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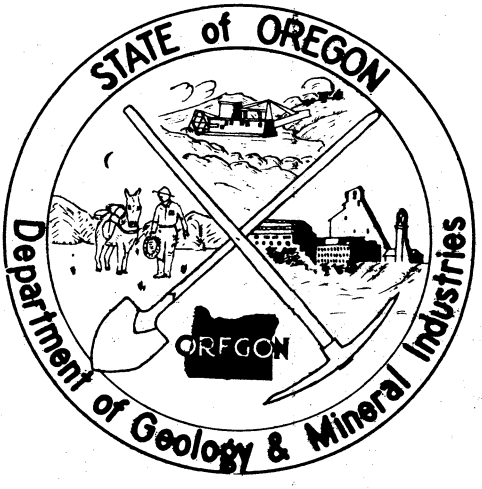

January 1948 Portland, Oregon

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SNAKE RIVER PASSAGE*

By

F. W. Libbey

"Neither snow, nor rain, nor heat, nor gloom of night stays these couriers from the swift completion of their appointed rounds." This oft-repeated quotation might be supplemented on the pennant of the "Idaho" by the words "and no Snake River rapids will prevent delivery of the U. S. mail by mailman and freighter, Capt. Kyle McGrady." Capt. Kyle in his river boat "Idaho" delivers mail to ranchers and miners on the banks of the Snake River through 50 miles of canyon and innumerable white-water rapids in that inaccessible, little-known region between the mouth of the Grande Ronde and Johnson's Bar, from 40 to 93 miles south of Lewiston, Idaho.

The "Idaho" is 58 feet long, flat-bottomed for shallow draught, and is driven by two independent powerful Diesel engines. There is a small pilot house and the rest of the boat is practically all combination hold and cabin designed to carry a maximum load of freight. And a surprising amount of freight - mainly sacks of wool - it can carry.

Regular mail trips are made each week, leaving Lewiston Friday and returning Saturday. Those are long hard days for Capt. Kyle and his one-man "crew," for navigating the Snake after dark just isn't done, and in order to complete the trip on schedule it is necessary to take advantage of every minute of daylight.

The boat pulls away from its modest dock and warehouse at Lewiston at 6 A.M. sharp and if you want to take the trip, don't get there at 6:01.

Out into the turbid current without any backing or filling throbs the "Idaho," Capt. Kyle at the wheel, and the Snake River trip up to Hells Canyon begins as any other boat trip begins. The river is in something of a hurry to get to the Columbia, but it is an orderly hurry and the "Idaho" pushes along at a regular gait.

The passengers - maybe fifteen or twenty - distribute themselves around as fancy dictates. Three or four maybe are in the pilot house with McGrady; the rest may either sit on a bench in the cabin or drape themselves on the cat walk around the cabin. A favorite place in good weather is on the deck over the cabin where one may recline on a bedroll or sit on the edge with feet hanging over the cat walk.

Your fellow passengers will be mainly ranchers or miners returning to their homes on the up-trip and visiting the city on the down-trip, but, more likely than not there will be a tourist or two, maybe a couple of mining engineers, even perhaps a representative of a national magazine of wide circulation with his photographer and a Forest Service supervisor. In any event, there will be an interesting group, some of whom will experience your thrills in your first trip into the canyon of the Snake.

The first 40 miles or so will be interesting but relatively tame, for you feel still in civilization. After leaving Lewiston and its sister city, Clarkston, on the Washington side of the river (yes, Lewis and Clark crossed the river here), you'll see some cultivated land but mostly grazing land - no timber - up to and beyond the sleepy little town of Asotin,

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*Reprinted from Ore.-Bin, July 1942, by request.

Washington, eight miles from Lewiston. A few miles beyond Asotin, on the Idaho side, some basalt cliffs show a varied assortment of columnar jointing. Some twisted patterns, roughly spiral-shaped, are worth a picture or two.

On 30 miles or so up the river without much change in scenery. There are two or three places where the water is fairly swift, but easily navigated compared to the upper river.

Then you reach little Rogersburg at the mouth of the Grand Ronde River which comes in all the way from the Blue Mountains and Wallowas in Oregon. Here the "Idaho" makes a stop - no piers or floats are necessary; at this, as at all other stops on the upper river, she just noses into the bank and holds on.

From Rogersburg you begin the real Snake River canyon trip. Here the mountains close in on the narrowing river. Here also are great beds of limestone on both sides of the river - destined some day probably to be quarried and put to industrial use.

Soon you come to some real rapids and McGrady grips the wheel, turning it quickly so that the bow hits the current at just the right angle. The boat keels over, a big splash of spray comes over the bow, you grab a hand-hold somewhere and brace yourself. The boat slows up, then digs in as the propellers churn, and slowly crawls up the swiftest part. You wonder if there will be swifter rapids above and you hope nothing happens to an engine or a propeller while she's battling up one of these rapids. There are too many rocks a bit too close for comfort.

One rapid follows another in fairly regular but far from monotonous succession. You begin to feel confidence in the "Idaho" and her captain; you don't grip the hand-hold quite as rigidly - "roll with the punch" as it were and grin as the spray hits a fellow passenger.

The sides of the canyon are fairly steep - all rock, no timber. The only exceptions are the occasional gravel bars accumulated along some bends in the present river, and those old flat stream terraces, sometimes several acres in extent, up to thirty or forty feet above present high water mark. These latter terraces represent ancient levels of the river and stand as mute evidence of the history of all such streams which are slowly but constantly wearing their channels downward.

A few of the gravel bars and terraces are being placered by "snipers." The equipment required is simple and everything about their lives is simple. They are not concerned about priorities, governmental regulations, excess profit and income taxes, rent, fuel, gasoline, movies, blackouts, and the various other advantages we enjoy in our so-called civilized communities. These "snipers" have three main concerns, namely, food, clothing, and McGrady's boat, and of these, perhaps McGrady's boat is paramount. It is their only connection with the outside world. Just to see it go by is proof that their communication line is intact and that they can go out into the land of Broadways and bright lights any time they choose. A white flag on the bank will bring the "Idaho" to the shore.

Snake River gold has a none too good reputation based on many disappointments and failures. One can pan it from all gravel bars but it is so finely divided that the quantity seen in a gold pan gives a magnified idea of the real weight. Report has it that the snipers on Snake River are doing well when they recover two or three dollars a day. The average is probably much less than that. But theirs is an independent breed, and they possess much that we in the city have exchanged for carbon monoxide, drunk drivers, and epidemics. No regimentation for them. And boy, there's some swell fishing and hunting up in that country.

A landing on the Idaho side where a woman comes aboard to confer with McGrady about buying a money order; an old prospector is waiting to mail a mineral sample; he engages the "crew" in earnest conversation about this discovery, as prospectors will; you think of the Ancient Mariner; sample appears to be graphite - probably too much iron.

Time and the "Idaho" wait for no man; the prospector's discourse is cut off; the gang-plank is hauled in and McGrady heads up stream.

More rapids; more landings to deliver mail; some passengers get off; nearing mid-day, the mouth of Salmon River is passed. It's called "the river of no return." Don't know why, but the appellation is sufficiently descriptive to suggest an Indian legend. At any rate, the Salmon, a very husky member of the Snake family (if you'll overlook the biology of the admittedly poor figure of speech) boils down out of the high mountains of central Idaho in considerable volume.

Well, it's time for coffee and sandwiches. Hope you've brought along sandwiches, for something about the scenery or mental exertion of helping to push the "Idaho" up the rapids gives you a swell (or is it "swollen"?) appetite. Besides you had breakfast at 5 A.M. McGrady's "crew" lights the gasoline stove in the cabin and supplies the coffee in a big coffee pot. You stand around waiting for the darned thing to boil. Pretty soon you get a sniff of the coffee; you wish to appear disinterested; didn't Robert Louis Stevenson say "It is better to anticipate than to arrive"? Let the rest anticipate all they want; you want the coffee. You have your own cup ready and waiting - better be safe and have your own sugar, too. Finally the coffee is ready - wait your turn - page Emily Post - maybe they'll trample the "crew."

Well, that primal urge to consume all the food and drink in sight seems to have given way to a feeling of well-being and you can again view the river without the distraction of hunger. Say, that coffee was good.

The "Idaho" keeps right on moving up the river - more rapids. The rock walls are getting higher - you guess that they slope up to 1500 or 2000 feet at the apparent summits. Some of the walls are sheer for a few hundred feet; others have a 30 to 40 degree slope. Once in a while a little creek comes rushing in.

Now McGrady eases into Eureka landing just below the mouth of the Imnaha River. A pack train meets the boat for supplies and mail. Three fishermen get on with their outfits, evidently bound for some fishing stream up the river.

Eureka is a ghost town with only the ghost remaining. The foundations of an old mill can be seen; nothing more. Report has it that a mining company attempted production of copper ore and concentrates in the early part of the present century. A great deal of money was spent - not warranted by ore developed. A steamboat costing $65,000 was built; wrecked on the first trip.

The Imnaha is at flood stage and muddy - very swift as far up as you can see. Quite a river although not in the same class as the Salmon.

Next stop is Fargo Landing a half mile above the mouth of the Imnaha where some men get off with camp equipment. They will set up camp for the engineers who are to make some mineral investigations.

Out into the current again and a short distance up to Divide Creek on the Idaho side. Fine looking fishing stream; ought to be some real trout in it. Now you approach Zig Zag rapids in an S-curve of the river. Here the "Idaho" labors. You watch a mass of rocks jutting out from the shore on your right. The boat is not moving and seems to be getting pretty close to the rocks. This would be an uncomfortable moment and place for something to happen to the engines or propeller shafts, but there's a little reserve of power left and you see that the boat is now edging forward. That's a relief.

A couple of stops at one of which the fishermen disembark and then Pittsburg Landing, on the Oregon side, where there are many sheep and much bleating. Shearing is in progress and McGrady investigates as to how much wool he will have to load on the return trip.

Well, must hurry along; there are dark clouds gathering and distant rumblings promising a storm. More mail is left at landings and you begin to think of supper and of tying up for the night. But first an important matter must be attended to. The Snake is famous for its sturgeon and McGrady likes to set out sturgeon lines in the evening on the way up. Night is the feeding time for sturgeon, and the lines may be collected on the way down the next morning.

The favored place for setting a line is a fairly deep eddy. A small hemp rope is the line and three large hooks, each on a separate piece of line a foot or so long, are attached to the main line at intervals of a couple of feet starting at about that distance from the rock weight. Each hook is baited with a third of an eel. (McGrady carries live eels obtained at Lewiston in an eel box on the stern of the boat.) The boat heads into shore at the selected eddy. The "crew" secures the free end of the rope to an alder or large rock. Then the boat backs away, and at the point where the line is stretched out at right angles to the shore, the rock weight is dropped overboard.

After four lines are set at four different eddys, a place to tie up for the night is chosen and the boat made secure by two wire lines.

By this time it is dark and raining. The all-important matter of supper is the next order of business. The party of nine including captain and "crew" gathers in the cabin and there's considerable activity. Everyone attempts to help the "crew" in preparing the meal, but in most cases it is mostly moral support implemented by a can-opener. The cabin is rather crowded and there is no space at all for the fastidious. The rain increases and is really coming down now, beating on the metal roof which proves to be less than water tight. At long last things are ready and everyone becomes wholly occupied. It's self-service and plenty of food. What more could you ask if you're hungry - and you are.

Anti-climax - dishwashing - some members very busy - like the guy with the group in the restaurant who is check blind; but others haven't equal courage and start in. Light is a bit dim in the cabin, and perhaps some phases of the cleansing operation are a bit "sketchy" according to "white kitchen" standards. Dishes are finally stowed away.

Now beds are laid out on the floor of the cabin and there's very little extra space. It's still pouring outside and you try to get your bed down to avoid the drips from the deck. Such attempts are never entirely successful, but maybe you'll get out of the way of the drop aimed at your eye.

Now everybody quiets down - a few facetious remarks, then intervals of silence - finally all silence - no, not exactly; the "crew" snores. Then crash - something explodes out there on the river. You and the rest sit bolt upright in bed, wide awake. Then somebody says "water spout." This isn't altogether enlightening to you, but seems to be an explanation satisfactory to the others so you lie down again. Then you find out that this means a rock slide in the walls of the canyon caused by excessive rains. Since the "Idaho" is tied up at a terrace you know that "water spouts" can't reach you and you quiet down again. Seems as if sleep has just taken over when, klang! Must be the telephone you think stupidly and then you get a glimmer of intelligence and realize it's an alarm clock - somebody says "three thirty - time to get up" - you mention something about the Inquisition; others groan also. But there's nothing you can do about it. Just about time to get up and eat breakfast so that McGrady can start at daylight.

Everybody gets busy - a little more organization this morning. Beds are rolled up. The "crew" has the coffee already well along; somebody gets some potatoes to frying while the "crew" is hovering over some bacon. A vitamin-minded member passes canned fruit juices around. You don't need it for an appetizer but you don't pass up anything in the food line even if it is only 4 A.M.

McGrady and the "crew" eat with facility, even hurriedly, and immediately cast off. It's daylight now and ten miles more of current to fight in order to reach Johnson's Bar and the end of the line so no time to lose.

Anti-climax again. You can't seem to walk away and leave those dishes, so you sigh and grab a "tattletale gray" dish cloth. Lucky you are not handling breakable dishes for the "Idaho" in motion gives an insecure footing. You go through various contortions in trying to maintain balance and dry dishes at the same time.

Out on deck again to see what the canyon has to offer in the way of scenery. It's about the same. There are the same steep walls, a few terraces, the same current with occasional rapids all the way up to Johnson's Bar. The river is noticeably higher, but the "Idaho" has no particular difficulty.

Johnson's Bar is reached - end of the line - nothing there but a mail box on a terrace. Nobody to meet the boat. A few minutes for delivery of mail and then the start of the return trip.

It's something of a relief to be going down stream. There is a pleasurable thrill in running the rapids; also you feel that now, with little strain on the engines, there is small likelihood of any accident to machinery. Going down through the rapids, however, requires fully as much skill, if not as much power, as going up. McGrady's technique inspires confidence even though at times the "Idaho" keels over so that you will get your feet wet if you are standing on the cat walk.

Now for the sturgeon lines. McGrady noses into the bank where the last line was set the previous night. The "crew" disengages the line and gets on board. The "Idaho" floats away from the shore and the "crew" pulls in the line. Because the sturgeon is a bit on the sluggish side and because of the heavy rock weight, you can't be sure whether or not the "crew" has a fish until either you see said fish in the water or the "crew" pulls the rock weight into view. In this case, a fish about 3 feet long comes into view and is hauled aboard without difficulty. The fish flops about some, but nothing compared to a real active fish like a salmon. The "crew" runs a rope through the sturgeon's gills and places him in the eel box which is much too small for him. One of the other three lines yields a sturgeon - smaller than the first - and that's all for sturgeon fishing.

McGrady makes a landing and takes on 3 sacks of wool. There is nobody around, and no sign of habitation. Ranches must be up in the hills somewhere. A sack of wool sounds as if it would be light and fleecy - fleecy surely, brother, but not light - 350 pounds in a sack made of heavy jute. You don't do much in the way of lifting - you just roll them aboard.

Down to Pittsburg Landing - to take on wool. Seems like a metropolis this morning. There are at least a dozen people including some youngsters; plenty of sheep, dogs, and horses.

Before loading the wool and taking on passengers, McGrady has another job to do which indicates something of the scope of his freighting service. Several men get aboard on the Oregon side and the "Idaho" goes across the river where a man with a rope on a steer is waiting. As soon as McGrady lands the boat, the men get off and promptly "bulldog" the steer, tying his head and feet so that he cannot move. Then, by means of a rope attached to his horns and by ungentle (definition: vigorous yanking east or west) steering with his tail, the unhappy steer is pulled up two planks and oriented crosswise on the deck in front of the pilot house.

Back across the river goes the "Idaho" and several sacks of wool are taken aboard as well as some passengers. Among these are two young ranch girls, fourteen or fifteen years old, who are having a wonderful time.

Four or five miles below Pittsburg Landing, the "Idaho" noses into the Oregon bank, and the Pittsburg Landing passengers get off. Some men and a pack train are waiting. This is the end of the excursion for the steer also. He is unloaded rather easily by placing him at the side of the deck with his four feet just over the side. While a man standing on shore holds the rope attached to his horns, and another man sits on the steer's head, McGrady carefully loosens the rope so that it can be removed from the steer's feet quickly. At the critical moment, McGrady takes away the ropes, the man at the head end gives a mighty shove, and the man on shore pulls on the rope. The steer convulses himself over the side of the boat and lands on all four feet in the shallow water. He scrambles on to dry land; then stands switching his tail and rolling his eyes as if to ask indignantly, "what's coming off around here?"

One of the young girls mentioned above starts saddling a horse. You remark the efficient way she cinches the saddle - no lost motion - old stuff to her - she's probably been at it ever since she was able to boost a saddle on to a horse.

Incidentally you will be struck by the fine-looking saddle horses up in the canyon. Without exception, they all seem well-shaped, spirited, and well kept - evidence that the horse is still of first importance for transportation in some sections of our country. The automobile has no place in the Snake River canyon.

A description of the balance of the trip down the river would be not without incident but in the main repetitious - running Zig Zag Rapids is highly exhilerating. The "Idaho" greans a bit with the strain in her timbers as she changes course here; one side goes down into white water; you hold your breath for a moment as she rights herself and goes plunging along.

More wool - the cabin is full; all the luggage and stuff is now stored on the deck; some sheepherders get on; they are holiday bound for Lewiston. Conversation indicates certain anticipations and you are certain that Robert Louis Stevenson was one hundred percent right. One sheepherder has a bundle of "green" sheepskins - very redolent of - well - sheep. He places them on deck next to some luggage, and thoughtfully mentions to the owner of the luggage that maybe said owner would like to move it a greater distance away from the skins. "Some people don't like the smell," he says.

Rounding a turn in the river, you view perhaps the finest scenic stretch of the river below Hells Canyon. Here the river flows westward. You look down the swiftly moving water for a mile or so. On the Idaho side are steep rock headlands to the waters edge. On the Oregon side is a small terrace backed by mountains with steep, rocky slopes and pinnacled summits. The Imnaha rushes into the Snake beyond a high bluff and high up along the skyline to the west are massive horizontal basalt flows.

Here on the terrace, Fargo Landing, the engineers get off. A tent with a fly has been set up. Smoke from a camp stove beckons. Perhaps you'll want to stay here until the "Idaho's" next down-trip. There isn't very much new to see on the way down. Besides the number of passengers aboard precludes free and unrestricted selection of desirable deck space. You are continually on the lee side of those "green" sheepskins. Yes, Fargo Landing it is - Adios, McGrady.

Too bad to stop on a sort of sour note? Not so intended. You treasure the small inconveniences as a part of the whole pleasant picture of this unique voyage. In a day you have traveled into one of the most inaccessible regions of the country - a region with all the flavor of the old West - where the few inhabitants rely with assurance for mail and transportation entirely upon weekly trips of Kyle McGrady.

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NONFERROUS METALS

According to the E. and M. J. Metal and Mineral Markets, New York, demand for nonferrous metals continues at a high level. As predicted, the price of Prime Western zinc has advanced 1½¢ per pound to 12¢ as a result of the advance of $6.00 a ton in the price of zinc concentrate in the tri-state district. Inquiries for lead are brisk and judging from reports consumers are unable to obtain sufficient metal to cover all of their requirements. The supply available for February may be smaller than that distributed during January. Consumers are looking to imports to increase supply. According to some observers, a higher price for lead will not bring out more metal at this time. Sales of copper for January delivery are about 112,000 tons. The buying interest in February metal has been very active. The domestic market is firm at 21½¢ valley points. Quicksilver buying is reported as quiet with the price remaining at about $79 per flask for spot metal. The price of foreign silver remains steady at 74 5/8¢ per ounce. The market price of antimony packed in cases in lots of 10,000 pounds or more but less than a carload has been revised upward to cover advance in freight charges to New York. The price is now 36.12¢ per pound New York area, and remains at 33¢ per pound carload lots f.o.b. Laredo, Texas. The Aluminum Company of Canada has advanced its price of aluminum ingot 1½¢ per pound to the basis of 15¢ delivered to Canada consumers.

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"FREE MARKET" PRICES OF GOLD

Following is a list of gold black market prices in world markets for 1946 and 1947 as given in Barron's Weekly, issue of January 12, 1948. It will be seen that according to this list declines outnumber increases.

The article accompanying the list states that the decreases and increases in the gold prices are influenced by economic conditions in the countries where the changes occurred. Decreases in Rumania and Italy were the result of devaluation of the currency; in France, Germany, Belgium, and Egypt, decreases occurred because industrial production is showing improvement. The severe strain on economic conditions in China induced by the civil war is shown in the continued rise in the gold price. The article states that the rise in Switzerland has been due to the request of the U.S. government that Switzerland stop selling gold coin freely. The action represents the continued general move of the United States and the International Monetary Fund to attempt to prohibit black markets in gold. It appears that the only places in the world where free gold transactions may be permitted are in Macao in Portugese China, Tangiers in North Africa, Beyrouth in Syria, and Caracas in Venezuela.

(dollars per ounce)

	Dec. 1947	Dec. 1946
Stockholm	41.50	36.00
Zurich	42.00	38.00
Mexico City	42.50	41.00
New York	42.75	37.00
Brussels	43.00	46.00
Buenos Aires	43.50	41.00
Toronto	44.00	45.00
Rome	46.00	51.00
Lisbon	46.50	48.00
Santiago	47.50	47.00
Manila	48.50	44.00
Beyrouth	52.00	51.00
Paris	53.00	56.00
Tangiers	53.00	57.00
Istanbul	53.00	55.00
Cairo	62.50	78.00
Bombay	71.00	71.00
Athens	73.00	85.00
Chungking	76.00	63.00
Berlin	78.00	80.00
Bucharest	81.00	84.00

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HIGH CONSUMPTION OF PLATINUM METALS IN 1947

World demand for platinum metals was maintained at a high level in 1947, with United States consumption estimated at 375,000 ounces, including 200,000 ounces of refined platinum and about 150,000 ounces of palladium, according to Charles Engelhard, president of Baker & Co., Inc. Industrial reconstruction in Europe absorbed larger quantities of the metals in the platinum group than in the preceding year.

The jewelry industry continues as a major consumer. However, a large proportion of the available supply of platinum metals is being used for industrial purposes. The economic advantage of using platinum metals for critical parts of equipment is recognized by producers of rayon, fiber glass, electrical apparatus, and chemical equipment. The development and perfection of bimetallic products made from a base metal faced with platinum has enabled manufacturers to use the precious metal to better advantage.

Platinum alloyed with rhodium is used extensively in the production of spinnerets for the rayon industry. Excellent fabricating qualities make it possible to drill more than 15,000 holes of about two and a half thousandths of an inch in diameter in a spinneret two and a half inches in diameter. Feeder dies of platinum metals are used in the mass-production of electric light bulbs.

An increasing quantity of jewelry is being manufactured from an alloy of 95 percent palladium and 5 percent ruthenium....Jewelers have found rhodium plate increasingly popular. Rhodium has the highest reflectivity of metals comprising the platinum group, and it is being employed more extensively in the production of front-surface mirrors. (Taken from E. & M. J. Metal and Mineral Markets, January 1, 1948.)

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ANNUAL MEETING OREGON ACADEMY OF SCIENCE

The Oregon Academy of Science held its annual meeting on January 16-17 at Willamette University, Salem. Business meetings were held on the afternoon of January 16 followed by a dinner attended by members of the council at the University commons. A public meeting was held in Waller Hall in the evening which was addressed by Dr. D. Curtis Mumford, Oregon State College, recent delegate to the International Conference of Agricultural Economists in England, on "Food and the Future."

On January 17 meetings of the various sections including biology, chemistry, mathematics, and geology and geography were held in Collins Hall. The program of the geology section, A. D. Vance, Chairman, was as follows:

(1) "Fossil Mammalian Tracks in Lake County, Oregon": E. L. Packard and I. S. Allison of Oregon State College and L. S. Cressman of the University of Oregon.

(2) "Native Vegetation in the Willamette Valley Region": John E. Smith of Corvallis.

(3) "Coastal Indians Land Case - An Historical-Geological Appraisal": Warren D. Smith of the University of Oregon.

(4) "Oregon's Rare Borate, Priceite": Lloyd W. Staples of the University of Oregon.

(5) "Occurrences of Ground Sloths in Oregon": E. L. Packard of Oregon State College.

(6) "Human Occupation of the Klamath Basin - A Preliminary Report": L. S. Cressman of the University of Oregon.

(7) Round table discussion on the subject of "Scarcity of Domestic Strategic Minerals with Special Attention to the Northwest," by Dr. Lloyd W. Staples, Professor of Geology, University of Oregon; Mr. Sheldon L. Glover, Supervisor, Division of Mines and Geology, Washington Department of Conservation; Dr. Warren D. Smith, emeritus Professor of Geology, University of Oregon; and F. W. Libbey, Director of the Oregon Department of Geology and Mineral Industries.

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PRELIMINARY REPORT ON METAL MINING IN OREGON, 1947

The United States Bureau of Mines has released preliminary estimates on the production of gold, silver, copper and lead in Oregon during 1947. No zinc production was reported. Production of the metals was as follows: gold, 18,780 fine ounces; silver, 33,000 fine ounces; copper, 16,000 pounds; lead, 22,000 pounds. Value of the four metals in 1947 was $693,721.00 compared with $624,231.00 in 1946.

