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STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
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NEW BAUXITE DISCOVERY

A new bauxite area of undetermined extent has been found by the Department in Clackamas County, Oregon. The discovery stemmed from a sample of ferruginous bauxite pisolites submitted to the Department for a mineral determination.

The general area in question is centered about 6 miles by road southeast of the town of Estacada and about 35 miles southeast of Portland. Reconnaissance work by the Department has so far shown occurrences extending over a lineal distance of about a mile on the southwest side of the Clackamas River. No field work has been done so far on the opposite side of the river. Typical ferruginous bauxite occurs as outcrops at two or three places on the Kiggins and Shearer farms in the NW¼ sec. 3 and NE¼ sec. 4, T. 4 S., R. 4 E., in Clackamas County. These places are reached by driving east on a county road from the settlement of Springwater south of Estacada. The accompanying index map shows the location of the area and the points at which some study has been made. A list of analyses is given and these indicate the values at the places investigated, but insufficient work has been done to predict with certainty the physical and chemical characteristics of the ore section or the detailed geology of the area.

The material so far studied shows some different characteristics from those which were typical of the bauxite in other counties of northwestern Oregon. The Clackamas County material is typical high-silica bauxite. Compared with the ore section in Washington and Columbia counties, first prospected by the Department and later intensively explored by Alcoa Mining Company, the Clackamas County bauxite is higher in both alumina and silica and much lower in iron oxide and titania. The important aluminum minerals are gibbsite and a much smaller proportion of kaolin. The texture of the ore section is typically oölitic with only a few pisolites observed. The color is brown. Gibbsitic nodules, which are rather common in Washington and Columbia counties, have not so far been found.

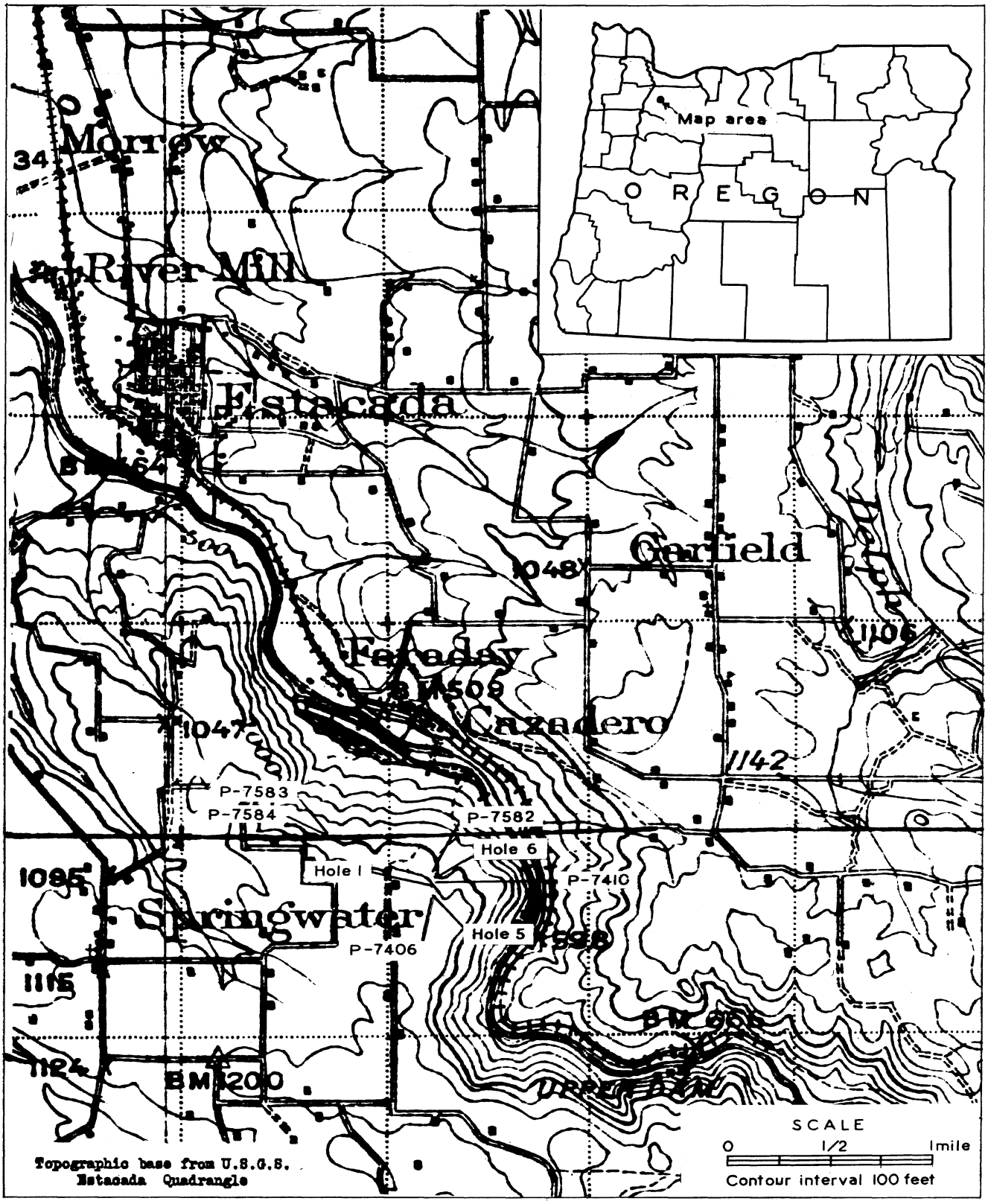
Average analysis, on a dry basis, obtained from about 7 feet of section of two auger holes about 1000 feet apart on the Kiggins farm, is as follows:

Alumina	43 %
Iron	10
Silica	21.5
Titania	1
Loss on ignition	20
Moisture	24

An average of 5 samples (P-7406, P-7410, P-7582, P-7583, P-7584) of oölitic material obtained from outcrops separated by a distance of about half a mile is as follows:

Alumina + titania*	44 %
Iron	11
Silica	17.7

*Titania averages about 1%.



Index map showing location of bauxite area on Kiggins and Shearer farms, Clackamas County, Oregon.

In other northwest Oregon counties the laterite, which includes the ferruginous bauxite section that formed on the upper flow or flows of Columbia River basalt, is generally overlain by a water-laid, massive silt believed to be of Troutdale age. This silt varies widely in depth but is generally moderate in thickness and would in nearly all places readily allow surface mining. In the area so far examined in Clackamas County the laterite section is overlain with Troutdale sediments containing pebbles of various sizes as much as a few inches in diameter. It seems likely that the laterite section in Clackamas County was covered by the Troutdale formation before laterization had proceeded as far as in other northwest localities. The meager evidence for this assumption is the presence of kaolin and the absence of gibbsite nodules.

In the absence of development work it is impossible to predict the thickness of overburden on the ore section. With the exception of a band of laterite of undetermined but probably narrow areal extent exposed in places on the Kiggins and Shearer farms, it seems likely that the laterite continues under a thick section of Troutdale formation extending away from the Clackamas River valley. Whether or not the same conditions obtain on both sides of the river is impossible to state at the present time. Probably lineal extensions of the present outcrops will be found both southeast and northwest of those mentioned above. However, whether or not the areal extent below the thick overburden is sufficient to make the area of economic importance is uncertain.

Samples so far analyzed show silica that is probably too high for production of alumina under normal conditions, but the bauxite may be of value for other purposes. It is possible also that Department samples may show a higher than actual percentage of silica because of dilution sometimes resulting from auger-hole drilling.

The following log of auger hole no. 6, drilled by the Department, shows characteristics of the upper part of the laterite section at this point. No hole has been drilled through the section to the basalt.

Hole 6.

Thickness represented	Al_2O_3 + TiO_2*	Fe	SiO_2	Loss on ignition	Moisture At 110°C.
0' - 5'		Not analyzed			
5' - 6'	34.31 %	11.58 %	32.40 %	---	---
6' - 11'		Not analyzed			
11' - 12'	45.42	9.70	16.78	22.46 %	25.6 %
12' - 13'		Not analyzed			
13' - 14'	45.49	10.59	14.60	21.43	---
14' - 15'		Not analyzed			
15' - 16'	43.34	11.31	19.54	19.32	32.6
16' - 17'		Not analyzed			
17' - 18'	36.81	10.09	32.82	14.06	---
18' - 19'		Not analyzed			
19' - 20'	35.81	10.20	33.44	13.85	13.70
20' - 21'		Not analyzed			
21' - 22'	36.46	8.98	34.88	---	---

*TiO_2 averages about 1 percent.

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RECENT MINING REGULATIONS ON O AND C LANDS UNWISE

A Bill of Particulars

by

F. W. Libbey

(1) The reopening of O and C lands to mineral entry and location by Public Law 477 was the righting of a wrong, not the granting of a privilege.

