

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

BULLETIN No. 43

Eighth Biennial Report

of the

**State Department of Geology
and Mineral Industries**

of the

STATE OF OREGON

July 1, 1950, to July 1, 1952

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



1952

STATE GOVERNING BOARD

MASON L. BINGHAM, CHAIRMAN	PORTLAND
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F. W. LIBBEY
DIRECTOR

To His Excellency, Douglas McKay
Governor of the State of Oregon
and to
The Forty-seventh Legislative Assembly of the State of Oregon

Sirs:

We submit herewith the Eighth Biennial Report of the
Department of Geology and Mineral Industries, covering
activities of the Department for the period from July 1, 1950,
to and including June 30, 1952.

Respectfully,

Mason L. Bingham
H. E. Hendryx
Niel R. Allen

Portland, Oregon
November 10, 1952

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OREGON'S MINERAL INDUSTRY

Introduction

Production of building materials in 1950 continued at a relatively high rate even though construction decreased compared to 1949. Activities in both the metallics and nonmetallics field remained about the same in 1950 as in 1949.

Although construction activities fell off somewhat in 1951 there was an increase in mercury, chromite, and certain nonmetallics production, notably expanded shale, so that the total value of production in 1951 was probably about \$23½ million. Exact figures have not yet been released by the U. S. Bureau of Mines.

Probably the most important recent happening in the State's mineral industry was the opening of the government chromite purchasing depot at Grants Pass in August 1951 and the beginning of production of chromite under the government buying program. The Bonanza quicksilver mine was reopened in April 1951 and has continued operations since.

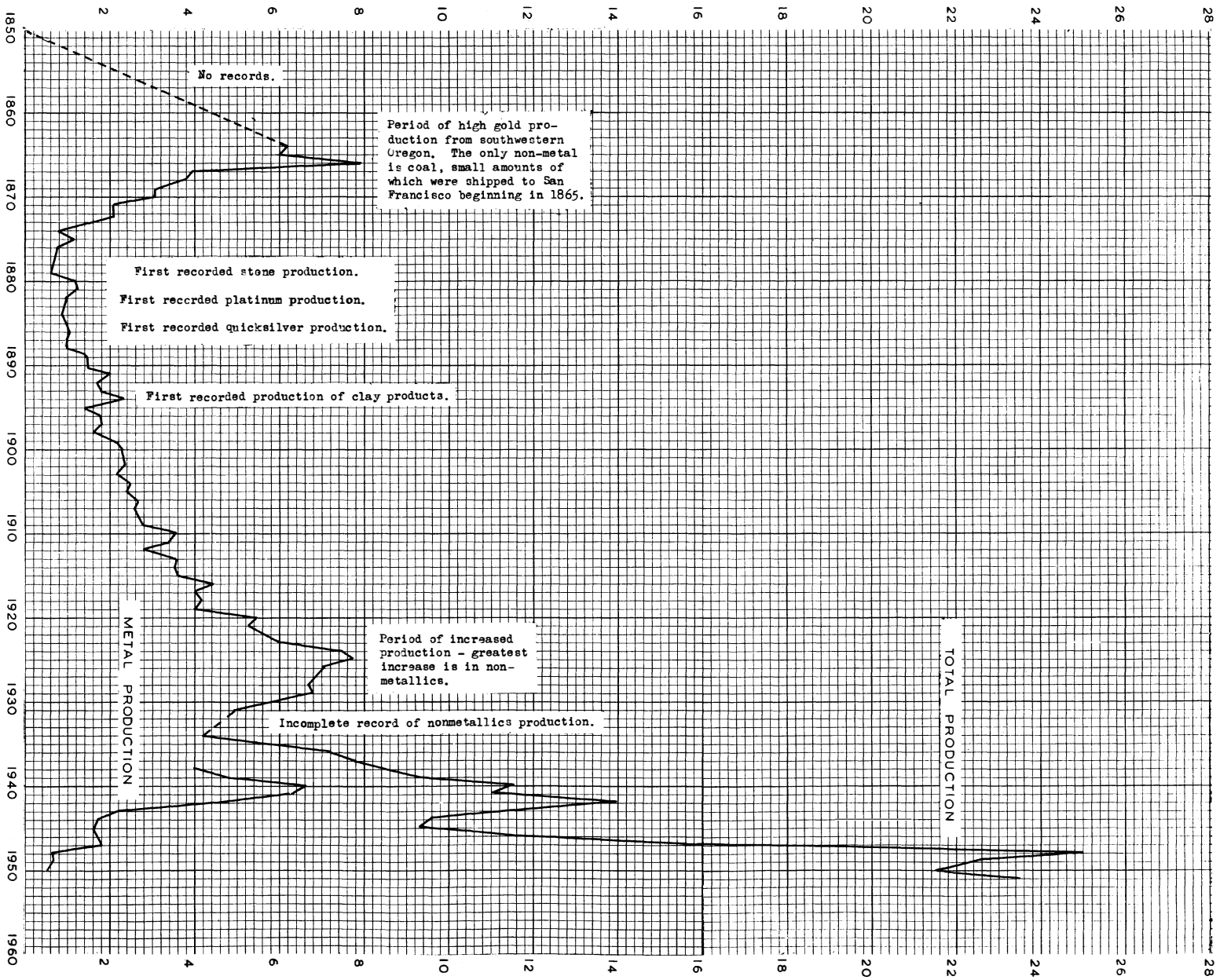
Mineral production for 1950 and 1951 is shown on the accompanying graph. The breakdown for 1950 as supplied by the U. S. Bureau of Mines is as follows (the 1951 breakdown is not available):

<u>Mineral</u>	<u>Quantity</u>	<u>Value</u>
Clays (except for cement) thousand short tons	112	\$ 91,000
Coal (thousand short tons).	1	8,000
Copper (short tons)	19	8,000
Gold (troy ounces)	11,058	387,000
Lead (short tons)	17	5,000
Mercury (flasks, 76 pounds)	5	1/
Perlite (short tons)	17,397	70,000
Pumice and pumicite (short tons)	79,653	321,000
Sand and gravel (thousand short tons)	8,200	8,168,000
Silver (thousand troy ounces)	14	12,000
Stone ^{2/} (thousand short tons)	3,837	5,559,000
Zinc (short tons)	21	6,000
Undistributed: Asbestos, carbon dioxide (natural), cement, diatomite, gem stones, lime, quartz, stone (dimension and crushed granite)	---	6,907,000
TOTAL		\$21,542,000

1/ Less than \$500.