Gold output in 1947 increased 7 percent compared to 1946 but is far below production of 113,402 ounces valued at $3,969,070 in 1940. Placers furnished the bulk of the production with the largest amount from two connected bucket dredges in Eastern Oregon, the Sumpter Valley Dredging Company and the Porter and Company dredge. Production of silver in 1947 increased from 6,927 ounces valued at $5,597 in 1946 to 33,000 ounces valued at $29,865 in 1947. The principal silver producer as in previous years was the Oregon King mine in Jefferson County. The silver was recovered from smelting ore.

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OREGON'S MINING INDUSTRY

By

P. W. Libbey*

Introduction

Mining in Oregon is highlighted by dormant metal mining and an upsurge in production of nonmetallics, especially those used in construction. Normally gold is the principal metal produced. Copper, lead, and zinc have always been minor and generally are by-products of gold ore shipped to custom smelters.

Oregon is one of the relatively few states which have commercial deposits of mercury and chromite, and, under the stimulus of war needs, production of both was greatly increased by a high price in a free market in the case of mercury, and by provision for prompt payment for ore delivered to Government depots in large or small lots at a price higher than peacetime in the case of chrome.

Mercury

With the war's end, Government agencies had no further interest in encouraging production of mercury and chromite, and producers were allowed to shift for themselves. What happened to the quicksilver market is too well known to need any review here. The current market price is about $79 a flask compared to $196 during the war, but operating costs have increased while the price has tobogganed. A few mercury mines are still struggling to keep their heads above water, mainly because the mines would be lost if they closed down.

Because of wartime restrictions and demands, there was insufficient labor at mercury mines, as at other metal mines, to carry on both mining and development work. Therefore production was emphasized and development suffered. At the end of the war when price support was removed, the mines had reserves depleted and were far behind in exploration.

In Oregon, mercury production increased from 4610 flasks valued at $347,917 in 1938 to a maximum of 9000 flasks valued at $1,671,000 in 1941. The better grade ore bodies were mined out and no new deposits were found to take their place. In 1941 there were 20 producers in the State, but more than 90 percent of the production came from five mines. Now there is only one producer, the Bonanza in Douglas County, with a production of only about 100 flasks a month. It is problematical just how long this mine will be able to continue under present conditions. If it closes down and the underground workings are not maintained, the mine will be lost. This condition is duplicated in mercury mines in California, Nevada, and Idaho. If we have another war, it would probably take at least two years to develop a sizable mercury production.

Chromite

The situation in Oregon chromite mining parallels that of mercury except that in peacetime we have always depended on foreign chrome, whereas we had a small profitable peacetime

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*Testimony presented to National Resources Subcommittee, Senator George Malone, Chairman of Senate Interior and Insular Affairs Committee, Denver, Colorado, February 5, 1948.

mercury industry before the war. Normally domestic chrome producers cannot compete with foreign chrome. During the war, chromite production and exploration were urged and encouraged by the War Production Board. About 30,000 tons of Oregon chrome was produced valued at nearly $1,000,000 and a large amount of exploration work was done on low-grade chromite sands in ancient marine terraces of the southern Oregon coast. When Government buying of chrome stopped, Oregon chrome mines closed down except the largest mine, the Oregon Chrome Mine, located in Josephine County. This property had shipped about 10,000 tons assaying slightly under 45 percent Cr_2O_3 to Metals Reserve Company depots during the war and because he had developed a substantial tonnage (for a chrome mine with lenticular orebodies) the owner was loath to close down. Therefore he has attempted over a period of months to get a decision from the Federal stockpiling agency as to whether that agency would purchase his chrome. At last account no decision had been obtained.

Gold

From the early 1850's to World War II gold was the most important in dollar value of the metals produced in Oregon. In 1940, which was the time of maximum gold production, Oregon produced 113,400 ounces valued at $3,970,000. Two-thirds of this production came from placers and one-third from lode mines. During 1940 there were 192 placer producers and 112 lode producers. Most of these operations were small; some of them were worked by hand methods, and many of the placers were seasonal - that is, they were worked only when they had water. Of course after L-208 stopped gold production, only a few thousand dollars a year was recovered from ores shipped to smelters until 1945 when relaxation of L-208 allowed resumption of gold mining. Gold production has increased from $48,000 in 1944 to approximately $650,000 in 1947, but this is far below the 1940 value, and there does not seem to be much hope of increasing gold production under present conditions. In 1946 the U.S. Bureau of Mines reported 37 placer producers and 23 lode producers. Most of these were either very small shippers or hydraulic operators who work on a seasonal basis. Several of the 1946 operators were not active in 1947. There is a definite lack of interest in starting new gold mines, even dredging enterprises, for reasons which have been repeated many times.

One factor which is clouding the gold dredging picture in Oregon is the growing opposition of the State Grange and some other groups to gold dredging. In the last Legislature, bills sponsored by officials of the Grange were introduced which, if they had passed, would have shut down nearly all the dredges in the State. Although this legislation was not passed, a Legislative interim committee was set up to hold hearings and to draw up a bill designed to regulate surface mining. This bill is to be submitted at the next Legislature. It is important to note that this legislation is concerned with surface mining even though all previous opposition has been aimed at the more restricted gold dredging. It appears that the Grange and some other agencies are opposed to anything in the way of surface mining that will destroy agricultural land. Possibly any low-priced grazing land could be called agricultural land. It has been stated by proponents of dredge legislation that all dredged land should be recoiled, this notwithstanding that more top soil is lost each year from Oregon farms because of improper farming methods than has been destroyed by mining of all kinds including dredging in the whole life of Oregon mining. In addition there is the serious soil erosion generally started by logging on steep slopes, also the erosion caused by overgrazing and the plowing up of marginal sod land. Even though the amount of farm land destroyed by dredging is but a drop in the bucket in percentage of the State's farm land, tailings from gold dredges, sometimes stacked along a principal highway, give a distorted picture of the amount of land taken out of production compared to loss of soil by erosion. The latter is generally gradual and therefore not appreciated by the general public. There is, I believe, another factor which enters into the picture - that is, production of gold has been propagandized as unimportant, even detrimental to our economy. Nothing could be further from the truth, but farmers who are now very prosperous have repeated the old catch phrase, "Why dig gold out of the ground in order to bury it at Fort Knox?" The opposition to gold dredging is confined to only a few states, but if regulation of all types of surface mining gains impetus, the matter will assume importance to the whole mining industry.

Nonmetallics

Oregon's nonmetallic mineral production is in a very healthy condition, principally because of the activity in the construction industry. In 1946 a canvass by our Department showed a value of approximately $11,700,000. The principal products are sand, gravel and crushed rock, portland cement, limestone, coal, quartz and silica sand, diatomite, pumice, and perlite. Pumice production has increased many fold since the war because of its use as a lightweight aggregate in building blocks. The perlite industry is new and promises to have a tremendous growth. Oregon has one substantial producer which is planning an immediate large increase in plant capacity.

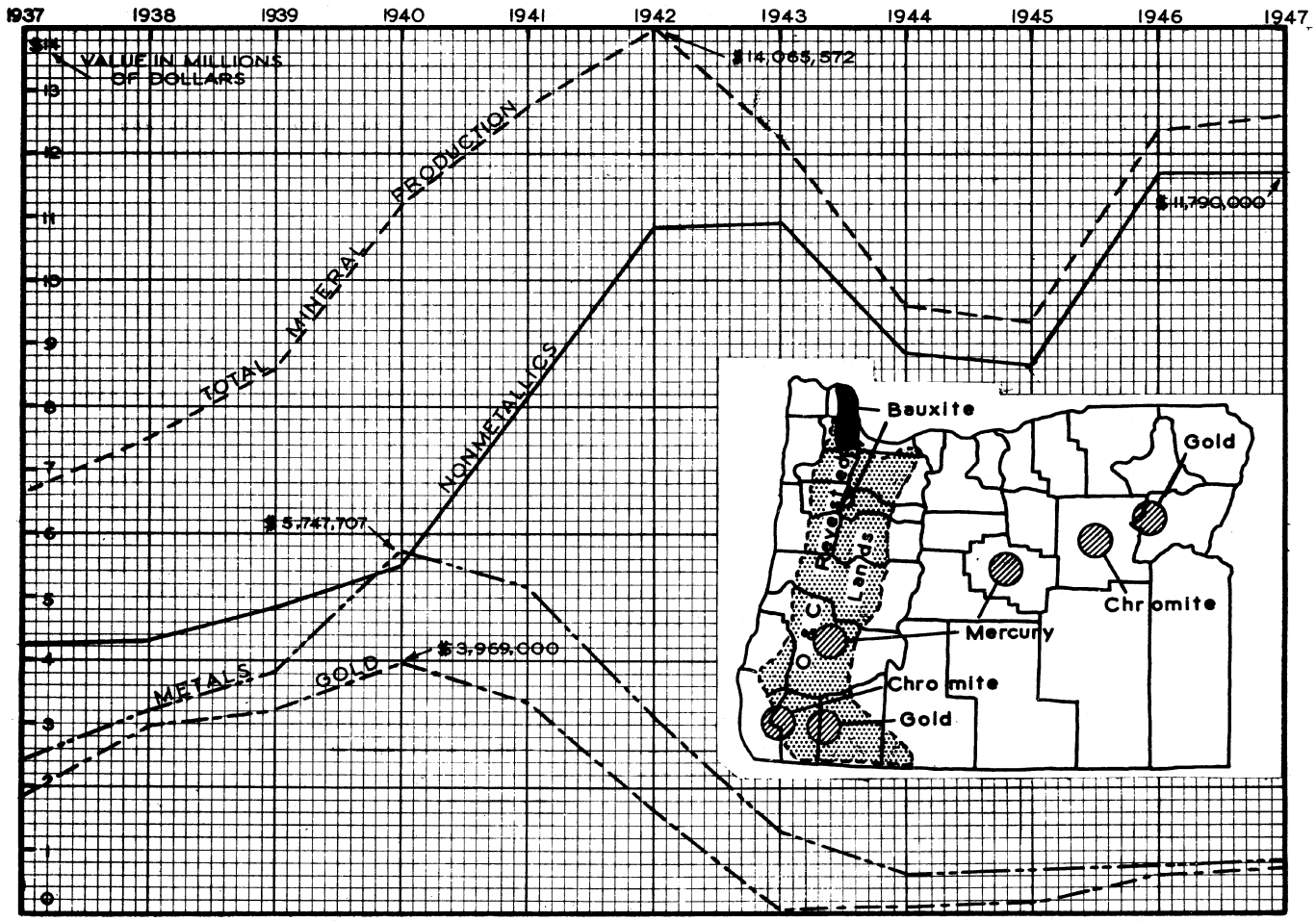
Bauxite

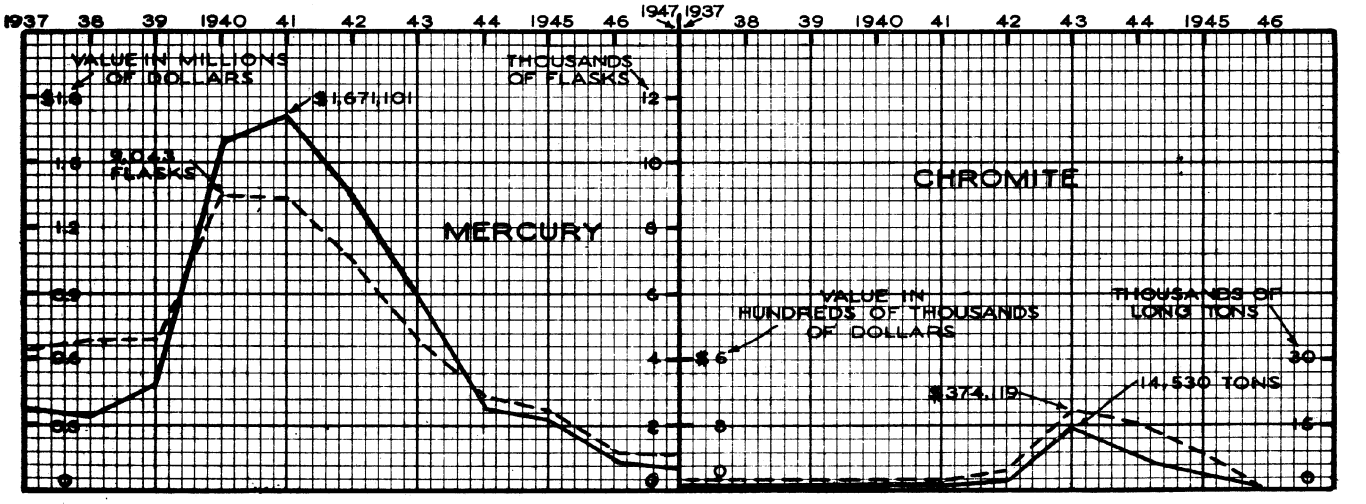
The mineral industry picture in Oregon is set off from other western states because of the discovery in 1943 of large reserves of high-iron bauxite in the northwestern part of the State. The Oregon Department of Geology and Mineral Industries was instrumental not only in the discovery but in the development of these widespread deposits. Alcoa Mining Company has been actively developing the area for over three years and is continuing drilling and sampling at the present time. From a national standpoint this is an outstanding mineral discovery because of the deficiency in bauxite reserves in continental United States. Although alumina is relatively low grade in these ores (approximately 35 percent), silica content is low - around 7 percent - which simplifies the treatment problem. Alumina may be recovered economically from this ore by either or both of two processes - the Bayer and the Pedersen. Using the latter, pig iron would be a by-product. No attention has been paid to these deposits by the "have not" people.

Oregon and California revested lands

All through the West, more and more potential mineral land has been withdrawn from the public domain by the Federal Government. This fact is very well known in detail to the Senate Public Lands Committee. In Oregon the matter is a live issue principally because the Interior Department decided in 1937 that the Oregon and California revested railroad grant lands comprising 2½ million acres of land, much of it known to be mineral land, in western Oregon should be withdrawn from mineral entry. These lands were originally granted to the Oregon and California Railroad in order to subsidize construction. In 1916 they were revested in the Federal Government and on June 9, 1916, Congress passed an act providing for the classification of these lands as timber lands, power-site lands, and agricultural lands, and it was expressly provided that the general mineral land laws should apply except to power sites. Therefore until 1937 the revested lands were open to mineral entry and location the same as other parts of the public domain. On August 28, 1937, a bill was passed by Congress which set up a program of sustained yield of timber on these revested lands. No mention was made in the legislation concerning application of the United States mining laws. However, after passage, the bill was interpreted by the Secretary of the Interior as excluding application of the mining laws to O and C land, and his decision declared that any mine locations made subsequent to August 28, 1937, would be invalid. In several sessions of Congress Senator Cordon and Congressman Ellsworth have introduced bills designed to reopen O and C lands to mineral entry with certain restrictions. So far these bills have not come out of committee. The lands contain deposits of various ores including bauxite, refractory clays, gold, silver, copper, lead, and zinc. Prospecting and mining would have no ill effect on the sustained yield program and there is no good reason why these lands should not be open to mineral entry except the wish of the Interior Department to place all Government mineral lands under a leasing system. This committee could further the program of encouraging mining development by urging passage of bills introduced by Senator Cordon and Congressman Ellsworth.

OREGON MINERAL PRODUCTION 1937—1947





Exploration incentives

Various other witnesses have advocated needed incentives designed to stimulate development and mining, particularly of marginal ores. Possibly much of the needed incentive is provided for in H.R. 2455, the Russell Bill, but tax relief incentive, such as is allowed new mines in Canada, would be highly desirable in the United States. From a long range viewpoint it seems to me that the Federal Government will have to subsidize prospecting and exploration by private enterprise in order to build up ore reserves. We cannot depend on the old time prospector any more. In addition to the Government departments concerned with ore finding, more direct assistance should be given prospectors as well as both small and large operators in finding and developing new ore bodies. From a long range viewpoint, overall demand for metals will increase faster than new reserves can be added in this country under our present system of taxation and high working costs. In addition, some stimulation should be given to prospecting for uranium and thorium. I do not like government subsidies, but there does not seem to be any way for private enterprise to meet the situation successfully unless the Government provides the needed incentive. This, I believe, could be done by direct or indirect subsidies to persons or groups who will aim specifically at finding and developing ore. In order to provide for national security the need for a subsidy is as great if not greater than is the need for subsidies to agriculture.

As has been stated many times, we should work to become as nearly self-sufficient in mineral supplies as is humanly possible so that we shall not be vulnerable in wartime. Another factor in the problem which should be carefully weighed by government officials is the probability that,as time goes on, foreign nations will become more and more reluctant to export strategic materials.

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OREGON PERLITE PRODUCTION SUBSTANTIAL

According to the State Department of Geology and Mineral Industries the new perlite industry of the Dantore Division of Dant & Russell, Inc., mined and milled 2,623 tons of raw ore in 1947. Of this quantity, 2,130 tons was furnaced and produced 68,771 bags of expanded perlite of 4 cubic feet each. In January 1948 the company produced 641 tons of raw perlite and shipped approximately 200 tons to a new Dantore furnace installation at Grand Rapids, Michigan, now being constructed. This is the first perlite ever shipped outside the State. The new furnace unit will be in operation sometime in March and at that time regular shipments of raw perlite will begin to Grand Rapids from the Lady Frances Mine of Dant & Russell, Inc., located on the Deschutes River at Frieda, a station on the Oregon Trunk Railroad about 14 miles south of Maupin, Wasco County.

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OREGON CHROME MINE RESUMES PRODUCTION

W. S. Robertson, Grants Pass, has resumed shipping chromite from the Oregon Chrome Mine on the Illinois River, Josephine County, after more than a year's development work. He has driven a 700-foot crosscut for a haulage tunnel which has tapped the ore body at a depth of approximately 500 feet below the surface. Shipments are being made to the Ohio Ferro Alloys Company in Tacoma at the rate of about 500 long tons per month. Twelve men on two shifts are now employed at the property.

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SOUTHERN OREGON LIMESTONE EXPLORATION

It is reported at Grants Pass that about 700 feet of diamond drilling has been completed at the Muck limestone property located on Cheney Creek south of Wilderville in Josephine County. The drilling was planned to check the quality of the stone at depth. The deepest hole drilled was reportedly 186 feet deep. A plant site has been prepared near Cheney Creek and a large Telsmith jaw crusher has already been installed. The bulk of the production will be sold for agricultural limestone but part will go for paper mill rock and part for calcium carbide.

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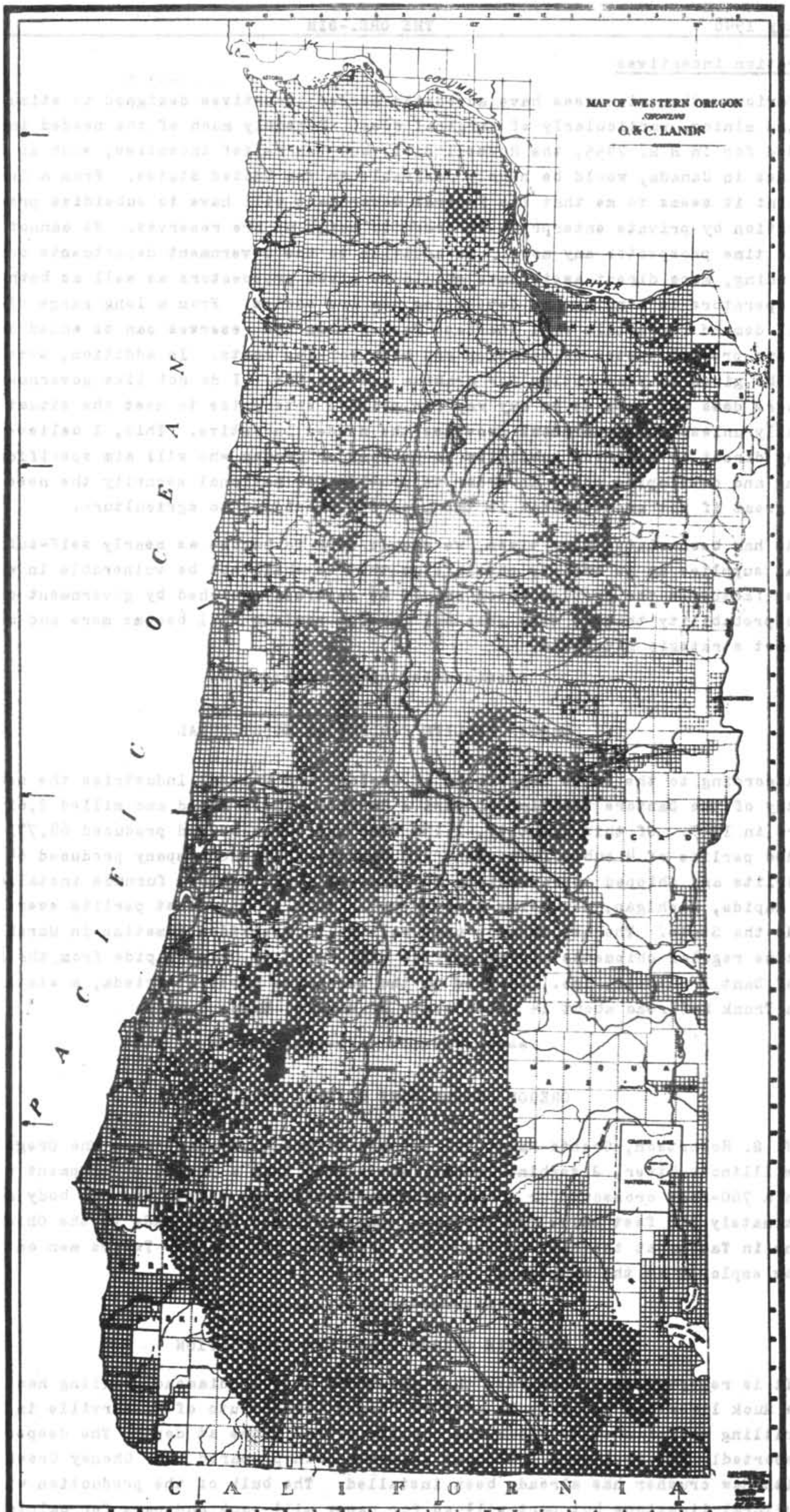
MAP OF WESTERN OREGON
SHOWING
O.&C. LANDS
COLUMBIA
P A C I F I C
O C E A N
C A L I F O R N I A

ELLSWORTH'S O&C BILL REPORTED FAVORABLY

Congressman Harris Ellsworth has stated in a letter to the Department that his bill, newly introduced this year, to open O&C lands for mineral entry and location was favorably reported to the House by the Public Lands Committee on February 10. The bill will be on the House Consent Calendar March 1 and possibly may pass the House at that time.

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SUMPTER VALLEY DREDGE SOLD

According to the Oregon Journal of January 30, the Sumpter Valley dredge has been purchased by the Baker Dredging Company composed of G. P. Lilley, M. A. Grant, and Harold Banta.

Except for the war period when gold mines were closed by Government order, the dredge has been digging steadily since 1934. It has 72 buckets, 9 cubic feet each, and is capable of handling about 280,000 cubic yards a month of Sumpter Valley ground.

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DEMAND FOR METALS CONTINUES STRONG

According to the E. & M. J. Metal and Mineral Markets, issue of February 19, 1948, the demand for copper, lead, and zinc continues active in spite of the unsettled condition of the market for agricultural commodities. The domestic copper market was firm at 21½¢ Connecticut Valley. There was some unsettlement in the scrap copper trade but this exerted no influence on the market for electrolytic copper. February deliveries, according to reports, should exceed 103,000 tons. Deliveries of refined copper to consumers in January amounted to 118,855 tons compared with 113,446 tons in December. Production of copper at domestic refineries in January amounted to 102,314 tons.

Market price for lead continues at 15¢ New York and there has been no let-up in the demand. Offers by producers of lead for March delivery have been slow, whereas consumer demand for April shipment of lead has been very active.

Galvanizers and the die-casting industry have been absorbing zinc at a continuing high rate. The base price for prime western was reported as firm at 12¢ East St. Louis. The export market was said to be unchanged at 12 to 12½¢ f.a.s. Gulf ports.

The quicksilver market was unsettled. Spot metal was available at prices ranging from $76 to $78 per flask. It is stated that on forward shipment of metal covering round lots it was possible to buy at a lower price, possibly $74 per flask.

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AIME INDUSTRIAL MINERALS CONFERENCE

The Oregon Section, American Institute of Mining and Metallurgical Engineers, is sponsoring an industrial minerals conference which will be held at the Multnomah Hotel, Portland, all day Saturday, May 8. Both the Columbia and the North Pacific Sections of the AIME have been asked to participate and to present papers. Co-sponsors of the Portland meeting are the State Department of Geology and Mineral Industries, the Raw Materials Survey, and the Industries Committee, Portland Chamber of Commerce. The technical program will include eight papers on industrial mineral subjects and time will be allotted for discussions. At the luncheon meeting a talk will be given by a prominent speaker. In the evening a banquet will be held at the Multnomah Hotel by the Oregon Section, AIME. Leslie C. Richards, mining engineer, Portland, is chairman of the committee on plans and preparations.

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PERLITE AS FILTER AID

In doing some metallurgical testing work with finely divided laterite in the Department chemical laboratory, considerable difficulty was experienced in filtering the material. Therefore different methods were tried in order to speed up the filtering operation. Expanded perlite (Dantore) was tried along with other agents and the following table shows some experimental results obtained in the attempt to find filter aids which would lessen the filtering time. Expanded perlite gave excellent comparative results but it is realized that additional work is required in order to verify these preliminary results, also that perlite might not be as efficient as a filter aid in other types of materials requiring filtration.

