August 1957

STATE OF OREGON

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OREGON'S MINERAL INDUSTRY HITS NEW PEAK IN 1956

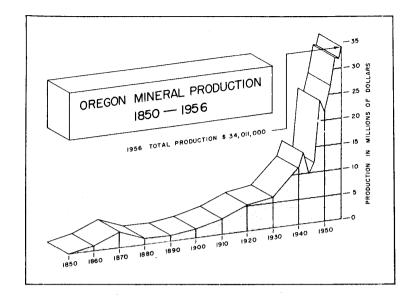
Mineral production in the State in 1956 increased 7 percent over 1955 and reached an all-time high in dollar value and number of men employed. In 1956 production totalled \$34,011,000, an increase of \$2,271,000 over 1955. Since 1947 the value of minerals produced in the State has increased 104 percent. Employment in mineral industries subject to the Oregon Unemployment Compensation Law now totals 8,201. The payroll earned by mineral industry employees amounted to \$42,743,678 in 1956, a 40-percent increase over 5 years ago.

The accompanying map shows the value of mineral production in each of the counties of the State. It is interesting to note that half of the counties reported increases over the previous year, and that the impact of the mineral industry was felt in all the counties generally on a year-around basis.

A bright spot in the State's growing mineral economy is the rapid increase in titanium and zirconium production. In addition to the U. S. Bureau of Mines facilities, two firms commenced reduction and reprocessing of these metals in the Albany area during the year. Approximately 300 workers are employed in the three plants. Of considerable significance is the fact that all of the raw materials used in these plants is imported from out of State. The many natural advantages available in Oregon make it attractive to industries of this type and a continued growth in metallurgical processing should be expected. The stabilizing effect of the presence of a metallurgical plant in a community is considerable since it provides steady employment, often on a seven-day, three-shift basis; does not deplete local resources; and is unaffected by local swings in the economy.

Oregon's mineral industry embraces a wide variety of raw materials and finished products. The diversification tends to smooth out the peaks and valleys experienced by other industries lacking a broad base of widely varied products. More than 20 mineral commodities are produced in Oregon, and 112 mills and smelters are in operation currently. Gold mining, long a major industry in the State is now almost nonexistent, but in its place have appeared, in steadily increasing volume, a host of new minerals. Expanded shale, nickel, and uranium are examples of these newcomers, all of which were produced for the first time within the past 10 years. The trend since 1850 is clearly shown on the graph on page 68. The increasing industrialization of the State will place ever greater demands on the basic raw materials supplied and processed by the mineral industry.

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Domestic mining in general and Oregon miners in particular are continually harassed by vacillating and short-sighted federal mineral policies. Oregon is a top producer of quicksilver and chromite, both strategic metals, but unless effective legislation is enacted promptly to insure a long-term program for either stockpiling or some form of protection against dumping of foreign supplies the mines will close. The United States cannot afford to become dependent upon importation of its critical minerals, and Oregon will suffer a severe blow

to its economy if the 57 chromite and mercury mines and mills are forced to close.

Information on Oregon's mineral industries is obtained through a cooperative agreement with the Department and the U.S. Bureau of Mines, Mineral Industry Division. The following table is taken from the Bureau's Advance Summary Area Report B-52.

R.S.M.