2/ Excludes dimension stone and crushed granite which are included in "Undistributed."

OREGON MINERAL PRODUCTION (IN MILLIONS OF DOLLARS)



Metallics

Gold, silver, copper, lead, and zinc

Gold lode mining has remained quiescent. Some gold ore has been shipped to copper and lead smelters. Most of this ore came from the Buffalo mine in Eastern Grant County and the Champion and Musick mines in the Bohemia district of Lane County. A small amount of copper ore was shipped from a prospect in Josephine County in 1951. Gold placer mining has accounted for about 90 percent of the gold production. Most of this production came from dredges of the Powder River Dredging Company at Sumpter Valley in western Baker County and Porter and Company on Crane Creek in eastern Grant County. The Porter and Company dredge closed down in 1951. About 40 small hydraulic operations have been active in Josephine and Grant counties each year when water was available, but the total value of gold produced from these hydraulic mines has been small.

Mercury

Because of unsettled international conditions, demand for all strategic minerals including mercury increased during 1951. The price of mercury started to increase in 1950 and early in 1951 reached a high of \$225 per flask. Although domestic mercury producers had in previous years gone through a sorry experience in developing and opening quicksilver mines in the face of foreign domination of the quicksilver market and lack of government interest in supporting the domestic industry, some domestic producers began to make preparations to reopen their properties, closed since the end of World War II. After rehabilitation work, the Bonanza quicksilver mine in Douglas County, Oregon, started production in April 1951. It has continued operating two mine shifts and three mill shifts ever since. Production has been in the order of about 100 flasks a month. The price in recent months has eased off consistently. As this is written (August 1952) the Spanish producers have reduced the market price so that the United States price is now down to about \$188 to \$190 per flask. Domestic production is at the rate of about 12,000 flasks per year compared with the high mark of 51,929 flasks in 1943. Current imports are at the rate of nearly 60,000 flasks a year. Domestic consumption in 1951 was 56,848 flasks. Principal domestic production is coming from six mines in California, and one each in Nevada, Idaho, and Oregon. These mines were the principal producers during World War II. One new mercury prospect discovered in Oregon in 1951 is situated near Murderers Creek in Grant County. A small production using a retort has been started. With all the uncertainties connected with the quicksilver market, there is no real incentive to look for and open up new quicksilver mines.

Chromite

Because of the international situation, highlighted by the Korean war, the federal government established emergency bureaus in 1950 which were designed to increase domestic mineral production, particularly production of strategic minerals. It was determined after many conferences were held with producers that an incentive price for chromite would be essential. Chromite producers in southern Oregon organized a committee which conferred with the Defense Minerals Administration in Washington, D.C., in an attempt to set up a government chromite ore-buying program

which would have a price high enough to encourage prospecting, development, and mining. After many conferences a program was finally established and the General Services Administration opened the ore-buying depot at Grants Pass on August 31, 1951. During the two months left when miners could work at their chromite properties about 7,000 tons of ore was mined and delivered to the depot. Snow in the mountains prevented production for most of the winter months, although a small production of chromite concentrates was maintained both in southern Oregon and northern California. In August 1952 five concentrating mills were active and there are about 60 shippers to the depot from Oregon and California. Because of the heavy snowfall during the winter of 1951-1952, the mine season for 1952 will be greatly shortened since many of the mines could not be reached until late May or early June.

Antimony

Some prospecting for antimony deposits has been carried on in Jefferson, Josephine, and Baker counties.

Manganese

A small amount of activity in manganese development and production in Baker County was started in 1951. One car of manganese ore was shipped to the Salem plant of Ray-O-Vac Company in July 1952. Reportedly, exploration is continuing at this deposit.

Nonmetallics

Limestone

The Oregon Portland Cement Company continues to quarry stone at Lime in Baker County and at Dallas in Polk County and to operate cement kilns at Lime and Oswego. The Pacific Portland Cement Company, control of which is now vested in the Ideal Portland Cement Company, has continued to quarry at the Marble Mountain deposit in Josephine County and to manufacture cement at the plant at Gold Hill. Transportation of stone from quarry to the plant is now by truck; formerly it was by railroad. Pacific Carbide and Alloys Company quarries stone at the Enterprise, Wallowa County, quarry for use in making calcium carbide at the Portland plant. The company started preparing a by-product of limestone fines for agstone in June 1952. About 49,000 tons of agricultural limestone, a small part of which came from Arlington, Washington, was used in Oregon in 1950. About 61,500 tons of agstone, more than half of which came from Arlington, Washington, was used in Oregon in 1951.

Sand, gravel, and crushed rock

Plants producing concrete aggregate were busy during the past two years although there was a slackening off in activity in late 1951 and early 1952. Crushed rock used in road construction both on highways and on logging roads was in considerable demand. Value of Oregon's production of sand, gravel, and crushed rock in 1950 amounted to \$13,727,000. Value for 1951 is not yet available but probably was not greatly different.

Clay

The same number of brick and tile plants (19) were active in 1951-1952 as in 1949-1950. Business was reported as consistently good. The Pacific Stoneware Company which makes jars, flower pots, and other specialty products continued at about the same rate of production as in previous years. Several small art potteries and ceramic studios throughout the State were busy.

Perlite

The perlite operation of Dant & Russell, Inc., Dantore Division, on the Deschutes River 14 miles south of Maupin in Wasco County carried on operations in the production of plaster sand about as reported in the last Biennial Report. Production of acoustical tile, however, was not continuous. Early in 1952 the whole operation was taken over by Kaiser Gypsum, a branch of Kaiser Industries, Inc., and Dant & Russell, Inc., has withdrawn from the perlite producing field. Insofar as reported at this time (August 1952) no change has been made in the perlite operations. No new perlite production in Oregon has been reported.

Pumice

Oregon pumice production, centered largely around Bend, has decreased somewhat in quantity but in 1951 had increased a small amount in dollar value which in 1951 was approximately \$315,000. There are five active pumice producers. Some new uses are being developed for pumice but competition with other lightweight aggregate material has cut into output.

Expanded shale

Two plants, Empire Building Materials Company and Smithwick Concrete Products Company, have continued to operate, and in 1951 production increased from 30 to 40 percent compared to 1950. Total value now amounts to about half a million dollars a year. Expanded shale is finding a larger market throughout the Northwest.

Diatomite

The Great Lakes Carbon Corporation continued to operate its quarry and plant at Lower Bridge near Terrebonne, Deschutes County.

Coal

Coal mining has been at a low ebb. One mine at Coos Bay has operated spasmodically. Some prospecting has been done at two or three coal prospects but nothing in the way of production has resulted.