Time of filtering (minutes)	Straight ore	Ore + 2½ gms. perlite untreated	Ore + 2½ gms. perlite treated with H_2SO_4	Ore + 2½ gms. perlite treated with H_2O_2	Ore + 2½ gms. of a commercial filter aid	Ore + 2½ gms. CaO
Actual time of running through original 100 cc H_2O + 25 gms. ore	10	7	6	6	7	12
Actual time of running through 50 cc of "wash" H_2O	19	12	16	8	17	15
Total elapsed time of filtering 150 cc liquid	29	19	22	14	24	27

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LIGHT METALS AND NORTHWEST POWER

Seattle *** Light metal producers are not without their troubles, too (Refers to shortage of steel reinforcing bars, Ed.). The plan announced by Aluminum Co. of America last November for construction of a new plant to manufacture aluminum rod, wire and electrical transmission cables, remains in the blueprint stage because of the present power shortage.

According to C. S. Thayer, manager of the company's smelting works in Vancouver where the new plant was to be located, they cannot go ahead until they have assurance that they will get continuous power for the new unit and further commitments which will insure power for continuous production of virgin pig at the present level.

The proposed plant would require approximately 4000 kw daily in addition to the heavy demand made at the smelting works. Contract for Bonneville Power for the smelting operation has expired and a new one is being negotiated.

It is interesting to note that one of the important reasons for the power shortage in the Northwest is the heavy demands made by the several primary aluminum producers in this area and that the proposed new plant of Alcoa would make aluminum cable and aluminum wire for electric transmission lines.

It has recently been divulged here that Reynolds Metals Co. is preparing to reopen its primary aluminum production plant at Longview, Wash. in July and is already recruiting labor. This plant was closed down last year because of the power shortage and the backlog of aluminum pig this company had on hand. A new contract has been negotiated which will asure power for this producer after July 1.

From West Coast edition of the Iron Age, February 17, 1948.

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CLEARING HOUSE

CH-100: For Sale - Complete dragline unit including shop. Good operating condition. Reported capacity 3500 cu. yds. per day. For information write Ben Baker, 110 Union Ave., Grants Pass, Ore.

CH-101: For Sale - Lone Wolf group of 4 unpatented lode claims located 3 miles northwest of Marial, Curry County, Oregon. Development reported to consist of two 50-ft. tunnels, two shafts, and numerous open cuts. Hill H. Smith, Box 145, Gold Beach, Ore.

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THE DOMESTIC MERCURY SITUATION

by
S. H. Williston
Vice-president Cordero Mining Company*

The present situation of the domestic mercury industry can be stated very briefly. The industry must sell at 1935 prices while operating at 1948 costs. For the last 100 years there have probably been an average of close to 40 operating mines in the United States each year. During the war years, 1939 to 1945, the number of operating mines increased to almost two hundred. At the close of 1947, only three mines were operating continuously, and two or three more were operating on an intermittent basis. It is quite safe to say that the industry as a whole is losing money. It is equally safe to say that no individual mine could show a profit if it were to carry on anything approaching normal exploration and development work. It is my opinion, although I cannot be certain, that no mercury mine in operation in the United States today is making a profit.

The five or six mines still running are operating on "hope," and as the months go by with no improvement in sales prices and rapidly rising costs, that "hope" is fading. In the meantime, to remain in operation at all, they are mining only the high-grade ore and leaving behind ore which would have shown a handsome profit under conditions prevalent before the war. When the end of this stage is reached the mines will be allowed to fill with water and cave.

The cause of the deterioration of the domestic quicksilver industry is the importation and the offerings of metal for importation from Russia, Japan, Yugoslavia, Italy, and Spain, and minor amounts from Mexico and South America. These foreign offerings are a result of surplus production of the war years, plus loss of other than United States and British markets for current foreign production. Most of the nations who offer the metal suffered seriously during the war and their desire for American dollar exchange overshadows natural economic laws.

Current artificial exchange rates make proper evaluation of foreign cost difficult, if not impossible. Russian offerings by way of Brazil are of uncertain origin but if they came from the prewar mercury operations of the Ukraine, the costs are probably in excess of the offering price. Yugoslavia imports come from the Idria mine near Trieste taken away from the Italians at the end of the war. With any degree of inflation it is doubtful if the costs at that mine are such that would permit economic competition. Apparently Tito's requirements for dollars are such that the cost of production means little if it will obtain the desired dollar exchange. Offers and shipments from Japan are in large part captured Japanese metal which the United States government imported into this country and sold on the New York market at below the going market price.

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*Testimony presented to National Resources Subcommittee of Senate Interior and Insular Affairs Committee, Denver, Colorado, February 3, 1948. Subcommittee chairman, Senator George Malone.

Most of the importations from Italy, like those from Spain, are controlled by the European mercury cartel. The two principal mines in Italy are controlled by the Italian government. The principal Spanish mine is owned, operated, and controlled by the Spanish government. Agencies of these two governments are the principal members of the European mercury cartel and normally control world prices for the metal.

To determine the cost of production of these various mines abroad is difficult. Even for Italy and Spain where the production is by far the largest, the possibility of determining any exact cost is almost impossible. The only information available on the cost of production in Italy is so mixed up with rapidly changing official exchange rates and the violent fluctuation of "black market" rates that any estimates on Italian costs can only be considered as guesses. At the conclusion of the invasion of Italy and for a short period thereafter when the mines first resumed operation, verbal reports from government sources indicated a cost of 8600 lira per flask. At that time the official exchange rate was 100 lira to the dollar, giving a dollar cost of production of $86 per flask. As internal inflation took place in Italy and as official exchange rates, and "black market" rates rose from 200 to 500, and finally to 600 lira to the dollar, the cost of production in dollars sank to a possible low of $14.00 a flask. More recent information may indicate that internal inflation is making up for the higher lira exchange rates and if the Italian producers are now paying 500 lira per day for miners, then the cost of production in Italy may be about $40.00 a flask.

Insofar as costs of production in Spain are concerned, the situation is no better than in Italy. The last official costs available to the industry are those of the Spanish Republican regime, a figure of approximately $40.00. Under General Franco it is known that these costs were reduced possibly as low as $20.00 or $25.00. It seems illogical that they could be reduced much below that figure considering the fact that at the Almaden mines it requires some 2000 men to handle 300 tons of ore per day. The only figures or wage rates available are those of January 1946 when the director of the Almaden mine stated that the highest wage rate paid was $1.10 per ten-hour day. Since that time information from the American Attache indicates an internal inflation of 100 percent. It is probably safe to say that the Spanish cost of production is not over $40.00 a flask, although it may be as low as $30.00, or as high as $50.00.

During the war years the domestic quicksilver industry produced the total requirements of the United States and also an additional supply for our allies. Prior to the war, this was considered an almost impossible job but at no time from 1939 to 1945 was there any shortage of the metal in the United States. In fact, in January 1944, domestic producers were providing an almost embarrassing surplus. In spite of this fact, the United States government purchased large amounts of mercury from Canada, Mexico, Spain, and some South American countries. Fortunately, at the conclusion of the war, in the fall of 1945, almost all of this surplus mercury owned or controlled by the United States government was channeled into the government stockpiles. Captured material abroad, together with some return lend lease metal from Britain, brought totals of mercury in the stockpiles far above the minimum stockpile requirements. Since little, if any, of the foreign metal was used during the war, and since the domestic American producers were able to supply all requirements, almost the total stockpile of mercury is of foreign origin. No domestic metal has been purchased for the stockpile since the war and no such purchases are contemplated. It might be well for the Armed Services to reconsider the mercury requirements in relation to the stockpile quotas. In September of 1945, military requirements indicated a consumption of 12,000 flasks a month, or 144,000 a year. If, in some future emergency, these amounts were to be required, neither the stockpile quotas, nor the total Western Hemisphere's reserves at prices well above the prices during the war years could supply the amounts required.

Prior to 1939, proven and probable reserves of mercury rarely averaged over a six months' supply for the mines then in operation, and any individual mine which had in reserve more than one year's supply was in an exceptionally favorable position. At the end of the

war period three domestic mines alone had reserves (based on a prewar cost and prewar prices) of seven or eight years. Since the war, with only prewar prices and no prewar costs, it might well be said that there are no ore reserves of mercury in the United States which may be mined at a profit.

In the quicksilver industry the largest individual item of expense is labor. Prior to the war, the cost of mine labor to the operator ranged from 60 to 70 cents an hour. At the present time, the cost of mine labor to the operator ranges from $1.15 to $1.60 an hour, including overtime. Thus, the principal cost of mine expense has more than doubled. The second largest item of expense is mine timbers. These have increased from $30 a thousand in 1935, to $90 a thousand at the present time. The third largest item of expense, fuel, has increased from 6¢ to over 13¢ a gallon. Thus, the principal items of cost of production have increased between 100 and 200 percent and there has certainly been no increased efficiency to offset this increase. While the mines remaining have been attempting to mechanize to the greatest possible extent, this mechanization has not been able to offset more than a very small part of the higher costs. In relation to 1935, the last year in which we had comparable sales prices for mercury, costs of operation have increased between 125 to 150 percent. Thus, present costs of operation at most mines are almost 2½ times what they were before the war when the operator received the same price for his metal as he receives at the present time.

Since it is quite apparent from the above that the domestic mercury industry under present conditions is doomed to early extinction, the question arises as to what, if anything, should be done about it. In the event there is no reasonable probability of war in the next five to ten years, I think it is probably proper to say that nothing should be done and the industry should be allowed to die. From the newspapers and from the rumors in Washington there is apparently no assurance that any such peacetime period can be counted upon, so it would appear that the nation cannot afford the destruction of the quicksilver industry. If the logical conclusion is reached that the mercury industry not be permitted to die, then there are several possible cures for the present situation.

1. The anti-dumping laws could be strengthened so that foreign metal could not be unloaded in this country through the subterfuge of depreciated currencies at prices below cost of production.

2. Anti-trust laws could be so enforced preventing the lowering of the price by foreign cartels so that they may later monopolize the market in the United States.

3. An increase in tariffs to correspond with the low foreign wages now less than ten percent of American wages.

4. Include mercury in some sort of a premium price plan which would keep the domestic industry afloat.

5. Approve some manner of exploration and development payments paid by the government to encourage the operator to maintain and increase reserves and cover his shutdown cost while the mines are inactive.

6. Adopt a policy of parity price support for domestic mining similar to the agricultural parity price support plan.

7. Adopt a policy of underground stockpiling which would give some degree of incentive to the domestic operator to maintain and increase his reserve and to retain his mine in operation.

Any of the above suggested programs would help the quicksilver industry survive the present period of low prices and high costs. It is the thought in the industry that even if nothing is done, present conditions would probably not last for a period of more than five or ten years. The reason for this feeling is that the current price of quicksilver, based on what it will buy, or based on its cost of production in man days, is probably at its lowest level in history. In 1875 the price of mercury was $25.00 a flask but it would

still purchase twenty-five days of labor. At Huancavelica, Peru, in the 17th century, one flask of quicksilver would purchase 200 days of labor or more. In the 1920's one flask of quicksilver would purchase 25 to 30 days of labor. In the depths of the depression of 1932 one flask of quicksilver would buy ten days of labor. At the present time $77.00 per flask on the New York market will buy from 6 to 7½ days of labor.

In the East, there is a wide publicized propaganda to "save our domestic mines for emergencies and import all of our needed strategic and critical metal." To anyone not familiar with the mining business it is very appealing; to anyone with knowledge of mining it is national suicide. It is not necessary to tell this to the chairman of this committee nor probably to anyone present at this time, but for the sake of the records, it is impossible to over-emphasize the fact that without a healthy industry engaged in mining each of the strategic and critical metals, there will be no deposits of those metals developed and available for mining in case of some future war. Further, there will be no manpower available or engineering talent available with the knowledge of the problems of those particular metals. Take the quicksilver industry as an example; if that industry is allowed to die, the mines will be allowed to fill with water and cave, but before that time the highest grade ore will have been removed, leaving only marginal shells around the edge of the principal ore bodies. The men with the know-how and with the knowledge of the respective mines will have drifted away into other enterprises, and the intimate knowledge of those deposits will be lost. When and if the country turns to those supposed reserves in an urgent need for strategic metals, they will find no one interested in them or able to mine them and the old mines in such shape that it might take years to put them back into efficient operation. The length of time required, even in peacetime, would be much greater than the length of time required to bring our healthy industry of 1939 into its peak production of 1943. It has often occurred to me that the difference in output of quicksilver, and for example chrome, during the last war is a good indication of what a healthy industry could do versus what an unhealthy industry did. When the war started, we had no chrome mining industry. The government spent a great deal of money in encouraging chrome mining during the war but increased tonnages of chrome only began to make themselves felt in the closing days of the period. Quicksilver, on the other hand, had a healthy industry in 1939 and with an adequate price incentive produced almost twice what was expected of it. It did this probably with less government help than any other division of the metal mining industry.

In conclusion, I would again like to re-emphasize the fact that the mercury mining industry, although over a hundred years old, is now almost dead. If, however, there is some tangible evidence that authorities realize the real condition and real importance of the domestic industry then it can probably struggle along in its torture for awhile waiting for relief. I greatly doubt that any part of the industry can or will survive very long in the absence of such evidence.

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NIEL ALLEN REAPPOINTED

On March 10 Governor John H. Hall reappointed Mr. Niel R. Allen of Grants Pass as a member of the Governing Board of the State Department of Geology and Mineral Industries. Mr. Allen's new term begins March 17, 1948, and ends March 16, 1952.

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SOUTHERN OREGON DREDGES LEAVE STATE

Mr. Charles Stearns of the Stearns and Owens Dredging Company reports plans to transfer operations from Josephine County, Oregon, to the vicinity of Fairbanks, Alaska, in the near future. Stated reason for this move is the excessive cost of resoiling dredged land. Resoiling was required in their contract covering dredging on the Applegate River.

The company began operations on the Kubli Ranch Placer on the Applegate River in 1940 and continued until closed down by the Government during the war period. Subsequent work has been on Poormans Creek and along the Applegate River.

This move represents the second major loss to southern Oregon placer mining within recent months. During the latter part of 1947 the Pantle Gold Dredging Company left the state to operate in Arizona. This latter company, using a dragline and dryland washing plant, operated east of Jacksonville during the 1946-1947 season, and late in 1947 dredged ground near Rogue River.

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NEW METHOD OF OBTAINING UNDISTURBED SOIL SAMPLES

by

Ralph S. Mason*

When it is necessary or advantageous to obtain undisturbed samples of loose soil, sand, volcanic ash and similar materials, the following method has been found to be simple and inexpensive. The method involves the use of the barrel obtained by cutting off the orifice end of a common hand sprayer (Flit gun). This produces a barrel approximately 12 inches long and 1¼ inches in diameter, equipped with a plunger and handle. This barrel

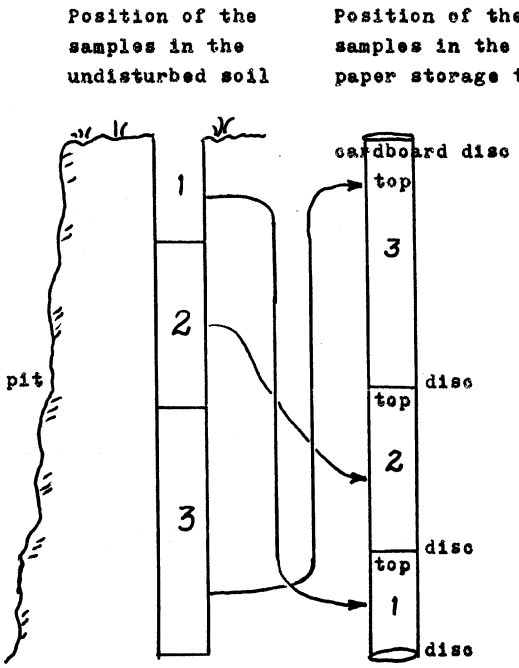

Fig. 1 - Diagram illustrating method of taking samples with Flit gun sampler and order in which samples are placed in paper tube.

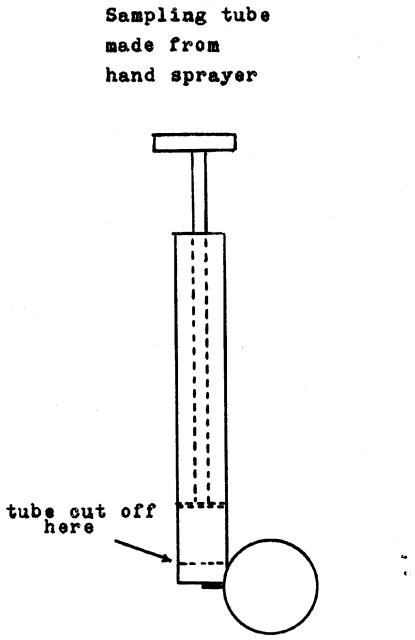

Fig. 2 - Diagram showing how orifice end of Flit gun sprayer is cut off to form sampling tube.

becomes the coring device and the only treatment required is to slightly sharpen the cutting edge with a file. Numerous samples of volcanic ash have been taken with such a device with excellent results. In practice the strata to be sampled are first cleared of any debris and a pit is dug to the bottom of the section to be cored. The "gun" is then held vertically and pushed into the bed approximately 5 or 6 inches back from the face of the pit. The amount of

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* Mining Engineer, Oregon State Department of Geology and Mineral Industries. Article reprinted from Ecology, January 1948 issue.

core that can be taken at one "push" will vary with the material but for volcanic ash a maximum of 6 inches was found best. A gentle downward pressure combined with a rotary or oscillatory motion is sufficient to fill the tube to the desired depth. The amount of penetration can be measured easily if an index scratch is made on the plunger handle when the plunger is flush with the cutting edge of the barrel. When the barrel is filled to the desired point the surrounding material is stripped away with a trowel or shovel down to the tip of the gun. A cardboard disc the same diameter as the barrel is then slipped under the cutting edge of the barrel and the barrel removed without disturbing the plunger. A sheet of kraft wrapping paper the same width as the length of the barrel and about a foot long is next wrapped around the tube and secured with either mucilage or scotch tape. The lower end of the tube is sealed by means of a cardboard disc and scotch tape. By exerting a steady, firm pressure on the handle of the gun the sample can be extruded undisturbed into the paper tube. Several samples can be loaded into one paper tube if a cardboard disc is used to separate them. When full, the tube is sealed off in the same manner as the other end. In obtaining the subsequent samples in the section, the gun is placed over the spot marked by the cardboard disc used as a marker and the coring process repeated. The packaged cores can be transported easily in a container such as a tall fruit juice can. In examining the cores in the laboratory it must be remembered that the samples are stacked in the paper tubes in reverse order and in this respect it is good practice to write on each tube the position of the various samples taken.

It has been found to be more expeditious to use two guns if more than one person is taking the samples since the second gun can be loaded while the first one is being extruded into the paper tube. Care must be taken not to damage the cutting edge on the gun by exerting undue pressure during the coring operation since the tube is of light gauge metal and will be deformed, thus causing difficult extrusion and also difficult insertion into the partially filled paper tubes. The cores can be opened easily for inspection by making two parallel longitudinal slits the full length of the sample and removing the strip of paper. Width of the strip removed should depend on the nature of the examination to be made.

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Author	Title
Allen, John Eliot	Contributions to the structure, stratigraphy, and petrography of the Lower Columbia River Gorge, 1932.
	Structures in the chromite deposits of the West Coast, 1940.
Allen, Rhesa M., Jr.	Geology and mineralization of the Morning Mine and adjacent region, Grant County, Oregon, 1947.
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Bassett, Robert George	The concentration of Oregon chromite bearing sands, 1945.
Bonneville Power Administration	Industries important to national defense feasible of establishment in the Pacific Northwest, 1940.
Buck, Adeline B.	The Willamette meteorite, 1936.
Callaghan, Eugene	Geology of the Heceta Head district, 1927
Crosby, W. O.	Benham Falls project, Deschutes River drainage, 1920.
Harper, Herbert E.	Geology of the Molalla quadrangle, 1946.

Author	Title
Hotz, P. E.	Iron ore deposits near Scappoose, Columbia County, Oregon, 1942.
Leever, William H.	Origin of the mineral deposits of the North Santiam mining district, Oregon, 1941.
Livingston, D. C.	A geologic reconnaissance of the Mineral and Cuddy Mountain mining district - Washington and Adams counties, Idaho, 1923.
Lowell, Wayne R.	Glaciation in the Wallowa Mountains, 1939.
	The paragenesis of some gold and copper ores of Southwestern Oregon, 1942.
Lowry, Wallace D.	The geology of the northeast quarter of the Ironside Mountain quadrangle, Baker and Malheur counties, Oregon, 1943.
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Oregon, University of	The mineral resources and mineral industry of Oregon for 1903.(1904)
Ruff, Lloyd L.	Preliminary notes on the geology of Bayocean peninsula, 1939.
Schenck, Hubert G.	A preliminary report of the geology of the Eugene quadrangle, Lane and Linn counties, Oregon, 1923.
Sheets, M. Meredith	Contributions to the geology of the Cascade Mountains in the vicinity of Mount Hood, 1932.
Souza, M. E.	Physiography and structure of the Oregon Coast Range Province, 1927.
Spreen, Christian August	A history of placer gold mining in Oregon 1850-1870, 1939.
Stowell, G. E.	Report on the geology and ore deposits of the Quartzville district, Oregon, 1944.
Wilcox, Howard G.	Fireclays and light colored clays of Western Oregon and the commercial development of a number 1 firebrick, 1935.
Wilkinson, William D.	The petrography of the Clarno formation of Oregon with special reference to the Mutton Mountains, 1932.
Williams, Ira A.	The Lava River tunnel (photostatic copy): Natural History, vol. 23, no. 2, 1923.
Wood, Hiram B.	Rock quarries and subsurface drainage in Washington County and old and new rock quarries, 1941.
Wray, Charles F.	The geology of the northwest quarter of the Ironside Mountain quadrangle, Grant and Baker counties, Oregon.
York, Harold A.	The history of the placer mining era in the state of Idaho, 1939.

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OREGON TOPOGRAPHIC MAPPING

Despite the increased rate of topographic mapping in Oregon during World War II by the U.S. Geological Survey and the Army Engineers, only 38.2 percent of the state has been covered. Much of the state west of the Cascades has been mapped topographically, although some of it dates back to 1893. Oregon ranks thirtieth in the percentage of area mapped in the forty-eight states. Ten states have been completely mapped, while Minnesota with 11.4 percent stands at the bottom of the list. Neighboring states all have higher percentages of areas mapped. Nevada has 40 percent, Idaho 46.1 percent, Washington 65.6 percent, and California 83.9 percent.

The above data was obtained from the annual report of the Secretary of the Interior for 1947.

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NONFERROUS METAL MARKETS

Following are extracts from E&MJ Metal and Mineral Markets, March 11, 1948:

Copper

All important sellers have opened their books for April business and all hands report a lively interest for copper from consumers, particularly the wire and cable division. In fact, the demand for March copper has not yet dried up completely. The price situation in the domestic market was about unchanged, with the undertone on nearby positions firm. Business booked was on the basis of 21½c., Valley.

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Lead

Attention of both buyers and sellers of lead again centered in the labor situation in Mexico. The strike at Monterrey has moved into its second week, with no clear indications of when the work stoppage will end. However, hope for an early settlement has not been abandoned. Consumers here continued to beg for lead and the tight situation in the metal shows no signs of easing. Makers of replacement batteries, who have been operating at an unusually high rate, are encountering increased competition for business.

Quotations were firm at 15c., New York, and 14.80 c., St. Louis. Sales of common lead for the week that ended yesterday totaled 4,908 tons.

Zinc

Buyers in need of Prime Western zinc for nearby delivery found it difficult to obtain the metal. Most producers appear to be well sold up so far as April metal is concerned. The situation in Special High Grade also remains firm, but sellers are wondering whether the demand will continue at current high levels over the summer period. There were indications that consumers were not so anxious about entering into forward commitments.

* * * * * * *

Tungsten

Recent business in domestic scheelite was concluded on the unchanged basis of $30 per unit of WO_3. In regard to imported tungsten ores, the market has turned inactive and quotations were more or less nominal. On foreign ore, in bond, prices named ranged from $20.50 to $21.50 per unit.

Domestic production of tungsten ore, basis 60 percent WO_3, amounted to 1,028 tons in the fourth quarter of 1947, against 900 tons in the third quarter, the Bureau of Mines reports. Imports for consumption in the Oct.-Dec. period totaled 2,311 tons. Consumption in the fourth quarter was estimated at 2,074 tons.

* * * * * * *

Quicksilver

Demand for quicksilver was moderate. Consumers remain confused over the supply situation, owing chiefly to uncertainty over what foreign producers are likely to do pricewise to attract buyers. The need for dollar exchange remains a factor in most countries that normally export the metal in volume. In spite of this uncertainty, marketing of foreign quicksilver has been less erratic in recent weeks. Quotations on spot continued unchanged at $76-$78 per flask, depending on quantity.

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O&C LANDS BILL PASSED BY HOUSE

O&C lands, about 2,500,000 acres in western Oregon, will be reopened to entry and location if a bill which passed the House of Representatives on March 1 is passed by the Senate. The bill is H.R.5049 introduced by Representative Harris Ellsworth. Senator Guy Cordon has secured authority from a Senate subcommittee of the Interior and Insular Affairs Committee to report H.R.5049 favorably to the full committee.

