lowell	K- 8	100	1942
Madras	G-14	100	1931
Maiden Peak	K-12	100	1944
McKenzie Bridge	I-10	100	1940
Medford	Q- 8	100	1945
Mill City	G-10	100	1941
Mitchell	G-18	100	1926
Mitchell Butte	K-30	50	1921
Mt. Hood	E-12	100	1944
Mt. Jefferson	G-12	100	1938
Newberry Crater	K-14	100	1935
Pendleton	C-24	50	1935
Pine	G-30	100	1941
Port Orford	O- 2	100	1944
Riddle	O- 6	100	1942
Roseburg	M- 6	100	1942
Sumpter	G-26	100	1939
Telocaset	E-28	100	1932
The Dalles	C-14	50	1941
Three Sisters	I-12	100	1941
Umatilla	C-22	50	1921
Waldo Lake	K-10	100	1944
Weiser	I-32	100	1916

7½-MINUTE QUADRANGLES (Scale 1:24,000)

Name	Location	Cont. Int.	Date
Corbett (13)	C- 9		B
Deer Island (3)	B- 7		B
Fairview (12)	C- 9		B
Hillsboro (8)	C- 7		B
Hillsboro NW (5)	C- 7		B
Kalama (2)	A- 7		A
Linnton (9)	C- 7		B
Malheur Butte (16)	I-30	20	1951
Moores Hollow (15)	I-30	20	1951
Olds Ferry (14)	H-30	20	1952
Payette (18)	I-31	20	1951
Portland NE (11)	C- 8		B
Portland NW (10)	C- 8		B
Rainier (1)	A- 7		A
Sauvie Island (6)	C- 7		B
St. Helens (4)	B- 7		B
Vancouver (7)	C- 8		B
Weiser South (17)	I-31	20	1951

(Circled numbers refer to 7½' quadrangles shown on index map.)

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
1069 State Office Building
Portland 1, Oregon

RIVER SURVEYS

	Name
1	Applegate River
10	Catherine Creek
8	Chewaucan River
11	Clackamas River (WSP 349)
12	Columbia River
5	Coquille River
4	Cow Creek
13	Crooked River
41	Dallas Reservoir
9	Deep and Camas creeks
14	Deschutes River (WSP 344)
15	Evans Creek
16	Gales Creek
45	Gate Creek
17	Grande Ronde River
7	Grave Creek
18	Hood River
46	Horse Creek
3	Illinois River (see Rogue)
19	John Day River (WSP 377)
44	Jordan Reservoir
20	Jump-off Joe Creek
2	Klamath River
21	Little Butte Creek
22	Lookout Point
23	Luckiamute River
24	McKenzie River
25	Metolius River
42	Mohawk River
40	Molalla River
26	Nehalem River
27	North Santiam River
28	North Umpqua River
3	Rogue River
29	Sandy River (WSP 348)
27	Santiam River (WSP 349)
30	Separation Creek
31	Siletz River
32	Snake River
27	South Santiam River
6	South Umpqua River
33	South Yamhill River
34	Umatilla River
35	Umpqua River
36	Walla Walla River
37	White River
22	Willamette River (Lookout Pt.)
38	Willamette River (WSP 349,378)
39	Willamina Creek
43	Wren Reservoir
33	Yamhill River (see S. Yamhill)

SPECIAL MAPS (various scales)

Name	Location	Cont. Int.
Crater Lake National Park	N-10	50
Crater Lake and vicinity	O-11	50
Mt. Hood and vicinity	D-12	100
Picture Gorge (advance)	G-20	5
Squaw Butte Ranch (advance)	L-20	50