Silica

The Bristol Silica Company operates a quartz quarry and a granite quarry, both in Jackson County, to supply poultry grit and metallurgical silica. During 1951 the Harbison-Walker Company of Pittsburgh, Pennsylvania, made a contract with the Bristol Silica Company to obtain a substantial quantity of quartz from the Bristol quartz quarry for the manufacture of silica brick at a plant in the San Francisco Bay area.

Gem stones

This Oregon industry is a combination of commercial lapidaries and hobbyists. Oregon is famous for its agates and "thunder eggs," and collectors from all over the West come to the State in order to obtain the material. Part of it is sold to lapidaries and part goes into private collections. Some collectors buy and sell agates and other mineral specimens as a business aside from their regular employment. It is impossible to determine the dollar value of this business but it is relatively large. If it were possible to separate the commercial from the noncommercial production, it would probably be found that the value of the raw stones sold commercially would be many thousands of dollars; the value of the cut and polished stones would be of the order of several hundred thousand dollars.

Exploration Activities

Bauxite

Early in 1951 Alcoa Mining Company did a small amount of auger-hole drilling on some of its properties both in Columbia and Washington counties in northwestern Oregon but late in the year ceased exploration activities and moved its technical staff to Bauxite, Arkansas, where a large bauxite plant is being built. The company had acquired and explored large areas containing bauxite in both the above-named counties. An office with one employee is still maintained at Hillsboro, Oregon, but the future of Oregon bauxite, rather completely in the hands of Alcoa Mining Company, is uncertain.

Nickel

As reported in the last Biennial Report, the M. A. Hanna Company leased the nickel deposit on Nickel Mountain near Riddle in Douglas County and began testing work. In 1950 the Hanna Development Company was organized and a considerable amount of churn drilling and bulldozing was done along with the sinking of one test shaft to check drilling results. The company maintains a field office at Riddle and is reported to be negotiating with the government for the construction of a treatment plant to be built at Riddle. It appears that field work by the company is at a standstill (August 1952) until negotiations with the government are completed. The U.S. Bureau of Mines is carrying on exploration of the nickel deposit at Red Flat in the upper Pistol River area of Curry County. The Bureau also explored the lateritic nickel deposit on Woodcock Mountain in southern Josephine County during 1951 by means of bulldozing and some auger-hole drilling. It is reported that their work showed ore of insufficient quality and quantity to encourage further exploration.

Asbestos

The Asbestos Corporation of Canada finished exploration of the serpentine asbestos deposit north of Mt. Vernon in Grant County and ceased field work in Oregon. A mill test was run on the Mt. Vernon ore but results as reported by the company did not warrant further work on the deposit. The Johns-Mansville Company of Canada is now engaged in exploration work on a serpentine asbestos deposit in eastern Grant County.

Tungsten

A small amount of tungsten ore was mined at the Mattern mine near Ashland during 1950 and 1951. Scheelite concentrates were produced from this ore in Van Curler Brothers' mill and shipped to Bishop, California. Early in 1952 a new tungsten prospect was found about $1\frac{1}{2}$ miles southwest of Ashland in Jackson County. Exploration work has been insufficient to determine the value of this discovery. Some testing work has been done for scheelite in the Chicken Creek area of southern Baker County.

Oil and gas testing

Over the past two years test work has been carried on at the Hay Creek Ranch in Jefferson County and at a location near Mitchell in Wheeler County. Two shallow tests less than 1,000 feet were drilled in southern Crook County and some gas, probably methane, was reported to have been encountered. Early in 1952 a test was started by Northwestern Oils, Inc., at a location about 10 miles south of the Hay Creek Ranch. It is reported that some geophysical work is being carried on in Harney, Malheur, and Wheeler counties.

Limestone

Diamond drilling is being done on Marble Mountain in southern Baker County to explore a large deposit of limestone.

SET-UP OF THE DEPARTMENT

Duties of the Department, as set forth in the law which created it (Oregon Laws, 1937, Chapter 179), 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 (Oregon Laws, 1949, Chapter 365).

The Department is administered by a Governing Board of three citizens who serve for four-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 receive traveling expenses. They meet at least four times each year. The Board may make contracts with Federal and other 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.

The Board has continued to maintain a head office of the Department at Portland and field offices both at Baker and at Grants Pass.

PERSONNEL

The Governing Board of the Department was composed of the following members as of July 1, 1952:

Mason L. Bingham, Portland, Chairman, appointed 1949.

H. E. Hendryx, Baker, reappointed 1951.

Niel R. Allen, Grants Pass, reappointed 1952.

The regular personnel of the Department on July 1, 1952, was as follows:

F. W. Libbey, Director

Hollis M. Dole, Geologist

L. L. Hoagland, Assayer and Chemist

Ralph S. Mason, Mining Engineer

Thomas C. Matthews, Spectroscopist

Lenin Ramp, Geologist

Margaret L. Steere, Geologist

R. E. Stewart, Geologist

Norman S. Wagner, Geologist (Baker)

David J. White, Geologist (Grants Pass)

F. A. Steeble, 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 clerical and miscellaneous office work, drafting, laboratory, and field work. They are included in a list on a following page giving compensation and expenses of employees.

ORGANIZATION WITHIN THE
STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

Director	Laboratory Division	{	Assay and chemical laboratories (Hoagland) Spectrographic laboratory (Matthews) Petrographic examination (Dole, Ramp, White)
	Mines Division	{	Info. service on mines (Libbey, Mason, Dole, Wagner, Ramp, White) Metallurgy and mineral economics (Libbey, Mason) Mine investigations (Libbey, Mason, Dole, Wagner, Ramp, White) "The Ore.-Bin" (Libbey, Owen, staff) Annual production data (Libbey, Mason, Wagner) Editorial and publication (Libbey, Steere, Mason, Dole, Owen) Industrial surveys (Libbey, Mason)
	Geologic Division	{	Info. service on geology (Dole, Stewart, Wagner, Ramp, White) Geological surveys (Dole, Wagner, Ramp, White) Petrology (Dole, White, Ramp) Stratigraphy (Stewart, Dole, Wagner, Ramp, White) Paleontology (Stewart) Map making (Mason, Dole, Wagner, Ramp) Editorial & Publication (Libbey, Steere, Mason, Dole, Stewart, Owen)
	Oil and gas Inspection	{	Libbey, Stewart, Wagner, White
	Reference Division	{	Library and catalog (Steere) Collection of rocks, minerals, and ores with index (Steere) Map collection and index (Mason) Mine reports and card files (Mason, Dole, Killian, Steere) Thin section file (Dole) Photograph file (Killian)
	Government Cooperation	{	Negotiations and cooperation with USGS, USBM, etc., (Libbey)
	Clerical Division	{	Secretarial (Roberts, Killian, Beedon, Sims) Bookkeeping (Steeble) Purchasing (Steeble) Property (Steeble)

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.