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O AND C LANDS

Thanks to the combined efforts of Congressman Harris Ellsworth and Senator Guy Cordon, the Ellsworth bill, H.R. 5049, was passed by Congress and signed by the President April 8, 1948. Therefore the O and C revested lands and the Coos Bay Wagon Road reconveyed lands have now been reopened to location and entry under the general mining laws. A copy of the bill in full follows:

H.R. 5049

IN THE HOUSE OF REPRESENTATIVES

January 20, 1948

Mr. Ellsworth introduced the following bill; which was referred to the Committee on Public Lands

A BILL

To reopen the revested Oregon and California Railroad and reconveyed Coos Bay Wagon Road grant lands to exploration, location, entry, and disposition under the general mining laws.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, THAT, NOTWITHSTANDING ANY PROVISIONS OF THE ACT OF AUGUST 28, 1937 (50 STAT. 874), OR ANY OTHER ACT RELATING TO THE REVESTED OREGON AND CALIFORNIA RAILROAD AND RECONVEYED COOS BAY WAGON ROAD GRANT LANDS, ALL OF SUCH REVESTED OR RECONVEYED LANDS, EXCEPT POWER SITES, SHALL BE OPEN FOR EXPLORATION, LOCATION, ENTRY, AND DISPOSITION UNDER THE MINERAL-LAND LAWS OF THE UNITED STATES, AND ALL MINERAL CLAIMS HERETOFORE LOCATED UPON SAID LANDS, IF OTHERWISE VALID UNDER THE MINERAL-LAND LAWS OF THE UNITED STATES, ARE HEREBY DECLARED VALID TO THE SAME EXTENT AS IF SUCH LANDS HAD REMAINED OPEN TO EXPLORATION, LOCATION, ENTRY, AND DISPOSITION UNDER SUCH LAWS FROM AUGUST 28, 1937, TO THE DATE OF ENACTMENT OF THIS ACT: Provided, THAT ANY PERSON WHO UNDER SUCH LAWS HAS ENTERED SINCE AUGUST 28, 1937, OR SHALL HEREAFTER ENTER, ANY OF SAID LANDS, SHALL NOT ACQUIRE TITLE, POSSESSORY OR OTHERWISE, TO THE TIMBER, NOW OR HEREAFTER GROWING THEREON, WHICH TIMBER MAY BE MANAGED AND DISPOSED OF AS IS OR MAY BE PROVIDED BY LAW, EXCEPT THAT SUCH PERSON SHALL HAVE THE RIGHT TO USE SO MUCH OF THE TIMBER THEREON AS MAY BE NECESSARY IN THE DEVELOPMENT AND OPERATION OF HIS MINE UNTIL SUCH TIME AS SUCH TIMBER IS DISPOSED OF BY THE UNITED STATES: Provided further, THAT LOCATIONS MADE PRIOR TO AUGUST 28, 1937, MAY BE PERFECTED IN ACCORDANCE WITH THE LAWS UNDER WHICH INITIATED.

THE OWNER OF ANY UNPATENTED MINING CLAIM LOCATED UPON ANY OF SUCH LANDS SHALL FILE FOR RECORD IN THE UNITED STATES DISTRICT LAND OFFICE OF THE LAND DISTRICT IN WHICH THE CLAIM IS SITUATED (1) WITHIN ONE HUNDRED AND EIGHTY DAYS AFTER THE EFFECTIVE DATE OF THIS ACT, AS TO LOCATIONS HERETOFORE MADE, OR WITHIN SIXTY DAYS OF LOCATIONS, AS TO LOCATIONS HEREAFTER MADE, A COPY OF THE NOTICE OF LOCATION OF THE CLAIM; (2) WITHIN SIXTY DAYS AFTER THE EXPIRATION OF ANY ANNUAL ASSESSMENT YEAR, A STATEMENT UNDER OATH AS TO THE ASSESSMENT WORK DONE OR IMPROVEMENTS MADE DURING THE PREVIOUS ASSESSMENT YEAR, OR AS TO COMPLIANCE, IN LIEU THEREOF, WITH ANY APPLICABLE RELIEF ACT.

It will be noted that the location of mining claims on these lands must be validated by recording the location notices in the United States district land office according to specifications in the bill. Also an affidavit covering all assessment work must be filed in the same district land office within sixty days of the expiration of an assessment year.

Presumably the district land office referred to is that at Roseburg, Oregon, for most of the area. Some of the land in the southern part of the State in Tps. 37, 38, 39, and 40 S., Rs. 6 and 7 E., is probably in the Lakeview district.

Originally the lands in question consisted of odd-numbered sections, but in a few places there have been some consolidations by exchange with the U.S. Forest Service. Questions concerning the areal distribution of these lands should be addressed to the O & C Lands Administration, Swan Island, Portland, Oregon, or the U.S. District Land Offices at Roseburg and Lakeview, or the county assessors of the counties of western Oregon.

A locator of a mining claim on O and C lands must conform to state laws as well as federal laws and, in addition to the regulations of H.R. 5049 covering the filing for record in the U.S. district land office, he must file a copy of the location notice together with an affidavit showing that the required location work has been done with the county recorder of the county in which the claim is located. State law requires also that a record of annual assessment must be filed with the county recorder of the county in which the mining claim is located. A copy of the section of the State law which applies to affidavit of annual labor is reproduced below:

> Recordation of affidavit of annual labor: Contents. Within 30 days after the performance of labor or making of improvements, required by law to be annually performed or made upon any mining claim, the person in whose behalf such labor was performed, or improvement made, or someone in his behalf, knowing the facts, shall make and have recorded in the mining records of the county in which said mining claim is situated, an affidavit setting forth:
>
> (1) The name of the claim or claims if grouped and the book and page of the record where the location notice of said claim or claims is recorded.
>
> (2) The number of days' work done and the character and value of the improvements placed thereon, together with the location of such work and improvements.
>
> (3) The date or dates of performing said labor and making said improvements.
>
> (4) At whose instance or request said work was done or improvements made.
>
> (5) The actual amount paid for said labor and improvements, and by whom paid, when the same was not done by the owner or owners of said claim.

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ATTENTION

ASSESSMENT WORK

OWNERS OF UNPATENTED MINING CLAIMS WHO WISH TO MAINTAIN THEIR POSSESSORY RIGHTS MUST DO ASSESSMENT WORK FOR THE CURRENT ASSESSMENT YEAR ENDING JULY 1, 1948.

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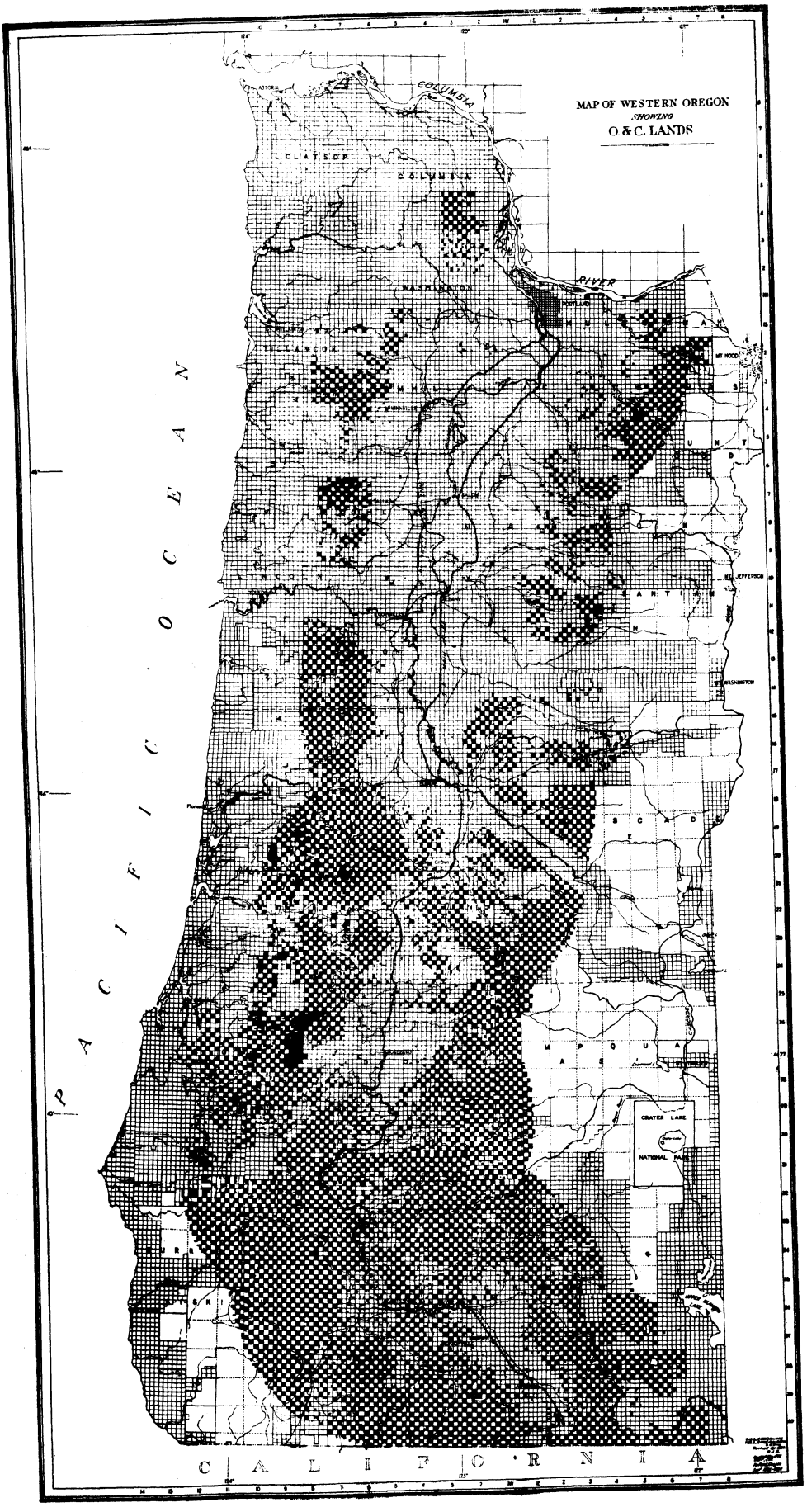
MAP OF WESTERN OREGON
SHOWING
O. & C. LANDS
COLUMBIA
RIVER
PACIFIC OCEAN
CALIFORNIA
CRATER LAKE
NATIONAL PARK

THROWAWAY ROCK BIT

by

Ralph S. Mason*

A new detachable rock bit has been developed and patented by the Throwaway Bit Corporation, Portland, Oregon. Designed to be used without resharpening and then discarded, the new bit, although weighing half as much as regular bits, reportedly has been found to be capable of drilling from 2 to 2½ times as much hole. The Throwaway Bit Corporation, headed by Mr. Homer B. Morris, President, and Mr. R. S. Miller, Vice-President, is currently producing 5000 bits per day and expects to be in full production by May. The company anticipates a production of 15,000 bits per day.

In design the new bit differs from the orthodox styles in that it is attached to the drill shank by means of a press fit. Regular drill steel can be converted easily by cutting off the threaded shank and turning down the end to a diameter of 1 inch. The bits are removed by means of a slide hammer. Four sizes of bits, 1 3/4 inches, 1 11/16 inches, 1 5/8 inches, and 1 9/16 inches are being produced currently. This small number of sizes will be increased if necessary in the future. The manufacturers claim that fewer sizes of their bits are required since their bits drill more than twice as far before changing. It is stated that one bit drilled 60 feet of hole before being discarded. According to the manufacturers, the bits have been tested mostly in the Coeur d'Alene district and at the Hedley Mascot Mine in Canada where siliceous limestone, on the 3700-foot level, was drilled approximately 50 percent faster than with any other detachable bit. The secret of this increased drilling capacity lies, in part, in the special heat treatment applied to the alloy steel bits and in the design of the shoulder. Although some production details are still confidential, officers of the company have outlined the manufacturing process as follows: alloy 1 3/16-inch steel bars are cut into slugs with a shear, heated in a high frequency coil, forged at one blow in a 120-ton press, then trimmed and bored for water hole, and hardened by placing in a special high frequency furnace. The resulting bit has a cutting face having a hardness of approximately 66 Rockwell-C.

In a drilling test in the Coeur d'Alene district in Idaho, it is reported that the Throwaway bit, when tested against both detachable bits and forged steel, drilled from 2 to 2½ times as much footage as any of them.

An important advantage claimed for the new bit is the simplicity of the drill steel shank, which can be machined and tempered in any machine shop or well-equipped mine shop. So far, no breakage of either bit or shank has been noted and drillers have reported that the bits are smooth-running and have not come loose from the steel. The secret of the ability of the bit to remain firmly attached to the drill shank lies in the fact that the inside of the socket sides are slightly convex which wedges the bit onto the shank when it is given a few smart raps against a boulder. Once the bit has become dull, it is discarded and a new one inserted in a matter of seconds. The new bit should be particularly useful for small, isolated mining operations which do not have resharpening equipment and where any reduction in shipping weight is important. Simplicity of the manufacturing process plus precision heat control makes it easy to produce bits identical in quality and hardness. The manufacturers state that just as soon as the company can meet the demand, several mines in the Coeur d'Alene district will switch over to the Throwaway bits since the operators are satisfied that there will be an appreciable saving in drilling costs by doing so. The new bits will be sold for 20 cents each in all sizes in large orders and the company intends to reduce prices after production costs of full scale operation have been determined.

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* Mining Engineer, State Department of Geology and Mineral Industries.

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METAL MARKETS

According to E & M J Metal and Mineral Markets, April 15, 1948, the demand for principal nonferrous metals continues very strong. Shipments of copper to domestic consumers increased to 122,988 tons compared to 106,823 tons in February. This gain resulted largely from a carryover from February and did not mean a substantial increase in consumption. Domestic copper continued firm on the basis of 21½ cents Connecticut Valley.

The increase in the price of lead to 17½ cents is expected to bring out more metal and some improvement has already been noted in the movement of scrap. Australian lead has been sold to consumers in this country on the basis of the new quotation. The amount so sold was not made public but it is stated that between 20,000 and 25,000 tons of lead will be set aside for shipment from Australia for the balance of the year.

The supply of zinc is becoming tighter. This is partly due to shipments earmarked for the Government stockpile. The price of Prime Western continued at 12 cents East St. Louis. Because of exports and shipments on Government account, stocks on hand fell to 45,229 tons at the end of March compared to 48,261 tons on February 29 and 68,011 tons at the beginning of the year.

Spot quicksilver ranged in price from $76 to $78 per flask depending on quantity. This was $1.00 higher than the preceding week. It is stated that leading domestic producers have withdrawn from the market. It is reported that 1000 flasks of imported metal have been bought for a New England mercury boiler installation now under construction.

Foreign silver was unchanged at 74 5/8 cents per ounce. The domestic price is fixed by law at 90.5 cents.

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HIGHER PRICE AND BONUS OFFERED FOR URANIUM ORE*

To stimulate exploration and production of uranium-bearing ores, the Atomic Energy Commission has raised its settlement basis for purchasing such ores. As a special incentive, the Commission will pay a bonus of $10,000 for the production and delivery of the first 20 tons of uranium ore or mechanically produced concentrates assaying 20 percent or more uranium oxide obtained from a new location.

The Commission plans to continue and expand its own exploration, development, and research relative to raw materials. This work, it points out, is designed to aid rather than limit the activities of private enterprise in prospecting, ore production, and ore beneficiation.

Minimum prices for delivery to AEC of domestic refined uranium, high-grade uranium-bearing ores and mechanical concentrates, guaranteed for 10 years, follow:

Ores and concentrates: $3.50 per pound of recoverable uranium oxide, less the cost per pound to refine to necessary purity as determined by the AEC after assay of a representative sample.

Refined uranium products: $3.50 per pound of uranium oxide.

Prices announced on April 10 are minimum prices for small lots. Higher prices may be established by negotiation with the seller for larger quantities, taking into account refining and milling costs, transportation costs, and other items. The Commission will give consideration to the presence of recoverable gold, silver, radium, thorium, and other valuable constituents.

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*From E & M J Metal and Mineral Markets, April 15, 1948.

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FERTILIZER SHORTAGE

The Ore.-Bin is indebted to the Oregon Voter, April 17, 1948, for the following:

Sulfate of ammonia fertilizer, much coveted by farmers, truck gardeners and other gardeners, is about as scarce and hard to get here in the Northwest as it was during the war emergency. Yet, there are plants in Salem, Salt Lake, and Oakland (Cal.) which are capable of producing something like 24,000 tons a month. Shortage of ammonia has the Salem and Salt Lake plants shut down and the Oakland plant operating on minimum basis. While this ammonia shortage thus cripples the 3 West Coast fertilizer factories, the US Army reportedly is shipping abroad 40,000 tons a month. More than 30,000 tons are sent monthly to Japan, the remainder to Europe. It seems that each ton of ammonia makes possible the manufacture of 4 tons of the coveted sulfate. The manufacturers and chambers of commerce, ably abetted by the growers, are putting up a fight to get the situation remedied. They are not asking that the shipments to other nations be stopped but merely that 6,000 tons a month out of the 40,000 tons be retained and turned over to the 3 western plants. Receipt of 2,000 tons of ammonia a month by each plant would mean a monthly output of 8,000 tons of fertilizer by each, it is said. If the Army or administration at Washington does not do something about the matter before then, it will be taken up at the scheduled Governors' Conference at Sacramento, April 22-24. Big plant of the Columbia Metals Corporation at Salem, output of which would materially relieve the shortage of the chemical fertilizer in this region, has been closed down since end of February. If our information is correct, a large part of the finished fertilizer produced in the Salem plant has, at least part of the time in the past, been shipped under government orders to China.

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OREGON MINING NOTES

The El Rio Dredging Company has started dredging operations near Takilma, Josephine County. Equipment consists of a dragline and dry land washing plant. One hundred forty-two acres are under lease.

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The Horsehead Lime Corporation has nearly finished installation of a rotary kiln near Williams, Josephine County. This property was operated before the war by the Washington Brick and Lime Company. It is planned to put the kiln into operation about June 1. Pulverized sawdust will be used for fuel. There is a good demand for chemical lime which this company will produce.

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Mr. George Tulare is sinking a prospect shaft at the Sylvanite Mine near Gold Hill, Jackson County. The plan is to sink on an incline about 100 feet for the purpose of prospecting the vein. The production record of this old mine is reported to be something in excess of $700,000 in gold. The run consisting of quartz and some pyrite has also contained some scheelite.

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EARTHQUAKES PREDICT FUTURE MOUNTAIN PEAKS

According to the Grants Pass Courier, March 24, 1948, Dr. James Gilluly, geology professor at UCLA, says that the earthquakes in southern California are a sign of new mountain peaks to come. Mt. Baldy, a bush league mountain in San Bernardino County, is rising between 20 and 40 inches a century and will be as high as Mt. Whitney in 200,000 years - a split second in geologic time.

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OIL WELL AT OCEAN CITY, WASHINGTON

According to the Oregonian, April 2, 1948, W. L. Stanton, division geologist in Olympia, reports that the Union Oil Company's oil well near Ocean City, Grays Harbor County, produces both gas and oil of exceptionally high quality, but not enough to be considered commercial thus far. The well is one of six drilled by the company this year, the five others showing some oil, but not enough. The Ocean City well has been drilled 6278 feet and was stopped because of mechanical difficulties. The showing of gas and oil extends about 2600 feet. According to Mr. Stanton, the well seems capable of producing 10 to 20 barrels of oil per day. Quality of both oil and gas is high. The mechanical troubles caused a meeting of high officials of the company in the test area in order to make a decision as to further testing work.

An AP dispatch in the Oregonian, April 17, 1948, stated that Fred W. Bush, Pacific Northwest Division Land Manager for the Union Oil Company, said that as a result of favorable indications found in the Ocean City well, the company has leased 360,000 acres for exploration in Washington. As quoted, Bush said that $1,500,000 had been spent by the company so far and that several million dollars more would be spent in exploration. Twelve to fifteen more wells may be drilled. Bush stated that the next well to be drilled will be on property near Tokeland. Another hole will be drilled one mile east of the mouth of the Hoh River on the Olympic Peninsula. Further drilling will be done inland near the town of Forks. Another well is planned to check the Ocean City well.

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CHEMICAL WARFARE ON INSECTS

For convenience we call it THIOPHOS 3422 Parathion but chemists call it diethyl nitrophenyl thiophosphate. Of greater importance to the American farmer is the fact that 165 entomologists distributed over 40 of these United States call it the most successful insecticide known. They arrived at this conclusion after testing it on practically every major crop and destructive insect. It is more deadly than the famous DDT and to a greater variety of insects. It is therefore an extremely potent weapon for chemical warfare on the insect hordes that are a menace to civilization.

The insect menace is far greater than is generally realized. Entomologists frequently remind us that insects appeared on earth before man and will probably survive him. Man's struggle for mastery over animals other than man has been quite successful but insects take many human lives each year and their destructiveness nullifies the work of a million men. There are several factors which help the insects to compete successfully with other forms of life. They can endure greater extremes of temperature and humidity; their skeleton is on the outside instead of inside like man's; some carry potent weapons and many are masters in the art of camouflage. The so-called social insects, such as termites, ants, and bees, have highly developed organizations in which different classes perform specialized functions for the benefit of the organization irrespective of the cost to the individual.

Man combats the insect in three ways; by quarantine, by biological warfare, and by chemical warfare. Quarantine prevents the entry of new pests and additions to those already established here. Biological warfare is carried on by growing or importing parasites to control destructive insects. Chemical warfare destroys them by applying poison to them or to their food.

For many years the principal chemicals available to entomologists were lead and calcium arsenates, lime sulphur solution, inorganic fluorine compounds, hydrogen cyanide, petroleum oils, pyrethrum extracts, and rotenone. The last two are obtained from plants and must be imported. Their active ingredients are complex compounds, impractical to synthesize, but they are highly toxic to insects and comparatively harmless to man and animals. Then came DDT (dichloro dephenyl trichloroethane) which performed yeoman service in World War II by controlling the malaria-carrying mosquito and the typhus-carrying body louse. It was logical

therefore to investigate other chlorinated compounds the best known of which are chlordane, chlorinated camphene, and hexachlorocyclohexane. Some enterprising chemists looked in other directions and found that certain esters of phospheric acid had remarkable potency as pesticides. The so-called hexaethyl tetraphosphate containing the effective tetraethyl pyrophosphate had merit but the latest in this type, parathion, is outstanding.

Although these new chemicals work wonders, some have detrimental traits. DDT is death to codling moths but mites resist it and multiply rapidly when their natural enemies have been decimated by DDT. Hexachlorocyclohexane leaves a disagreeable taste and odor and some phosphoric esters are very sensitive to moisture. But the newest development, parathion, is several times more powerful than DDT, affects a greater variety of insects, is quite stable to hydrolysis in normal waters, and any residue decreases rapidly by volatilizing. It is deadly for those troublesome mites on apples and pears and is highly effective against quite a number of insect pests on fruit and vegetables. No wonder then it was so highly acclaimed by the 165 entomologists who tested it during the 1947 season. However, information on toxicity does not permit recommending parathion for controlling household insects or pests on domestic animals.

The Department of Agriculture is continually urging the farmer to kill the bug and save the crop. This is particularly urgent with the present acute world shortage of food and every effort is being made by the Chemical Industry to provide the farmer with the most effective insecticides. It is startling to recall that, although the European corn borer was first recorded in Massachusetts in 1917, it now carries on its depredations as far south as North Carolina and west to Wisconsin and Iowa. Nearly three billion bushels of corn were grown in this area in 1946 and the borer could cause enormous loss unless active measures are maintained to control it. And the corn borer is only one of an imposing list of marauders that can reduce our productiveness and therefore lower our standard of living. They must be fought relentlessly with all the skill and ingenuity at our command. Research in the Chemical Industry is contributing by the development of new and more potent insecticides for aggressive warfare on all types of destructive insects.

From For Instance, No. 40, 1948. American Cyanamid Company, New York.

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PRICE OF PLATINUM UPPED

Supplies of platinum in this country have been dwindling during the past several months and as a result the price has been going up. On April 17 an AP dispatch in the Oregonian quoted platinum at $98 per ounce wholesale and $101 retail. The price had been boosted $14 an ounce on March 30. A year ago the price was $63 wholesale and $66 retail. Reportedly Russia has withheld shipments for nearly a year. At this price Oregon dredges and hydraulic miners should investigate platinum possibilities very carefully.

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WHEN WILL SUPPLY LINES BE CUT?

As this is being written the newspaper headlines say,"Russia Cuts Our Berlin Supply Line." How long will it be before she cuts our manganese, chrome, and other strategic material supply lines? And how long will it be before Congress and the Administration realize that we must depend for our stockpile, not on the Western Hemisphere, but those countries which border us and, more particularly, on our domestic production, technology, and skill?

The administration still choses the chimera of stockpiling from foreign sources exclusively, in spite of the developments which make the proponents of domestic self-sufficiency look like seers. No honest exponent of stockpiling objects to getting all the foreign material we can. No sensible Congress or Administration should delay stimulating domestic mining at whatever cost. No selfish interests, foreign or domestic, should stand in the way of quickly passing the best possible law combining flexible incentive payments to producers of all strategic and critical metals and minerals with stockpiling. The cost, however high, is sure to be only a fraction of what would be spent under war pressure to get the same, or lesser, results. Perhaps, even, such an incentive plan should be extended to Mexico and Canada.

From Pay Dirt, April 19, 1948.

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NICKEL-BEARING LATERITE AREAS OF SOUTHWESTERN OREGON*

by
Hollis Dole, F. W. Libbey, and R. S. Mason
State Department of Geology and Mineral Industries

Introduction

From August 10 to August 21, 1947, the Department continued its investigations of nickel-bearing laterites developed in peridotite areas in southwestern Oregon. Two areas, Woodcock Mountain in Josephine County and Nickel Mountain in Douglas County (see index map), were sampled in addition to the Red Flat deposit which was sampled by auger hole drilling in a preliminary investigation in 1946.

Location of deposits

The Red Flat deposit lies near the head of Pistol River in Curry County. The area covered by the flat includes secs. 19 and 30, T. 37 S., R. 13 W. The highest point on Red Flat has an elevation of approximately 2500 feet above sea level. The deposit can be reached over a U.S. Forest Service road which leaves US Highway 101 a few miles south of Gold Beach and goes up Hunter Creek. An older road from the post office of Pistol River near the mouth of Pistol River may also be used.

