

WASHINGTON MINERAL INDUSTRY - 1960

by

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The mineral industry of Washington in 1960 continued the growth it has experienced during the past quarter of a century. According to a U. S. Bureau of Mines preliminary tabulation, the value of minerals production for the year was \$65.4 million, an increase of 2 percent over the \$63.9 million figure for the previous year. Production has increased steadily from a low of \$9 million in 1933. Continuing population growth in the Northwest assures an ever-increasing demand for industrial (nonmetallic) minerals, and the future for metals production also looks bright.

Although our neighbor state, Idaho, is commonly thought of as an important mining state, Washington is not generally thought to be in the same class. However, the record shows that our mineral production in 1960 was \$9.6 million (17 percent) greater than that of Idaho. Our production was one and a half times greater than Oregon's and three times that of Alaska.

King County had the highest mineral production value, followed by Spokane, Skagit, Stevens, and Pierce Counties. Only Wahkiakum County had no recorded production. The most important mineral commodities in each of these counties, listed in decreasing order of value, are: King—cement, sand and gravel, stone, coal, clay, and peat; Spokane—cement, sand and gravel, stone, clay, and uranium; Skagit—cement, sand and gravel, stone, clay, olivine, talc and soapstone, strontium, and chromite; Stevens—uranium, magnesite, stone, sand and gravel, lead, barite, clay, silver, zinc, and grinding pebbles; and Pierce—sand and gravel, stone, and clay.

Leading Producers

Washington leads the nation in the production of magnesite. This important industrial mineral, used as a refractory material in the manufacture of steel, comes from the quarries of Northwest Magnesite Co. near Chewelah in Stevens County. Olivine, another refractory material, was produced by Northwest Olivine Co. from the southern Twin Sisters Mountains in Skagit County. This is the largest deposit of olivine known in the United States. Production increased about 47 percent over the 1959 figure. Most of the product was used as foundry sand.

The second and third largest lode gold mines in the United States are located in Washington. These are the Knob Hill mine of Knob Hill Mines, Inc. at Republic and the Gold King mine of Lovitt Mining Co. at Wenatchee. This state ranks fourth among the states in diatomite production, fifth in lead production, sixth in uranium, ninth in copper, and tenth in zinc.

Zinc ore production, valued at \$5.5 million, lead all other ores in the State in 1960. Uranium ore was second in value, at \$3.3 million, gold was third, lead was fourth, silver was fifth, and copper was last, at \$56 thousand.

New Developments

An important development was initiated during the year by Goldfield Consolidated Mines Co. at its Anderson mine in northern Stevens County. This mine, formerly an open-pit operation, was shut down in 1952 by low zinc prices. In 1960 it was reopened by an inclined shaft directed toward new ore bodies discovered by geochemical prospecting and diamond drilling. A 1,500-ton a day operation is planned. Perhaps the most significant development during the year in the field of industrial minerals was the construction by Lane Mountain Silica Co. of a plant to process silica sand from a quarry near Valley in southern Stevens County. The plant, when completed early in 1961, will have a capacity of 400 tons of high-grade silica sand per day.

Mineral Fuels

Coal output in Washington dropped to 209,000 tons, 33,000 tons less than the preceding year. Despite the steadily dwindling demand for their product, coal operators are looking forward with optimism to the future, when large-scale steam-electric generation will be started, thus establishing an important new coal market.

Crude oil production from the State's only commercial oil well, the Sunshine Mining Co. - Medina No. 1, declined during 1960, but exploration for oil and gas in Grays Harbor County gave promise of production from other wells. During the year six test wells were drilled for a total footage of approximately 24,400 feet.

Metallurgical Industries

The plutonium plants operated by General Electric Co. at Hanford are by far the largest metallurgical industry in the State. The New Production Reactor now under construction is being built so that if Congress will give authorization and provide funds the reactor heat that is now wasted may be converted to electric power. The reactor, if constructed as a dual-purpose plant, would have a power-producing

capacity of about 700,000 kilowatts.

