OREGON'S MINERAL INDUSTRY IN 1956

By
Ralph S. Mason*

The year 1956 saw the value of Oregon's mineral production climb to an all-time high of almost $35,000,000, a 10 percent gain over 1955 which in turn was a record year. Increased capacity of two of the cement plants and installation of additional furnaces at the Hanna nickel plant were largely responsible for the increase. The preliminary figures released by the U. S. Bureau of Mines reveal that in 1956 every mineral commodity produced in the State had a greater value than the preceding year. Of perhaps equal importance to the State, and particularly to those areas where new mining and metallurgical industries are locating, is the impact of steady employment and the need for related services and supplies brought about through increased mining activities. The trend in Oregon, as it is elsewhere, is toward larger and larger operations adequately financed and designed for many years of operation. A preliminary survey by the Department of the number of people deriving their living from mining and metallurgical industries in the State indicates that the figure is in excess of 3000. To this figure should be added those indirectly connected on a full-time basis such as trucking firms and others providing special services.

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Major Developments

Coal. Pacific Power & Light Company has been pushing rapidly ahead with exploration of the Eden Ridge coal deposits and feasibility studies for a steam-electric generating plant in the Coos County area since the public announcement of its investigations (see The Ore.-Bin, August 1956). The mine-mouth plant would be teamed with a hydroelectric development on the South Fork of the Coquille River to combine steam and hydro generation. Applications have been filed with both the Federal Power Commission and the Oregon Hydroelectric Commission for preliminary permits to investigate feasibility of the hydro phases.

Core drilling was conducted through the fall and winter to establish the extent of the subbituminous grade coal deposits and depth, continuity, and attitude of the seams. Six drilling rigs working two shifts each were in the area through the fall and most of the winter. Sixteen holes have been completed and 10,484 linear feet of drilling logged. Geological studies based on the core data and laboratory analyses and firing tests on the coal samples are under way. Studies directed at the most economic methods of mining and location of the steam plant have included inspection tours in western Pennsylvania coal fields, and visits to mines and cleaning plants located near steam electric plants.

Drill crews and geologists are housed during the winter at a camp established near the location because of the difficulty of access to the area from Powers, the nearest community. The company has financed the installation of four stream-gauging stations by the U.S. Geological Survey. Company representatives also are working closely with the fish and wildlife agencies of the State.

Mercury. Three new furnaces to handle mercury ore went into operation in Oregon during the year. At the Bretz mine in southern Malheur County, Arentz-Comstock Mining Venture completed an operating agreement with Shawano Development Corporation to construct a treatment plant. Shawano had previously completed some exploratory drilling on the property. Stripping of overburden began in April and plant construction was started in August. On December 1, a 150-ton flotation plant and retort went into operation. At the Black Butte mine in Lane County, Mercury & Chemicals Corporation fired up a 100-ton retort early in November and at year's end was operating around the clock. Two shifts a day are working in the mine. A new raise from the 900 to the 1100 levels was completed and ore was coming from both levels. In Douglas County, the Buena Vista mine was reported to be in production late in the year. Considerable exploration work had been done at the mine in the previous 12 months. A 50-ton furnace was reconditioned and other improvements made to the surface plant.

At the Horse Heaven mine in Jefferson County, Cordero Mining Company operated a 25-ton rotary furnace for 10½ months during 1956. Ore was obtained from old pillars in the mine and from an open pit. Exploration work was also being carried on underground in an effort to extend the ore body. The Horse Heaven mine has been one of Oregon's large producers with a total of approximately 16,200 flasks produced to date. The other major mercury producer in the State during the year was the Bonanza mine operated by the Bonanza Oil & Mine Corporation in Douglas County. Aside from some lost time due to to winter storms, the mine operated continuously. Shaft sinking to the 1230 level was carried on. Approximately half of the quicksilver produced came from a newly installed retort. Production at the Bonanza dates from about 1865, and by 1939 it was the second largest producer in the United States. Some exploration work was also carried on by Bonanza at the nearby Nonpareil property during the year.
Exploration work was carried on at eight other quicksilver properties in 1956. The Axehandle mine in Crook County, idle for a number of years, was leased by the International Engineering & Mining Company which started exploration work late in the year. The Digmore Claims in southern Lake County were being developed by John and Weyland Rousch, who reported discovery of a large low-grade deposit. Oregon Uranium Corporation moved a report on a prospect at Glass Mountain in northern Lake County, and the S. and S. Mining Company continued to explore and do a small amount of retorting at a property in the same general area. In April the Uranic & Strategic Minerals Company announced plans to drill on a prospect at Vale Butte in Malheur County. H. K. Riddle was exploring a prospect at Hope Butte in northern Malheur County. In Harney County, Oregon Drilling & Mining Co. leased several prospects near Fields and some drilling was reported under way late in the year. Chester and E. W. Kubli acquired the Steamboat Cinnabar No. 1 prospect (formerly the Curl prospect) in southern Jackson County in September and began exploration work.