Woodcock Mountain is located in southwestern Josephine County about one mile west of Cave Junction, a town on US Highway 199, 35 miles south of Grants Pass. The mountain covers parts of secs. 7, 18, 19, 30, and 31, T. 39 S., R. 8 W., and secs. 12, 13, 24, 25, and 36, T. 39 S., R. 9 W. Its axis trends north and its areal extent is approximately 4 miles long by 2 miles wide. The areal extent of the laterite is roughly 2½ miles by half a mile. The elevation is 3391 feet at the highest point. Josephine Creek flows northward in the canyon to the west of the mountain and the West Fork of the Illinois River occupies the wider valley to the east. The northern portion of the mountain can be reached by taking the road from Kerby to Tennessee Mountain Forest Service lookout. The western half of Woodcock Mountain lies within the national forest boundary.

Nickel Mountain, in southern Douglas County, lies about 3 miles northwest of the town of Riddle. The mountain covers parts of secs. 8, 9, 10, 17, 18, 19, and 20, T. 30 S., R. 6 W. The deposits can be reached by a graveled road from Riddle, which is on the Shasta Route of the Southern Pacific Railroad. The summit of the mountain has an elevation of 3533 feet above sea level. Cow Creek flows eastward in a flat-bottomed valley immediately to the south of the mountain.

Field Work

Field work by the Department during 1947 consisted of taking channel and drill hole samples at these three localities. At both Nickel Mountain and Woodcock Mountain a

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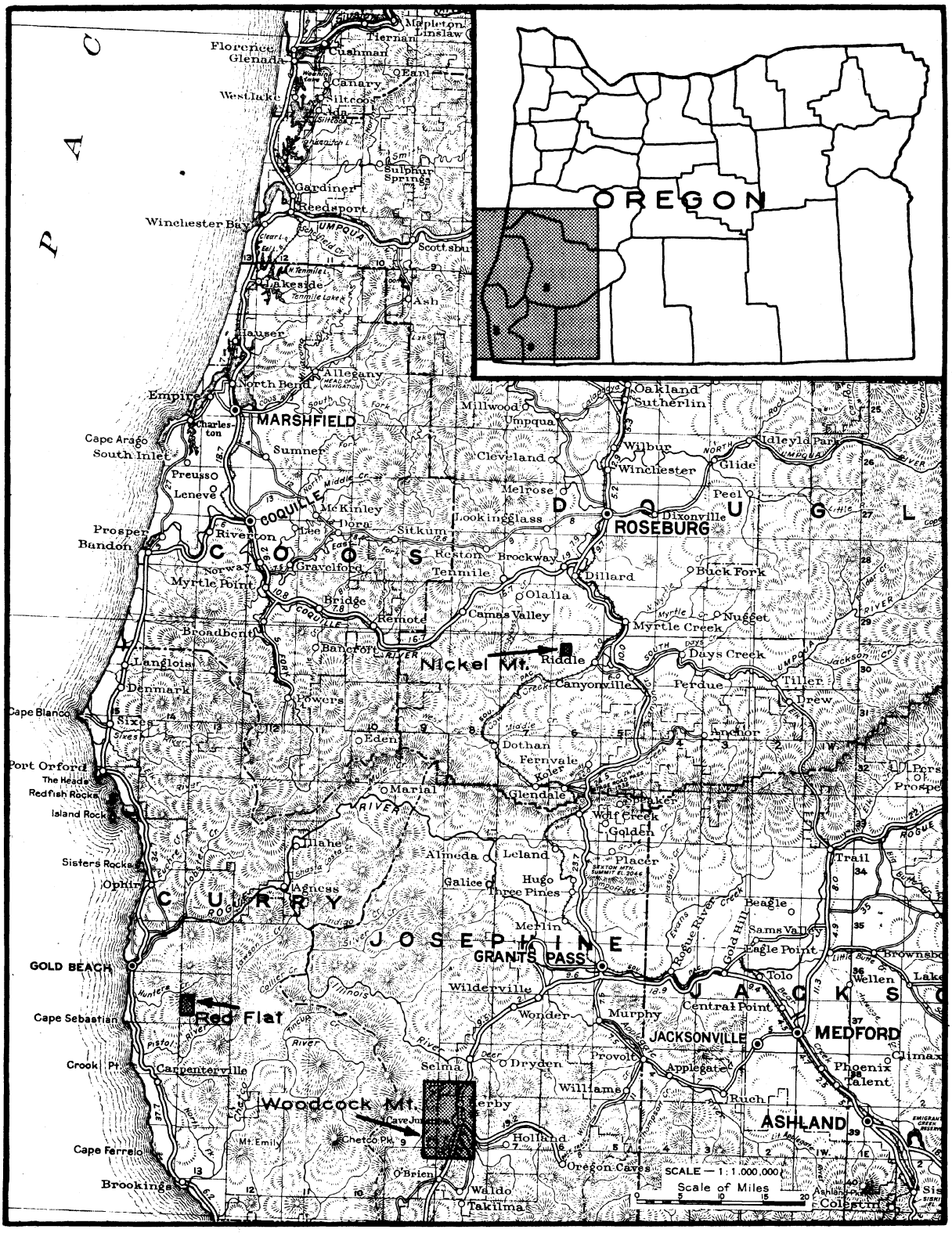
*Supplementary to "Nickel-Bearing Laterite, Red Flat, Curry County, Oregon" published in Ore.-Bin, March 1947.



Index Map of Southwestern Oregon Showing Location of Nickel-Bearing Laterite Areas

preliminary reconnaissance was made in conjunction with the sampling. At Red Flat, additional samples were taken to supplement the work done in 1946. A rough sketch map of the northern part of the Red Flat area and a geologic reconnaissance of the area to the northeast were also made. All samples were subsequently analyzed in the Department laboratories.

RED FLAT

Much of the area of laterite is held by the Red Gold Mining Company of Gold Beach, Oregon. Several bulldozer cuts, dug late in 1946 by Mr. Harry Hedderley of the Red Ridge Mining Company, whose property adjoins the Red Gold property on the north, were examined and sampled by the Department in 1947. In the cut adjacent to auger hole no. 1 (drilled in 1946; see map on p. 36), channel samples were taken (tbl. 1, samples P-6507 to P-6514). In the cut on the slope just west of the Red Gold Mining Company camp, irregular, nickel-stained, siliceous seams were found between blocks of serpentine. Analyses of samples taken in this cut are shown in table 1 (P-6521 to P-6523). Neither garnierite nor laterite was found in the cuts northwest of the Red Ridge camp at the north end of the area.

Channel sampling of the cuts was accomplished with difficulty due to the boulders of serpentine and peridotite encountered a few feet below the surface. The cut west of the Red Gold camp was too shallow to show the depth to which the seams of nickel-stained material extend. The stain appeared to be confined to the surfaces of the blocks and to narrow seams in the lateritic soil filling between them. Blocks of peridotite, in various stages of weathering in all of the cuts, were surrounded by lateritic, reddish-brown soil. The thickness of the zone of weathering was not determined because auger holes had to be abandoned at shallow depths when boulders were encountered. A test pit or shaft would probably be required to allow sampling of the complete laterite section and to show the depth of laterite to bed rock.

NICKEL MOUNTAIN

The deposit has been known and named for many years. Several reports on the deposit have been made, the latest being the U.S. Geological Survey investigation by Pecora and Hobbs* in 1942. Exploration by private groups has been undertaken from time to time. In 1942 Freeport Sulphur Company conducted an extensive drilling and trenching program. Most of the deposit is on land owned by the E. F. Adams estate of Oakland, California.

Field work by the Department in 1947 consisted of a general reconnaissance of the area, drilling and sampling an 8-foot auger hole, and taking various other channel and grab samples. Since considerable information was already available on exploration at depth, the Department's investigation was aimed at extending the boundaries of the known nickel-bearing areas. The accompanying map, adapted from U.S. Geol. Survey Bull. 931-I, shows locations of samples taken by the Department. Analyses are given in table 2. Insufficient work has been done by the Department to allow extension of the known laterite areas.

WOODCOCK MOUNTAIN

A number of mining claims have been staked on and near the summit of Woodcock Mountain. In the Department's investigations three samples were taken at the southern end and two more near the middle of the summit (see map). A hand auger-hole was abandoned at 3 feet 8 inches when boulders were struck. Samples P-6534 and P-6535 were from the portal of an old, inclined shaft which was partially caved (see tbl. 3). A ton or more of peridotite boulders piled on the shaft dump showed nickel-stained boxwork patterns of silica.

Summary

At Red Flat the bulldozing work showed that, in the places opened up, the laterite contained many boulders of serpentine and peridotite. The cuts gave sections of the

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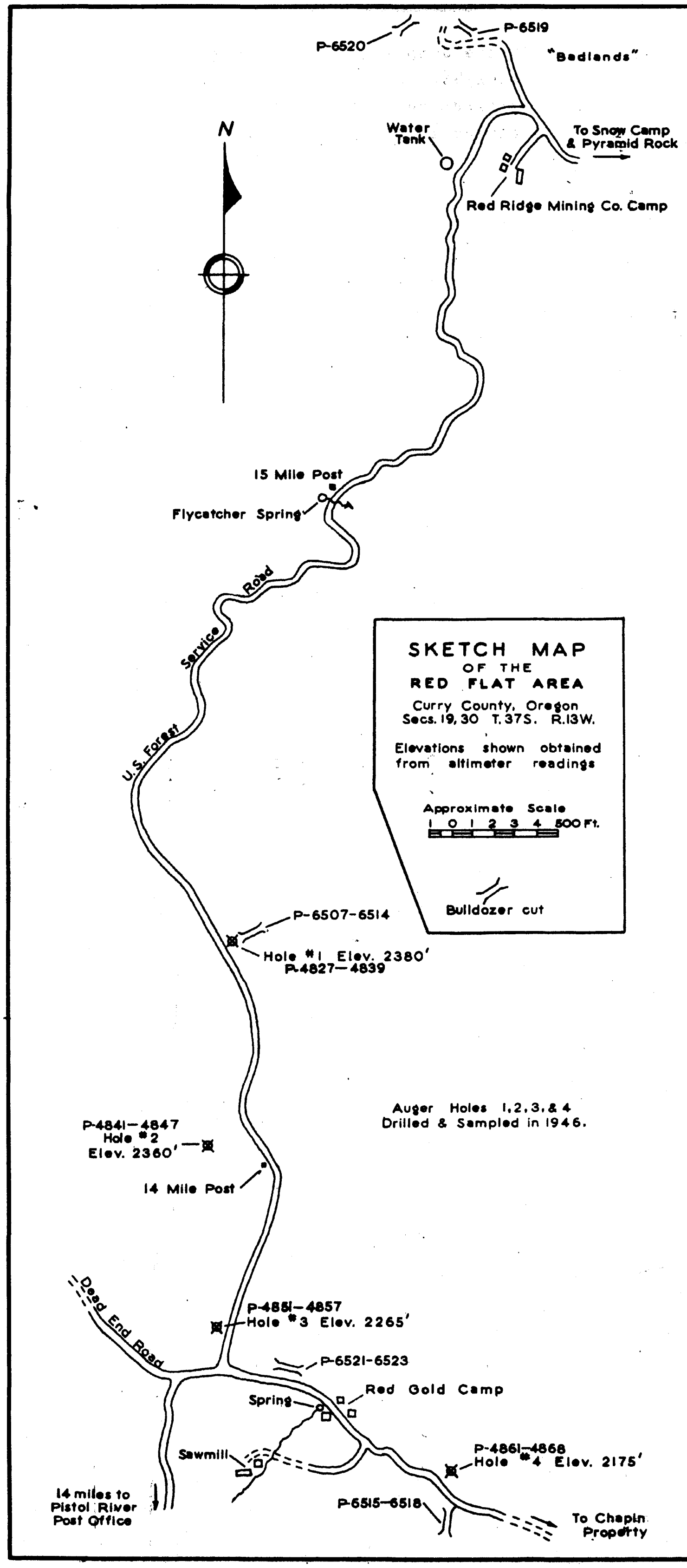
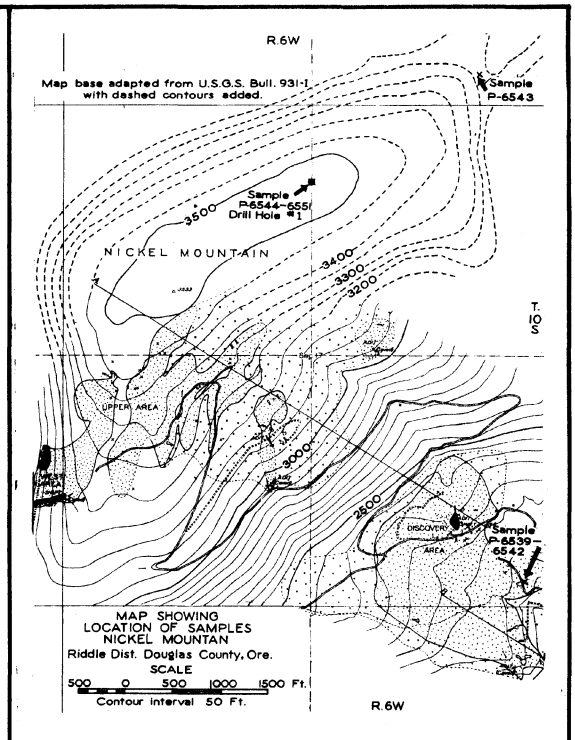
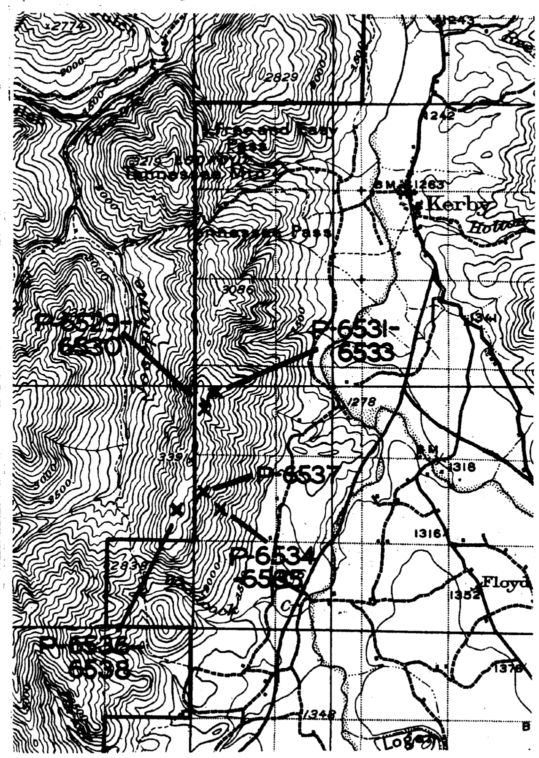
*Nickel deposit near Riddle, Douglas County, Oregon: U.S. Geol. Survey Bull. 931-I, 1942.


SKETCH MAP
OF THE
RED FLAT AREA
Curry County, Oregon
Secs. 19, 30 T.37S. R.13W.
Elevations shown obtained from altimeter readings
Approximate Scale
500 Ft.
Bulldozer cut
N
P-6520
P-6519
"Badlands"
Water Tank
To Snow Camp & Pyramid Rock
Red Ridge Mining Co. Camp
15 Mile Post
Flycatcher Spring
U.S. Forest Service Road
P-6507-6514
Hole #1 Elev. 2380'
P-4827-4839
Auger Holes 1, 2, 3, & 4 Drilled & Sampled in 1946.
P-4841-4847
Hole #2
Elev. 2360'
14 Mile Post
Dead End Road
P-4851-4857
Hole #3 Elev. 2265'
P-6521-6523
Red Gold Camp
Spring
Sawmill
P-4861-4868
Hole #4 Elev. 2175'
14 miles to Pistol River Post Office
P-6515-6518
To Chapin Property


R.6W
Map base adapted from U.S.G.S. Bull. 931-I with dashed contours added.
Sample P-6543
Sample P-6544-6551 Drill Hole #1
NICKEL MOUNTAIN
3500
3400
3300
3200
3000
2500
T. 10 S
UPPER AREA
DISCOVERY AREA
Sample P-6539-6542
MAP SHOWING LOCATION OF SAMPLES NICKEL MOUNTAN
Riddle Dist. Douglas County, Ore.
SCALE
500 0 500 1000 1500 Ft.
Contour Interval 50 Ft.
R.6W



MAP SHOWING LOCATION OF SAMPLES
WOODCOCK MOUNTAIN
Josephine County, Oregon
Map base from U.S.G.S. Kerby Quad.
Scale
1 0 1 2 3 4 5 Miles.
Contour Interval 100 Feet

D.I.B.

laterite which were shallower than those obtained by augering in 1946. Therefore the 1947 sampling provided no new information on the nickel content of the laterite at depth or on the possibility of finding garnierite below the laterite as at Nickel Mountain.

The small amount of work at Woodcock Mountain shows that there is a possibility of an extensive laterite deposit similar in character to that at Red Flat, but no exact information was obtained on the thickness of the laterite section. Further work here is planned.

At Nickel Mountain, the Department's reconnaissance showed that the Freeport Sulphur Company's exploration work had covered the major part of the potential areas of nickel laterite and silica boxwork material on the mountain. As near as could be determined from the restricted amount of reconnaissance work done, the chances for finding substantial extensions of the known nickel-bearing laterite on Nickel Mountain are not good.

Table 1.

Red Flat

Sample number	Sample width	Sample description[1]	Percent Ni	Percent Cr_2O_3
		Samples from bulldozer cut near auger hole no. 1, drilled in 1946 (see map). Sample intervals are vertically below collar of hole no. 1.		
P-6507	5' - 8'	Sample starts just below roots in top soil	0.83	3.45
P-6508	8' - 11'		0.86	0.35
P-6509	11' - 12'	Soft serpentine	0.92	0.25
P-6510	11' - 12'	Mostly laterite	0.79	0.31
P-6511	12' - 13'	70 percent laterite, 30 percent serpentine	0.74	0.28
P-6512	13' - 14'	" " " " " "	0.97	0.43
P-6513	14' - 15'	Laterite	0.98	0.55
P-6514	14' - 15'	Partially weathered serpentine	0.79	0.32
		* * * * * * * *		
		Samples from bulldozer cut east of Red Gold camp (laterite section in cut corresponds to no. 4 hole in 1946 sampling).		
P-6515		Serpentine from sump in cut	0.26	0.47
P-6516	0 - 2½'	Laterite at surface	1.02	2.86
P-6517	2½' - 5'	Laterite	0.65	2.83
P-6518	5' - 6'	"	0.55	2.12
		* * * * * * * *		
P-6519		Hedderley bulldozer cut nearest Pyramid Lookout - grab of sump (no laterite)	0.316	0.47
P-6520		Hedderley bulldozer cut west of first cut - serpentine	0.246	0.41
		* * * * * * * *		
		Samples from bulldozer cut just west of Red Gold camp		
P-6521		Nickel stain in quartz seams and on faces of serpentine	1.13	0.74
P-6522		Soft red laterite	1.42	0.86
P-6523		Bottom of cut - serpentine	0.76	0.49

[1] Samples taken in August 1948.

Table 2.

Nickel Mountain

Sample number	Sample width	Sample description	Percent Ni	Percent Cr_2O_3
		Laterite samples from big cut on road (see map); samples start below roots in top soil.		
P-6539	2¼' - 4'	Below surface	0.53	1.60
P-6540	4' - 6'		0.66	1.41
P-6541	6' - 8'		0.65	1.11
P-6542	8' - 9'		0.67	0.89
		* * * * * * * *		
P-6543		Grab from soil surface of saddle; "potential ore" zone (farthest north laterite).	0.60	1.48
		* * * * * * * *		
		Samples from top of ridge, hole no. 1 (see map).		
P-6544	6" - 1'	(northeast of Freeport exploration)	1.72	1.26
P-6545	1' - 2'		2.37	0.93
P-6546	2' - 3'		2.30	1.06
P-6547	3' - 4'		1.65	0.77
P-6548	4' - 5'		1.97	0.47
P-6549	5' - 6'		2.01	0.77
P-6550	6' - 7'		1.85	0.87
P-6551	7' - 8'		1.79	0.84
		* * * * * * * *		

Table 3.

Woodcock Mountain

		Samples from Redbird No. 2 claim		
P-6529	0 - 1'	Hole no. 1	1.45	0.94
P-6530	2' - 3'	Location cut channel; below surface	1.38	0.94
P-6531	0'6" - 1'6"	Hole no. 2 near location cut (see map)	1.03	2.65
P-6532	1'6" - 2'6"	Hole no. 2 near location cut (see map)	1.38	2.26
P-6533	2'6" - 3'8"	Hole no. 2 near location cut (see map)	1.24	1.85
		* * * * * * * *		
P-6534		Grab of inclined shaft dump, silica boxwork (very little green stain).	0.40	0.34
P-6535		Grab of top of inclined shaft (green stain)	1.33	0.94
P-6536		Grab of unweathered peridotite top of mountain	0.23	0.40
P-6537		Claim No. 4, location cut 2½' - 4' laterite	0.67	1.50
P-6538		Grab of soil at top of mountain, south end 6" below surface	0.88	2.12

****

WOULD EXTEND ASSESSMENT EXEMPTION

Senator Watkins (Utah) and Representative Stockman (Oregon) have introduced companion bills designed to exempt mining claims from annual work again. Senator Watkins' bill, S. 2479, has been reported upon favorably by the Senate Interior and Insular Affairs Committee and is now on the Senate calendar. Senator Cordon has sent the Department a copy of the report of the committee. The report reads as follows:

> The Senate Committee on Interior and Insular Affairs, to whom was referred the bill (S. 2479) providing for the suspension of annual assessment work on mining claims held by location in the United States, having considered the same, report favorably thereon without amendment and with the recommendation that the bill do pass.
>
> The purpose of this bill is to suspend the provision of section 2324 of the Revised Statutes of the United States, requiring that $100 worth of labor be performed or improvements in that amount be made each year on each mining claim located, until 12 o'clock meridian on the 1st day of July 1948.
>
> The committee believed there are controlling reasons why assessment work should be suspended in the United States and called attention to the fact that bill on this subject pertaining to Alaska was passed in the first session of the Eightieth Congress.
>
> The requirement as to performance of this work had been generally suspended throughout the United States since early in the war, and the committee is of the opinion that the scarcity of labor, labor costs, machinery costs, and all other costs associated with mining have advanced materially and that the suspension of assessment work for another year is justified.
>
> The committee wishes to emphasize, however, that such relief granted under the special circumstances mentioned above should not be taken as forecasting the abandonment in more normal times of the requirement for annual assessment work.

Whether or not this legislation will pass is uncertain.

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METAL MARKETS

The E & M J Metal and Mineral Markets, for the week ending May 13, reports a continuing tight situation in the market for copper, lead, and zinc.

The price for copper continued firm at 21½ cents a pound Connecticut Valley. Demand for copper from foreign countries was active. Some foreign copper was purchased by United States authorities for the Government stockpile.

The lead supply is such that some producers find it impossible to deliver monthly allotments to customers in one shipment. Smelter stocks are at an exceedingly low level. Sales of lead for the week amounted to 5,786 tons.

The zinc market is strong with quotations for domestic zinc on the basis of 12 cents per pound East St. Louis. Zinc producers, especially in the tri-state district, are following the subsidy payment situation in Washington very closely. It seems likely that some subsidy to high-cost producers of zinc and other strategic metals will be granted. Shipments of slab zinc by smelters in the United States totaled 72,649 tons in April, an excess over-production of 2,319 tons. Two thousand six hundred forty-five tons was earmarked for Government account. Stocks for zinc at the end of April 23 were 42,910 tons compared with 45,229 tons the preceding month and 68,011 tons at the beginning of the year. Unfilled orders increased from 61,610 tons at the end of March to 71,691 tons at the end of April.

The import duty on tungsten has been reduced from 50 cents per pound of contained W to 38 cents effective May 22.

Import duty on antimony metal and oxide will be reduced from 2 cents per pound to 1 cent effective May 22. Since the supply situation is tight, tariff action will have no immediate influence on the market. Antimony metal is quoted at 33 cents per pound in bulk at Laredo.

Quicksilver metal sold at $74 per flask, down $1. Importations have been substantial. Domestic production continues to decline. Of the platinum metals (quotations are for troy ounces), iridium is quoted at $110-120 per ounce, palladium at $24 per ounce, and platinum at $98-101 per ounce. Antimony ore is now quoted per unit of antimony contained, as follows: 50-55 percent, $4.50-4.55; 58-60 percent, $4.55-4.65; 60-65 percent, $4.70-4.80. Titanium ore is quoted, ilmenite per gross ton, 56-59 percent TiO_2, $18-19 f.o.b. Atlantic Seaboard. For rutile per pound guaranteed minimum, 94 percent concentrate, 8-10 cents. Monazite, 70 percent rare minerals, is quoted at $175-185 per ton Atlantic ports.

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POLK COUNTY GEOLOGY DESCRIBED

"Geology of the Dallas and Valsetz Quadrangles" is the title of Bulletin No. 35 just issued by the State Department of Geology and Mineral Industries. The bulletin is illustrated and includes colored geologic maps of the quadrangles named. Author of the report is Dr. E. M. Baldwin, formerly geologist with the Department, now Assistant Professor of Geology at the University of Oregon. The area mapped is in Polk County from the western edge of the Willamette Valley to the central Coast Range of western Oregon. Dallas, Falls City, and Valsetz are the principal towns in the region studied. Aside from sand, gravel, and crushed rock, the economic geology of the quadrangles is concerned principally with limestone. Quarries owned by the Oregon Portland Cement Company and the Limestone Products Company are located near Dallas and, together with some other deposits, are described.