About a quarter of the aluminum smelting capacity in the United States is located in the Northwest. Despite an ample supply of hydroelectric power, primary aluminum output in the State was less than capacity owing to slackened markets. Estimated State production of aluminum was 347,000 tons valued at \$176 million, an increase in value of about 6 percent over 1959. New production facilities were constructed or announced by all three Washington aluminum producers — Alumigum Company of America at its Vancouver plant, Kaiser Aluminum & Chemical Corp. at its Mead plant and Trentwood rolling mill, and Reynolds Metals Co. at its Longview plant. An entirely new producer was in prospect when United Pacific Aluminum Corp. announced plans to build a 45,000-ton per year primary aluminum plant at Longview, with completion scheduled in 1962. Another new aluminum plant, with an annual capacity of 75,000 tons, was announced for construction either in Washington or Oregon by Harvey Aluminum, Inc.

Other important smelters and metallurgical plants that continued to operate throughout the year were the copper smelter and refinery of the American Smelting and Refining Co. at Tacoma, the electric-furnace steel plant and rolling mill of the Bethlehem Steel Co. in Seattle, the silicon carbide plant of the Carborundum Company of America at Vancouver, and the silicon metal and ferrosilicon plants of Ohio Ferro Alloys Corp. in Tacoma, Pacific Northwest Alloys, Inc. at Mead, and Keokuk Electro-Metals Co. Division of Vanadium Corp. of America at Rock Island near Wenatchee.

State Department of Conservation

The state administration's program to expand and diversify existing industry and to attract new industry to Washington is being implemented in part by the Division of Mines and Geology of the Department of Conservation. In order to update the knowledge of the mineral raw materials that might contribute most to the State's economic growth, the Division in 1960 continued with detailed surveys of limestone, clay, and coal that were started the previous year.

Limestone.—Field investigations were completed to determine the amount and quality of limestone available in the largest and most accessible deposits in both eastern and western Washington. The deposits are concentrated in the northern tier of counties from San Juan to Pend Oreille. Two geologists and five field assistants have been assigned to this job. Topographic and geologic maps of the best deposits were made. About 750 samples were taken for complete chemical analysis. The results of the survey will be published in two reports.

Clay.-Geologic mapping was completed in the north half of the Van Zandt quadrangle just east of Sumas in Whatcom county. This is an area where high-grade clay has been mined and where limestone is being quarried and large undeveloped limestone deposits are known. In addition, there are deposits of chromite and iron in the area. Mapping and sampling will, it is hoped, serve as a guide to more of all these resources, with emphasis on the clay.

Coal.-A 2-year investigation of the coal reserves of Washington was completed during the year. The work was done by the Fuels Branch of the U. S. Geological Survey, and the cost was shared equally by the State and the Federal Government. The report on this work should be ready for publication in 1961. With the data compiled in this report, anyone who may be interested in coal in the Northwest will be able to make preliminary appraisals of Washington's coal resources for any possible industrial use.

In July 1959 a 2-year cooperative project was initiated with the Fuels Branch of the U. S. Geological Survey to map the geology and investigate the coal and clay resources of an area in King County between Issaquah and Enumclaw. Some of the most productive coal mines and refractory clay pits in King County are in this area, and it is expected that detailed geologic mapping will furnish a guide for exploration and development of new reserves of both of these commodities.

Other activities.-The Division of Mines and Geology during 1960 continued to acquire information on other metallic and nonmetallic mineral deposits in the State. Systematic examinations were made of all the mines, prospects, and mineral deposits in the Methow quadrangle in Okanogan County. Complete revision of the State Geologic Map was completed, and the map was in press at year's end. A free mineral identification service provided hundreds of laboratory examinations of samples of ores, rocks, and minerals from taxpayers throughout the State.

Reports published.-Geology and mineral-resource reports published by the Division during the year and the price at which the reports may be purchased from the Department of Conservation, 335 General Administration Building, Olympia, Washington are:

"1959 Directory of Washington Mining Operations," Information Circular 34, by Gerald W. Thorsen, free.

"Inventory of Washington Minerals: Nonmetallic Minerals," Bulletin 37, part I, by Gerald M. Valentine and Marshall T. Huntting, \$3.00.

"Bibliography and Index of the Geology and Mineral Resources of Washington, 1937-1956", Bulletin 46, by William H. Reichert, \$2.00

"Geological Interpretation of Airborne Magnetometer and Scintillometer Survey of Parts of Okanogan and Ferry Counties, Washington", Report of Investigations 20, \$1.50.

"Geology of the Jumbo Mountain Nickel Deposit, Snohomish County, Washington", Reprint 6, by J. W. Mills, 25 cents.

"Map Showing Locations of Gem and Ornamental Stones in Washington", free.