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 for 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.

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 appropriative funds, the Department maintains a separate account with the State Treasurer into which go monies received from sale of departmental publications, from gifts, or from cooperating agencies. Expenditures approved by the State Auditor are then drawn on this account to cover payment of expenses incurred by the Department.

The following headings give appropriations made by the last two legislatures as well as funds requested for the biennium 1953-1955.

	<u>1949-1951</u>	<u>1951-1953</u>	<u>Requested</u> <u>1953-1955</u>
<u>Department of Geology</u> <u>& Mineral Industries</u>	<u>July 1 - June 30</u>	<u>July 1 - June 30</u>	<u>July 1 - June 30</u>
Salaries & Wages	\$ 127,333.00	\$ 135,028.00	\$ 155,657.60
Gen., Oper., and Maint.	36,573.00	50,225.00	52,825.00
Capital Outlays	5,950.00	3,100.00	4,300.00
Special Requests	<u>9,000.00</u>	<u>10,000.00</u>	<u>16,000.00</u>
<u>Total</u>	\$ 178,856.00	\$ 198,353.00	\$ 228,782.60

The increase in appropriations requested is due mainly to increased costs of operation. Salaries and wages are governed by State Civil Service and Budget Division regulations. The Salaries and Wages account is the total of salaries including merit increases according to rates set by the Civil Service Commission. Compared to the 1951-53 biennium, one extra geologist is added to the staff. The increase of the General, Operating, and Maintenance account is needed to continue activities at about the same rate as in the 1951-53 biennium except that it is planned to do more field work in chromite investigations. The request for Capital Outlays is increased somewhat because of the need for additions in the Department library to facilitate research in stratigraphic studies. Under Special Requests the increase is requested in order to step up work on construction of the State Geologic Map. This work has lagged in the past because of lack of personnel who could be assigned to the job and because of the magnitude of the project.

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; and cataloging publications and specimens for the library and museum.

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 from July 1, 1950, to July 1, 1952, are given below:

Number of visitors at the Portland office	4,240
Pieces of mail received at Portland office	19,775
Pieces of mail sent out of Portland office (not including new publications)	15,343
Number of qualitative determinations made	292
Number of quantitative determinations made	5,496
Petrographic examinations (excluding thin sections)	202
Number of thin sections analyzed	19
Microscopic examinations for State Board of Health	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.

Pertinent statistics concerning the work of these field offices for the two-year period are as follows:

	<u>Qualitative Determinations</u>	<u>Business Callers</u>	<u>Business Letters</u>
Baker	794	2,450	678
Grants Pass	1,066	5,195	571
<u>Total</u>	1,860	7,645	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, and tantalum, in which interest has greatly increased since World War II. Custom analyses included quantitative control work on alloys for casting and heat treating operations as well as quantitative analyses of rare earths. The laboratory is equipped with a Geiger counter and all samples received are tested for radioactivity. Considerable work has been done for the State and City of Portland crime detection laboratories.

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 are given below:

Total number of analyses made	1,330
Custom analyses made	326
Total number of samples tested for radioactivity	3,109
Receipts from custom analyses	\$1,316.80

CERAMICS

Work in ceramics during the current biennium has been hindered by the loss of the Department's ceramist employed from July 1, 1948, to July 1, 1950, on a half-time basis in cooperation with the Oregon Ceramic Studio. He accepted an industry offer from Niagara Falls because the Department could not employ him on full-time work. Complete ceramic testing by the Department has been discontinued. Clay samples received, especially light-colored clays, are given a preliminary examination to determine if ceramic testing elsewhere is warranted. Some burning of Department test bricklets has been done by the Sylvan Brick Company in determining characteristics of common clays. Some identification of clay samples has been done cooperatively by the U.S. Bureau of Mines at Albany, Oregon, and some ceramic testing has been done for the Department by the University of Washington, Seattle.

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.

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-D, "Oregon Metal Mines Handbook" for Northwestern Oregon, 1951. A catalog of records and reports of known mines, prospects, and deposits. 1276 copies cost \$1,689.98.

Bulletin No. 42, Seventh Biennial Report of the Department. 662 copies cost \$190.82.

G.M.I. Short Paper No. 20, "Glazes from Oregon Volcanic Glass," by C. W. F. Jacobs, 1950. Contains results of tests and analyses made in the Department laboratory on volcanic glass to be used as an economic flux in the ceramic industry. 1,040 copies cost \$134.41.

G.M.I. Short Paper No. 21, "Lightweight Aggregate Industry in Oregon," by Ralph S. Mason, 1951. Contains reports on field and laboratory work done by the author on materials used as lightweight aggregates or building stones; also an appendix showing experimental results on a new method of treating pumice so that it could be glazed with volcanic ash to improve both absorption and strength characteristics. 1238 copies cost \$222.06.

G.M.I. Short Paper No. 22, "Preliminary Report on Tungsten in Oregon," by Harold D. Wolfe and David J. White, 1951. This report is designed as a guide to tungsten prospecting in Oregon. A short resume of the geology and composition of tungsten minerals as well as three methods of prospecting is given. Seventeen prospects and a bibliography are also included. 1,269 copies cost \$372.94.

Reprint: G.M.I. Short Paper No. 7, "Geologic History of the Portland Area," by Ray C. Treasher, 1942. (Reprinted in 1951) A nontechnical paper to be used by the layman or student. 500 copies cost \$50.48.

Miscellaneous Paper No. 2, "Key to Oregon Mineral Deposits Map," by Ralph S. Mason, 1951. Contains references to sources of information regarding the properties shown on "Oregon Mineral Deposits Map" (1951). 1,250 copies cost \$181.01.

Oregon Mineral Deposits Map, by Ralph S. Mason, 1951. Lists principal known deposits of metallic and nonmetallic minerals. 2,200 maps cost \$278.00.

Small Mineral Locality Maps, (1952). 950 copies cost \$9.02. (Multigraphed by the Department on 8½ by 11 sheets.)

Index to Topographic Mapping, (1950). 700 cost \$3.45. (Multigraphed by the Department on 8½ by 11 sheets.)