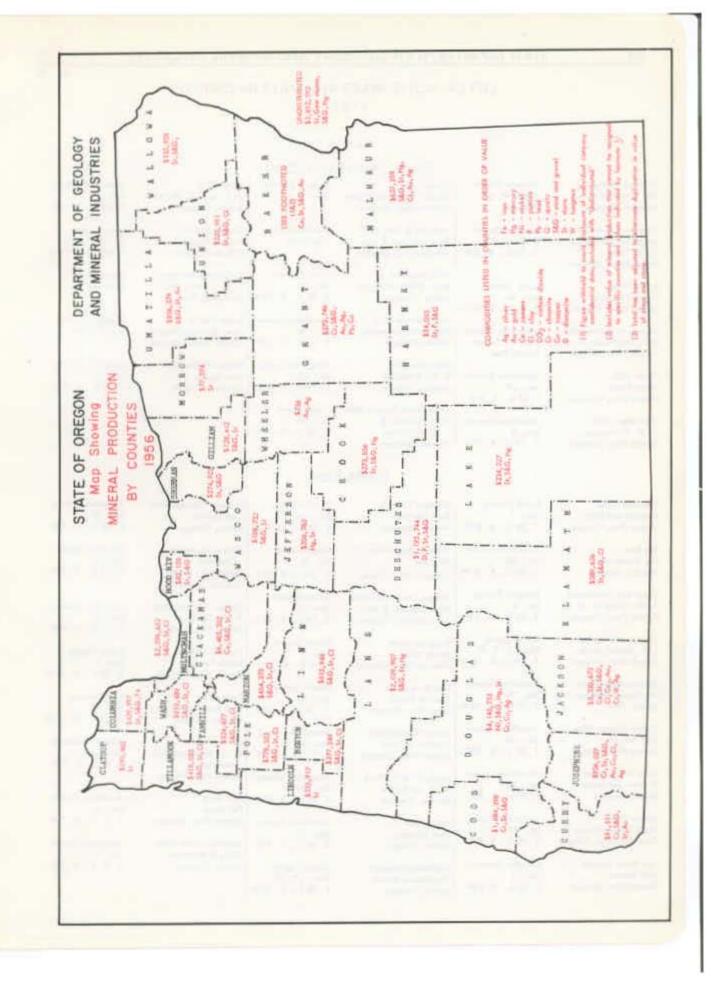
Mineral	Production	in	Oregon,	1955 -	_	19561

	195	1955		1956	
Mineral	Short tons (unless other- wise stated)	\$ Value	Short tons (unless other- wise stated)	\$ Value	
Chromite – gross weight	5,341 250,608 4 1,708 2,000 3 1,056 4,181 11,953,878 8,815 7,741,937	463,514 275,916 2,984 59,780 2/ 894 306,610 2/ 11,832,344 7,978 9,417,834 2/	54,577 256,942 7 2,738 1,893 5 1,893 6,866 11,637,183 13,537 6,097,965	2,001,083 278,205 5,950 95,830 2/ 1,570 492,029 2/ 11,646,367 12,252 7,890,197 2/	
Total	3/	31,740,000	3/	34,011,000	

 $[\]underline{1}$ / Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

^{2/} Figure withheld to avoid disclosure of individual company confidential data.

^{3/} Total has been adjusted to eliminate duplication in the value of clays and stone.



LIST OF ACTIVE MINES AND MILLS IN OREGON 1957

METALS

Ashland Mining Co. Van Curler Bros. Ashland, Oregon	Jackson County 1 mile W. of Ashland	Gazley Mill Glenn and Harry Shippen Canyonville, Oregon	Douglas County Gazley	Selma Mill J. T. & T. K. Seifert Selma, Oregon	Josephine County Sec. 11 T. 38 S., R. 8 W.
Birdseye Creek Mill Lone Star Mining Co. C. A. Wise Rogue River, Oregon	Jackson County SW1 sec. 27 T. 36 S., R. 4 W.	Haggard & New Mill Wm. Gardner & Sons Canyon City, Oregon	Grant County Dog Creek	Sourdough Mill Howard Beasley O'Brien, Oregon	Curry County Sec. 2 T. 40 S., R. 11 W.
Bristol-Baker Howard Beasley Grants Pass, Oregon	Curry County Sec. 36 T. 40 S., R. 11 W.	McCaleb Mill B.A. & R.E.McCaleb Selma, Oregon	Curry County Sec. 11 T. 38 S., R. 10 W.	Tri-County Milling Co. J. A. Curzon, Mgr. John Day, Oregon	Grant County John Day
Chrome Industries Mill Elzie Mayfield, Jr. & Sr. Grants Pass, Oregon	Josephine County NW "F" Street Grants Pass	McTimmonds Mill Everett McTimmonds Selma, Oregon		Triple L Mill Harry & Lester Shippen Myrtle Creek, Oregon	Douglas County Myrtle Creek
Foster Mill Ernest Foster Grants Pass, Oregon	Josephine County Sec. 29 T. 37 S., R. 8 W.	Radcliffe Mill R. W. Radcliffe Merlin, Oregon	Josephine County Sec. 26 T. 34 S., R. 8 W.	Waldo Milling Co. Jack Eggers Takilma, Oregon	Josephine County Sec. 27 T. 40 S., R. 8 W.
Gallagher Mill J. G. Gallagher Grants Pass, Oregon	Josephine County Sec. 2 T. 37 S., R. 7 W.	Rock Creek Chrome Mill Carl Wikstrom & O.K. Foster Powers, Oregon	Coos County Sec. 33 T. 33 S., R. 12 W		