The Defense Minerals Exploration Administration had two active contracts with mercury producers in the State during the year. Bonanza Oil & Mine Corporation extended its shaft to the 1230 level and did some development and exploration work on the 830 level with DMEA assistance, and H. K. Riddle explored the Jordan mine in Malheur County. Eight other DMEA contracts were being processed at the end of the year, six of them for mercury exploration, one for chromite, and one for mercury and uranium.

Mercury production in 1956 amounted to 1875 flasks having an average value of $260 per flask for a total of $487,500. The all-time record for the State was attained in 1940 when 9,043 flasks having a value of $1,599,436 were produced by 20 mines. Average value per flask in 1940 was $176.86. Ten years later, in 1950, when the price had slipped to $81.26 per flask, Oregon production had dwindled to 5 flasks, all of which came from the Amity mine in Crook County.

Electro-process industries. One of the most encouraging developments in Oregon's mining and metallurgical field in recent years has been the rapid growth of the electro-metallurgical industry. Starting with the Reynolds' aluminum reduction plant at Troutdale during World War II, the industry now embraces such diverse products as calcium carbide, ferrosilicon, ferromanganese, silicon, aluminum silicon, ferronickel, titanium, and zirconium.

Titanium and zirconium production are newcomers to Oregon's metal industry. At Albany, Wah Chang Corporation was nearing completion of a zirconium reduction plant which, in conjunction with its facilities leased from the federal government, will produce 350,000 pounds of zirconium sponge per year. Also in Albany, Oregon Metallurgical Corporation began producing zirconium and titanium ingots from sponge in July and by year's end, castings were being made from both metals. Demand for zirconium and titanium by the aircraft and atomic energy fields is great and it would seem probable that plant expansions can be expected in the near future. A total of 270 men is currently employed by the two companies.

Sharp increases in tonnage of nickel ore mined and in the amount of ferronickel produced characterized the Hanna Company’s operations at Riddle, Douglas County, during 1956. The mine, located on the top of Nickel Mountain, is owned and operated by Hanna Coal & Ore Corporation. A total of 437,316 dry tons of ore was mined and tramined down the mountain to the smelter which is owned by Hanna Nickel Smelting Company. The smelter produced 24,755,327 pounds of ferronickel which contained 11,382,984 pounds of nickel, an increase of 36 percent over 1955. Two additional electric furnaces were put in operation
January 1957

early in the year. A total of 497 employees is engaged at the two Hanna operations.

Exploration for nickeliferous laterite deposits in southwestern Oregon by the Department continued during the year. Similar activity was reported by the California Division of Mines for the area lying just south of the Oregon-California line in Del Norte County.

There was little change in the production pattern of ferroalloys in 1956. One of the current problems has been the shortage of metallurgical-grade silica. Oregon has only one silica producer and considerable tonnages are brought in from Washington. The following plants were in production in the State during the year: Electro Metallurgical Company, Portland, producing calcium carbide, ferrosilicon, and ferromanganese; Hanna Nickel Smelting Company, Riddle, producing ferrosilicon, and ferronickel; National Metallurgical Corporation, Springfield, producing aluminum silicon, and silicon; and Pacific Carbide & Alloys Company, Portland, producing calcium carbide.