Index to Geologic Mapping, (1950). 700 cost \$4.57. (Multigraphed by the Department on 8½ by 11 sheets.)

The Ore.-Bin. This small monthly periodical is prepared and multigraphed in the office of the Department. Monthly circulation is 829, 382 of which are sent free to legislators, Oregon libraries, educational institutions, and a restricted exchange list. A yearly subscription charge of 40 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

Geology of the Galice quadrangle, Josephine County, Oregon. This 15-minute quadrangle map has been prepared by the U.S. Geological Survey according to a cooperative arrangement with the Department and is now being printed. Publication is planned for early 1953.

Geologic map of the Albany quadrangle. This 15-minute quadrangle map with accompanying text, both by Dr. I. S. Allison of Oregon State College, has been finished. Bids for printing the map have been requested by the Printing Division of the State Department of Finance.

Geological reconnaissance mapping in the Pueblo Mountains area of southern Harney County was done for a short time in 1950. Because of lack of personnel these studies were not continued in 1951.

Geologic map of the Telocaset quadrangle, Baker County, Oregon. This 30-minute quadrangle map which has been a part-time project of Mr. N. S. Wagner, field geologist of the Department stationed at Baker, was finished in 1951. A text is being prepared and the map and text will be published in 1953.

Geologic map of the Dutchman Butte quadrangle, Douglas County, Oregon. Field work on this 15-minute quadrangle map continued in 1951 and was finished in 1952. It is planned to publish the map and text in late 1953.

Reconnaissance mapping in Umatilla County, Oregon was started by Mr. N. S. Wagner in 1951 as a result of a request by the Umatilla County Development Committee and the Umatilla County Court. Mapping was continued in 1952 as a part-time project. It is planned to complete the map in 1953.

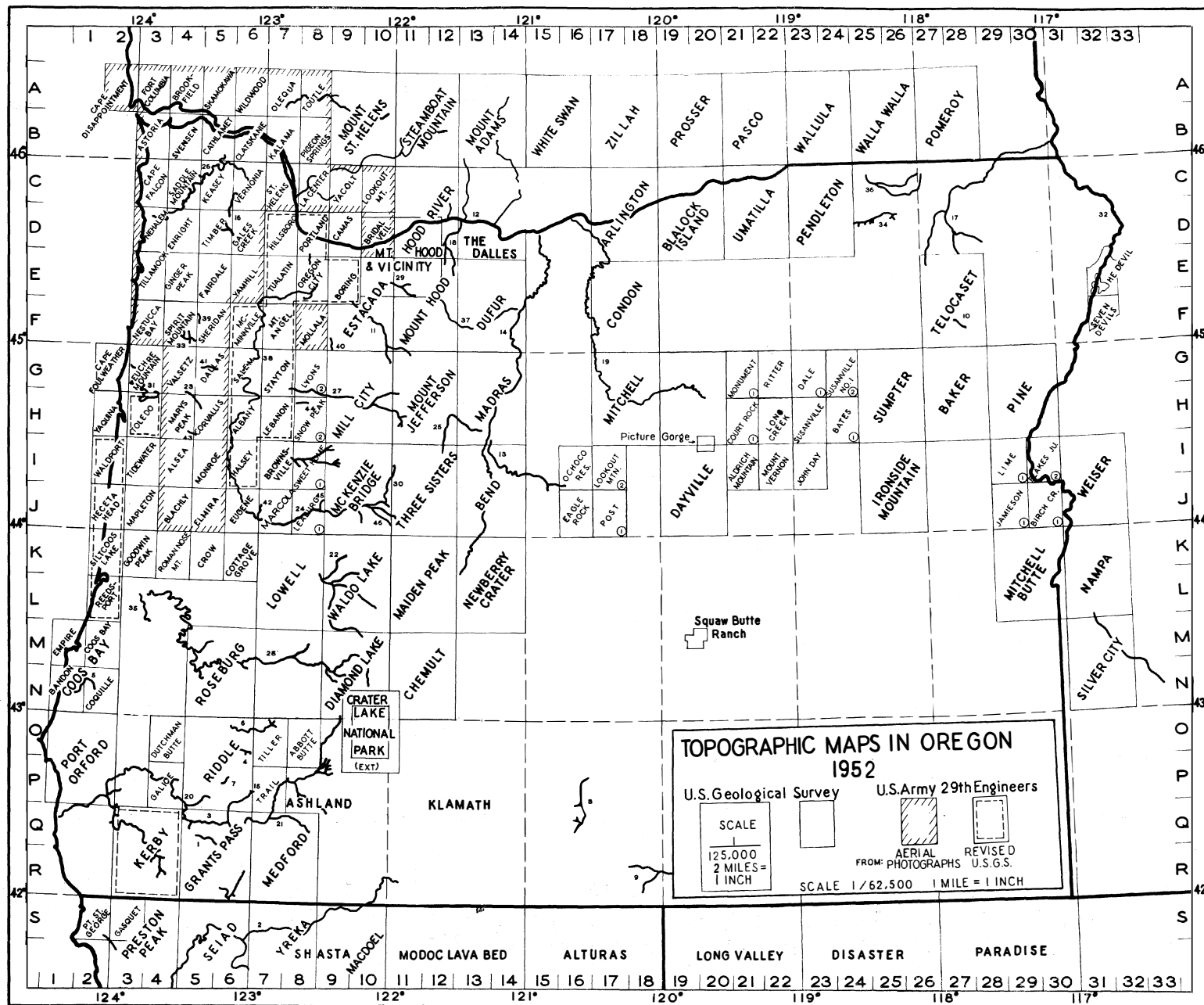
Bulletin 14-C, Vol. II, Sec. 1, Josephine County, Second Edition. The first edition of this volume of the Metal Mines Handbook was exhausted in 1950. Because of the continuing demand, a second edition was prepared with such revisions as Department records contained. The bulletin will be issued early in 1953.

Fossil localities in Oregon. In response to numerous requests for information about where to look for fossils, a list of the better known and easily accessible localities is being compiled, chiefly from literature. The list will include the types of fossils found at each location and also a description or map to show how to reach the locality.

Bibliography of the geology and mineral resources of Oregon, second supplement, has been completed in manuscript form and will be published as Bulletin 37. The supplement covers the material published during the five-year period from 1946 through 1950.