The bulletin may be obtained at the office of the Department in the Woodlark Building, Portland, or at the field offices of the Department in Baker and Grants Pass. Price postpaid is 75 cents.

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INDUSTRIAL MINERALS CONFERENCE

The Northwest Industrial Minerals Conference, sponsored by the Oregon Section of the American Institute of Mining and Metallurgical Engineers, was held at the Multnomah Hotel, Portland, on May 8. Co-sponsors were the Oregon State Department of Geology and Mineral Industries, the Portland Chamber of Commerce, and the Raw Materials Survey, Inc.

The morning session got under way with an address of welcome by Eric Allen, Jr., secretary to Governor John H. Hall and the Governor's representative. Co-chairmen of the sessions were Niel R. Allen, Chairman of the Governing Board of the State Department of Geology and Mineral Industries, Fay I. Bristol, Bristol Silica Company, representing the Oregon Section, General Thomas M. Robins, President of Raw Materials Survey, Inc., and Sheldon L. Glover, Supervisor of the Washington State Division of Mines and Geology. At the luncheon, Leslie C. Richards, chairman of the committee which planned the conference, acted as toastmaster. Henry Mulryan, Western Vice-Chairman, Industrial Minerals Division, A.I.M.E., was the principal speaker. He stressed the growing importance of industrial minerals on the West Coast and brought out the great need for study and research on the various problems of preparation and marketing in the nonmetallics industry.

Between 5:30 and 6:30 a cocktail party was held at the Mallory Hotel and this was followed by a dinner. Mr. S. H. Lorain, Chairman of the Oregon Section, A.I.M.E., acted as toastmaster, and John Dierdorff, Vice-President of the Pacific Power and Light Company, was the after-dinner speaker. His subject was "New Developments in Power and Fuel and their Effect on the Industrial Growth of the Pacific Northwest." Mr. Dierdorff emphasized the postwar growth of industry and stated that power requirements in the Northwest had outstripped supply. He said that if the plan to deliver natural gas from Alberta materializes it will be a great boon to the Northwest.

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OREGON'S GOLD PLACERS

by

The Staff

Because of many inquiries received by the Department asking for information on areas in Oregon where placer gold may be found, the staff has prepared the accompanying article. A large proportion of these inquiries are from people who have had little or no experience in mining but who wish to learn, and at the same time get some recreation. In an article of this kind only the barest outline of placer mining technique can be given. The Department does not have detailed information on which any recommendations concerning the location of profitable placers may be made.

The Editor

History

The discovery of gold in the rich placers of the Sacramento Valley of California in 1848 profoundly affected the course of events in western United States. The first direct effect was the rapid spread of gold prospecting into Oregon, Washington, Idaho, Montana, and British Columbia.

Gold was found in the sands of the Rogue River in 1849 by men on their way to California gold fields; but the discovery was overshadowed by the excitement in California and, too, the low concentration of the Rogue River gold, where first found, was probably somewhat discouraging.

In 1851 prospectors from California came into Oregon and discovered rich placers on Jackson Creek. This discovery resulted in the founding of Jacksonville and was the beginning of the mining industry of the State. Reports of the rich Jackson Creek placers brought in a large number of prospectors from California. In fairly rapid succession gold discoveries were made on many of the tributaries of the Rogue River, notably the upper Illinois and the Applegate. Soon thereafter, in 1853, gold was found in fairly heavy concentrations on the beaches near Bandon and at Gold Beach.

There is no record of production for the first ten years of mining in the State, nearly all of which was in southwestern Oregon.* The value undoubtedly amounted to many millions of dollars, probably fifty millions or more.

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* According to articles and news items in the Oregonian during the early 1850's, prospecting at that time was being done with some success on the Malheur, John Day, and Burnt rivers, but trouble with Indians and the richer discoveries in Washington and Idaho held Oregon prospecting back until the rich discoveries were made at Griffin Gulch near Baker.

In 1861 rich gold concentrations were found in Griffin Gulch, west of the present city of Baker. A rush occurred and the productive areas spread out to Auburn, Canyon City, upper Powder River, upper Burnt River, and to some of the high bars or terraces above Willow Creek.

As in all gold placer mining areas, activities in Oregon began with mining of the easily accessible placers by hand methods. These were followed by large-scale methods, at first using hydraulic giants and later, where conditions allowed, dredges. Application of the dragline dredge was something of an innovation and grew out of developments in seeking cheap methods of earth moving.

When the United States Government advanced the price of gold in the early 1930's, there was a great increase in gold mining activities throughout the West. In Oregon this increase was mainly noticeable because of a large number of dragline dredges which came into the State. The principal areas affected were the Sumpter Valley area in western Baker County, the John Day Valley, the North Fork and Middle Fork of the John Day in Grant County, and tributaries of the Rogue River in Josephine and Jackson counties. The high point in production came in 1940 when a total of 56 dredges, including dry land equipment, worked in the State. In addition there were 82 hydraulic mines, 10 drift mines, and 44 hand-operated properties, making a total of 192 producing placers. Gold production from placers during 1940 amounted to 71,577 ounces, valued at $2,505,000.

The death-blow to gold mining came in 1942 when, in October, War Production Board Order L-208 was put into effect. Gold mines were shut down without recourse and remained closed until July 1, 1945, when L-208 was somewhat tardily rescinded. Since that time a few dredges and hydraulic operators have resumed work - a very bare skeleton of the pre-war industry. In early June 1948 there were 5 producing dredges, and during the season when water was available there were 16 hydraulic operations. A small number of "snipers" have worked sporadically during the year. High costs of exploration and operation, together with the fixed price of gold, are effective in throttling gold mining, both lode and placer.

Placer activities

Dredging: During 1941 a total of 49 dredges of all types operated in the northeastern and southwestern parts of the State. As this is written (June 1948) 5 dredges are working in northeastern Oregon and 2 are preparing to work in southwestern Oregon. These are located respectively in Sumpter Valley, South Fork of Burnt River, and Cottonwood Creek, Baker County; Clear Creek and the North Fork of the John Day River, Grant County; and upper Illinois River, Josephine County.

Hydraulic mining: Hydraulic mining activities are centered principally in southwestern Oregon. Hydraulicking is used on gravel banks which are so situated that gravels may be broken up by water under pressure from nozzles, washed down, and carried beyond the pit, usually through sluices. The method is cheap but, of course, water under a high head is required. The efficiency of a hydraulic operation depends upon the amount and head of the water available and ease of tailings disposal.

Ground sluicing is a method of excavating placer gravels by flowing water, and, when plenty of water is available, it is a cheap method of washing gravel away leaving the gold behind. Various adaptations may be used depending upon the conditions of gravel bank and amount and fall of water. Essentially, in ground sluicing a stream "is diverted to flow against or over a bank of placer ground, eroding it and washing it to and through box sluices."*

Placer areas

The accompanying maps of northeastern and southwestern Oregon show the generalized locations of known placer deposits. Many of these areas which have been dredged would offer little likelihood of finding commercial gravels. However, some potential gold placer areas have not been worked, and many of the hydraulic operations contain fairly good reserves.

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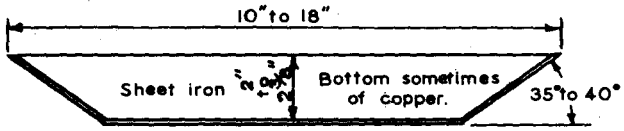
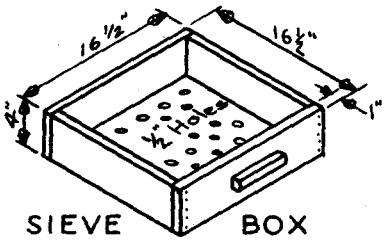
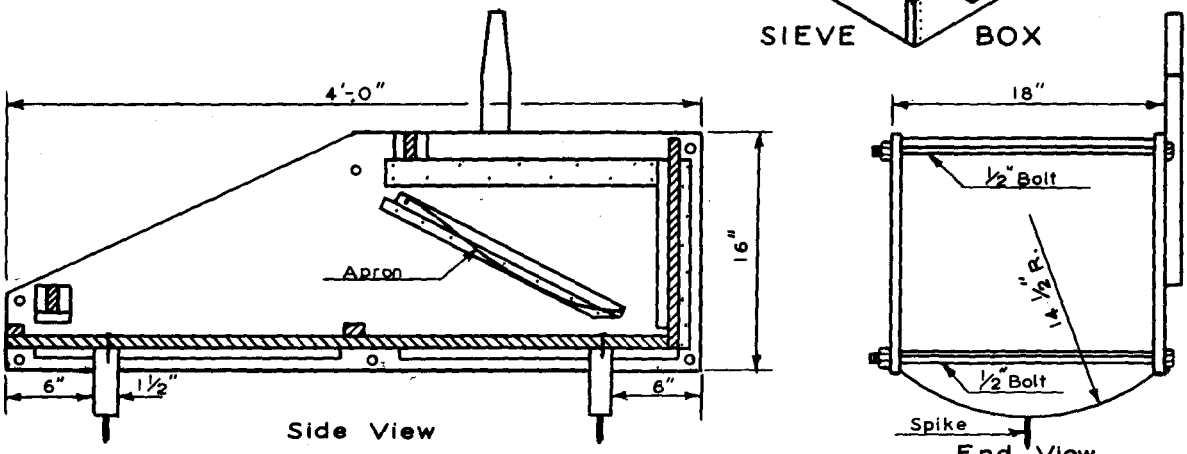
*U.S. Bur. Mines Inf. Circ. 6611R, 1938, Small-scale placer mining methods, by C.F.Jackson.



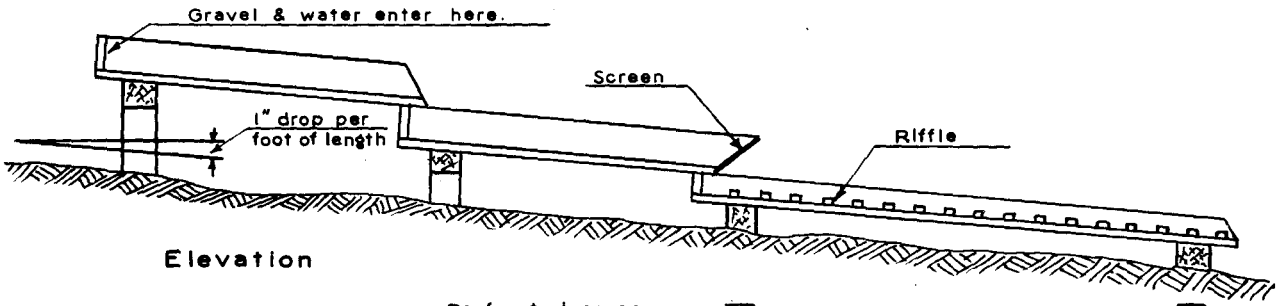
GOLD PAN

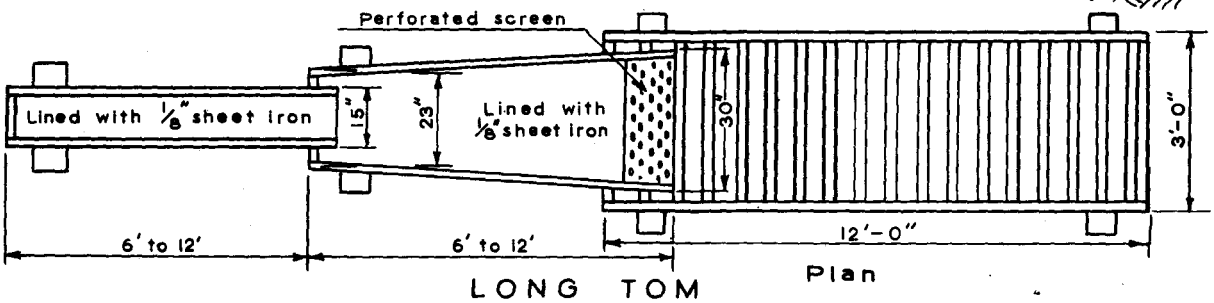


SIEVE BOX

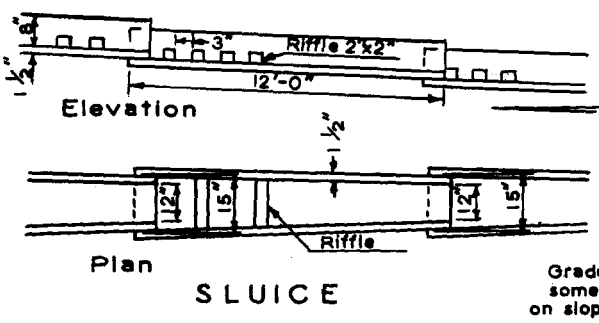


KNOCKDOWN ROCKER

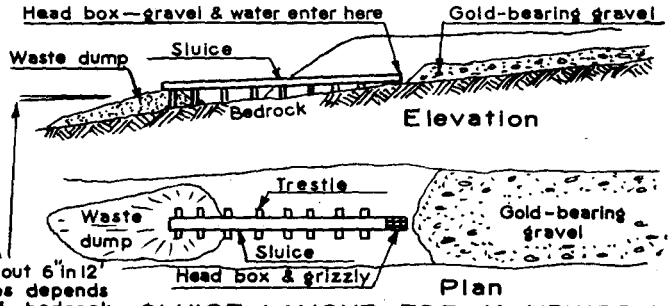




LONG TOM



SLUICE



Grade about 6"in12' sometimes depends on slope of bedrock.

SLUICE LAYOUT FOR HANDWORK

SMALL SCALE PLACER MINING APPARATUS
(Taken from U.S.B.M. I.C. 6611R)

D. I. B.

Since these operations are limited, both by water supply and by regulations of the Rogue River Coordination Board, the reserves will last for a long time. There is, too, the probability that at some time in the not too distant future the price of gold will be raised substantially. This will increase the reserves of the hydraulic gravels as well as bring into the commercial picture some low-grade gravels which may be worth dredging.

It should be emphasized that no placer areas have been tested by the Department and no recommendations can be made.

Beach placers

Beach placers may be considered under two headings - present beaches and ancient, elevated, marine terraces. The high-grade gold concentrations on the beaches in the early days appear to have been all worked out, but small-scale methods are still employed in certain places even though the returns are meager. The present beaches have, so far, not lent themselves to large-scale operations. In many places the beaches contain an excessive quantity of buried logs and stumps, and it should be noted that the accumulations of sand on the present beaches are of a transitory nature. These sands may pile up in certain periods of storms and high tides; they may be depleted during other periods. Probably there are large gross values in some of the offshore accumulations. Whether or not it would be feasible to treat successfully these nearshore, underwater deposits is debatable. It should be mentioned that the gold found on the beaches is usually finely divided and its association with heavy black sand makes for poor recoveries; this condition has caused many failures of beach placer projects in the past.

The ancient, elevated, marine terraces have been explored from Coos Bay south to and beyond the California line. There have been numerous attempts to mine these deposits but it is doubtful if any of them have been profitable. Usually the overburden is heavy and, in addition, the high proportion of black sand with which the gold occurs has always hampered gold recovery. These terrace deposits were investigated rather thoroughly during World War II because of the occurrence of chromite in the sands.

River-terrace placers

Some of the high bars or perched river-terraces in eastern and southwestern Oregon appear to offer interesting possibilities for gold placer mining, provided that operators are experienced. Such operations will need to have water brought to them, or, in some places, it may be feasible to screen the gravel and haul the fines to water. Such projects should receive thorough investigation before money is spent on a plant.

It may be mentioned also that platinum metals occur with the gold in some places on the southern Oregon coast as well as in inland placers. Under present prices for platinum such occurrences would materially influence the gross values in the sands and gravels.

Summary

The attraction of gold hunting and gold finding will never diminish as long as there are prospectors or persons with the prospector's urge. However, without systematic exploration there is no hope of a real gold-mining industry, and under present economic conditions there is no incentive to carry on gold mining exploration, either lode or placer.

Oregon's placer mining industry is nearly 100 years old and has been worth to the State upwards of $100,000,000 in value of production. That as much or greater gold value remains in Oregon's placer gravels can hardly be doubted, but how much of the remaining gold may be won at a profit is highly problematical.

There are a few gold-bearing alluvials which are overlain by good cropland; there are other areas which are privately owned by people who know very little about, and are not interested in, placer mining; still other gold bearing gravels might have physical conditions such as large boulders or too much clay or too much overburden all or any of which might

prevent profitable operation. It is probably needless to state that no project involving capital expenditure should be undertaken without thorough investigation.

For the new small-scale operator, the prospector, "sniper," "pocket" hunter, or amateur gold hunter the placer areas available would be generally included in the following classifications:

1. Unreserved and "open" public domain. Such areas may be located under the placer mining laws. No single agency would be able to give complete information on areas which may be "open." Anyone seeking an area which may be located should first find out from the nearest district U. S. Land Office the extent and location of the unreserved public land. In order to find out if a particular section of this land is open for location, he should search on the ground and in the county recorder's office for evidence of prior location or abandonment. He should of course familiarize himself with Federal and State mining laws covering location and assessment work.*
2. State land. The State Land Board has control of such land. The location and extent may be determined from Land Board records at Salem or from the records of the County Assessor. A mining lease may be negotiated with the Land Board.
3. Privately owned land. In order to prospect or work such land it is necessary to make arrangements with the owner of the land.

*Mining laws of the State of Oregon: Oregon Dept. Geology and Min. Industries Bull.1, 1942.

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ASSESSMENT WORK

Senate bill 2479 which exempts mining claims from annual assessment work for the current assessment year ending July 1, 1948, has passed the House according to a telegram from Senator Guy Cordon to the State Department of Geology and Mineral Industries. The bill had previously passed the Senate, and the House action therefore clears the way for the President's signature.

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MICROFOSSIL REPORT PUBLISHED

The first volume of Bulletin 36 describing microfossils of certain geological formations of western Oregon has just been issued by the State Department of Geology and Mineral Industries. This illustrated report, prepared in cooperation with the U.S. Geological Survey, gives results of the first studies of a project undertaken by the Department designed to determine the proper place in the geologic column of sedimentary formations of the State. Such studies are of particular value to oil geologists and also are needed in order to construct a geologic map of the State. Title of the report is "Five Papers on Foraminifera from the Tertiary of Western Oregon." Authors are J. A. Cushman of the U.S. Geological Survey, R. E. Stewart of the Department staff, and K. C. Stewart.

Bulletin 36 may be obtained from the Department office in the Woodlark Building, Portland, or the field offices at Baker and Grants Pass. Price postpaid $1.00.

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SAFETY PAMPHLET

A pamphlet designed to show the dangers, particularly to children of school age, of exploring old mines or other underground openings is being distributed free by the State Department of Geology and Mineral Industries. The pamphlet is illustrated by John Powers of the Safety Department of the Anaconda Copper Mining Company. The text was supplied through the cooperation of the Safety Division of the U.S. Bureau of Mines and the Arizona Small Mine Operators Association. The pamphlet illustrates graphically many hazards which are peculiar to old underground openings, and warns against their exploration by persons inexperienced in underground work.

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NEW OREGON MINERAL

Mansfieldite, a hydrous aluminum arsenate, discovered at Hobart Butte, Lane County, Oregon, is a new mineral described in the American Mineralogist, March-April 1948, by Victor T. Allen and Joseph J. Fahey. The first specimen of the new mineral was collected July 29, 1942, by Dr. Victor Allen who, with Dr. Robert Nichols, was investigating the high alumina clay deposit at Hobart Butte for the U.S. Geological Survey. The mineral was named for the late Dr. George R. Mansfield, former Chief of the Section of Areal and Nonmetalliferous Geology, U.S. Geological Survey.

The discovery of mansfieldite has added a new member to the family of rare natural aluminum arsenates and has permitted the discoverer to clarify relations among members in the series of minerals ranging from aluminum arsenate to iron arsenate (scorodite).

Mansfieldite is white to pale gray and occurs in porous, cellular masses of spherulitic fibres along with a pale green mineral of like texture generally called scorodite. The latter mineral, according to Dr. Allen, has not been found free of alumina at Hobart Butte, and is properly called aluminian scorodite.

The article by Messrs. Allen and Fahey sketches the geology of Hobart Butte and briefly describes mineral assemblages besides the aluminian arsenates.

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CLEARING HOUSE

CH-102 - For sale: Grinding plant consisting of hammer mill, feeder, grinder, cyclone, screen, ice plant located at Terminal No. 4 with trackage at Portland. Anyone interested should get in touch with the owner, P. E. Harris. Telephone ATwater 1821.

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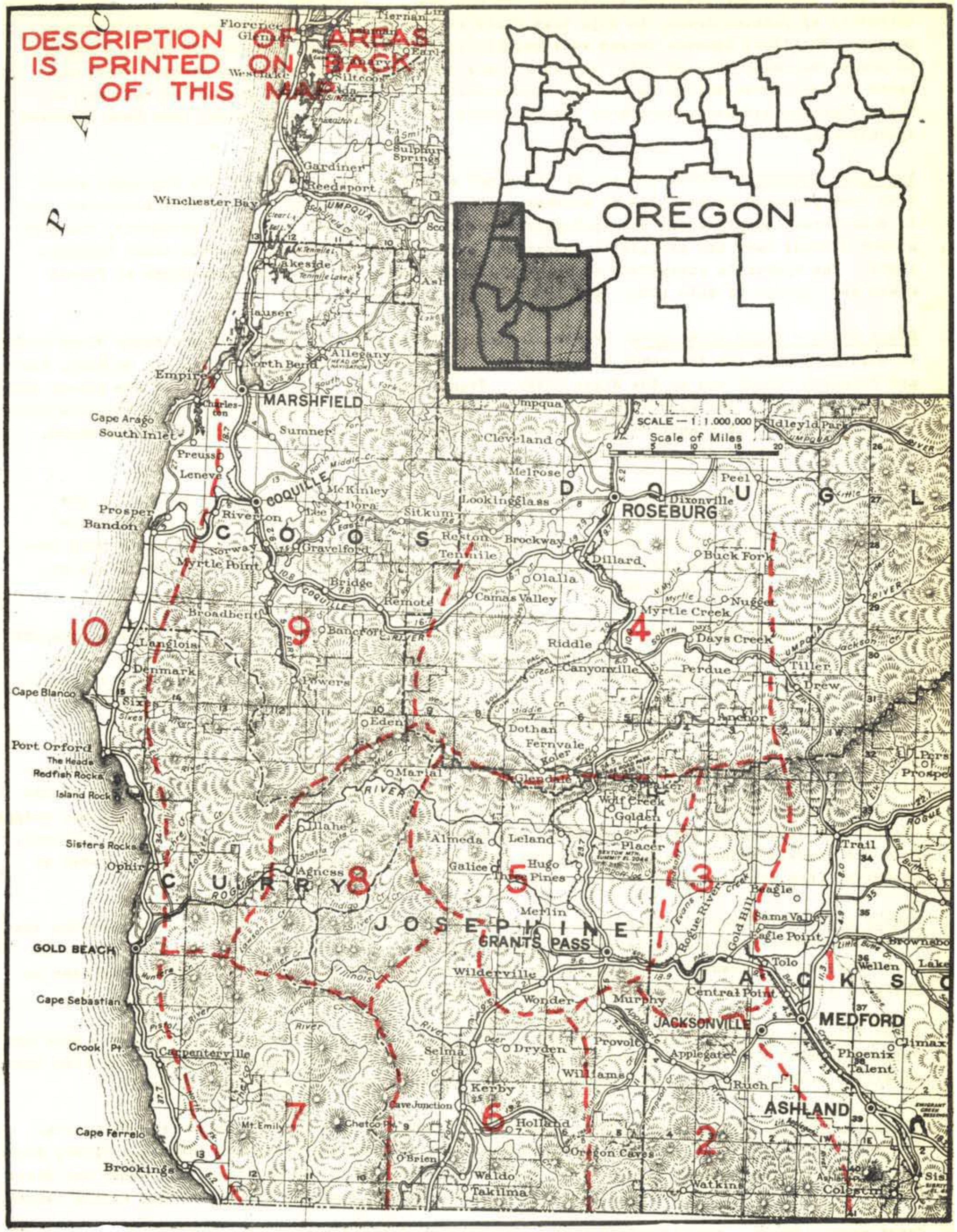


PLACER MINING AREAS OF SOUTHWESTERN OREGON

(Numbers refer to areas on opposite side)

1. Jacksonville - Talent area: Placer mining here has been limited to Bear Creek and its tributaries draining the Siskiyou Mountains. It was the strike in this area on Rich Gulch, a tributary of Jackson Creek, in 1851 that first attracted the many propectors to southwestern Oregon. The first placers worked were usually of the gulch type. One of the first dredges in Oregon was near Tolo in 1898; in later years small dredges operated on Jackson Creek and parts of Bear Creek Valley in and near Jacksonville. The auriferous gravels at the base of the Cretaceous sediments, found in the foothills of the Siskiyou Mountains, have been placered sporadically.

2. Applegate drainage: Parts of many of the minor and major tributaries of the Applegate River have been placered at one time or another. All main placer mining methods have been used, and in some areas, mainly along the Applegate River and Forest Creek and its tributaries, the more modern methods have had profitable operations after older methods had reached their economic limit. The hydraulic operations of the Sterling Mine and the dredging operations on Forest Creek are typical of this area. All types of placer deposits occur.

3. Evans Creek - Rogue River area: Parts of nearly all of the tributaries of the Rogue River south of Gold Hill have run the gamut of placer mining operations. Dredges have worked on Kane, Foots, and Pleasant creeks and in the Rogue River. Evans Creek has long provided sites for placer operations but most of the work has been confined to the area from Sykes Creek to its junction with the Rogue. The "old channels" west of Wimer, although the scene of activity in early times, have not been worked for many years.

