STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES
329 S.W. OAK ST.
PORTLAND, OREGON

THE ORE.-BIN

VOL. 1 NO. 12 PORTLAND, OREGON December 1939

TO ALL EXCHANGE LIBRARIES:

Announcement is made of the release of Departmental publications:
BULLETIN NO. 19, entitled "Dredging of Farmland in Oregon"; by F. W. Libbey.
G.M.I. SHORT PAPER NO. 1, "Preliminary Report upon Oregon Saline Lakes", by Dr. O. F. Stafford.
Copies of Bulletin No.19 were mailed from this office on December 2, 1939, and copies of G.M.I.Short Paper No.1 will go forward from this office about December 12, 1939. If these are not received within 10 days from the above dates, advise this office immediately; otherwise, replacements for copies lost in the mail or elsewhere cannot be made.

NEW BULLETIN ANNOUNCED

Announcement is made of the publication of the following bulletin by the State Department of Geology and Mineral Industries:

> "Dredging of Farmland in Oregon", by F. W. Libbey, mining engineer, State Department of Geology and Mineral Industries, Bulletin no.19; 40 pp., 10 plates (map, photographs, and graphs); 1939; 40 cents.

Copies may be obtained from the Department's office, 329 S.W. Oak Street, Portland, or the State Assay Laboratories at Baker and Grants Pass, upon receipt of 40 cents to help defray cost of printing and mailing.

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Persons who have had occasion to discuss the good or detriment to the state of dredging croplands have raised such questions as: What is the value of various kinds of lands being dredged for gold in this state? What is the average amount of gold obtained from an average acre of dredge land? How much of the gold recovered goes into local wages, supplies, taxes, etc.? What percentage of the land being dredged yearly in this state is waste land, meadow land, cropland, etc.? How much gold is being produced annually by the dredges in the state? What is the answer to the question of resurfacing after dredging in Oregon? Is the statement that dredging takes land out of production for future generations defensible? Is the statement that "dredge tailings look like hell" defensible? How can the costs of stripping overburden and resoiling after dredging be calculated? What are the pertinent facts connected with dredging in the John Day Valley? How can we compare the destruction of farm land by dredging with its destruction by other agencies?

These and other questions relating to dredging in this state are answered in the bulletin above referred to. The report includes a compilation of facts pertaining to dredging, an unbiased engineering analysis of these facts, and conclusions which should be of value to persons interested in dredging, not only here but wherever dredging is carried on.

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NEW SERIES OF PUBLICATIONS

The Oregon State Department of Geology and Mineral Industries herewith announces the first of a series of reports to be known as G.M.I. Short Papers.

> G.M.I. Short Paper no.1, "Preliminary Report upon Oregon Saline Lakes", by Dr. O. F. Stafford, Department of Chemistry, University of Oregon. Price 10 cents.

This paper discusses and reaches conclusions as to the feasibility of the utilization of salt lake deposits in Oregon under present conditions of transportation, competition, and market demand. It is not an exhaustive study but a report made for the purpose of determining whether this Department would be justified in undertaking at this time or in the near future a series of detailed tests of research nature on the utilization of salt deposits in the Lake County district of Oregon. Dr. Stafford's findings will be of interest to many persons who have, in the past, given consideration to the possibility of developing and using these well-known salt deposits.

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THE G.M.I. SERIES

Occasionally the Department finds it desirable to issue and make available to the public the text of brief reports, the result of field investigations by members of the staff, or the result of office compilations pertaining to the mining and mineral industry of the State which may be of general interest. This G.M.I. (Geology and Mineral Industries) series is a corollary of the Technical Paper series of the U.S. Geological Survey and the Information Circular and the Report of Investigation series of the U.S. Bureau of Mines and fulfills the need for a vehicle of publication which can be more quickly and inexpensively produced with Department facilities. The G.M.I. series will not replace but will supplement our regular Bulletin series. A price of 10 cents postpaid has been established for each of the issues of this new series. The Short Papers will be issued irregularly. Notice of publication of each will be carried in the monthly issues of the "Ore.-Bin" and occasionally in the press.

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CHANGES IN DEPARTMENT STAFF.

The Department announces the following changes in its personnel set-up:

Mr. Jewel E. Morrison, Mining Engineer with headquarters at Grants Pass since 1937, has resigned to accept a mine operating job as superintendent at

the Al Sarena Mine - locally known as the Buzzard - located about fifty miles north of Medford.

Mr. Ray C. Treasher, Geologist with headquarters at Portland since 1937, is being transferred January 1st to southwest Oregon with residence at Grants Pass. Treasher will be Field Geologist and carry on the department's regular field inspection service, with special emphasis on strictly technical and geological phases of mining problems.