Chrome Mines

Babyfoot Mine Langley and Dean	Curry County Sec. 3	Gardner Chrome Fred Gardner	Curry County Sec. 10	Mohawk Chrome Mine Carl Stevens	Josephine County Sec. 29
Grants Pass, Oregon	T. 38 S., R. 9 W.	Harbor, Oregon	T. 39 S., R. 11 W.	Selma, Oregon	T. 38 S., R. 9 W.
Big Bear Lee Sanderson Merlin, Oregon	Josephine County Sec. 35 T. 36 S., R. 8 W.	Gardner Ranch No. 1 Al Dunn Canyon City, Oregon	Grant County Sec. 8 T. 14 S., R. 32 E.	Nickel Mountain Chromite Dorothy A. Kartes	Douglas County Sec. 20 T. 30 S., R. 6 W.
DI 10 (5: .)	5 1 6 .	, ,,	,	Azalea, Oregon	
Black Boy (Starveout) T. M. Petrie et al Grants Pass, Oregon	Douglas County Sec. 5 T. 33 S., R. 4 W.	Haggard and New Mine Wm. Gardner & Sons Canyon City, Oregon	Grant County Sec. 21 T, 14 S., R. 32 E.	Oregon Chrome Mine W. S. Robertson Grants Pass, Oregon	Josephine County Sec. 21 T. 37 S., R. 9 W.
Chetco Mining Co. F. I. Bristol, et al Grants Pass, Oregon	Curry County Secs. 2, 3, 10 T. 39 S., R. 10 W.	Kingsley Mine Bandy Sintay Canyon City, Oregon	Grant County Sec. 9 T. 14 S., R. 32 E.	Pearsoll Mine Ernest Foster Grants Pass, Oregon	Curry County Sec. 2 T. 38 S., R. 10 W.
Chrome King Mine Roy Hansen Mining Co. Selma, Ore.	Josephine County Sec. 36 T. 37 S., R. 10 W.	Lost Buck Mine Short & Bailey John Day, Oregon	Grant County Sec. 28 T. 14 S., R. 31 E.	Rosie Mine Fred Baumgartner, et al Harbor, Oregon	Curry County Sec. 11 T. 39 S., R. 11 W.
Crown Chrome Mine Carl Stevens Grants Pass, Oregon	Josephine County Sec. 28 T. 37 S., R. 9 W.	Lucky Hunch Mine Langley & Dean Grants Pass, Oregon	Josephine County Sec. 33 T. 37 S., R. 9 W.	Sad Sack Mine W. S. Robertson and associates	Josephine County Sec. 23 T. 36 S., R. 9 W.
Deep Gorge Mine Grisson and Inman Selma, Oregon	Josephine County Sec. 32 T. 37 S., R. 9 W.	Lucky L. & R. Mine R. W. Radcliffe Merlin, Oregon	Josephine County Sec. 35 T. 35 S., R. 9 W.	Grants Pass, Oregon Salt Rock	Josephine County
Esterly Mine Black Sheep Mining Co.	Josephine County Sec. 22	Lucky Star Pete Neubert	Josephine County Sec. 21	Pat Arnot Grants Pass, Oregon	Sec. 6 T. 36 S., R. 7 W.
Cave Junction, Oregon	T. 40 S., R. 8 W.	Selma, Oregon	T. 37 S., R. 9 W.	Saturday Anne Mine Craig & Weishaar	Josephine County Sec. 9
Four Point Chrome Carl Stevens Grants Pass, Oregon	Douglas County Sec. 1 T. 33 S., R. 5 W.	McCaleb Chromite McCaleb & Kaiser Selma, Oregon	Curry County Secs. 11, 12 T. 38 S., R. 10 W.	Selma, Oregon	T. 37 S., R. 9 W.