The influence of the electrometallurgical industry on a community can be appreciable. Electro processes can generally be located with a freedom of action not possible for most other industries. With the exception of electric power, raw materials are imported and finished products are shipped considerable distances, so the choice of a plant site becomes relatively unimportant. To a small community the presence of such a plant means stabilization of income since it operates continuously and is not subject to seasonal variations.

Chromite. The extension of the General Services Administration chromite stockpile buying program from June 30, 1957, until June 30, 1959, gave a boost to the State's production of metallurgical-grade lump chromite and concentrates. With the expected deadline nearing, miners and mill men were reluctant to do additional development or improvement work. The extension removed this problem, at least temporarily, and deliveries to the Grants Pass stockpile during 1956 amounted to 8,330 long tons, the largest amount delivered under the current program. Since 1951, Oregon mines have produced a total of 33,897 tons of ore and concentrates having a total value of $2,764,354. This is an average of $81.60 per ton for the ore.

Twelve Grant County mines and three mills produced a total of approximately 1500 long dry tons of lump ore and concentrates for the Grants Pass stockpile in 1956. Tri-County Milling & Concentrating Corporation operated its plant at John Day on ore from the Lost Buck, Ward, and Zero mines; AI Dunn concentrated ore from the Gardner Ranch No. 1 and a property near the Potato Patch mine; and the Comstock Uranium & Tungsten Company, Inc., shipped concentrates obtained from low-grade ores mined at the Haggard & New mine. In addition to the mines delivering ore to mills for beneficiation, the following mines shipped directly to the stockpile: Dry Camp, operated by Allen and John Stinnett; Red Hill mine, with R. C. Beggs shipping; Stewart Ranch deposit, Burt Hayes, shipper; and the Mule Shoe mine in Mormon Basin, operated by Joe Anderson. Although most of the ore and concentrates were shipped to the Grants Pass stockpile by truck a small tonnage was sold under the car-lot program established during the year.

In southwestern Oregon, 25 mines and 9 mills were active during the year. Josephine County had 13 mines and 5 mills, Curry followed with 8 mines and 2 mills, Douglas County had 3 mines and 1 mill, and Coos County had 1 mine and 1 mill. Some mills operated entirely
on ore from one mine located nearby while others worked on a custom basis. A small amount of ore originating in northern California was upgraded in Oregon mills. Pacific Northwest Alloys dismantled their beneficiation plant just north of Coquille in August upon exhaustion of the stockpile of rough concentrates left by the Defense Plant Corporation mill during World War II. Minerals Sands Company continued work on their concentration plant north of Bandon, but no production was announced during the year.

The largest chromite mine in southwestern Oregon is Oregon Chrome located on the Illinois River in Josephine County and operated by William Robertson. The mine has a long history of intermittent production extending back to World War I. It has reportedly been "mined out" several times but reserves of ore at the end of the year were perhaps the largest since the mine was opened. Some of the ore is concentrated in the Gallaher Mill located a few miles away on U.S. Highway 199. More than 20 men are employed at the mine.

Oregon is one of the few states in the Union which produces metallurgical-grade lump chromite ore. Deposits are characteristically small, with a few exceptions, and mining costs are correspondingly high. The industry has been plagued over the years with periods of intense activity during national emergencies, and almost complete stagnation in peacetime. If a domestic chromite mining industry is to become firmly established, a long-term program must be set up in order that mine and mill operators can properly plan their mining venture and exploit the large disseminated ore bodies. A long-term program for chromite would also encourage other mining activities as chromite exploration could result in discovery of other mineral deposits.

Lime, limestone, and cement. Construction of a lime-burning plant near Baker by Chemical Lime Company began in August, with completion scheduled for early 1957. Raw limestone will be obtained from the company-owned quarry about 8 miles from the plant. Production from this plant will mark the first lime burned in the State since 1947 when the Horsehead plant in Josephine County suspended activity.