KEY TO SYMBOLS

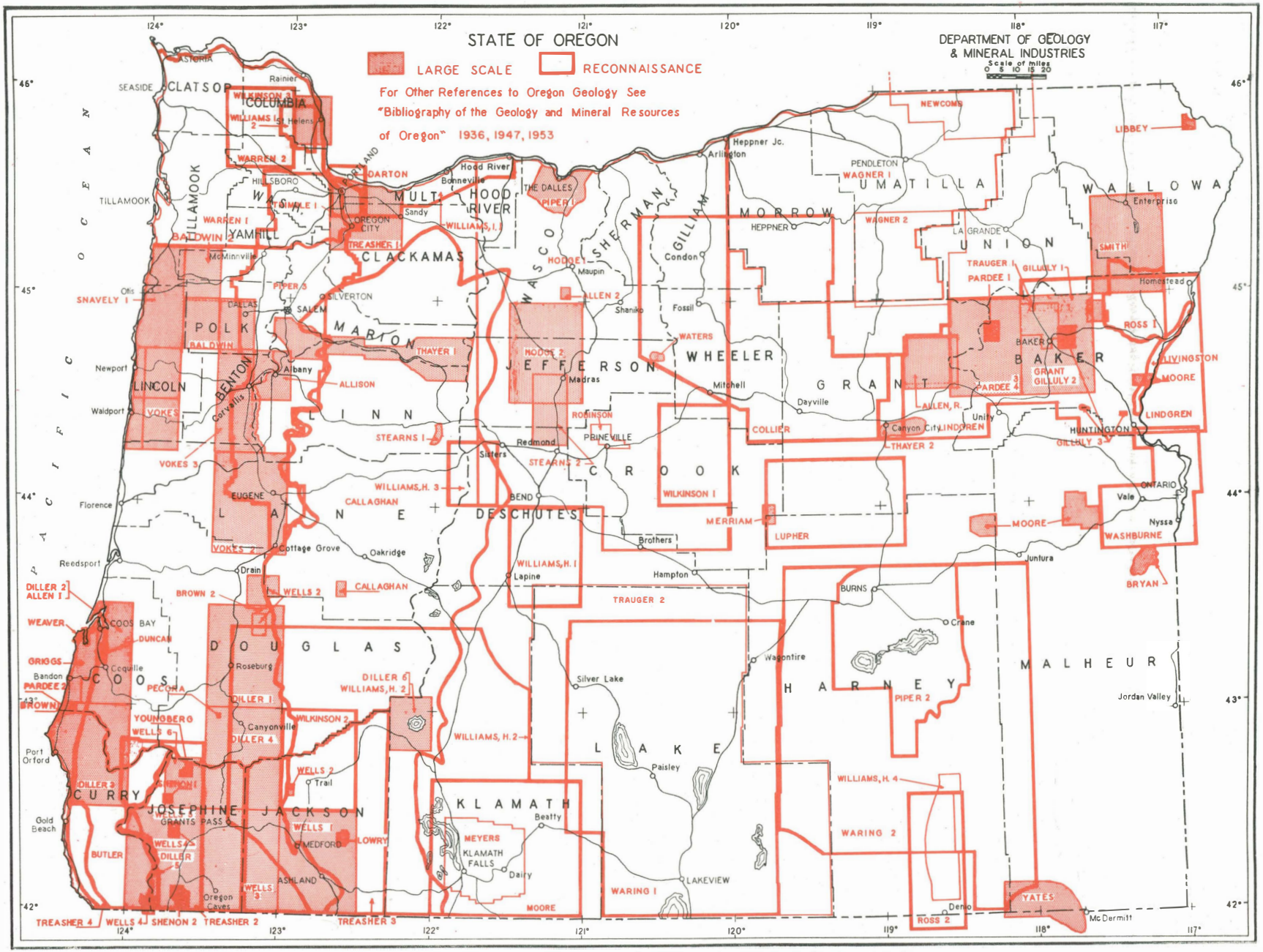
A Map scheduled for publication 7-1-54 - 6-30-55

B Map scheduled for publication 7-1-55 - 6-30-56

◯ Circled numbers refer to 7½-minute quadrangles shown on index map.

* * * *

Quadrangle maps may be purchased from the U. S. Geological Survey, Denver Federal Center, Denver 15, Colorado.



PUBLISHED GEOLOGICAL MAPS IN OREGON, 1954

PUBLISHED GEOLOGICAL MAPS IN OREGON - 1954

Allen, J. E. (and Baldwin, E. M.) (1) Geology and coal resources of the Coos Bay quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 27, 1944; (2) Perlite deposits near the Deschutes River, southern Wasco County, Oregon: Oreg. Dept. Geol. & Min. Ind. Short Paper 16, 1946.

Allen, R. M., Jr., Geology and mineralization of the Morning Mine and adjacent region, Grant County, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 39, 1948.

Allison, I. S., Geology of the Albany quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 37, 1953.

Baldwin, E. M., (1) Geology of the Dallas and Valsetz quadrangles, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 35, 1947; (2) (and Roberts, A. E.) Geology of the Spirit Mountain quadrangle, Oregon: U.S. Geol. Survey Oil and Gas Invest. Map OM 129, 1952.

Brown, R. E., (1) Some manganese deposits in the southern Oregon coastal region: Oreg. Dept. Geol. & Min. Ind. Short Paper 9, 1942; (2) (and Waters, A. C.) Quicksilver deposits of the Bonanza-Nonpareil district, Douglas County, Oregon: U.S. Geol. Survey Bull. 955-F, 1951.

Bryan, K., Geology of the Owyhee irrigation project: U.S. Geol. Survey Water-Supply Paper 597-A, 1929.

Butler, G. M. (and Mitchell, G. J.) Preliminary survey of the geology and mineral resources of Curry County, Oregon: Oreg. Bur. Mines & Geol. Min. Res. of Oreg., vol. 2, no. 2, 1916.