PUBLISHED GEOLOGIC MAPS IN OREGON - 1952

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TOPOGRAPHIC MAPS OF OREGON — 1952

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

Name	Location	Cont. Int.	Date
* Abbott Butte	O- 8	50	1947
* Albany	H- 6	25	1944
* Aldrich Mountain	I-21	50	1943
o Alsea	I- 4	50	1942
o Astoria	B- 3	20	1939
* Bandon	N- 1	50	1944
Bates	H-24	Underway	(1)
Birch Creek	J-30	Underway	(1)
o Blachly	J- 4	50	1942
Blakes Junction	I-30	Underway	(2)
" Boring	E- 9	25	1944
o Bridal Veil	D-10	100	1942
* Brownsville	I- 7	40	1952
* Camas	D- 9	25	1942
o Cape Falcon	C- 3	50	1940
* Cape Foulweather	G- 2	50	1944
o Cathlamet	B- 5	20	1941
o Clatskanie	B- 6	25	1942
* Coos Bay	M- 2	50	1945
* Coquille	N- 2	50	1945
o Corvallis	H- 2	50	1942
* Cottage Grove	K- 6	25	1921
Court Rock	H-21	Underway	(1)
* Crow	K- 5	50	1945
Dale	G-23	Underway	(1)
o Dallas	G- 5	50	1942
* Dutchman Butte	O- 4	50	1948
* Eagle Rock	I-16	50	1948
o Elmira	J- 5	50	1942
* Empire	M- 1	50	1944
o Enright	D- 4	100	1941
* Euchre Mountain	G- 3	50	1943
" Eugene	J- 6	5825	1949
o Fairdale	E- 5	100	1942
o Gales Creek	D- 6	25	1943
* Galice	P- 4	50	1948
o Ginger Peak	E- 4	100	1942
* Goodwin Peak	K- 3	50	1943
" Halsey	I- 6	10825	1941
" Heceta Head	J- 2	50	1944
* He Devil	E-32	50	1922
" Hillsboro	D- 7	25	1943
Jamieson	J-29	Underway	(1)
* John Day	I-23	50	1943
o Kalama	B- 7	20	1943
o Keasey	C- 5	100	1943
Leaburg	J- 8	Underway	(1)
" Lebanon	H- 7	25	1944
Lime	I-29	Underway	(1)
* Long Creek	H-22	40	1951
Lookout Mountain	I-17	Underway	(2)
Lyons	G- 8	Underway	(2)
* Mapleton	J- 3	50	1945
* Marcola	J- 7	40	1952
o Marys Peak	H- 4	50	1942
" McMinnville	F- 6	25	1943
o Molalla	F- 8	25	1943
o Monroe	I- 5	50	1942
Monument	G-21	Underway	(1)
" Mount Angel	F- 7	25	1943
* Mount Vernon	I-22	50	1943
o Nehalem	D- 3	100	1943
o Nestucca Bay	F- 3	100	1942
* Ochoco Reservoir	I-16	50	1950
o Oregon City	E- 8	25	1945
" Portland	D- 8	25	1940
Post	J-17	Underway	(1)
" Reedsport	I- 2	50	1942
* Ritter	G-22	40	1952
* Roman Nose Mt.	K- 4	100	1945
o Saddle Mountain	C- 4	100	1943
" Salem	G- 6	25	1940
* Seven Devils	F-32	50	1920
o Sheridan	F- 5	100	1942
" Siltcoos Lake	K- 2	50	1942
Snow Peak	H- 8	Underway	(2)
o Spirit Mountain	F- 4	100	1942
" Stayton	G- 7	25	1944
o St. Helens	C- 7	25	1943
* Susanville	H-23	40	1951
Susanville #1	G-24	Underway	(2)
o Svensen	B- 4	20	1940
Sweet Home	I- 8	Underway	(1)

Name	Location	Cont. Int.	Date
* Tidewater	I- 3	50	1945
o Tillamook	E- 3	100	1942
* Tiller	O- 7	50	1946
o Timber	D- 5	100	1941
* Toledo	H- 3	50	1946
* Trail	P- 7	50	1945
" Tualatin	E- 7	25	1943
o Valsetz	G- 4	50	1942
o Vernonia	C- 6	25	1943
" Waldport	I- 2	50	1942
o Yamhill	E- 6	100	1942
* Yaquina	H- 2	50	1946

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

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

SPECIAL MAPS

Name	Location	Cont. Int.	Scale
Crater Lake			
National Park	O-10	50	1:62,000
Crater Lake and vicinity	P-11	50	1:48,000
Mt. Hood and vicinity	E-12	100	1:125,000
Picture Gorge (advance)	H-20	5	1:24,000
Squaw Butte Ranch (advance)	M-20	50	1:48,000

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)

KEY TO SYMBOLS

- * Map published by U.S. Geological Survey, obtainable from the Denver Federal Center - Bldg. 25, Denver, Colorado.
- o Map printed by U.S. Army, 29th Engineers, obtainable from the State Department of Geology.
- " Map revised by U.S. Army, 29th Engineers, on U.S. Geological Survey topographic base.

- ① Map scheduled for publication 7-1-52 - 6-30-53.
- ② Map scheduled for publication 7-1-53 - 6-30-54.

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

1069 STATE OFFICE BUILDING
PORTLAND 1, OREGON

COOPERATIVE WORK

Informal cooperative work on problems connected with construction of the State geologic map has been continued by the Geologic Branch of 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 made 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 Norbistrath, and R. M. Grivetti, 1945.

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 Norbistrath, and P. D. Snavely, Jr., 1949.

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.

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.

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.

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 and the State Highway Department.

As a member of the Governor's Committee on Natural Resources 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. Much progress has been made along these lines.

Work by the Department in assisting schools in preparation of sets of mineral samples has been continued and expanded. Circulating sets of 60 minerals each have been distributed to schools both in western and eastern Oregon. There has been a large continuing demand for these mineral sets, limited by the Department's inability 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 non-profit organization privately financed, on studies of volcanic ash as a pozzolanic material in cooperation with the Mechanical Engineering Department of Oregon State College. Samples were furnished by the Department. Although no outstanding results have been obtained, the subject is a broad one and further testing would be desirable.