Production of limestone for the manufacture of cement increased considerably in 1956. Oregon Portland Cement Company completed plant expansions at Lime, Baker County, and at Oswego, Clackamas County. The plant capacity at Lime was doubled while that at Oswego was increased 60 percent. More than 3 million barrels of cement can be produced annually by the two plants as a result of the 6 million-dollar expansion program. Limestone for the Lime plant is obtained locally, while the Oswego plant obtains its supply from company-owned quarries near Dallas in Polk County and from Baker County. A total of 375 men is employed at the two plants. Ideal Cement Company was in full production at its plant at Gold Hill in Jackson County. High-grade limestone is trucked from the company's quarry near Wilderville, Josephine County. One-hundred fifty men were employed at the plant and quarry. Pacific Carbide & Alloys Company obtained marble from their quarry near Enterprise in Wallowa County and railed it to Portland for the production of calcium carbide. A wholly owned subsidiary, Greely Lime Company, distributed undersized material for agricultural purposes in the Willamette Valley area. The only producer of limestone operating solely for agricultural purposes was Dewitt's Polk County Lime Company near Dallas. Limestones in the Dallas area contain about 53 percent calcium carbonate, and the economic distance which such material can be hauled is limited. National Industrial Products Company continued to ship crushed limestone from a quarry located near Durkee in Baker County, to pulp mills, sugar factories, and the cement plant at Lime. Twenty-five men are employed at the quarry and crushing plant.
Uranium. The White King claim in Lake County, operated by the Lakeview Mining Company, was extensively diamond drilled during the year and sinking of a two-compartment shaft was begun in September. Two bulk shipments of crude ore were made to the Vitro Chemical uranium reduction plant in Salt Lake City, Utah. The latest shipment consisting of approximately 500 tons was obtained underground and was sent for mill-testing purposes.

A review of uranium prospecting activity in the State and notes on the geological relationships which have been observed at several prospects were published in the December 1956 issue of The Ore.-Bin.

### Minerals Summary

In addition to the major developments given above, other phases of Oregon's mineral industry have continued to grow. The following summarizes these activities. Attention is called to the accompanying table, "Oregon's Mineral Industry at a Glance."

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<th>Oregon's Mineral Industry at a Glance</th>
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(symbols indicate relation to 1955)

The Department completed its investigation of the ferruginous bauxite deposits in the Salem Hills, Marion County, Oregon, and published a bulletin which showed the results of this work. On the basis of 27 widely scattered auger holes, there is indicated an aggregate area of approximately 1200 acres underlain by gibbsitic laterite which has an average thickness of 14.4 feet. Average analyses of drill hole samples give a weighted average of 35.0 percent alumina, 6.7 percent silica, 31.5 percent iron oxide, 6.5 percent titania, and 20.2 percent loss on ignition. Aluminium Laboratories, Limited, Canada, which carried on a drilling exploration program in this area during the summer and fall of 1955, concluded its study and has allowed its land options to expire. Throughout the year several geologists representing aluminum companies have visited the area of the deposits. Harvey Aluminum Company has recently announced its intention to begin an exploration program in the Salem Hills if a sufficient amount of land can be acquired. Harvey began construction of transmission facilities for its $65,000,000 aluminum reduction plant at The Dalles in August.

In a separate investigation the U.S. Bureau of Mines has begun metallurgical tests on the Salem Hills material.

The lightweight aggregate industry in Oregon falls into two classifications: pumice-cinder operations and expanded shale operations. In central Oregon three pumice producers were active during the year while two expanded shale plants operated in the Portland area. Detailed descriptions of the pumice and volcanic cinder operations in central Oregon were published in the November 1956 issue of The Ore.-Bin. Rigid controls over sizing and blending are maintained by the pumice-cinder plants, and production is tailored to individual consumer's needs. The two expanded shale producers, Empire Building Materials Company and Smithwick Concrete Products Company, continued to enlarge their line of pre-stressed and pre-cast structural members. Diverse applications of this relatively new building material is illustrated by the production of beams 72 feet long, structural members for bridges, and pre-cast expanded shale concrete for the bell shells used in constructing the piers of the Portland-Vancouver bridge. The saving of 20 tons of weight by using this type of concrete rather than regular sand-cement-gravel mix permitted emplacement of the shells in one piece below the water line with a consequent saving in expense. Empire announced that plans are well along for the reclaiming of crusher dust by pugging. The pellets thus produced would be added to the kiln feed.
The Buffalo mine near Granite in Grant County contributed the bulk of the State's gold during the year which totaled $86,800. Minor production from small placer mines, mostly in southwestern Oregon, supplied the balance of the gold recovered. Sunshine Mining Company, Wallace, Idaho, examined five mines in the Bourne area of Baker County during the summer months. The mines included the Columbia, Tabor Fraction, E and E, North Pole, and Villard. They were important gold producers a number of years ago.