Mr. Leslie L. Motz, formerly assayer at the Baker State Assay Laboratory, was transferred December 1st to the Portland office staff and, as Metallurgical Chemist, will be occupied principally with studies and problems of metallurgical nature in connection with mining, milling, and industrial activities. The Department's desire to be in a better position to give attention to problems of metallurgy comes from its belief that such studies will fit in properly with new electrochemical and electro-metallurgical development which Bonneville power will doubtless encourage in the Columbia Area.

Mr. Hugh K. Lancaster has been employed as Assayer at the Baker State Assay Laboratory to fill the vacancy left by Mr. Motz's transfer.

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GOVERNMENT STRATEGIC MINERAL SPECIFICATIONS AND BIDS

The Procurement Division of the U.S. Treasury Department recently opened bids for supplies of ores of manganese, tungsten, and chromium to be placed in military reserve stock-piles as provided for by the Thomas Act - the so-called Strategic Minerals Bill - passed last summer.

Manganese:

Three grades of manganese ores, provided for in the request for bids, are listed below with minimum and maximum chemical analysis requirements for each grade:

Grade	Manganese (Mn)	Iron (Fe)	Zinc (Zn)	Silica (SiO_2)	Phosphorous (P)	Alumina (Al_2O_3)
	Minimum %	Max. %	Max. %	Max. %	Max. %	Max. %
A	48	7	1	9	0.12	3
B	48	7	1	*10	0.18	6
C	48	7	1	7	0.15	6

* For each additional 1% Mn over 48%, an additional 0.2% SiO_2 is allowed.

Deliveries of manganese ore under the bids requested by the government were to be made either at Ogden, Utah, or Baltimore, Maryland.

Sixteen bids for supplying manganese were opened by the government on October 19 and 20. The bid prices ranged from $0.42 to $1.67 per long ton unit of Mn in lots of 3,000 tons or more. Two bids were accepted by the government, one by the Cuban American Manganese Corporation for 25,000 long tons at the contract price of

$765,000, or $0.612 per long ton unit, for delivery c.i.f. Baltimore, Maryland; the other, the bid of the Green Brier Mining Company of White Sulphur Springs, West Virginia, for 5,000 tons of domestic ore to be delivered at Baltimore, Maryland, at a contract price of $180,000, or $0.75 per long ton unit.

Tungsten:

The tungsten chemical analysis requirements in bids requested by the government were as follows: Tungsten tri-oxide (Tungstic acid, WO_3), 60% minimum, tin - 1% maximum, copper - 0.05% max., phosphorous - 0.035% max., arsenic - 0.50% max., antimony - 0.05% max., bismuth - 0.12% max., molybdenum - 0.40% max., and sulphur - 0.50% max.; ores to be delivered at bid prices at Columbus, Ohio.

The prices quoted by bidders ranged from $23.50 to $24.50 per short ton unit of WO_3 in lots of 100 to 400 tons. One bid was accepted for a lot of 425 short tons of Chinese ore offered by Wah Chang Trading Corporation of New York City at $23.75, including a $7.93 duty, per short ton unit.

Chromium:

The chromium chemical analysis requirements of the government bids are given as follows: Chromium oxide (chromic acid, Cr_2O_3) - 48% minimum, iron - maximum not more than one-third of actual percentage of chromium metal (in other words, an ore running 48% chromic oxide, which would contain only 33% metallic chromite, could not run more than 11% iron to meet the specifications), sulphur - 0.50% max., and phosphrous - 0.20% max.; deliveries of chromite ore to be made at New Cumberland, Pennsylvania.

Prices quoted by bidders were in the neighborhood of 3.2 cents per pound of contained chromic acid in quantities of 6,000 tons or more of ore. The two bids on chromium ore were cancelled on the grounds that neither bidder could meet the government terms.

Certain physical and other requirements are stipulated in the bids as published by the government. These conditions are outlined on page 72 of the Engineering and Mining Journal for October 1939, and page 29 of the November issue of the same publication. In very brief outline the additional requirements are as follows: for manganese - preferably ore should pass 4-inch screen and contain a minimum of fines; no ore to be accepted which will not pass 6-inch screen nor which contains more than 12½% of fines which will pass a 20-mesh screen. For tungsten - acceptable in lumps or fines or a mixture of both; ore to be delivered in heavy oak barrels or suitable steel drums, weight of each filled container not to exceed 500 pounds. For chromium - to be furnished in lumps; all lumps to pass a 6-inch screen and not more than 10% to pass a ½-inch mesh screen; all ore to meet federal specifications for manufacture of ferro-chromium without blending.

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ARTICLES OF INTEREST

"Equipping a Small Gold Mine on the Mother Lode", by O. H. Rolfs; Engineering and Mining Journal, October 1939. This gives a good write-up of the cost and details of equipping a small gold mine anywhere.