Callaghan, E., (and Buddington, A. F.) Metalliferous mineral deposits of the Cascade Range in Oregon: U.S. Geol. Survey Bull. 893, 1938.

Collier, A. J., The geology and mineral resources of the John Day region: Oreg. Bur. Mines & Geol. Min. Res. of Oreg., vol. 1, no. 3, 1914.

Darton, N. H., Structural materials in parts of Oregon and Washington: U.S. Geol. Survey Bull. 387, 1909.

Diller, J. S., U.S. Geol. Survey Atlas (1) Roseburg folio (no. 49), 1898; (2) Coos Bay folio (no. 73), 1901; (3) Port Orford folio (no. 89), 1903; (4) (and Kay, G. F.) Riddle folio (no. 218), 1924; (5) Mineral resources of southwestern Oregon: U.S. Geol. Survey Bull. 546, 1914; (6) (and Patton, H. B.) The geology and petrography of Crater Lake National Park: U.S. Geol. Survey Prof. Paper 3, 1902.

Duncan, D. C., Geology and coal deposits in part of the Coos Bay coal field, Oregon: U.S. Geol. Survey Bull. 982-B, 1953.

Gilluly, J., (1) Copper deposits near Keating, Oregon: U.S. Geol. Survey Bull. 830-A, 1933; (2) Geology and mineral resources of the Baker quadrangle, Oregon: U.S. Geol. Survey Bull. 879, 1937; (3) (and Reed, J. C., and Park, C. F., Jr.) Some mining districts of eastern Oregon: U.S. Geol. Survey Bull. 846-A, 1933.

Grant, U. S., (and Cady, G. H.) Preliminary report on the general and economic geology of the Baker district of eastern Oregon: Oreg. Bur. Mines & Geol. Min. Res. of Oreg., vol. 1, no. 6, 1914.

Griggs, A. B., Chromite-bearing sands of the southern part of the coast of Oregon: U.S. Geol. Survey Bull. 945-E, 1945.

Hodge, E. T., Geologic map of north central Oregon: Oregon Univ. Pub., Geol. Ser., vol. 1, no. 5, 1932; also Oreg. State Mon., Studies in Geol. no. 3, 1942; (2) Geologic map of the Madras quadrangle, Oregon: Oregon State Mon., Studies in Geol. no. 1, 1941.

Libbey, F. W., Some mineral deposits in the area surrounding the junction of the Snake and Imnaha rivers in Oregon: Oreg. Dept. Geol. & Min. Ind. Short Paper 11, 1943.

Lindgren, W., The gold belt of the Blue Mountains of Oregon: U.S. Geol. Survey 22nd Ann. Rept., pt. 2, pp. 551-776, 1901.

Livingston, D. C., A geologic reconnaissance of the Mineral and Cuddy Mt. mining districts, Washington and Adams counties, Idaho (incl. Oregon side of the Snake River): Idaho Bur. Mines & Geol. Pamph. 13, 1925.

Lowry, W. D., Tyrrell manganese deposit and other similar properties in the Lake Creek district, Oregon: Oreg. Dept. Geol. & Min. Ind. Short Paper 10, 1943.

Lupher, R. L., Jurassic stratigraphy of central Oregon: Geol. Soc. America Bull., vol. 52, no. 2, pp. 219-269, 1941.

Merriam, C. W., (and Berthiaume, S. A.) Late Paleozoic formations in central Oregon: Geol. Soc. America Bull., vol. 54, no. 2, pp. 145-171, 1943.

Meyers, J. D., (and Newcomb, R. C.) Geology and ground-water resources of the Swan Lake - Yonna valleys area, Klamath County, Oregon: U.S. Geol. Survey Open File Rpt., 1952.

Moore, B. N., Nonmetallic mineral resources of eastern Oregon: U.S. Geol. Survey Bull. 875, 1937.

Newcomb, R. C., Preliminary report on the ground-water resources of the Walla Walla basin, Washington-Oregon: U.S. Geol. Survey Open File Rpt., 1951.

Pardee, J. T., (1) Faulting and vein structure in the Cracker Creek gold district, Baker County, Oregon: U.S. Geol. Survey Bull. 380, p. 87, 1909; (2) Beach placers of the Oregon coast: U.S. Geol. Survey Circ. 8, 1934; (3) (and Hewett, D. F.) Geology and mineral resources of the Sumpter quadrangle, Oregon: Oreg. Bur. Mines & Geol. Min. Res. of Oregon., vol. 1, no. 6, 1914; (4) (et al) Preliminary geologic map of the Sumpter quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Map, 1941.

Pecora, W. T., (and Hobbs, W. S.) Nickel deposits near Riddle, Douglas County, Oregon: U.S. Geol. Survey Bull. 931-I, 1942.