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

Comparative Statements of Expenditures 1947-49, 1949-51, and 1951-53

	<u>1947-49</u>		
	Expenditures	G&MI Expenditures	Total Expenditures
	7/1/47- 6/30/49	7/1/47- 6/30/49	7/1/47- 6/30/49
<u>Salaries and Wages</u>	<u>\$ 105,694.58</u>		<u>105,694.58</u>
<u>General, Operating, and Maintenance</u>	<u>36,216.06</u>	<u>2,503.54</u>	<u>38,719.60</u>
Office Supplies	1,094.20		1,094.20
Telephone and Telegraph	1,157.05		1,157.05
Postage, Freight and Express	1,485.21		1,485.21
Printing	4,276.58	391.57	4,668.15
Rents	13,042.00		13,042.00
Premiums	200.49		200.49
Contributions: Pub.Emp.Ret.Board	3,190.09	1,612.94	4,803.03
State Civil Service	293.28		293.28
State Ind.Acc.Comm.	309.87		309.87
Assessments: Restoration, etc.	135.63		135.63
Auditing	513.88		513.88
Private Car Mileage	141.49	192.75	334.24
Railroad Fares, etc.	531.39	245.28	776.67
Meals and Lodging	1,826.06	61.00	1,887.06
Motor Vehicles	3,029.08		3,029.08
Heat, Light, Water, Power	932.95		932.95
Laundry	96.14		96.14
Laboratory and Field	1,787.57		1,787.57
Library	357.26		357.26
Buildings and Fixtures	182.70		182.70
Photos and Blueprints	325.22		325.22
Out-of-state Travel	496.39		496.39
All Other	791.63		791.63
Expense, moving to State Office Building			
Micro-filming records			
Gas-Oil well law administration	19.90		19.90
<u>Capital Outlays:</u>	<u>2,870.25</u>	<u>699.85</u>	<u>3,570.10</u>
Office Furniture and Equipment	536.50	213.50	750.00
Motor Vehicles	800.00	486.35	1,286.35
Laboratory and Field	1,474.17		1,474.17
Library	59.58		59.58
<u>Special Requests</u>	<u>7,308.64</u>		<u>7,308.64</u>
State Geological Survey	4,112.86		4,112.86
Cooperative with U.S. Geological Survey (state geologic map)	3,000.00		3,000.00
Mineral Commodity Survey	195.78		195.78
TOTAL EXPENDITURES	\$ 152,089.53	3,203.39	155,292.92

	<u>1949-51</u>		<u>1951-53</u>	<u>1953-55</u>
Expenditures	G&M Expenditures	Total	Estimated	Funds
7/1/49- 6/30/51	7/1/49- 6/30/51	Expenditures 7/1/49- 6/30/51	Expenditures 7/1/51- 6/30/53	Requested 1953-55
<u>122,929.26</u>		<u>122,929.26</u>	<u>133,066.77</u>	<u>155,657.60</u>
<u>36,225.62</u>	<u>2,780.91</u>	<u>39,006.53</u>	<u>48,915.44</u>	<u>52,825.00</u>
853.14	55.85	908.99	1,178.94	1,300.00
1,208.83	44.58	1,253.41	1,534.08	1,750.00
1,558.42	91.66	1,650.08	1,600.00	1,800.00
2,423.78	693.74	3,117.52	1,500.00	2,000.00
14,988.00		14,988.00	21,000.00	21,500.00
239.00		239.00	377.50	400.00
5,520.66	872.62	6,393.28	6,800.00	7,100.00
332.96		332.96	350.00	350.00
354.00		354.00	400.00	400.00
211.05		211.05	250.00	250.00
327.48		327.48	677.34	700.00
97.14		97.14	220.91	400.00
579.38	138.95	718.33	1,000.00	1,500.00
1,357.12	32.50	1,389.62	2,466.13	3,000.00
2,464.62	37.24	2,501.86	2,644.85	3,500.00
817.49		817.49	691.88	1,000.00
92.64	3.60	96.24	120.87	100.00
1,852.91	2.75	1,855.66	2,134.75	2,200.00
289.44	15.00	304.44	325.00	325.00
57.02		57.02	650.28	1,000.00
122.54	27.11	149.65	275.14	300.00
	757.76	757.76	*	*
393.53	7.55	401.08	731.98	1,200.00
			1,735.79	
			250.00	250.00
<u>84.47</u>		<u>84.47</u>		<u>500.00</u>
<u>4,880.51</u>	<u>30.25</u>	<u>4,910.76</u>	<u>3,100.00</u>	<u>4,300.00</u>
1,115.54		1,115.54	538.55	500.00
3,362.13	30.25	3,392.38	1,987.55	2,000.00
323.61		323.61	548.90	1,000.00
<u>79.23</u>		<u>79.23</u>	<u>25.00</u>	<u>800.00</u>
<u>8,544.41</u>		<u>8,544.41</u>	<u>10,000.00</u>	<u>16,000.00</u>
5,544.41		5,544.41	6,000.00	6,000.00
3,000.00		3,000.00	4,000.00	10,000.00
<u>172,579.80</u>	<u>2,811.16</u>	<u>175,390.96</u>	<u>195,082.21</u>	<u>228,782.60</u>

*Included in Railroad Fares and Meals and Lodging.

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

for period July 1, 1950, to July 1, 1952

Balance June 30, 1950

\$ 4,056.35

RECEIPTS:

Sale of publications	\$ 2,990.63	
Sale of mine reports, blueprints, and sundry sales	63.79	
Sale of mineral specimen collections	98.85	
Refunds from Geological Society of the Oregon Country for printing expense	162.59	
Refunds for telephone and telegraph tolls, and other refunds	29.07	
Contributions by F. W. Libbey for articles sold to magazines	17.50	
Public Employes Retirement Board refund for overpayment on contributions by H. M. Dole	32.98	
Refund from Secretary of State for E-license on state car	2.00	
Appropriation by 1950-51 Legislature for Federal chrome assay project	<u>10,000.00</u>	<u>13,397.41</u>
		17,453.76

DISBURSEMENTS:

General Operating and Maintenance:		
Office Supplies	44.14	
Telephone and Telegraph	9.00	
Postage	10.00	
Printing	367.64	
Railroad Fares	76.65	
Meals and Lodging	26.50	
Out-of-state Travel	538.81	
Photos and Blueprints	24.41	
Public Employes Retirement Board	872.62	
Capital Outlays:		
Office equipment	19.80	
Field and Laboratory equipment	<u>95.55</u>	<u>2,085.12</u>

BALANCE June 30, 1952

\$15,368.64

PRESS RELEASES
Issued from July 1, 1950, to June 30, 1952

No.