"Bleaching Clays Find Increasing Use", by G.A.Schroeter; Engineering and Mining Journal, November 1939. This gives an outline picture of classification, utilization, and geology of these clays. Reading of this article along with this Department's Bulletin no.6, "Some Refractory Clays of Western Oregon", will give anyone an informative picture of the clay possibilities of western Oregon.

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Attention is drawn to the following properties for acquisition or disposal.

112-1. Wanted to lease: Small free gold mine for 20-ton mill operation.
Byron Brown,
Stanfield, Oregon

112-2 Morning Mine in Greenhorn District, Baker county. Well developed mine. Water, timber, and power available. Will consider sale, lease, or financial aid. W. W. Gardner, Whitney, Oregon.

112-3 Gold property of 2 unpatented claims located in Granite District, Grant county. Developed by 25-foot shaft and 150-foot tunnel. Water and timber available. Will consider sale or financial aid.
John Leuck, Granite, Oregon.

112-4 Gold and scheelite property in Lower Burnt River District, Chicken Creek, Baker county. Will consider sale or financial aid to put in small mill.
Geo. E. Morin, Allegany (Coos Co.) Oregon.

112-5 Gold property of 3 unpatented claims in Grant county. Developed by 33-foot shaft, 40-foot tunnel, open cuts. Water and timber available. Will sell. Floyd Sherwood, Austin, Oregon.

112-6 Gold property of 4 unpatented claims in Upper Burnt River district, Baker county. Developed by 150-foot drift and surface cuts. Will consider sale or financing. W. T. Thomason, Baker, Oregon.

112-7 Clay deposit of 2200 acres, patented, near Curtin, Douglas county. Developed by surface cuts. Water and timber available. Will consider sale or financing. C.Wolfer and A.E.Miller, Canyonville.

112-8. Limestone deposit of 4 unpatented claims near Riddle, Douglas county. Developed by surface cuts. Water, timber, power, railroad available. Will consider sale or financial aid. (See 112-7 above).

112-9. Molybdenite deposit of 3 claims near Rogue River, Jackson county. Developed by surface cuts. Water, timber and power available. Will consider sale or financing. (See 112-7 above).

112-10 Gold property of 8 claims 20 miles south of Powers, Oregon. Developed by tunnels and open cuts. Water and timber available. Will sell or consider aid in development. W. W. McCoy, Powers, Oregon.

BENTONITE.

The name bentonite has been applied to a group of clays that have been derived from volcanic ash and that contain as their chief constituent the clay minerals montmorillonite (a complex silicate of aluminum, calcium and magnesium) and beidellite (aluminum silicate). The broad term bentonite includes the two general classes: (1) the standard bentonites which absorb large quantities of water and swell to many times their original volume, and (2) the subbentonites which absorb practically no water and swell no more than ordinary clays.

Bentonite occurs principally in Wyoming, California, and South Dakota; and lesser deposits exist in Montana, Arizona, Utah, and Idaho. It originated as deposits of volcanic ash or dust which settled in the salt seas of the Northwest. The glassy ash particles were gradually devitrified by chemical decomposition and hydration as the region alternated between land and sea.

Bentonite has no definite chemical formula, and the composition will vary greatly between the different kinds even from the same deposit. Montmorillonite forms more than 75 percent of the mineral content; while feldspar, gypsum and calcite, quartz, volcanic glass, biotite, and zeolites form the remainder.

As with most nonmetallic minerals, physical properties control utilization and price. High-grade bentonites of the standard, or Type 1, class absorb as much as 5 times their weight of water and swell to as much as 15 times their orignal volume. Additions of 6 parts water make a gelatinous paste of bentonite, while 20 or more parts make a colloidal solution in which particles of bentonite will remain in suspension indefinitely. The subbentonites of Type 2 do not swell, and they settle rapidly in thin water dispersions.

The principal uses of bentonite are as a bonding agent in foundry moulding sands; oil-well drilling mud; for bleaching petroleum products; in the manufacture of cement and ceramic products, soaps, paper, cosmetics and pharmaceutical products and roofing; for clarifying wines; as a suspending, thickening, and paste-forming agent in laundries, water softeners, and newspaper manufacture; for sealing irrigation dams and ditches and subsurface building walls against seepage of water; for clarifying turbid water and purifying sewage; and many other uses which are continually being found.

The best developed Oregon occurrences of bentonitoid clay are located in the Molalla region some 20 miles south of Oregon City. However, bentonitoid clays, as defined above, are derived from volcanic ash; so therefore, any area containing altered volcanic tuff is a possible bentonite deposit. Simple tests for absorption and swelling of a sample of clay will indicate the likelihood of its being a bentonite, and time may be saved by the prospector by making these tests in the field .

The commercial value of a bentonite deposit depends upon the type or class of bentonite, thickness and dip of clay seam, amount of overburden, and cost of transportation.

Bentonite has decreased in cost during the past few years until it is now quoted at $7 to $8 per ton in dried, coarsely crushed form in carload lots.

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