(2) Public Law 477 contains a provision under which the recording of location notices as well as affidavits of annual labor must be done in a United States district land office. This innocent-sounding provision duplicates the requirement for the recording set up under state law, under which filing is required to be done in county offices. The chance for confusion and uncertainty in the federal requirement is apparent, when it is realized that these lands originally were in a checkerboard of odd-numbered sections throughout western Oregon. There have been exchanges of lands principally between the O and C Lands Administration and the U.S. Forest Service so that, in the absence of authoritative advice, no claim owner can be certain whether or not his claim is on O and C land and thus subject to the provisions of the act. This legislation puts the burden of proof on the claim owner and it is a far-from-simple matter for him to determine whether or not his land is a part of the O and C lands. The provision in the law requiring filing in the United States district land office is, in the opinion of the writer, unnecessary, in effect unjust, and serves no useful purpose. It will encourage claim-jumping and litigation. The requirement is no more necessary on O and C lands than on any other part of the public domain.

(3) The provisions in Public Law 477, which require that filings shall be made in the United States district land office, place a great burden on that office if it renders prompt and accurate service to the public. If it does not render such service in its execution of the provisions which require filing, it will suffer in prestige and show that any idea of supposed benefits to the Government in being able to keep a better check on mining claims is a delusion. In the meantime prospecting will suffer.

(4) If a check on the location, the amount of work done, and the adherence of the claim owner to the general mining laws is considered desirable or necessary by Congress, an inspection system should be set up by congressional action, similar perhaps to that in effect in Canada. Such an inspection system should be applied to all public land and not to just a small fraction of that land.

(5) The intent of the United States mining laws, as construed time and again by the courts, is to encourage prospecting and discovery of mineral deposits and to protect the prospector in his possessory rights. Congress refrained from setting up elaborate regulations governing discovery and location. Local customs and rules of miners in mining districts were the basis of the United States mining laws and have been an important influence in establishing these laws. Although this influence is generally out-moded because of changed conditions, court decisions have always given due consideration to the accepted customs of miners and prospectors wherever and whenever applicable. The custom of recording in a local office is one of long standing. Duplicate filings will not help the Government and would certainly be contrary to any miners' customs.

(6) The United States mining laws established the requirements for locating a mining claim, including discovery of mineral and marking boundaries. It was left to the States, by inference at least, to prescribe the method of recording the location. If the federal system needs to be revamped, any change in the law should be made by Congress and should apply to all public domain and not just a part.

(7) The regulations implementing Public Law 477, issued by the Bureau of Land Management, give directions to the claim owner on requirements for describing the location of the mining claim in the record. The directions are that the claim owner must use legal descriptions on surveyed land, location by distance and direction from the nearest corner of public land surveys on unsurveyed land, or proper legal subdivision if the land were surveyed. If the claim owner fails to include this information, he must file a statement giving "satisfactory" reasons for not doing so. Undoubtedly in the minds of the framers of the regulations "satisfactory" means satisfactory to the land office. This provision gives judicial power to the land office in a degree never visualized by Congress in framing United States mining laws relating to location of mining claims.

(8) Although sustained yield of timber, which is the primary purpose of legislation establishing the O and C Lands Administration, is undoubtedly in the public interest, it should not be assumed by administrators of the act that sustained yield overshadows all other interests in such public lands and that prospecting is necessarily of minor importance in the public interest. For example, a discovery of commercial uranium ore on O and C lands could be of more importance to the country than all the timber on these lands. The Atomic Energy Commission is doing everything possible to encourage prospecting for radioactive minerals. Other Government bureaus should realize the need for such prospecting and should cooperate actively.

(9) Too many powerful interests, both public and private, having to do with timber, look upon the prospector as a nuisance, a crank, or a trespasser. They forget what he has done to build up the West, to make markets for lumber, and to establish industries which support governmental functions. There have been instances in which logging operations have destroyed prospectors' improvements without consideration or without recompense.

(10) There are some weaknesses in the United States mining laws. Conditions have changed greatly since the basic laws were written, and additions, perhaps changes, should be made in the public interest; but these provisions should be made, as stated above, by Congress and not in piecemeal fashion by administrative orders to be applied to a fraction of the public domain. It appears likely that provisions of Public Law 477, and subsequent regulations implementing the law, were set up under the mistaken assumption that prospecting and mining necessarily conflict with the sustained yield program on O and C land. The Bureau of Land Management should recognize that now, more than ever before, minerals are essential to national progress and national defense, and that the prospector should be given every encouragement - not looked upon as a necessary evil or as a probable land speculator.

(11) In the opinion of the writer the provision in Public Law 477 requiring filing in the United States district land office should be repealed.

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OLD A.I.M.E. MAP

The Department has acquired a 62-year-old geologic map of the United States from the estate of the late William Huntley Hampton. The map was issued by the A.I.M.E., in 1886, in order to illustrate the coloration and nomenclature recommended by the International Geological Congress in its attempt to standardize symbols on geologic maps. However, the recommended color system was not adopted universally; the U.S. Geological Survey, as well as the geological surveys of Canada and other countries, still maintains its own color system for designating the various geologic epochs.