Chrome Mines (cont.)						
Seifert Mine J.T. & T.K. Seifert Selma, Oregon	Josephine County Sec. 3 T. 37 S., R. 9 W.	Sourdough Mine Howard Beasley Grants Pass, Oregon	Curry County Sec. 36 T. 40 S., R. 11 W.	Wm. Gardner Ranch (Al Dunn lease) Mr. Lambert Canyon City, Oregon	Grant County Sec. 8 T. 14 S., R. 32 E.	
Shade Mine McShane & Adams Grants Pass, Oregon	Josephine County Sec. 21 T. 37 S., R. 9 W.	Stewart Ranch Mine Burt Hayes John Day, Oregon	Grant County T. 13 S., R. 33 E.	Zero Mine Wm. Gardner Canyon City, Oregon	Grant County Sec. 8 T. 14 S., R. 32 E.	
Sordy Mine Tulare & Binder Gold Hill, Oregon	Josephine County Sec. 14 T, 36 S., R. 9 W.	Ward Mine Wm. Gardner Canyon City, Oregon	Grant County Sec. 6 T. 14 S., R. 32 E.		,,,,,,,,,	
		Gold Lode	Mines	!		
Bald Mt. Mine Kenneth Grabner Sumpter, Oregon Buffalo Mine	Baker County Sec. 3 T. 3 S., R. 36 E. Grant County	Charlotte Prospect Lloyd Warner & Dave Williams Grants Pass, Oregon	Jackson County Sec. 5 T. 40 S., R. 4 W	Greenback Mine Wes Pieren Grants Pass, Oregon Union Leader	Josephine County Sec. 32 T. 33 S., R. 5 W.	
J. P. Jackson, Jr. Granite, Oregon	Sec. 14 T. 8 S., R. 35½E.	Dry Diggings Walt Cannon Grants Pass, Oregon	Josephine County Sec. 14 T. 36 S., R. 5 W.	S. Vaughn & Sons Glendale, Oregon	Sec. 36 T. 32 S., R. 5 W.	
		Gold Pla	 .			
		(Mostly seasonal	operations)			
CalOre. Placers Ed Carlson Galice, Oregon	Josephine County Secs. 2, 3 T. 35 S., R. 8 W.	Leipold Placer Pieren & Connoly Galice, Oregon	Josephine County Sec. 3 T. 35 S., R. 8 W.	Pankey Placer Bert Pankey Merlin, Oregon	Josephine County Sec. 10 T. 35 S., R. 8 W.	
Federal Placer Orville Snavely Jacksonville, Oregon	Jackson County Sec. 13 T. 39 S., R. 3 W.	Lewis Placer Bud Lewis Galice, Oregon	Josephine County Sec. 36 T. 34 S., R. 8 W.	Smith Placer A. C. Smith Grants Pass, Oregon	Josephine County Sec. 10? T. 33 S., R. 5 W.	
Golden Bar Placer	Josephine County Sec. 2	Palmar Creek Placer (China Diggings) Lewis Brothers	Jackson County Sec. 7 T. 40 S., R. 3 W.	Speaker Placer Henry Speaker Wolf Creek, Oregon	Josephine County Sec. 9 T. 33 S., R. 5 W.	
R. L. Pancost Merlin, Oregon	T. 35 S., R. 8 W.	Sierra Land Co. Grants Pass, Oregon		Sterling Placer Paul Pearce Jacksonville, Oregon	Jackson County Sec. 33 T. 38 S., R. 2 W.	
Mercury						
Black Butte Mine Mercury & Chemicals Corp. Black Butte, Oregon	Lane County Sec. 16 T. 23 S., R. 3 W.	Bretz Mine Arentz–Comstock Mining Venture McDermitt, Nevada	Matheur County Sec. 3 T. 41 S., R. 41 E.	Horseheaven Mine Cordero Mining Co. Ashwood, Oregon	Jefferson County Sec. 12 T. 10 S., R. 18 E.	
Bonanza Mine Bonanza Oil & Mine Corp.	Douglas County Sec. 16	Glass Buttes Mine Oregon Uranium Co. Hampton, Oregon	Lake County Sec. 34 T. 23 S., R. 23 E.	Maury Mountain Mine F.D. & H.W. Eickemeyer Prineville, Oregon	Crook County Secs. 10, 15 T. 17 S., R. 19 E.	
Sutherlin, Oregon	T. 25 S., R. 4 W.	Hampion, Cregon		Towner Quicksilver Mine Frank Towner Post, Oregon	Crook County Sec. 10 T. 17 S., R. 19 E.	
Miscellaneous Metals						
Hanna Nickel Smelting Co. (Nickel) Riddle, Oregon	Douglas County Nickel Mountain T. 30 S., R. 6 W.	Lakeview Mining Co. (Uranium) Lakeview, Oregon	Lake County T. 37 S., Rs. 18, 19 E.	Standard Mine (Copper, cobalt) Roy Summers John Day, Oregon	Grant County Sec. 12 T. 12 S., R. 33 E.	