Piper, A. M., (1) Geology and ground-water resources of The Dalles region, Oregon: U.S. Geol. Survey Water-Supply Paper 659-B, 1932; (2) (and Robinson, T. W., and Park, C. F., Jr.) Geology and ground-water resources of the Harney basin, Oregon: U.S. Geol. Survey Water-Supply Paper 841, 1939; (3) Ground-water resources of the Willamette Valley, Oregon: U.S. Geol. Survey Water-Supply Paper 890, 1942.

Robinson, J. W., Ground water in the Prineville area, Oregon: U.S. Geol. Survey Open File Rpt., 1947.

Ross, C. P., (1) Geology of part of the Wallowa Mountains, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 3, 1938; (2) Quicksilver deposits in the Steens and Pueblo Mountains, southern Oregon: U.S. Geol. Survey Bull. 931-J, 1942.

Shenon, P. J., (1) Geology of the Robertson, Humdinger, and Robert E. gold mines, southwestern Oregon: U.S. Geol. Survey Bull. 830-B, 1933; (2) Geology and ore deposits of the Takilma-Waldo district, Oregon: U.S. Geol. Survey Bull. 846-B, 1933.

Smith, W. D., (and Allen, J. E.) Geology and physiography of the northern Wallowa Mountains, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 12, 1941.

Snavely, P. D., Jr., (and Vokes, H. E.) The coastal area between Cape Kiwanda and Cape Foulweather, Oregon: U.S. Geol. Survey Oil and Gas Invest. Prelim Map 97, 1949.

Stearns, H. T., (1) Geology and water resources of the upper McKenzie River Valley, Oregon: U.S. Geol. Survey Water-Supply Paper 597-D, 1929; (2) Geology and water resources of the middle Deschutes River basin, Oregon: U.S. Geol. Survey Water-Supply Paper 637-D, 1931.

Thayer, T. P., (1) Geology of the Salem Hills and the North Santiam River basin, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 15, 1939; (2) Chromite deposits of Grant County, Oregon: U.S. Geol. Survey Bull. 922-D, 1940.

Trauger, F. D., (1) Ground-water resources of Baker Valley, Baker County, Oregon: U.S. Geol. Survey Open File Rpt., 1951; (2) Basic ground-water data in Lake County, Oregon: U.S. Geol. Survey Open File Rpt. 1951.

Treasher, R. C., (1) Geologic history and map of the Portland area: Oreg. Dept. Geol. & Min. Ind. Short Paper 7, 1942, Map; (2) Geologic map of Josephine County (Oregon Metal Mines Handbook): Oreg. Dept. Geol. & Min. Ind. Bull. 14-C, vol. 2, sec. 1, 1942; (3) Geologic map of Jackson County (Oregon Metal Mines Handbook): Oreg. Dept. Geol. & Min. Ind. Bull. 14-C, vol. 2, sec. 2, 1943; (4) Reconnaissance geologic survey in Curry County along coast highway from Gold Beach to California State line: Geol. Soc. Oregon Country News Letter, vol. 9, no. 13, 1943.

Trimble, D. E., (1) An account of the geology of Oregon City, Oregon: U.S. Geol. Survey Open File Rpt., 1954.

Vokes, H. E., (1) (and Norbisrath, Hans, and Snavely, P. D., Jr.) Geology of the Newport-Waldport area, Lincoln County, Oregon: U.S. Geol. Survey Oil and Gas Invest. Prelim. Map 88, 1949; (2) (and Snavely, P. D., Jr., and Myers, Donald A.) Geology of the southern and southwestern border areas of the Willamette Valley, Oregon: U.S. Geol. Survey Oil and Gas Invest. Map OM 110, 1951; (3) (and Myers, Donald A., and Hoover, Linn) Geology of the west-central border area of the Willamette Valley, Oregon: U.S. Geol. Survey Oil and Gas Invest. Series Map OM 150, 1954.

Wagner, N. S., (1) Ground-water studies in Umatilla and Morrow counties: Oreg. Dept. Geol. & Min. Ind. Bull. 41, 1949; (2) Geology of the southern half of Umatilla County, Oregon: Oreg. Dept. Geol. & Min. Ind. Ore.-Bin, vol. 16, no. 3, March 1954.

Waring, C. A., (1) Geology and water resources of a portion of south-central Oregon: U.S. Geol. Survey Water-Supply Paper 220, 1908; (2) Geology and water resources of the Harney Basin region, Oregon: U.S. Geol. Survey Water-Supply Paper 231, 1909.

Warren, W. C., (1) (et al) Geology of northwestern Oregon, west of the Willamette River and north of latitude 45° 15'; U.S. Geol. Survey Oil and Gas Invest. Prelim. Map 42, 1945; (2) (and Norbisrath, Hans) Stratigraphy of upper Nehalem River basin, northwestern Oregon: Am. Assoc. Petroleum Geologists Bull., vol. 30, no. 2, pp. 213-237, 1946.