4. Umpqua drainage: Very little work has been done in this area in comparison to that in the areas of Nos. 2, 3, and 5. Cow Creek and "high channels" adjacent to it have received the most attention. The Victory Mine near Glendale is a typical operation. Other areas that have reported some production are on Olalla Creek, tributaries of Myrtle and North Myrtle creeks, and tributaries of the South Umpqua between Days Creek and Tiller.

5. Grants Pass - Wolf Creek area: Grave Creek and its tributaries Wolf and Coyote creeks, Jumpoff Joe Creek, Taylor Creek, and Galice Creek have been the most consistent producers in recent years. At one time or another, however, work of some type has been done on portions of practically every stream in the area. Dredges have worked on Grave Creek and in the Rogue River. "Old channel" deposits are found in many places and are scenes of periodic activity.

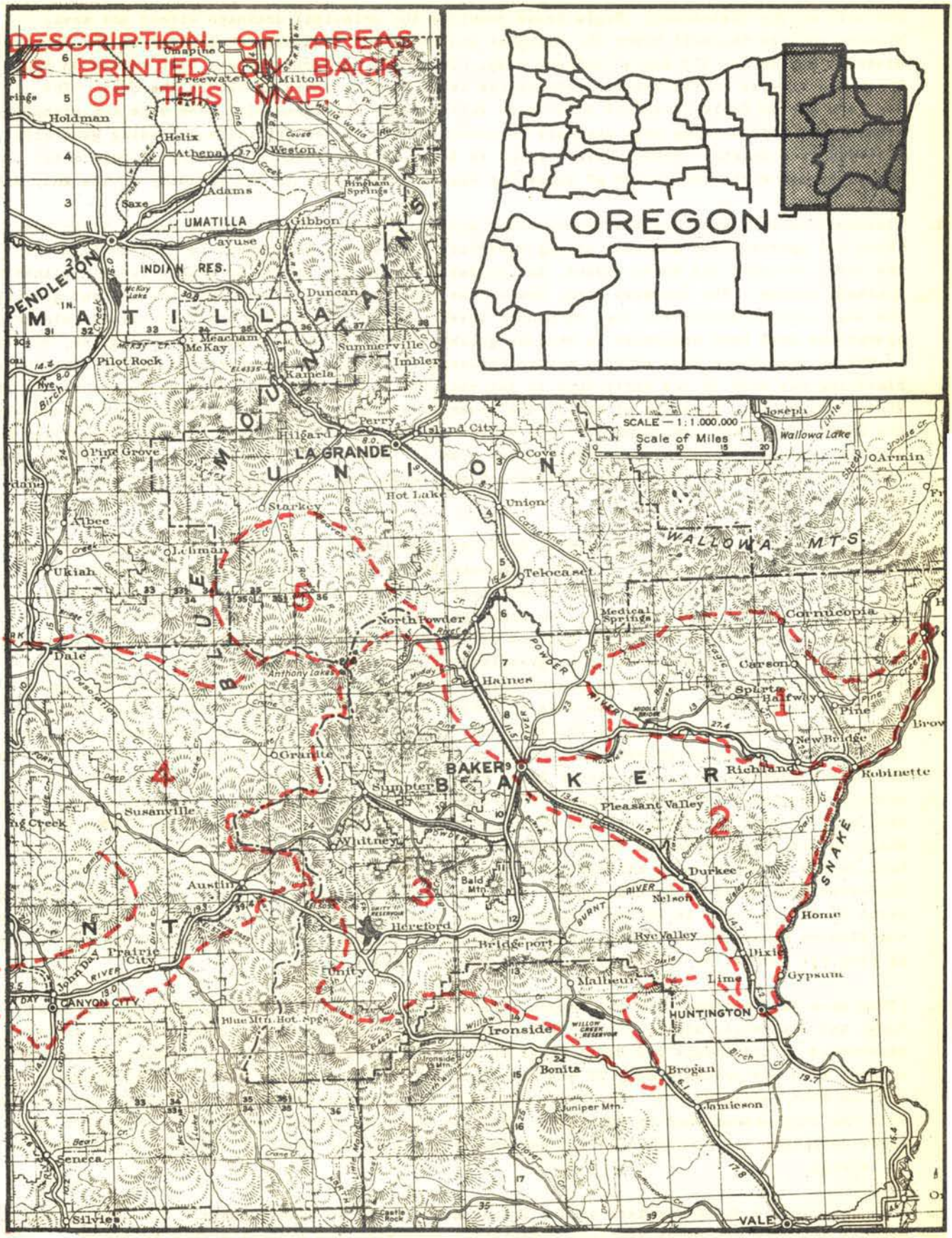
6. Upper Illinois area: The Esterly mine in this area is one of the famous old mines of Oregon. Here gold and platinum are found in both the Tertiary and Quaternary gravels, with most of the production from the latter. Mining has also been done on Sucker, Althouse, Josephine, and Briggs creeks ever since gold was discovered in Jacksonville. All types of mining have been utilized, from the crudest methods to large dragline dredges, and gold has been found in all classes of deposits, from Cretaceous gravels to Recent stream channels.

7. Chetco drainage: Very little recent work has been done in this area. It is quite possible that its inaccessibility has much to do with this. The work that has been done has been mainly in Quaternary stream channels or high on the hillsides, such as in Gold Basin. There has been no dredging in this area, in fact most of the work has been limited to ground sluicing.

8. Lower Illinois - Rogue River area: Most of the mining here has been confined to gravel bars and "high channels" bordering the two rivers. Some hydraulicking and ground sluicing have been done on Silver Creek, Collier Creek, and Mule Creek but the operations were usually small.

9. Coquille - Sixes - Lower Rogue area: Only minor production has been reported from this area. Streams on which most of the past work has been done are Boulder Creek and the Rogue River; Rock, Johnson, and Salmon creeks of the South Fork of the Coquille River drainage; Elk River and Sixes River. Work has been confined to hydraulicking and ground sluicing in present-day stream channels.

10. Coast area: Beach placers include both present beaches and elevated marine terraces. Rich sands were found at Gold Beach and at Bandon in 1852 and beaches have been prospected and worked for gold and platinum as far north as Cape Arago. In former years, several operations on the elevated terraces were attempted, including the Eagle and Pioneer mines, north of Bandon and the Madden mine, north of Sixes. Gold and platinum occur as flakes in black sand and vary greatly in distribution and quantity.



PLACER MINING AREAS IN NORTHEASTERN OREGON

(Numbers refer to areas on opposite side)

1. (Covered by this area are the Cornucopia, Eagle Creek, Homestead and parts of the Sparta-Sheep Mountain mining districts.) Eagle Creek provides the principal drainage within the area. Placers include the well known old Shanghai and other old time placer diggings in the Sparta district and in the old Hogem (Sanger) camp. Gulch and bar gravels have been worked on Eagle Creek and on some of its smaller tributaries as well as on other creeks in the area. The New York Bar on Eagle Creek and Pine Creek Valley below the Cornucopia lode mine are examples. Remnants of gold-bearing high channels reportedly exist in the dry hills extending generally eastward from Sparta. Powder River, which is taken as the southern boundary of this area, has supported a limited amount of placering almost exclusively in the vicinity of the Macy Mine.

2. (Included in this area are the Conner Creek and Virtue and portions of the Baker, Lower Burnt River and Sparta-Sheep Mountain mining districts.) The area is bounded for the most part by the Burnt, Powder, and Snake rivers, but contains within its bounds no single large distinctive drainage system. For the most part, the creeks that do exist radiate from the Lookout Mountains. The most notable placer was that on Conner Creek. Fairly extensive, but less notable placering operations have been conducted in various gulches on Little Lookout Mountain. Smaller, widely scattered operations have existed around Pleasant Valley and as far north as Virtue Flat where placering was done in the early days in the vicinity of the surface exposures of the Virtue and White Swan veins. A series of bars, both river level and elevated exist at various places along the Snake River, and have long been the object of attention by "snipers." The Powder River has already been mentioned in the discussion of area 1. Burnt River, which from Durkee to Huntington is taken as the southwestern boundary of this area, has never proved of much interest to placer operators.

3. Two major drainages and several mining districts are included in this area. (The mining districts are the Cracker Creek, Greenhorn, Morman Basin, Rich Creek, Sumpter, Upper Burnt River and portions of the Baker and Lower Burnt River districts.) The drainages are the Powder and Burnt rivers. The headwaters of these drainages, around Whitney and the Sumpter Valley, are characterized by rather extensive placers of the valley-fill type. Gold values are found on down both of these rivers, but in progressively decreasing quantity with locally valuable concentrations dependent largely on contributions from tributary streams. Many such streams are tributary to both rivers. In the case of Powder River, the celebrated Auburn placer is an example. Similar gulches draining the mountains on the north side of the river have been found to contain gold-bearing gravels from Baker to Sumpter. This does not appear to be the case in the creeks draining in to the Powder River from the south. The placer on Stices Gulch is a notable exception. As in the case of the Powder River, only limited and sporadic attempts have been made to work the lower reaches of Burnt River. Tributary streams such as Clarks Creek, which drains from the Morman Basin district and Pine and Cow creeks which drain to the south from Dooley Mountain, have all sustained productive operations. Other placers, not directly connected with these major drainages, occur in Morman Basin and Rye Valley, and on the drainage basin of Willow Creek in Malheur County. Also, various creeks draining in to Baker Valley from the Elkhorn Mountains have been worked. Throughout the area small-scale operations of a seasonal kind are carried on regularly by utilizing snow waters.

4. (This area embraces parts of the Canyon, Granite, Greenhorn, Middle Fork, North Fork, Quartzburg, and Susanville mining districts.) Included in the area are the John Day River and the headwaters of the Middle and North Forks of the John Day with all their tributary streams. The placers here are predominantly of the river and gulch type although some Tertiary placer exists, such as that represented by the French diggings. No western boundary can be given to this area with the information that is available. Gold is known to extend considerable distances down these drainages to the westward, but evidence concerning the limit of economic concentrations is lacking.

5. This area covers the headwaters of the Grande Ronde River in Union County. The Camp Carson placers probably represent Tertiary deposition; otherwise the placers worked in the past have been predominantly of the gulch type of Recent age.

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PROSPECTING WITH A GOLD PAN

by

A. O. Bartell*

Do you know that valuable clues to the geology and mineralization of a district can be found in a handful of sand from a stream bed draining the area? This handful of sand has a story to tell to those who have a little patience.

A story to tell

The handful of sand may contain tiny specks of valuable minerals (gold, scheelite, cinnabar, chromite, tourmaline - to mention a few), that will lure you upstream with the hope of uncovering a new deposit. More practically, this handful of sand can indicate the type of rocks that are exposed by the drainage system. Any mineral that has a specific gravity of 3.5 or higher can be separated from soil by panning. Garnet and pyrite, for example, (some tiny but perfect textbook-picture crystals may be seen with your hand lens) can indicate an outcrop of metamorphic rocks. In one district where the writer prospected, small boat-shaped orthorhombic crystals of topaz always indicated the presence of andesite outcrops.

How do you read the story the handful of sand has to tell? By panning - yes, by panning, just as the old-time prospector does. The old prospector will tell you sagely that it takes years of experience and a good "wrist" to pan. Don't let him kid you! You don't have to be an expert to read the story in the handful of sand. Panning is a simple process of shaking the heavy particles to the bottom of the pan and washing the lighter particles off the top. It is that simple! The separation achieved by panning is the result of two processes - sizing and gravity concentration. You can put some dry sand and gravel in a fruit jar, gently shake it back and forth, and in a short while you will see that the mixture has sorted itself with the fine sand on the bottom and the coarse gravel on top - you have sized it. Now if you scrape off the gravel, take the sand alone and continue the gentle shaking, you gradually settle the heavy grains (magnetite, etc.) to the bottom of the jar and the lighter grains (quartz, feldspar, etc.) will be displaced and rise to the top - you have concentrated the heavy minerals. Water speeds up the operations by acting as a lubricant and as a medium that makes a greater relative difference in the specific gravity of the various minerals.

The recipe for panning

Fill your pan with the material to be examined. Submerge it in water and knead it with your fingers to break up the lumps of clay. Now agitate the pan (still under water) in a brisk back-and-forth-rotary motion to cause the coarser gravel to rise to the top where you rake it off with your fingers. Size it in this manner several times. Now, more gently, agitate the pan in the water with the same rotary motion but tilt it forward to cause the heavy minerals on the bottom to concentrate in the sharp bend made by the side and the bottom. Next, with the pan tilted forward and with the lip just below the surface of the water, dip the pan in a forward-upward-and-back motion so that the water washes off the lighter upper layer of sand. You can assist this operation by sweeping off the top sand with the back of your fingers. Alternate the rotary agitation with the washing action until only the heavier minerals remain. In the final washing, use your thumb to scrape away the lighter sands that wash away from the heavy minerals. Put in a small amount of clear water and give your pan a light, quick swirl to cause the concentrates to "tail" out so that you can examine them easily with your hand lens. It does take practice and skill to be able to pan quickly and accurately, but proper interpretation of the results is more important than expert manipulation of the pan itself.

Where to pan

The first and most important step in prospecting with a pan is to select a good sample. In panning streams, one must remember that Nature is roughly sizing and concentrating the rocks and sands that she has eroded from the hills. In fast water the sands will be swept along and, if they do not drop in the little eddies behind the boulders, they will be carried downstream to rest as a bar where the water is quiet. The heavy sands - the ones you are

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*Mining Engineer, Portland, Oregon.

interested in - will drop first. They will be ones that are more likely to be caught behind the boulders and the ones that will be found at the upstream end of the bars along with the pebbles. In the summer when the streams are dry, it is very easy to select your sample, but when the stream is running bank-full, about all you can do is dig out the sands between the boulders along the bank. The heavy mineral sands tend to work towards bedrock in the stream. However, where the stream exposes patches of relatively smooth bedrock, don't expect to find rich pannings in the potholes and bedrock crevices. During high water, when there is the greatest movement and sorting of material, the bottom velocity of the stream will be greater on bedrock where there is no boulder-covered floor to impede its flow; the cobbles will be churning round and round in the potholes; there will be no chance for the sands to come to rest. An exception would be a pothole that had become "dead" by being choked with boulders - in this case the sands between the boulders should give an excellent sample.

In panning the dry washes in an arid country, it is a simple matter to get a good sample if you remember that desert gullies are usually formed under cloudburst conditions. Right after the worst of the storm, when the gullies are running bank-full, the boulders and cobbles will be moving. As the main force of the water passes, the boulders will become quiet and serve to catch the coarse sands and pebbles. When the rush of flood subsides, the silt will drop out. To select a good sample, you must dig down below this silt and fill your pan with the sands lodged between the boulders in the center of the wash.

Other places to select a sample for panning are: Iron-stained outcrops, clay-gouge areas in regions where there has been considerable faulting or magmatic intrusions, and old mining dumps. In samples panned from mining dumps, you can find valuable clues as to the character of the mineralization in the district. Also, there may be minor minerals in tailing piles that were of no value to the old operation but which, due to new techniques or uses developed, may now have sufficient value to make reworking of the dump profitable.

Prospecting tools

The common miner's pan (the one you see in the pictures of the grizzled prospector and his burro) is approximately 2½ inches deep, has flaring sides, and varies from 10 to 16 inches in the largest diameter. A 10-inch tin frying pan with the handle cut off makes a quite serviceable pan. Desert prospectors cut the handle off a "one-egg" frying pan and do their panning in a kettle of water. The panning rejects are scooped out and discarded as they collect in the bottom of the kettle, but the same water is used over and over. In this manner a two-gallon can of water and a kettle can be made to serve a whole day's prospecting.

It might be noted here that dirty water does not hinder the panning. As a matter of fact, the suspended sludge increases the specific gravity of the water, resulting in a greater relative difference in the specific gravity of the minerals.

Besides a pan, you should carry a prospecting pick and a trowel for digging the samples, several sample sacks, and a large-diameter inexpensive hand lens. The writer found that a simple 1½-inch length of 2-inch pipe made a very useful mortar for crushing rock specimens so they could be examined by panning. The piece of pipe is placed on a flat boulder, the sample dropped in and crushed with the prospecting pick.

In conclusion, prospecting with a pan is one of the fastest ways of checking the mineralization of a district. The mechanics of the actual panning are very simple, but care must be exercised in selecting the sample and interpreting the results.

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PORTLAND, OREGON

THE ORE.-BIN

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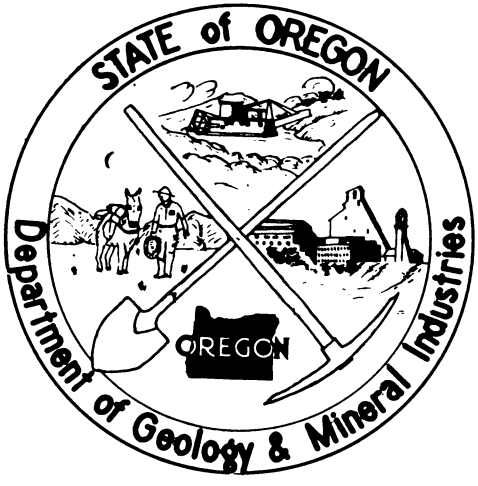

O AND C MINING CLAIM FILING CONFUSION

Public Law 477, which reopened Oregon and California Railroad revested lands and Coos Bay Wagon Road grant lands to location and entry under the general mining laws, contained a provision wholly new to the United States mining statutes. This was the requirement that a copy of the notice of location of a mining claim must be filed for record in the United States district land office of the land district in which the claim is located. The time limit allowed is within 180 days from April 8, 1948, the effective date of the Act, in the case of claims located prior to that date, and within 60 days from April 8, 1948, in the case of claims located after that date. In addition, and this is the most urgently timely matter to note now, the law requires that the owner of an unpatented mining claim must file for record in the United States district land office within 60 days after the expiration of the assessment year "a statement under oath" as to the assessment work done or improvements made during the previous assessment year, or as to compliance, in lieu thereof, with the applicable relief Act, which is Public Law 665. These filings are in addition to those necessary under State law which requires filings with the county recorder. No information is yet available as to any required form of the "statement under oath" or as to filing fees payable.

Furthermore, there has arisen a question concerning compliance which will plague everybody concerned until some solution is found. How is any claim owner in western Oregon to know certainly whether or not his claim is on O and C revested land or Coos Bay Wagon Road grant land? Originally the revested and grant lands were in odd numbered sections, but there is the question of "controverted lands" and there have been exchanges so that now a claim owner may not feel certain whether or not his claim is in these land areas. If it is, he must file his records in the district land office (in addition to the filing with the county recorder); if it is not so located, he is not required to file in the district land office.

The obvious answer to the claim owner's question as to the status of his land is to ask the district land office. However, because of press of work at this time of year the inquirer may or may not get a clarifying answer. Remember, in order to comply with Public Law 477, the owner of a mining claim on O and C or Coos Bay grant lands must file the "statement under oath" required by the Act within 60 days of the end of the assessment year, or before August 30, 1948. Therefore, to insure his compliance with the law, he should make his filings in the office of the district land office at Roseburg (except for a small area in eastern Jackson County) unless he has assurance from the land office that his claim is not on O and C or Coos Bay grant lands.

Senator Cordon has wired that the Washington office has prepared regulations which, however, have not yet been approved. This Department will aid in publicizing the approved procedure when released.

In any event, however, it would appear that the result of the statutory requirements for filing in the United States district land offices will be to deluge the office at Roseburg with filings and requests for information, and it seems likely that the innocent sounding filing requirement will be found to be practically unworkable. Relief of some kind will be sought when Congress next meets.

Editor

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OREGON 1947 MINERAL PRODUCTION REACHES NEW HIGH

The State Department of Geology and Mineral Industries announces that preliminary figures of the United States Bureau of Mines give the 1947 value of mineral production in the State as $16,700,000 of which $800,000 represents metals and $15,900,000 nonmetallic minerals. This total compares with a value of $11,783,000 in 1946 and $14,065,572 in 1942, the former record year.

The 1947 value shows more than 41 percent increase over 1946 and reflects the great increase in production of nonmetallic minerals. The ratio of value of nonmetallic to metallic minerals is nearly 20 to 1.

The principal nonmetallic minerals produced were cement, clay and clay products, coal, diatomite, lime and limestone, perlite, pumice, sand and gravel, silica, and stone.

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MINING NEWS

Mine owners of the Bohemia district, Lane County, Oregon, have formed an association to aid in the development of the district. At the organization meeting held June 16, 1948, at Cottage Grove, Albert Helliwell and Ray E. Nelson were elected temporary chairman and temporary secretary, respectively.

* * * * *

Bartells Brothers Mining Company has been organized to take over the operation of the Champion Mine, Bohemia district, Lane County, Oregon, formerly operated by Fred Bartells. The concentrator will be put into production and three 150-h.p. diesel engines have been purchased. The mill, which is expected to start about August 1, will treat ore mainly from the Champion Mine but will also receive ore from the Musick and Helena Mines controlled by Kenneth Watkins.

* * * * *

The Bonanza Mine near Sutherlin is one of the few quicksilver mines in the United States which is continuing to operate under the very adverse conditions now existing in the domestic quicksilver industry. Bonanza employs from 18 to 20 men and is mining ore from three levels. The furnace is run about two weeks each month. C. G. Whelchel is general Superintendent.

* * * * *

The Oregon Chrome Mine on the Illinois River, Josephine County, Oregon, is the only producing chrome mine in the United States. Ore is shipped to the Ohio Ferro Alloys Company, Tacoma, Washington.

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EARTHQUAKE FELT AT KLAMATH FALLS AT NOON DECEMBER 24, 1947*

December 24, 1947, at 12:02

Klamath Falls (central section). (VI)[1/] Motion trembling. Felt by several. Rattling of loose objects; buildings creaked. One report of cracked plaster. "Those reporting in rather wide area. Radio Station KFLW reported a momentary distortion at noon." Ground: Rocky.

Klamath Falls. (IV)[2/] Motion swaying, rapid onset. Felt by several. Rattling of loose objects and creaking of buildings heard by several. Faint, bumping sounds heard. Pictures on walls and suspended lighting fixtures swayed. Few alarmed.

[1/] (VI)(Mercalli Intensity Scale) = Felt by all; many frightened and ran outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.

[2/] (IV)(Mercalli Scale) = During the day felt indoors by many; outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls made creaking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.

* From abstracts of earthquake reports for the Pacific Coast and the Western Mountain region, U.S. Coast and Geodetic Survey, MSA-56, 1948.

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THE SEISMOGRAPH STATION AT OREGON STATE COLLEGE

By
H. R. Vinyard*

The purpose of a seismograph is to provide a continuous record of momentary displacements of the earth's crust from the normal undisturbed position. Until recently instruments for this purpose depended upon the inertia of a mass suspended in a manner such as to allow it to remain in its original position while the surroundings undergo short period displacements. The majority of instruments now used are of this kind. For directional analysis each of the three components of motion requires a separate seismograph and recording system: one instrument records north-south component of motion, another the east-west component, and the third instrument shows the vertical component. In order that each instrument will respond only to the directional component desired, the mass needs to be suspended in such a way as to make it not susceptible to motion in more than one direction. The horizontal pendulum form of mass suspension approximately satisfies this requirement: it can be made responsive only to the component of horizontal motion perpendicular to the pendulum, and can oppose the vertical component if held vertically rigid. The horizontal pendulum can also be made to respond exclusively to vertical motion if horizontally hinged and vertically spring supported.

When the supporting frame of a horizontal pendulum is subject to the displacement accompanying an earthquake wave, the mass tends to remain in its original position. By virtue of the axial hinge the earth motion causes an angular displacement of the pendulum with respect to its normal position, and at the same time the mass undergoes a positional displacement. Either of these motions relative to the surroundings may be used for recording an earthquake wave. For optical recording a small mirror is mounted near the hinge so as to turn with the angular displacement. A beam of light from a source near the instrument is directed to the mirror, and the reflected beam which experiences twice any angular displacement of mirror and pendulum is focused on photosensitive paper. The recording paper is ordinarily fastened to a large cylinder which rotates at a steady rate and at the same time moves laterally to give a helical trace of the point of light coming from the mirror. An accurate clock can be made to give time pips on the trace at one minute intervals. This system of recording is the one employed at the Oregon State College seismograph station.

The station, which has been in continuous operation since July 1, 1946, utilizes two Wood-Anderson type instruments. Like most of the earthquake detecting devices for indicating horizontal motion these are horizontal pendulums. The vertical support for each pendulum is a 10-inch length of tungsten wire of diameter 0.003 inch attached to a frame at top and bottom. At about the center of this wire there is attached a small silver cylinder of length one inch and diameter 0.16 inch. The wire lies along an element of the cylinder, thus making the line of attachment parallel to the axis of the cylinder. This is in effect a very short horizontal pendulum which has a very sensitive angular response to earth motion. A small mirror is mounted on the silver cylinder to permit optical recording of angular deflections.

An 8 by 10 foot pier is located in the basement of the physics building but is not attached to the floor of the building. It is embedded to a 10-foot depth in alluvial soil with bedrock perhaps 80 feet below. Because of undesirably large temperature variations in the pier room and also because of an unexpectedly large tilt due to student movements whenever classes change, it was necessary to sacrifice the large optical magnification obtainable with these instruments. After operating for some time another drawback to large magnifications appeared in the form of extreme microseismic activity, due both to man and nature. Using a short optical arm a dynamic magnification of about 100 is now being used although the instruments are capable of magnifications from 1000 to 1500.

*Department of Physics, Oregon State College, in charge of station.

A single motor drives two recording cylinders which are 20 inches long and 15 inches in diameter. Lateral motion due to one revolution of the cylinders is 1/8 inch and takes place in 48 minutes. The rate of travel of the recording point of light is about one inch per minute. At this rate a 48-inch strip of 15-inch wide photostat paper will last 3½ days. It is planned sometime in the future to increase the speed to about three times its present value and then change the record every day.