Miscellaneous Processing Plants						
Electro Metaliurgical Co. (Carbide, ferroalloys) Div. Union Carbide Co. Portland, Oregon	Multnomah County Plant in St. Johns	Oregon Metallurgical Corp. (Zirconium, titanium) Albany, Oregon	Linn County Albany	Pacific Carbide & Alloys Co. (Carbide) N. Columbia Blvd. & Hurst, Portland, Oregon	Multnomah County Plant in N.Portland	
Harvey Aluminum Co. (Plant under construction) The Dalles, Oregon	Wasco County	Oregon Steel Mills (Steel) 5200 N.W. Front Ave. Portland, Oregon	Multnomah County	Reynolds Matals Co. (Aluminum) Troutdale, Oregon	Multnomah County	
Industrial Processing Co. (Calcium hydrate) 5005 N.W. Front Avenue	Multnomah County	Orr Eng. & Chemical Co. (Limonite) James M. Orr Scappoose, Oregon	Columbia County Plant in Scappoose	Supreme Perlite N. Suttle Road Portland, Oregon	Multnomah County Plant in N.Portland	
Portland, Oregon Nat'l. Metallurgical Corp (Aluminum silicon;silicon)		Owens-Illinois Glass Co. (Glass containers) 5535 N.E. 101 Avenue	Multnomah County	Vermiculite–Northwest, Inc. (Vermiculite) 2303 N. Harding Portland, Oregon	Multnomah County	
Springfield, Oregon	, -	Portland, Oregon		Wah Chang Corp. (Zirconium) Albany, Oregon	Linn County Albany	
		NONMET	ALLICS			
		Building	Stone	ı		
Northwest Granite Co. Haines, Oregon	Baker County Sec. 27 T. 7 S., R. 39 E.	Rainbow Rock Quarry (Tuff) Madden & Burk Maupin, Oregon	Wasco County Sec. 11 T. 6 S., R. 11 E.	Tuff Stone Co. Sublimity, Oregan	Marion County Sec. 29 T. 8 S., R. 1 E.	
Pacific States Cut Stone Co. (Tuff) E. L. Keeter Madras, Oregon	Jefferson County Sec. 9 T. 9 S., R. 15 E.	Rocky Butte Quarry (Basalt) Joe Marston Portland, Oregon	Multnomah County Quarry at Rocky Butte			
		Lightweight Aggre	gate Producers			
Cascade Pumice Lloyd A. Williamson Bend, Oregon	Deschutes County Sec. 5 T. 18 S., R. 12 E. and Sec. 36 T. 16 S., R. 11 E.	Deschutes Concrete Products Co. (Pumice) Chester T. Lackey Redmond, Oregon	Deschutes County Sec. 30 T. 16 S., R. 12 E. and Sec. 33 T. 14 S., R. 13 E.	Northwest Aggregates, Inc. (Expanded shale) Portland, Oregon Smithwick Concrete Products Co.	Washington County Sec. 24 T. 3 N., R. 5 W. Washington County T. 3 N., R. 4 W.	
Central Oregon Pumice Co. W. E. Miller Bend, Oregon	Deschutes County Sec. 7 T. 17 S., R. 12 E. and Sec. 7 T. 18 S., R. 12 E.	Great Lakes Carbon Corp. (Diatomite) Dicalite Division Lower Bridge, Oregon	Deschutes County Sec. 16 T. 14 S., R. 12 E.	(Expanded shale) Portland, Oregon	1. 3 14., 16. 4 14.	
Cinder Hill Quarry (Cinders) Leroy E. Grote Redmond, Oregon	Deschutes County Sec. 33 T. 14 S., R. 13 E.	Harney Concrete Tile Co. (Pumice) Don Robbins Burns, Oregon	Harney County Sec. 3 T. 24 S., R. 30 E.			
Limestone						
Chemical Lime Co. (Burnt lime) Baker, Oregon	Baker County Plant at Wing- ville	Greely Lime Co. (Quarry near Enterprise) Portland, Oregon	Wallowa County Sec. 19 T. 2 S., R. 44 E.	National Industrial Products Co. Durkee, Oregon	Baker County Sec. 10 T. 12 S., R. 43 E.	
Dewitt's Polk County Lime Co. Dallas, Oregon	Polk County S.W. of Dallas	Ideal Cement Co. (Quarry at Marble Mt.) Gold Hill, Oregon	Josephine County Sec. 30 T. 37 S., R. 6 W.	Oregon Portland Cement Co. (Quarries at Lime and Dallas; plant at Oswego) Portland, Oregon	Baker and Polk counties Secs. 26, 27, 34,35 T. 13 S., R. 44 E. and Sec. 12 T. 8 S., R. 6 W.	