Washburne, C. W., Gas and oil prospects near Vale, Oregon, and Payette, Idaho; U.S. Geol. Survey Bull. 431-A, 1911.

Waters, A. C., (and Brown, R. E., et al) Quicksilver deposits of the Horse Heaven mining district, Oregon: U.S. Geol. Survey Bull. 969-E, 1951.

Weaver, C. E., Stratigraphy and paleontology of the Tertiary formations at Coos Bay, Oregon: Washington Univ. (Seattle) Pub. in Geology, vol. 6, no. 2, pp. 31-62, 1945.

Wells, F. G., (1) (et al) Preliminary geologic map of the Medford quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Map, 1939; (2) (and Waters, A. C.) Quicksilver deposits of southwestern Oregon: U.S. Geol. Survey Bull. 850, 1934; (3) (et al) Preliminary geologic map of the Grants Pass quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Map, 1940; (4) (and Page, L. R., and James, H. L.) Chromite deposits in the Sourdough area, Curry County, and the Briggs Creek area, Josephine County, Oregon: U.S. Geol. Survey Bull. 922-P, 1940; (5) (and Hotz, P. E., and Cater, F. W., Jr.) Preliminary description of the geology of the Kerby quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 40, 1949; (6) (and Walker, G. W.) Geology of the Galice quadrangle, Oregon: U.S. Geol. Surv y Geol. Quad. Map, 1953.

Wilkinson, W. D., (1) Reconnaissance geologic map of the Round Mountain quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Map, 1940; (2) Reconnaissance geologic map of the Butte Falls quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Map, 1941; (3) (and Lowry, W. D., and Baldwin, E. M.) Geology of the St. Helens quadrangle, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 31, 1946.

Williams, H., (1) Newberry Volcano of central Oregon: Geol. Soc. America Bull., vol. 46, pp. 253-304, 1935; (2) The geology of Crater Lake National Park, Oregon, with a reconnaissance of the Cascade Range southward to Mount Shasta: Carnegie Inst. Washington Pub. 540, 1942; (3) Volcanoes of the Three Sisters region, Oregon Cascades: California Univ. Dept. Geol. Sci., Bull., vol. 27, no. 3, pp. 37-84, 1944; (4) (and Compton, R. R.) Quicksilver deposits of Steens Mountain and Pueblo Mountains, southeast Oregon: U.S. Geol. Survey Bull. 995-B, 1953.

Williams, I. A., (1) The Columbia River Gorge: Its geologic history interpreted from the Columbia River Highway: Oreg. Bur. Mines & Geol. Min. Res. of Oreg., vol. 2, no. 3, 1916; (2) (and Parks, H. M.) The limonite iron ores of Columbia County, Oregon: Oreg. Bur. Mines & Geol. Min. Res. of Oreg., vol. 3, no. 3, 1923.

Yates, R. G., Quicksilver deposits of the Opalite district, Malheur County, Oregon, and Humboldt County, Nevada: U.S. Geol. Survey Bull. 931-N, 1942.

Youngberg, E. A., Mines and prospects of the Mount Reuben mining district, Josephine County, Oregon: Oreg. Dept. Geol. & Min. Ind. Bull. 34, 1947.

COOPERATIVE WORK

A formal cooperative project on construction of the State Geologic Map has been set up with the U.S. Geological Survey.

The Department has cooperated on an informal basis with the Oil and Gas Division of the U.S. Geological Survey in mapping projects in northwestern Oregon. Five maps have been published so far in this project as follows:

Geology of northwestern Oregon west of the Willamette River and north of latitude 45°15': U.S. Geol. Survey, Oil and Gas Invest. Prelim. Map 42, by W. C. Warren, Hans Norbisrath, and R. M. Grivetti, 1945. Price 70 cents.

Geology of the Newport-Waldport area, Lincoln County, Oregon: U.S. Geol. Survey, Oil and Gas Invest. Prelim. Map 88, by H. E. Vokes, Hans Norbisrath, and P. D. Snavely, Jr., 1949. Price 75 cents.

Geology of the coastal area from Cape Kiwanda to Cape Foulweather, Oregon: U.S. Geol. Survey, Oil and Gas Invest. Prelim. Map 97, by P. D. Snavely, Jr., and H. E. Vokes, 1949. Price 50 cents.

Geology of the southern and southwestern border areas of the Willamette Valley, Oregon: U.S. Geol. Survey, Oil and Gas Invest. Map OM 110, by H. E. Vokes, P. D. Snavely, Jr., and Donald A. Myers, 1951. Price 60 cents.

Geology of the Spirit Mountain quadrangle, Oregon: U.S. Geol. Survey, Oil and Gas Invest. Map OM 129, by E. M. Baldwin and A. E. Roberts, 1952. Price 60 cents.