The old A.I.M.E. map is distinctly out-moded today. It shows Oregon as about 75 percent undifferentiated "volcanic," with an Archean mass in the northeast part of the state. Cretaceous deposits extend the entire length of the state west of the Cascades, while Tertiary and Quaternary are limited to the larger drainage basins. Increased knowledge of Oregon geology has resulted in many changes in the map in 60 years, as will be apparent when the Oregon geologic map, in preparation at the present time, is completed.

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OREGON MINING NOTES

A Moscow, Idaho, dispatch in the Oregon Journal states that Columbia Metals, Inc., has been purchased by J. O. Gallagher, former president of the corporation. Gallagher is also purchasing the $5,000,000 plant at Salem, Oregon. The Columbia Metals plant, built for producing alumina from Northwest clays during the war, has been converted to processing fertilizers.

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The first carload shipment of copper ore to be made from southern Josephine County, Oregon, in almost 20 years was sent to the Tacoma smelter the latter part of August and first part of September. These are initial shipments from the old dump of the Queen of Bronze mine, the ore of which carries values in copper and gold. Recently this mine, along with the Cowboy and other holdings, was incorporated in Oregon under the name of Waite Minerals, Incorporated. The address is P. O. Box 2, Grants Pass, Oregon.

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Completion of work on the Horsehead Lime Plant near Williams, Josephine County, will be delayed until next spring according to Mr. W. H. Holloway, general superintendent. Although this plant has been in limited production in the past few months it will take approximately 65 more days of work to complete the plant facilities, and this will not be feasible until after the rainy season, Mr. Holloway added. The Horsehead Lime Company has been installing new equipment, including a rotary kiln, for the production of burned lime and burned lime products at the site of the plant operated before World War II by the Washington Brick and Lime Company.

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The Greenhorn Mining Corporation is the name of a new corporation recently formed under the laws of the State of Oregon. Officers are Fred Whaley, president; Tom Cudd, vice-president; and W. E. Keister, secretary-treasurer. All are from Grants Pass. The property which they are working is a gold lode and is located on the Left Fork of Foots Creek, Jackson County. This property was formerly called the Miller mine. Present work is pointed towards driving the old drift to reach a body of ore reportedly at the bottom of the old shaft.

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The flotation mill at the Buffalo mine in eastern Grant County is being operated one shift a day. Concentrates are shipped to the Midvale smelter and hand-sorted high-grade ore is included. Continuous daily operation of the mill is reportedly warranted because of the opening up of a new block of ore on the 400-foot level driven on the no. 4 or Constitution vein. This no. 4 vein is larger in size and has a somewhat different dip and strike from the other Buffalo veins. Values are in gold, silver, and lead.

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The Chemical Lime Company, Baker, Oregon, has started diamond drilling its deposit located on Marble Creek about 7 miles west of Baker.

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The Calhoun & Howell dredging equipment on the North Fork of the John Day River, Oregon, includes a Bucyrus-Monaghan dragline with a 3½-yard bucket and a new washing plant. The owners are shovel operators and are digging the ground themselves.

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NICKEL AND COBALT IN VEGETATION

A sample of lichen growing on serpentine in southern Baker County, Oregon, was analyzed spectrographically for nickel and cobalt. It was determined that the lichen contained nickel in the 0.1 to 1 percent range and cobalt in the 0.01 to 0.1 percent range. The serpentine itself contained 0.14 percent nickel with cobalt in the 0.001 to 0.01 percent range.

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STRATEGIC, CRITICAL GOODS

Those who know the necessity of stockpiling of certain strategic and critical materials are beginning to believe that the government will really arrive somewhere with its program over the next year. The Munitions Board plans to spend around $600,000,000. The State Department has made agreements with certain European countries for needed items, and the Economic Cooperation Administration has set up a strategic materials division to help implement the program. The Commerce Department has received a ruling from the attorney general permitting it to sponsor the voluntary allocation of needed materials produced in the United States. This means that the builders of the stockpiles will not be handicapped by their inability in the past to get certain items regardless of the price essential. Officers of both the Army and the Navy have indicated that certain items coming into Pacific ports undoubtedly will be stockpiled in the West, which should mean that Portland will get some share in items imported over the year ahead.

From Commerce, August 20, 1948, published by the Portland Chamber of Commerce.