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Miscellaneous Nonmetals

Alkali Lake Sodium (Salines) A. M. Matlack Eugene, Oregon Lake County Alkali Lake Bristol Silica Co. (Crushed granite & quartz) F. I. Bristol Rogue River, Oregon Jackson County Sec. 30 T. 36 S., R. 3 W.

Gas-Ice Corporation (Dry ice) Portland, Oregon

Wilhoit Coal Mine T. G. Mandrones Portland, Oregon Jackson County Sec. 7 T. 39 S., R. 2 E.

Clackamas County Sec. 15 T. 6 S., R. 2 E.

R.S.M.

OREGON'S CONGRESSIONAL DELEGATION URGES REALISTIC MINING PROGRAM

At the hearing on the Department of Interior's long-range minerals policy held before the subcommittee of the U.S. Senate Committee on Interior and Insular Affairs, Oregon's two senators and its congressman from the second district representing eastern Oregon testified to the effect that the proposed program was inadequate and that a realistic program should be worked out immediately.

Senator Wayne Morse stated, "Chrome is a metal of high strategic value in time of defense emergency. Thus it would seem to be plain common sense to work out at once a plan to supplement the present program which expires June 30, 1959. We need an adequate incentive program to insure exploration for chromite deposits in the continental United States. . . . I urge the Committee to make a careful study of incentives that will enable small chrome mining operations to explore and produce this vital defense mineral and reap reasonable returns on their investments."

Senator Richard L. Neuberger stated, "We seem to be arriving at a point where we could very easily immobilize our domestic mineral industry. To allow this to happen would be very poor business. . . . Today Oregon's mining industry faces a most uncertain future. To play its part in the event of a national emergency would be difficult if not impossible unless it is bolstered by a friendly and helpful domestic program."

Congressman Ullman stated, "I think the only realistic approach to the problem of domestic chrome production is the adoption of a program similar to that which is now in effect. Certainly our defense needs are such that we could not tolerate the demise of this industry. . . . Ore producers have consistently been at the mercy of foreign mines which pay their workers fantastically low wages. I know from first-hand information that the miners in the district which I represent have barely been able to keep their heads above water. The high cost of mining plus high freight rates have indeed made it difficult for the development of a stable mining industry in the West. We cannot afford to lose the foothold which we have gained."