These maps are for sale at the U.S. Geological Survey, Map Distribution Office, Denver Federal Center, Denver, Colorado.

The Department has worked in close cooperation both with Oregon State College and with the University of Oregon on problems connected with geology and mineral industry of the State.

The Department has worked cooperatively in projects with the State Board of Health, the State and City of Portland crime laboratories, the State Highway Department, and the State Land Board.

The Department has cooperated with some coastal municipalities in their efforts to secure harbor improvements. In November 1953 a report discussing the geology of Yaquina Bay was prepared for the port districts of Toledo and Newport. This report was used in the districts' petition to the U.S. Army Engineers for deepening of the Yaquina harbor, channel, and turning basin. In February 1954 a report outlining the mineral deposits and mineral potential of the area tributary to Gold Beach was prepared for representatives of the group petitioning for the improvements of Gold Beach harbor.

As a member of the Governor's Committee on Natural Resources the Director of the Department has participated in several meetings and hearings on matters connected with the State's natural resources. The object of the Committee meetings has been to promote cooperation among the State's natural resources departments in the interest of conservation and development of natural resources. Much progress has been made along these lines.

Work with schools and students has been increasing. Mineral specimen sets of 60 minerals each have been distributed to schools both in western and eastern Oregon.

The sets are circulated from one school to another and are accompanied by a descriptive text. There has been a continuing demand for these mineral sets, limited by the Department's ability to supply the number of sets requested. In addition, student groups have been guided through the Department and at the same time members of the staff have described the Department's work in connection with the study and analysis of minerals and rocks. Staff members have given many talks to schools during the biennial period.

The Department has worked informally with the Raw Materials Survey, a nonprofit organization privately financed.

PRESS RELEASES
(Issued from July 1, 1952, to June 30, 1954)

No.

111 "Josephine County Metals Bulletin" - January 12, 1953
(Bulletin 14-C)

112 "Geology Bulletin Issued" - May 4, 1953
(Bulletin 37)

113 "Bibliography of Oregon Geology Issued" - May 4, 1953
(Bulletin 44)

114 "New Fossil Publication" - June 23, 1953
(Misc. Paper 3)

115 "Galice Quadrangle Geologic Map Published" - December 29, 1953

116 "Oregon Oil and Gas Rules" - January 25, 1954
(Misc. Paper 4)

117 "Radioassayer" - March 17, 1954

118 "Mineral Identification Bulletin Revised" - March 17, 1954
(Bulletin 16)

119 "Test for Radioactivity" - March 30, 1954

GEOLOGY AND MINERAL INDUSTRIES ACCOUNT
(section 7, chapter 179, Oregon Laws 1937)

for period July 1, 1952, to July 1, 1954

Balance June 30, 1952		$ 15,368.64
RECEIPTS:		
Sale of publications	$ 4,565.81	
Sale of mine reports, blueprints, and sundry sales	56.70	
Sale of mineral specimen collections	522.80	
Refunds from Geological Society of the Oregon Country for printing expense	282.78	
Refunds for telephone and telegraph tolls, and other refunds	16.88	
Contributions by F. W. Libbey for articles sold to magazines	20.00	
Public Employees Retirement Board refund for over-payment on contributions by M. L. Steere and R. S. Mason	58.44	
Witness fees of Thomas C. Matthews in Grand Jury	2.10	
Issue of Oil Drill Permits	50.00	5,628.66
		20,997.30
DISBURSEMENTS:		
General Operating and Maintenance:		
Office Supplies	22.76	
Printing	102.72	
Rents	1,032.70	
Railroad Fares	6.00	
Meals and Lodgings	41.35	
Motor Vehicles Supplies	3.00	
Freight & Express	68.88	
Blueprints and Photos	28.25	
Laboratory and Field	25.16	
Library	100.00	
Capital Outlays:		
Laboratory and Field Equipment	80.07	
Return to General Fund of the State of Oregon of sum appropriated by 1950-51 Legislature for Federal Chrome Assay	10,000.00	11,510.89
BALANCE June 30, 1954		$ 9,486.41