Exploration at the Fall Creek Copper mine on the Illinois River in Josephine County was carried out during the year with some shipments of chalcopyrite to the Tacoma Smelter. The Bohemia district, Lane County, had a minor amount of activity during the year. At the Helena mine, Kenneth Watkins drove a new level 100 feet below the lowest workings. The U.S. Bureau of Mines conducted sampling and analysis of areas overlying copper deposits in the Takilma-Waldo district in southern Josephine County.

Sand and gravel continued as the single largest mineral commodity produced in the State, with a preliminary value estimated at nearly 12 million dollars. A complete canvass of sand and gravel producers is not possible since considerable quantities of material are produced by companies not primarily engaged in the business. Valuation of sand and gravel and many other industrial minerals is difficult to determine. In the case of metals, national or international values of the finished product are readily obtainable. Industrial minerals enjoy no such standardization as the market value is usually determined between producer and consumer. Furthermore industrial minerals producers often report the value of their product as it comes out of the pit rather than when ready for market. If the latter figure was used, the value for sand and gravel would be at least double the figure reported.

Experimental work continued at Hatch Brothers Chemical Company plant near Tillamook on a process to extract magnesium from sea water. A small pilot plant was under construction at year's end. A. M. Matlock processed a small tonnage of soda from Alkali Lake in Lake County and sold it for a sweeping compound, sweetener, and neutralizer.

Bristol Silica Company continued to operate the only silica quarry in the State. Search for new deposits was unsuccessful despite a large and growing demand for metalurgical-grade rock.

Activities of two of the building stone quarries were reported in the November issue of The Ore.-Bin. A third quarry, operated by the Tuff Stone Company near Sublimity in Marion County was sold in November to Oregon Tuff Stone, Inc. Production was continuous during the year with an average of six men employed. The quarry supplies a specialty item which is used for construction of cold storage plants and cold rooms, in addition to the regular construction and veneer uses. Production of dimension and veneer stone was also reported from the Rocky Butte quarry in Portland and the Carver quarry in Clackamas County. Northwestern Granite quarry near Haines in Baker County produced monumental granite.

Oil and Gas Summary

During the year six new permits to drill for oil and gas in Oregon were approved by the Department. By the end of 1956, four drill rigs were active, three had suspended operations, and two tests had been plugged and abandoned. Leasing of land for drilling exploration in the State declined somewhat from the year before; however, much of the land taken up in previous years has been retained. Throughout the summer field season at least six major oil companies
maintained geological and geophysical crews for surface exploration in all parts of the State. Exploration activity of this type appears likely to continue in 1957.

The 13,000-foot well completed in January 1956 by the Sinclair Oil and Gas Company near Mapleton, western Lane County, is the deepest test recorded in the Northwest including Alaska. In Oregon, up to the present time, only eleven other wells have been drilled deeper than 5,000 feet. These range in depth from 5,141 feet to 9,263 feet. It is anticipated that further drillings by major companies will be made in 1957.

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PLACER MINES ACTIVATED

The old China Diggings on Palmer Creek, a tributary of the Applegate River in Jackson County, sec. 7, T. 40 S., R. 3 W., has been purchased and put into operation by the Sierra Land Company of Grants Pass. The property consists of seven claims previously owned by the Haynes Brothers of Medford. Frank M. Kolkow and Ben R. Haynes, Murphy, are the operators. A 10-inch diesel-powered pump and a No. 2 Giant are being used. Howard Lewis, Grants Pass, one of the owners, said that the operation was started in November, 1956, and that a short supply of water has been their principal problem.