Besides deploring the inadequacy of the proposed chrome program, Oregon's delegation went on record as favoring continuation of the "floor plan" for quicksilver.

U.S. GEOLOGICAL SURVEY FUELS DIVISION ACTIVE IN OREGON

Parke D. Snavely, Jr., Regional Supervisor, Fuels Division, is doing geological mapping in the Newport embayment of the Oregon coast. His mapping this year is emphasizing the Eocene sediments and volcanics of the area. Mr. Snavely is also continuing his studies on Coast Range intrusives.

Linn Hoover is completing his field mapping in the Drain and Anlauf quadrangles of the southern Willamette Valley. Field work was started by Mr. Hoover in this transitional area between the Coast Range and the Cascade Mountains in 1955.

. . .

Dr. Weldon Rau is measuring sections and systematically sampling for microfossils in the Yaquina and Alsea river basins of the Oregon Coast. John Fryberger, graduate student at the University of Oregon, is assisting Dr. Rau.

Dr. Ewart M. Baldwin, professor of geology at the University of Oregon, is doing geological mapping in the Hubbard Creek and Camas Valley quadrangles of southwestern Oregon for the Survey.

EXPANDED SHALE INDUSTRY TAKES STEP FORWARD

The first production of expanded shale in Oregon began ten years ago with the firing up of a small kiln, operated by Robert Brooke, near Sunset Tunnel in Washington County. Brooke conceived the idea of bloating Oregon clays a year earlier, and the Department of Geology and Mineral Industries assisted in locating likely areas, running preliminary bloating tests, and finally selecting a suitable quarry and plant site. The plant was taken over in 1948 by Northwest Aggregates, a wholly owned subsidiary of Empire Building Materials Company, and considerably enlarged. It has been in steady operation ever since, except for shut-downs due to bad weather during the winter months.

A second producer entered the field in 1950 when Smithwick Concrete Products Company opened a kiln in Portland. Raw shale was quarried in northern Washington County a few miles south of Vernonia and railed to the kiln. This month Smithwick completed the transfer of its kiln at Portland to the quarry site where the removal of large quantities of shale during the past 7 years had provided a suitable level space for its construction. The plant is located on tracks of the Spokane, Portland & Seattle Railway.

Both producers operate concrete block plants in addition to their quarries and kilns. Smithwick has plants in Portland and Eugene, and Empire produces blocks and pre-cast and pre-stressed structural members at its Portland plant. Both companies also supply lightweight aggregate for monolithic concrete which is much used in bridge deckings and other applications where a saving in weight is essential in concrete construction. Both firms are quarrying a fossiliferous gray marine shale of Oligocene age which crops out widely over parts of Washington, Columbia, and Clatsop counties.

WATER QUALITY DATA INVENTORIED

As a part of its program for studying the use and control of Oregon's water resources, the State Water Resources Board, in cooperation with the Engineering Experiment Station at Oregon State College, has prepared an index to all available information on the quality of Oregon's surface and subsurface waters. Compilers are Warren C. Westgarth and Martin Northcraft of the Engineering Experiment Station.

The index has been published in two successive bulletins. Bulletin no. 1, "Water quality data inventory," is an index to all available published and unpublished information on quality of Oregon waters as of June 1956. Bulletin no. 2, "Water quality data inventory supplement," is an index to the results of a State-wide water-sampling program, conducted between June 1956 and June 1957, in which water from approximately 400 stations was collected and analyzed. In both bulletins the data on streams and wells are arranged in tabular form according to drainage basin and are accompanied by a bibliography to which the reader is referred for particulars regarding any water sample.

These two useful inventories have a number of important applications, one of which is to serve as an aid in selecting suitable locations for industrial plants in the State. The two bulletins may be obtained from the Oregon State Water Resources Board, Capitol Building, Salem, Oregon.

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