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

Comparative Statements of Expenditures 1949-51, 1951-53, and 1953-55

	1949-51		
	Expenditures 7/1/49-6/30/51	G&MI Expenditures 7/1/49-6/30/51	Total Expenditures 7/1/49-6/30/51
Salaries and Wages	$ 122,929.26		122,929.26
General, Operating, and Maintenance	36,225.62	2,780.91	39,006.53
Office Supplies	853.14	55.85	908.99
Telephone and Telegraph	1,208.83	44.58	1,253.41
Postage, Freight, and Express	1,558.42	91.66	1,650.08
Printing	2,423.78	693.74	3,117.52
Rents	14,988.00		14,988.00
Premiums	239.00		239.00
Contributions: Pub. Emp. Ret. Board	5,520.66	872.62	6,393.28
Soc. Security			
State Civil Service	332.96		332.96
State Ind. Acc.	354.00		354.00
Assessments: Restoration, etc.	211.05		211.05
Auditing	327.48		327.48
Private Car Mileage	97.14		97.14
Railroad Fares, etc.	579.38	138.95	718.33
Meals and Lodging	1,357.12	32.50	1,389.62
Motor Vehicles	2,464.62	37.24	2,501.86
Heat, Light, Water, Power	817.49		817.49
Laundry	92.64	3.60	96.24
Laboratory and Field	1,852,91	2.75	1,855.66
Library	289.44	15.00	304.44
Buildings and Fixtures	57.02		57.02
Photos and Blueprints	122.54	27.11	149.65
Out-of-state Travel		757.76	757.76
All other	393.53	7.55	401.08
Expense moving to State Office Bldg.			
Microfilming records			
Gas-Oil well law administration	84.47		84.47
Capital Outlays:	4,880.51	30.25	4,910.76
Office Furniture and Equipment	1,115.54		1,115.54
Motor Vehicles	3,362.13	30.25	3,392.38
Laboratory and Field	323.61		323.61
Library	79.23		79.23
Special Requests:	8,544.41		8,544.41
State Geological Survey	5,544.41		5,544.41
" " Mapping	3,000.00		3,000.00
TOTAL EXPENDITURES	$ 172,579.80	2,811.16	175,390.96

	1951-53		1953-55	1955-57
Expenditures 7/1/51-6/30/53	G&MI Expenditures 7/1/51-6/30/53	Total Expenditures 7/1/51-6/30/53	Estimated Expenditures 7/1/53-6/30/55	Funds Requested 1955-57
133,010.74		133,010.74	153,923.06	178,852.20
49,410.16	1,142.53	50,552.69	52,390.09	56,621.00
1,219.50	22.76	1,242.26	1,299.82	1,400.00
1,606.44	9.00	1,615.44	1,750.21	1,750.00
1,743.06		1,743.06	1,876.19	2,000.00
3,600.83	167.72	3,768.55	2,007.76	2,500.00
19,796.95	892.70	20,689.65	21,792.40	22,625.00
212.50		212.50	385.44	400.00
6,388.10		6,388.10	5,220.60	5,857.00
			2,370.31	3,034.00
401.03		401.03	349.18	600.00
399.80		399.80	459.67	515.00
201.19		201.19	178.37	340.00
631.28		631.28	656.36	700.00
239.97		239.97	411.70	800.00
1,086.28	6.00	1,092.28	1,353.01	1,500.00
2,482.78	41.35	2,524.13	2,808.90	3,000.00
2,615.73	3.00	2,618.73	3,500.41	3,500.00
607.13		607.13	822.28	900.00
116.32		116.32	96.51	100.00
2,315.80		2,315.80	2,203.91	2,400.00
393.61		393.61	324.47	600.00
847.03		847.03	632.12	950.00
347.41		347.41	404.18	300.00
			*	*
421.63		421.63	737.13	600.00
1,735.79		1,735.79		
			250.00	250.00
			499.16	
3,100.00	195.42	3,295.42	4,083.64	6,900.00
850.14	19.80	869.94	488.78	1,050.00
1,300.51		1,300.51	2,000.00	2,000.00
875.90	175.62	1,051.52	794.94	3,600.00
73.45		73.45	799.92	250.00
9,534.59		9,534.59	13,367.57	13,500.00
7,659.89		7,659.89	5,948.56	13,500.00
1,874.70		1,874.70	7,419.01	
195,055.49	1,337.95	196,393.44	223,764.36	255,873.20

*Included in Railroad Fares and Meals and Lodging.

PUBLICATIONS

State Department of Geology and Mineral Industries, 1069 State Office Building, Portland 1, Oregon