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The Steam Beer placer, located at Leland in sec. 6, T. 34 S., R. 6 W., Josephine County, is being reactivated by McKee and Associates who have leased the property from Recoveries, Inc., an Oregon corporation. New equipment reportedly capable of handling about 80 yards of gravel per hour has been installed at the mine. Mr. Pete L. Gregersen, who is in charge of the operation, expected that installation of the plant would be complete by January 8th.

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GROUND-WATER LEVELS IN OREGON ABOVE AVERAGE IN 1956

In the Willamette Valley the level in the key well at Portland was above average every month except October, January, and September and was about 1 1/2 feet below average at the end of the water year. In the upper Willamette Valley the water level in an observation well at Junction City was near or above average during the first 4 months of the water year and below average during the rest. At year's end the level was about 1 foot below average.

East of the Cascades all year-end water levels reported were near or above average. In the Fort Rock Valley, an area of interior surface drainage, water levels in a well at The Poplars ranch continued the upward trend established in 1950-51; a new record-high level was measured every month except April and at year's end the level was about 4 1/2 feet above average. The major factor controlling the fluctuations of levels in the wells at Milton-Freewater in the Walla Walla River basin, at Baker in the Powder River basin, and near Burns in the Harney Basin (an area of interior drainage) is the time of arrival of recharge from the snowmelt. The levels in all wells were average or below at the beginning of the year and rose to above-average stages as the melt from the above-average snowpack reached them. The water levels in these three wells remained at average or above-average stages throughout the rest of the year.

(From U.S. Geological Survey Water Resources Review, Annual Summary.)

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GEOLOGIC MAP OF SIUSLAW RIVER AREA PUBLISHED

Geologic map of the lower Siuslaw River area, Oregon, by E. M. Baldwin, has been issued by the U.S. Geological Survey as Map OM 186 of the Oil and Gas Investigations series. The map was prepared in cooperation with the Oregon Department of Geology and Mineral Industries. The map covers six 15-minute quadrangles: Heceta Head, Mapleton, Blachly, Siltcoos Lake, Goodwin Peak, and Roman Nose Mountain, in western Lane and Douglas counties. Distribution of Tertiary sedimentary and volcanic rocks and intrusive igneous rocks are indicated in patterns of green and white. Major folds and faults are shown. The map is printed on a single sheet without text at a scale of 1 inch equals approximately 1 mile. It may be purchased for 50 cents from the Geological Survey, Denver Federal Center, Denver, Colorado.

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SEVERANCE TAX BILL TO BE INTRODUCED

According to the Oregon Voter of January 26, 1957, a severance tax bill is to be introduced shortly in the House of Representatives by the State Tax Commission. The Oregon Voter states: "Bill provides for state severance tax on oil, gas, coal and minerals. Tax to be imposed on producer on probably a net basis in order to distinguish between high and low cost production. Rate would be 3% on oil and gas - 2% on all other. Net revenues to go 80% to general fund, and 20% back to counties." It is understood that the bill is to be very similar to the severance bill introduced in the last session of the Legislature which never got out of committee.

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STATE LEGISLATURE COMMITTEES ANNOUNCED

Members of the Senate Committee on Natural Resources for the Forty-ninth Legislative Assembly of Oregon are as follows:

Philip B. Lowry, Chairman, Medford
Warren Gill, Vice-Chairman, Lebanon
Howard C. Belton, Canby
Phil Brady, Portland

Members of the House Committee on Forestry and Mining are as follows:

George J. Annala, Chairman, Hood River
V. Edwin Johnson, Vice-Chairman, Eugene
Eddie Ahrens, Turner
Carl Back, Sixes
Fay I. Bristol, Grants Pass

Andrew J. Naterlin, Newport
Daniel A. Thiel, Astoria
Francis W. Ziegler, Corvallis

W. O. Kelsay, Roseburg
E. A. Littrell, Medford
Emil A. Stunz, Nyssa
Carl Yancey, Klamath Falls

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CORRECTION

The location of Drilling Permit No. 23 issued to Standard Oil Company of California should read 4319 feet west and 2909 feet south of the N.E. corner of sec. 6, T. 4 S., R. 21 E., Gilliam County. The location appearing in the December Ore.-Bin was incorrectly given.

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