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RIGHTS OF MINERS TO USE OF SURFACE OF MINING CLAIMS

by

John E. Russell

During the past several years there seems to have grown up an erroneous idea as to the rights of miners to the use of the surface of mining claims. As a result, disputes have arisen between those who hold Taylor Grazing Act leases and miners who hold bona fide mining claims over the rights to the use of the surface of the mining claims. The following decisions clearly state the issue:

> "A perfected valid appropriation of public mineral lands, under the mining laws, operates as a withdrawal of the tract from the body of the public domain, and so long as such appropriation remains valid and subsisting the land covered thereby is deemed private property." Lindley on Mines, 3rd Ed. Sec. 322. Gwillim v. Donnellson, 115 U. S. 45. Belk v. Meagher, 104 U. S. 279. Iron Silver M. Co. v. Campbell, 29 Pac. 313.

> "A valid mining location appropriates the surface, and the rights given by such location cannot, so long as it remains in force, be disturbed by any acts of third parties." Del Monte M. & M. Co. v. Last Chance M. Co. 171 U. S. 55.

> "Land to which any claims or rights to them have attached does not fall within the designation of 'public lands'." Lindley on Mines, 3rd Ed. Sec. 322. Newhall v. Sanger, 92 U.S. 701. Bardon v. N. P. R. R. 145 U. S. 536.

> "The general government itself cannot abridge the rights of the miner." Gold Hill Q.M. Co. v. Ish, 5 Ore. 104, 11 Morrison Mining Rights 635.

> "A mining claim perfected under the law is property in the highest sense of that term. It has the effect of a grant by the United States of the right of present and exclusive possession of the lands located." Clipper M. Co. v. Eli M. Co., 194 U. S. 220. Forbes v. Gracey, 83 Fed. 483.

The courts without dissent have upheld the rights of the miner to his legally located mining claim and the possession thereof, both as to the surface and to the minerals. There is no reservation in the mining law reserving any right in the government or anyone else to use of the surface of the mining claim.

Nowhere in any law that has been passed by Congress can be found any authority to disturb the miner in his exclusive possession of his mining claim including all of the surface as well as the underground.

As is well said by one of the courts, 'a mining claim perfected under the law is property in the highest sense of that term'. The owner of a mining claim may exclude all others therefrom and be entirely within his legal rights.

The fact that miners have been generous in the past, and have not objected when the owners of animals permitted such animals to graze over and upon the mining claims, has not established any right to encourage trespassers to claim any right to the use of the surface of a mining claim.

There are instances where Taylor Grazing Act lessees have gone so far as to threaten the owner of mining claims with bodily injury if the miner persisted in working his mine.

Taylor Grazing Act leases should never be granted in an area where the major portion of the ground is covered by legally located and held mining claims. There are many areas in Arizona where only small spots can be said to be non-mineral. A lease granted an applicant covering a section where the major portion thereof is covered by mining claims is certainly void as to the entire portion covered by the mining claims and a lessee of such an area clearly cannot interfere with the miner's operation and his right of ingress and egress.

From Pay Dirt, September 15, 1948, published by Arizona Small Mine Operators, Phoenix, Arizona.

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FILINGS ON O AND C LANDS

Owners of unpatented mining claims on O and C lands should remember that such claims located prior to April 8, 1948, must be recorded in the office of the U.S. District Land Office, Swan Island, Portland, on or before Tuesday, October 5, 1948. Public Law 477 requires that owners of unpatented mining claims on O and C lands must file for record in the United States district land office a copy of a notice of location of the claim in order to validate the location.

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GALLIUM

The Eagle-Picher Lead Co., Joplin, Mo., was the only producer of gallium in the United States in 1946. The Anaconda Copper Mining Co., Great Falls, Mont., produced several thousand grams in 1943-45 but had no output in 1946. The Bureau of Mines plans to investigate extractive processes on very low-grade domestic gallium-bearing material.

Gallium is the only metal other than mercury that is liquid at low temperatures but differs from the latter in having a high boiling point. These properties are useful in certain military devices, which will be designed to require gallium if a sufficient supply can be assured. Gallium is the filling in a thermometer for use up to 1,000° C. (1,832°F.). It was employed by the Manhattan Project as a volatile "carrier" to sweep out impurities during uranium analyses. The price of gallium during World War II was about $3 a gram. The metal was added October 17, 1946, to the Positive List of Commodities requiring license for export.

Germanite containing gallium occurs in the Mansfeld copper mines, Germany, and in the Tsumeb (Otavi) copper-lead mine, Southwest Africa. The latter property was purchased by Tsumeb Corp., Ltd., a new American-British firm, in January 1947.

Taken from preprint of chapter on "Minor Metals" in U.S. Bureau of Mines Minerals Yearbook, 1946.

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