BULLETINS

		Price postpaid*
1.	Mining laws of Oregon, 1951, 3d rev., contains Federal placer mining regulations	$ 0.40
2.	Progress report on Coos Bay coal field, 1938: F. W. Libbey	(out of print)
3.	Geology of part of the Wallowa Mountains, 1938: C. P. Ross	0.50
4.	Quicksilver in Oregon, 1938: C. N. Schuette	(out of print)
5.	Geological report on part of the Clarno Basin, 1938: Donald K. Mackay	(out of print)
6.	Preliminary rept. on some of the refractory clays of W. Oregon, 1938: Wilson & Treasher	(out of print)
7.	The gem minerals of Oregon, 1938: H. C. Dake	(out of print)
8.	Feasibility of steel plant in lower Columbia area, rev. ed., 1940: R. M. Miller	(out of print)
9.	Chromite deposits in Oregon, 1941, rev. ed.: J. E. Allen	(out of print)
10.	Placer mining on Rogue River in relation to fish and fishing, 1938: H. B. Ward	(out of print)
11.	Geology and mineral resources of Lane County, Oregon, 1938: W. D. Smith	(out of print)
12.	Geology and physiography of northern Wallowa Mountains, 1941: Smith & Allen, et al	(out of print)
13.	First biennial report of the Department, 1937-38	(out of print)
14.	Oregon metal mines handbooks: by the staff	
	A. Baker, Union, and Wallowa counties, 1939	(out of print)
	B. Grant, Morrow, and Umatilla counties, 1941	(out of print)
	C. Vol. I, Coos, Curry, and Douglas counties, 1941	(out of print)
	Vol.II, Section 1, Josephine County, 1952 (2d ed.)	1.25
	Section 2, Jackson County, 1943	(out of print)
	D. Northwestern Oregon, 1951	1.25
15.	Geology of Salem Hills and North Santiam River basin, Oregon, 1939: T. P. Thayer	(out of print)
16.	Field identification of minerals for Oregon prospectors and collectors, rev. ed., 1954: compiled by Ray C. Treasher	1.00
17.	Manganese in Oregon, 1942: by the staff	(out of print)
18.	First aid to fossils, or what to do before the paleontologist comes, 1939: J. E. Allen	(out of print)
19.	Dredging of farmland in Oregon, 1939: F. W. Libbey	(out of print)
20.	Analyses and other properties of Oregon coals, 1940: H. F. Yancey and M. R. Geer	(out of print)
21.	Second biennial report of the Department, 1939-40	(out of print)
23.	Invest. of rpt'd. occurrence of tin at Juniper Ridge, Oregon, 1942: Harrison & Allen	0.40
24.	Origin of the black sands of the coast of southwestern Oregon, 1943: W. H. Twenhofel	(out of print)
25.	Third biennial report of the Department, 1941-42	(out of print)
26.	Soil: Its origin, destruction, and preservation, 1944: W. H. Twenhofel	0.45
27.	Geology and coal resources of Coos Bay quadrangle, 1944: J. E. Allen & E. M. Baldwin	1.00
28.	Fourth biennial report of the Department, 1943-44	(out of print)
29.	Ferruginous bauxite in northwestern Oregon, 1945: Libbey, Lowry, & Mason	1.00
30.	Mineralogical and physical composition of the sands of the Oregon coast from Coos Bay to the mouth of the Columbia River, 1945: W. H. Twenhofel	(out of print)
31.	Geology of the St. Helens quadrangle, 1946: Wilkinson, Lowry, & Baldwin	0.45
32.	Fifth biennial report of the Department, 1945-46	(out of print)
33.	Bibliography (supp.) of the geology and mineral resources of Oregon, 1947: J. E. Allen	1.00
34.	Mines and prospects of the Mt. Reuben mining district, Josephine County, Oregon, 1947: Elton A. Youngberg	0.50
35.	Geology of the Dallas and Valsetz quadrangles, Oregon, 1947: E. M. Baldwin	0.75
36.	(1st vol.) Five papers on foraminifera from the Tertiary of Western Oregon, 1947: J. A. Cushman, R. E. Stewart, and K. C. Stewart	1.00
	(2d vol.) Two papers on foraminifera from the Tertiary of W. Oregon and W. Washington, 1949: Cushman, Stewart, & Stewart; and one paper on mollusca and microfauna of Wildcat coast section, Humboldt County, California, 1949: Stewart & Stewart	1.25
37.	Geology of the Albany quadrangle, Oregon, 1953: Ira S. Allison	0.75
38.	Sixth biennial report of the Department, 1947-48	(out of print)
39.	Geology and mineralization of the Morning Mine and adjacent region, Grant County, Oregon, 1948: Rhesa M. Allen, Jr.,	(withdrawn pending revision)
40.	Preliminary description of the geology of the Kerby quadrangle, Oregon, 1949: Wells, Hotz, & Cater	0.85
41.	Ground-water studies in Umatilla and Morrow counties, 1949: Norman S. Wagner	1.25
42.	Seventh biennial report of the Department, 1948-50	(out of print)
43.	Eighth biennial report of the Department, 1950-52	Free
44.	Bibliography (2d supp.) of the geology and mineral resources of Oregon, 1953: M. L. Steere	1.00

*Prices subject to change; please include remittance with order.

8/10/54

PUBLICATIONS (cont.)

G.M.I. SHORT PAPERS	Price postpaid
1. Preliminary report upon Oregon saline lakes, 1939: O. F. Stafford	(out of print)
2. Industrial aluminum - a brief survey, 1940: Leslie L. Motz	$ 0.10
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The Ore.-Bin - Issued monthly by the staff as medium for news about the Department, mines, and minerals. (Available back issues 5 cents each.) Subscription price per year	0.50
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