- 101 "New Use for Oregon Volcanic Glass" - August 30, 1950
 (G.M.I. Short Paper No. 20)
- 102 "New Volume Oregon Mines Handbook" - May 23, 1951
 (Bulletin No. 14-D)
- 103 "Government Releases Details of Chrome Buying Program" - May 26, 1951
- 104 "Assessment Year Date May Be Changed" - June 26, 1951
- 105 "State Department Reports on Lightweight Aggregates" - October 5, 1951
 (G.M.I. Short Paper No. 21)
- 106 "Oregon Tungsten Report" - October 5, 1951
 (G.M.I. Short Paper No. 22)
- 107 "Mining Law Bulletin Issued" - December 21, 1951
 (Bulletin No. 1, third edition, revised)
- 108 "New Mineral Localities Map" - January 24, 1952
- 109 "Oregon Native Stone for Roosevelt Memorial Museum at
Warm Springs, Georgia" - March 21, 1952
- 110 "To All Chrome Miners in Oregon and California" - March 26, 1952

PUBLICATIONS

State of Oregon: 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	0.10
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. Prelim.rept. on some of the refractory clays of Western 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 . . .	0.40
9. Chromite deposits in Oregon, 1938: John Eliot 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, 2d ed., 1941: compiled by Ray C. Treasher	0.75
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	Free
23. Inv. of reported occurrence of tin at Juniper Ridge, Ore., 1942: H. C. Harrison & J. E. Allen . .	0.40
24. Origin of the black sands of the coast of southwestern Oregon, 1943: W. H. Twenhofel . .	0.30
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 and E. M. Baldwin . .	1.00
28. Fourth biennial report of the Department, 1943-44	Free
29. Ferruginous bauxite in northwestern Oregon, 1945: Libbey, Lowry, and 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, and 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, and Stewart; and one paper on mollusca and microfauna of Wildcat coast section, Humboldt County, California, 1949: Stewart and Stewart	1.25
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: Francis G. Wells, Preston E. Hotz, and Fred W. Cater, Jr.	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	Free
43. Eighth biennial report of the Department, 1950-52	Free

*Prices subject to change.

LP-40: 11/3/52

PUBLICATIONS (Cont.)

<u>G.M.I. Short Papers</u>		<u>Price Postpaid</u>
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	
3. Advance report on some quicksilver prospects in Butte Falls quadrangle, Oregon, 1940: W. D. Wilkinson	(out of print)	
4. Flotation of Oregon limestone, 1940: J. B. Clemmer & B. H. Clemmons	0.10	
5. Survey of nonmetallic mineral production of Oregon for 1940-41: C. P. Holdredge	(out of print)	
6. Pumice and pumicite, 1941: James A. Adams	(out of print)	
7. Geologic history of the Portland area, 1942: Ray C. Treasher	0.25	
8. Strategic and critical minerals, a guide for Oregon prospectors, 1942: L. W. Staples	(out of print)	
9. Some manganese deposits in the southern Oregon coastal region, 1942: R. E. Brown	0.10	
10. Investigation of Tyrrell manganese and other nearby deposits, 1943: W. D. Lowry	(out of print)	
11. Mineral deposits in region of Imnaha and Snake rivers, Oregon, 1943: F. W. Libbey	(out of print)	
12. Preliminary report on high-alumina iron ores in Washington County, Oregon, 1944: F. W. Libbey, W. D. Lowry, and R. S. Mason	(out of print)	
13. Antimony in Oregon, 1944: Norman S. Wagner	0.15	
14. Notes on building-block materials of eastern Oregon, 1946: Norman S. Wagner	0.10	
15. Reconnaissance geology of limestone deposits in the Willamette Valley, Oregon, 1946: J. E. Allen	0.15	
16. Perlite deposits near the Deschutes River, southern Wasco County, Oreg., 1946: J. E. Allen	0.15	
17. Sodium salts of Lake County, Oregon, 1947: Ira S. Allison & Ralph S. Mason	0.15	
18. Radioactive ores the prospectors should know, 1949: David J. White	0.20	
19. Brick and tile industry in Oregon, 1949: J. E. Allen and R. S. Mason	0.20	
20. Glazes from Oregon volcanic glass, 1950: Charles W. F. Jacobs	0.20	
21. Lightweight aggregate industry in Oregon, 1951: Ralph S. Mason	0.25	
22. Preliminary report on tungsten in Oregon, 1951: Harold D. Wolfe and David J. White	0.35	

Geologic Maps

Geologic map of the Wallowa Lake quad., 1938: W. D. Smith & others	(out of print)
Geologic map of the Central Portion of the Wallowa Mountains, Oregon, 1938: W. D. Smith & others	0.20
Geologic map of the Salem Hills and North Santiam River basin, Oregon, 1939: T. P. Thayer	0.25
Geologic map of the Medford quad., 1939: F. G. Wells & others	0.40
Geologic map and geology of the Round Mountain quad., 1940: W. D. Wilkinson & others	0.25
Geologic map of the Butte Falls quad., 1941: W. D. Wilkinson & others	0.45
Geologic map and geology of the Grants Pass quad., 1940: F. G. Wells & others	0.30
Preliminary geologic map of the Sumpter quad., 1941: J. T. Pardee & others	0.40
Geologic map of the Portland area, 1942: Ray C. Treasher	0.25
Geologic map of the Coos Bay quad., 1944: J. E. Allen & E. M. Baldwin (sold with Bull. 27)	----
Geologic map of the St. Helens quad., 1945: W. D. Wilkinson, W. D. Lowry, & E. M. Baldwin (also in Bull. 31)	0.35
Geologic map of the Dallas quad., Oregon, 1947: E. M. Baldwin (also in Bull. 35)	0.25
Geologic map of the Valsetz quad., Oregon, 1947: E. M. Baldwin (also in Bull. 35)	0.25
Preliminary geologic map of the Kerby quad., Oregon, 1948: Francis G. Wells, Preston E. Hotz, & Fred W. Cater, Jr., (also in Bull. 40)	0.80

Miscellaneous Publications

Misc. Paper 1 - A description of some Oregon rocks and minerals (prepared to accompany school mineral sets), 1950: Hollis M. Dole	0.40
Misc. Paper 2 - Key to Oregon mineral deposits map, 1951: Ralph S. Mason	0.15
<u>The Ore-Bin</u> - Issued monthly by the staff as medium for news about the Department, mines, and minerals. (Available back issues 5¢ each.) Subscription price per year	0.40
Oregon mineral localities map (22 x 34 inches) 1951	0.30
Oregon quicksilver localities map (22 x 34 inches) 1946	0.25
Landforms of Oregon: a physiographic sketch (17 x 22 inches) 1941	0.15
Index to topographic mapping in Oregon, 1952	Free
Index to published geologic mapping in Oregon, 1952	Free
Bibliography of the geology and mineral resources of Oregon, to 1936: State Planning Board	1.50