A single light source is used; the beam, divided by a pair of prisms, directs light to the two instruments. These prisms are rigidly held to a semi-rotatable table which is given a slight thrust each minute in order to produce time indication on the record. The timing impulses are from a fairly good clock which is checked by radio every time the record is changed.

Considerable work is planned for the future in improving the station. A vertical component instrument of the Sprengnether type is now being constructed. A seismograph vault remote from all disturbances is highly desirable, and there is hope that financial provisions will be made for such a building.

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MAP OF OREGON 1870

On the opposite page there is reproduced a map originally published in Johnson's New Illustrated Family Atlas of the World, New York, A. J. Johnson, Publisher, 276 and 278 Mulberry Street, 1870.

Many errors will be found especially in Eastern Oregon where the lack of professional mapping is evident. Note the courses of the John Day and Grande Ronde rivers.

The following information concerning Oregon counties as shown on the map was taken from Oregon Geographic Names by Lewis A. McArthur. Wasco County was created January 11, 1854, and originally comprised all the area of Oregon Territory between the Cascade Range and the Rocky Mountains. Baker County was carved out of Wasco County by act of the State legislature September 22, 1862. Union County was taken from the northern part of Baker County as it then existed on October 14, 1864. (The map appears to be in error as to the area of Baker County as it existed at that time. Although the northern county boundary is not shown, Union County area shows coverage of Powder and Burnt rivers which is obviously wrong even for that date. Present northern boundary of Baker County is plus 45 degrees north latitude.) Benton County was created December 23, 1847, by the provisional legislature. The western part was cut off to form Lincoln County February 20, 1893. One wonders why Benton County, already small, as Oregon counties go, was further reduced in area and deprived of her coast line.

****

NEW ENGINEERING FIRM

Announcement has been made of the formation of the engineering firm of Anderson, Richards, and Spencer with offices in the Palmer Building, Baker, Oregon. They will engage in a general consulting practice of mining and metallurgical engineering. The members of the firm are H. Ferrel Anderson, Leslie C. Richards, and Richard N. Spencer, all members of the American Institute of Mining and Metallurgical Engineers.

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THREE OREGON LAND OFFICES CONSOLIDATED INTO ONE

A Washington dispatch in the Oregonian of July 22 states that beginning in August the three district Land Offices, now at Lakeview, Roseburg, and The Dalles, will be consolidated into one single office at Portland. The reason given is the dwindling amount of public land.

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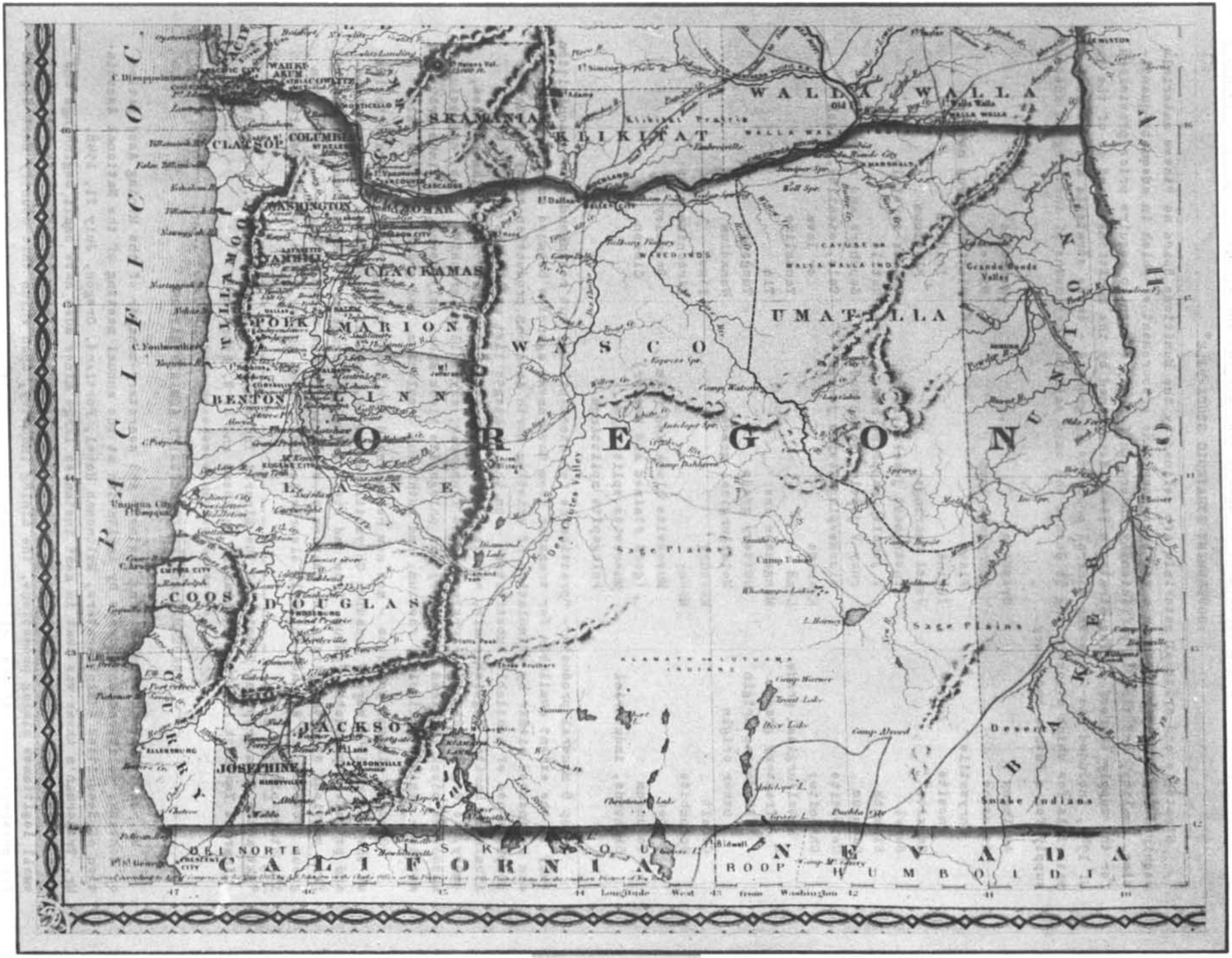

Map of Oregon 1870

GOVERNMENT STRATEGIC STOCK PILE*

Strategic and critical materials are defined by the Munitions Board as "those materials required for essential uses in a war emergency, the procurement of which in adequate quantities, quality, and time is sufficiently uncertain for any reason to require prior provisions for the supply thereof." The strategic list, determined by the Munitions Board as of the end of 1946, included the following mineral products in group A - those strategic and critical materials for which stock-piling is deemed the only satisfactory means of insuring an adequate supply for a future emergency.

Antimony
Asbestos
  Chrysotile
  Amosite
Bauxite
Beryl
Bismuth
Cadmium
Celestite
Chromite:
  Metallurgical grade
  Refractory grade:
    Rhodesian origin
    Other origin
Cobalt
Columbite
Copper
Corundum
Diamonds, industrial
Graphite:
  Amorphous lump
  Flake
Iodine
Jewel bearings:
  Instrument jewels(except V jewels), sapphire and ruby V jewels, watch and timekeeping device jewels
Kyanite
Lead
Manganese ore:
  Battery grade
  Metallurgical grade
Mercury
Mica:
  Muscovite block and film (good stained and better)
  Muscovite splittings
  Phlogopite splittings
Monazite
Nickel
Platinum-group metals:
  Iridium
  Platinum
Quartz crystals
Rutile
Sapphire and ruby
Talc, steatite, block or lava
Tantalite
Tin
Tungsten
Vanadium
Zinc
Zirconium ores:
  Baddeleyite
  Zircon

Group B mineral products - "practicable for stock-piling, but recommended for acquisition only to the extent available for transfer from Government agencies because adequacy of supply can be insured either by stimulation of existing North American production or by partial or complete use of available substitutes" - on the strategic list at the end of 1946 were: Aluminum, barite, English chalk, chemical-grade chromite, natural cryolite, diamond dies, emery, acid-grade and metallurgical-grade fluorspar, crystalline graphite fines, magnesium, muscovite block (stained and lower) and phlogopite block mica, molybdenum, platinum-group metals - osmium, palladium, rhodium, and ruthenium - selenium, and ground steatite talc.

Group C mineral products - not now recommended for stock-piling - on the strategic list at the end of 1946 were: Canadian Chrysotile asbestos, optical glass, iron ore, petroleum and petroleum products, radium, iron and steel scrap, and uranium. Uranium had been omitted from previous strategic lists for reasons of security; it was added to group C rather than group A because it was not entirely clear which Government agency would be responsible for its stock-piling.

*Extracted from preprint "Review of the Mineral Industries in 1946" from U.S. Bur. Mines Minerals Yearbook in 1946 by Allan F. Matthews and E. W. Pehrson.

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TRAUERMAN ADDRESSES SECURITY ADMINISTRATORS

Mr. Carl J. Trauerman, mining engineer and secretary-manager of the Mining Association of Montana, delivered an address by invitation at the annual meeting of the National Association of Securities Administrators, Multnomah Hotel, Portland, Oregon, July 21, 1948. Mr. Trauerman's theme was that in most instances large mines must have small beginnings and that unless encouragement by those in authority is given to raising of venture capital by small legitimate mining promotions, the mining industry, upon which this country must depend for prosperity and defense, will suffer greatly.

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STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
Head Office: 702 Woodlark Building, Portland 5, Oregon

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FILINGS ON O AND C LANDS

The following regulations governing filings on Oregon and California Railroad revested lands and Coos Bay Wagon Road grant lands were issued by the Bureau of Land Management, Department of the Interior on August 6, 1948, and sent to the Ore.-Bin by Congressman Harris Ellsworth. The printed instructions were taken from the Federal Register. A press release from Congressman Ellsworth's office in explanation of the regulations was sent at the same time and is also printed below.

Mineral Locations in Revested Oregon and California Railroad and Reconveyed Coos Bay Wagon Road Grant Lands

185.37a General provisions. The act of April 8, 1948, (62 Stat. 162) reopens the revested Oregon and California Railroad and Reconveyed Coos Bay Wagon Road Grant Lands (hereinafter referred to in this section as the O. and C. lands) in Oregon, except powersites, to exploration, location, entry and disposition under the United States Mining Laws. The act also validates mineral claims, if otherwise valid, located on the O. and C. lands during the period from August 28, 1937, to April 8, 1948.

The procedure in the locating of mining claims, performance of annual labor and the prosecution of mineral patent proceedings in connection with O. and C. lands is the same as provided by the United States Mining Laws and the general regulations in Part 185, and is also subject to the additional conditions and requirements hereinafter set forth.

185.37b Requirements for filing notices of locations of claims; descriptions. Where prior to April 8, 1948, a mining claim has been located upon O. and C. lands, the owner thereof must file for record, not later than October 5, 1948, in the District Land Office of the land district in which the claim is situated, a copy of the notice of location of the claim. With respect to all mining claims located on O. and C. lands on or after April 8, 1948, the owner thereof must file for record, within 60 days of the date of such mining location, in the appropriate District Land Office, a copy of the notice of location of the claim.

If the location affects surveyed lands and the copy of location notice does not describe those legal subdivisions, section, township, and range partly or wholly covered by the mining claim, the copy must be accompanied by a statement of the owner of the claim describing the legal subdivisions affected.

If the location affects unsurveyed lands and the copy of location notice does not show the land described therein connected by course and distance to the nearest corner of the public land surveys and does not give the probable legal subdivisions affected if the lands were surveyed, the copy must be accompanied by a statement of the owner of the claim giving that information or satisfactory reasons for not doing so.

The name and address of each owner of the claim should be furnished with the other data required by this section.

185.37c Requirement for filing statements of assessment work. The owner of any unpatented mining claim located upon O. and C. lands must also file for record in the District Land Office in which the claim is situated, within 60 days after the expiration of any annual assessment year, a statement under oath, as to the assessment work done or improvements made during the previous assessment year, or, as to compliance in lieu thereof, with any applicable relief act.

185.37d Restriction on use of timber; application for such use. The owner of any unpatented mining claim located upon O. and C. lands on or after August 28, 1937, shall not acquire title, possessory or otherwise, to the timber, now or hereafter growing upon such claim. Such timber may be managed and disposed of under existing law or as may be provided by subsequent law. The owner of such unpatented mining claim, until such time as the timber is otherwise disposed of by the United States, if he wishes to cut and use so much of the timber upon his claim as may be necessary in the development and operation of his mine, shall file a written application with the District Forester for permission to do so. The application shall set forth the estimated quantity and kind of timber desired and the use to which it will be put. The applicant shall not cut any of the timber prior to the approval of the application therefor.

185.37e Applications for final certificates and patents. Applications for patents and final certificates in connection with mining claims located upon O. and C. lands on or after August 28, 1937, must be noted "Mining claims on O. and C. lands, under the act of April 8, 1948." All patents issued on such claims located on or after August 28, 1937, shall contain an appropriate reference to the act of April 8, 1948, and shall indicate that the patent is issued subject to the conditions and limitations of the act.

Cross Reference: Other regulations governing the revested and reconveyed lands: See Part 115.

(R. S. 453,2478, Pub. Law 477, 80th Cong., 62 Stat. 162; 43 U. S. C. 2, 1201)

Marion Clawson, Director.

Approved: July 27, 1948.

C. Girard Davidson,
Assistant Secretary of the Interior.

(F. R. Doc. 48-7142; Filed, Aug. 6, 1948; 8:46 a.m.)

RELEASE FROM CONGRESSMAN ELLSWORTH'S OFFICE

Washington, D. C., Aug. 7.--Confusion and uncertainty regarding the proper filing of mining claims on O & C revested lands were removed today with the issuance by the Department of Interior of regulations governing mineral locations on those lands. Closed to mineral entry since 1937, more than 2,500,000 acres of western Oregon lands were again opened to entry by Congress this year. Senator Cordon and Congressman Ellsworth were authors of companion bills in Congress which became law April 8.

"The new Act and regulations," Congressman Ellsworth points out, "contain a provision new to U.S. mining laws. Any owner of a claim on O & C or Coos Bay Wagon Road lands is required to file a copy of notice of claim with the District Land Office of the district in which the claim is located. This is in addition to the filing with the County Recorder required by state law."

Claims located on these lands prior to April 8, 1948, must be filed for record not later than October 5, 1948. Claims located on or after April 8, 1948, must be filed for record within 60 days of such location.

If the location is on surveyed lands, the regulations state, the notice of claim must contain either a full legal description of the location or a copy of a statement by the owner describing the legal subdivisions affected. If on unsurveyed lands, the notice filed should show the land described connected by course and distance to the nearest corner of public land surveys or the probable legal subdivision if the lands were surveyed. Where the above information is not filed with claims on unsurveyed lands, the owner must file a statement giving satisfactory reasons for not doing so. The applicant may not cut any timber prior to approval of an application made to the District Forester of the O & C Administration.

Owners of unpatented claims must file for record within 60 days after the expiration of an assessment year a statement under oath as to the assessment work done or improvements made or in compliance with any relief act that applies. Ellsworth also pointed out that while Congress extended the moratorium on assessment work, all claim owners must file sworn statements claiming exemption under Public Law 665 of the 80th Congress not later than August 30, 1948.

Since the Department of Interior is presently consolidating land offices in Oregon under one office in Portland, applications can be sent to the Portland office, though those sent to the old land office addresses will be forwarded.

Congressman Ellsworth indicated that there may be some confusion where claim owners cannot determine whether their claims are located on the reopened lands because of certain "controverted lands" and exchange lands. No filing with the District Land Office is necessary if the claim is not on reopened lands. If the claim owner is in doubt and is unable to verify the location because of the land office consolidation, his only protection may be to file with the Portland office in addition to filing with the County Recorder.

The new law and regulations validate any mineral claims, if otherwise valid, located on the reopened lands from August 28, 1937, to April 8, 1948.

EDITOR'S NOTE

The Ore.-Bin does not share Congressman Ellsworth's seeming optimism regarding removal of "confusion and uncertainty" in the issuance of the above regulations. How a claim owner is to be sure that his claim is or is not on the revested or grant lands is still uncertain. It seems to us that the provision which requires filing with the District United States Land Office is unnecessary, is contrary to the spirit of the United States Mining Laws, and is another obstacle thrown in the way of the legitimate prospector as distinguished from the land speculator.

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GRANT COUNTY MINING AREA DESCRIBED

"Geology and Mineralization of the Morning Mine and Adjacent Region, Grant County, Oregon" is the title of Bulletin 39 just issued by the State Department of Geology and Mineral Industries. The author is Dr. Rhesa M. Allen, Jr., now professor of geology at Virginia Polytechnic Institute. The bulletin is the result of field work done in the Greenhorn Mountains of northeastern Grant County during 1946 and represents a part of Allen's doctorate at Cornell University.

The bulletin may be obtained at the Department offices at Portland, Baker, and Grants Pass. It has 48 pages of descriptive text, photographs, and maps. Special attention is given to the economic geology of mining properties of the region. Price 50 cents postpaid.

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A STORY ABOUT MINING RECORDS -- AND YOU

by

N. S. Wagner*

A man called at one of our field offices a few weeks ago eagerly hoping to obtain maps and other technical data of a certain mine. This man is the owner of that mine, and the mine is a potentially important one. It was a producer of some consequence years ago. It rates as worthy of re-examination.

Engineering reports and maps of the underground workings of this mine had been made and kept up to date by the original operators. Even smelter receipts covering ore shipped by subsequent leasors had also been saved. The present owner possessed all of this data. That is, he did possess it up until a year ago at which time he loaned it to a trusted associate who in turn loaned it to a "reliable" group of prospective purchasers.

Today the owner has in his possession only recollections of the data he used to have. For the "reliable" purchasers did ". . . fold their tents, like the Arabs, and as silently steal away."

This is an old, old story as anyone who has followed mine examination work knows. "I had maps, but . . ." "My father kept all his smelter receipts, but . . ." Sometimes it is that the cabin burned down and the records with it. Sometimes it is just carelessness on the part of the owner who didn't fully realize the importance of saving this data. Regrettably too often, however, it is bad faith on the part of parties to whom the data had been entrusted. Whatever the reasons, the fact remains that such losses are common. And the story of such losses doesn't end with the owner's loss. The loss is also a loss to the State and to the mining industry as a whole.

Consider the mine owned by the man who called at the field office. This mine is now just another of the many properties knowledge about which is chiefly legendary. The truly significant technical data of a geologic and economic nature are gone. Only superficial reports of relatively inconsequential importance can now be made with the data at hand. In short, the facts remaining include details on the ownership, names of the claims and locations, topographic and climatic statistics for the district, descriptions of access roads, on - yes, on lists of such odds and ends of semiobsolete equipment as may remain and on other trivial data right down the line to and including a factual description of the caved portals. But, for what is beyond those caved portals all that may now be offered is HEARSAY. So and so many crosscuts or sublevels or winzes generally understood to exist . . . ; such and such values claimed for the vein in this, that, or another place . . . ; vein widths reported to be . . . ; according to . . . .

Had this man filed with this Department copies of his data, we, in turn, could have given him back copies of the now missing reports and maps. His mine would then rate as a potentially real one - not as a legendary one.

Yes, it is an old, old story - this story of records that have been lost.

Requests for technical data on specific properties are frequently received by the Department both from the property owners themselves who hope that we may furnish them with records covering some early phase of their properties' history, and from examining engineers who hope to augment the data made available to them by the owners.

We do maintain files of such data and oftentimes we are able to supply the inquirer not only with the data he sought to obtain, but also with copies of other maps and reports he had no idea existed. But far more often the inquirer goes away empty-handed as did the man mentioned above.

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* Field geologist, Oregon Department of Geology and Mineral Industries.

That this department should function as a repository of valuable records pertaining to the past operations of individual mines, is beyond question. The ability so to function in this capacity, however, is to a large extent directly proportional to the cooperation afforded by members of the mining industry, owners and operators alike. If records are not first given to us, we cannot provide copies later.

Many mine owners and operators do make it a point to place on file with us full and complete copies of records of their operations. To mention one instance, we have copied the significant figures from the original smelter receipts for all shipments, nearly 70, ever made by one operator. The value to the operator of this data in our possession can be illustrated by the fact that he has made use of it on several occasions, as some of his original receipts had been mislaid.

The chief value of records, whether they be technical data on metallurgical tests of the ore, or reports on the geology of the mine, or maps of workings, or production statistics, is that they may play an important part in possible future development of the property they represent. With such records examining engineers or geologists can better appraise a property. Without such data they are likely to accord but little consideration to an old property.

Another value of records, particularly geologic reports and maps of workings, is that they serve as a guide for the planning of intelligent prospect development projects. Knowledge concerning the location of old stopes, faults, veins, crosscuts, and winzes may have an important bearing on the location of new workings or on the spotting of diamond drill holes. Without knowledge concerning these things much money may be spent in the needless reopening of old workings and in the blind driving of new workings. With such data the more responsible and experienced mining companies may be interested in undertaking to reopen an old property. Only the more venturesome promotion capital would consider a property without complete and reliable records, and even then, if the company were under competent management, it would be attracted only to properties which have reasonably good, substantiated records.

The ability to replace a lost map by making a photostat of a print from our files amounts to the saving of many dollars. A map of underground workings can be replaced only after the caved workings have been pumped out, reopened, and retimbered. Maps of claim boundaries and surface workings are not quite so difficult to replace, but even here the cost of doing so may amount to several hundreds of dollars.

The file of significant records on individual mining properties now possessed by this department is far from being complete. This is due largely to the fact that there was no department of geology and mining in existence in Oregon during the periods when the most active metal mine operations were going on. With no department to gather records when they were available, records became scattered and lost. The existent file gathered by this department has been built up by donations from private mining people who recognize the value of saving copies of important records. While many of the contained records thus assembled are of great value, the coverage of these records in terms of existing properties is haphazard and incomplete.

Although many mining people recognize the value of this department as a repository for important records, and regularly make a practice of filing copies of records with us, there are, of course, some who for reasons of their own do not so cooperate. However, it is believed that the public in general doesn't realize the Department's position with respect to the salvaging of technical records of past mining operations and to the preserving of current records.

For anyone wishing to dispose of records of early day mining in Oregon (relics and books on mining included), it is suggested that he do so by turning them over to this department. Material pertinent to the Department's files and to the potential welfare of the State's mining industry can then be sorted out. In connection with current

information of a private nature filed with us, the policy is that such information is considered confidential. Copies are released only to the legal owner of the property, or to other persons on his authority.

By way of disposing of it, a trunk full of records was burned recently. These records were assembled by a prominent mining man who figured actively in the development of an important and productive mining district during the latter part of the last century. Although records, dating back as far as these may be of little importance today, still, no estimate may now be made of the amount of data destroyed that might have been of the utmost value. The properties in that district are today in the control of many new owners. We might have been able to provide them with important data on their properties had it been given to us and not burned.

To the owners of mines and examining engineers who will examine properties in Oregon next year, or the next, or the next, --- we can provide you with technical data only if such data had first been made available to us. In other words, this phase of our department's activity, this ability to serve YOU with technical and other records on individual properties is proportional to the extent to which YOU, and all members of the mining public, make use of the opportunity of filing copies of records with us.

To the end that records of past mining operations be salvaged and records of current operations be preserved, this article has been written. It is urged that those possessed of such records, old or current, make use of the Department as a repository for copies of said records. In so doing, a certain measure of insurance is taken against future loss, even though we cannot guarantee against loss by fire.

Your cooperation in this respect is invited and urged.

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FISSIONABLE MATERIAL DISCOVERY CLAIMS

This Association recently asked the Bureau of Land Management for an interpretation as to protection afforded a prospector who located a claim containing fissionable material. A reply to this query from the Director gives the following information:

> "This Department has taken the position that a location under the mining laws based on a discovery of uranium, thorium, or other material peculiarly essential to the production of fissionable material, made on or since September 13, 1945, confers no rights whatever to those materials and it is invalid. However, a location could be made if the land contained other minerals not essential to the production of fissionable materials, but all fissionable material on the land could only be disposed of under the direction of the Atomic Energy Commission."

This implies that to validate the discovery the "mineral of commercial value" would, necessarily, have to be one of the associated minerals.

In the meantime, the Atomic Energy Commission announced July 10th that an additional 115 square miles of public lands in Utah and Colorado have been withdrawn from entry and will be reserved for uranium exploration. This withdrawal covered 18,423 acres in Grand County, Utah, and 95,575 acres in Mesa and San Miguel Counties in Colorado. The Commission stated that no further withdrawals are contemplated at this time until the lands now withdrawn have been thoroughly examined.

(From Management Digest published by Utah Mining Association.)

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SOILS AND PLANTS AS PROSPECTING AIDS

The following is taken from U.S. Geological Survey Bulletin 959-A, Geophysical Abstracts 132, January-March 1948:

9871. Maliuga, D. P. Chemical composition of soils and plants as indicators in prospecting for metals (in Russian): Acad. Sci. U.R.S.S. Bull. (Izvestiia), Sér. Géog. et Géophys., vol. 11, no. 3, pp. 135-138, Moscow, 1947.

Chemical analyses of soils, especially the pertinent investigations of V. J. Vernadsky and T. Berthaud, have shown that the presence in the parent rocks of heavy metals, such as iron, manganese, nickel, and cobalt is associated with an unusually high content of these elements in the derived soil. The soil itself and the plants growing on it in such cases show as much as a hundredfold amount of the metals in question, as compared with the normal content. Thus, the ashes of the plant Thlaspi calaminare Lej contain as much as 13 percent of zinc oxide, the ashes of Nicotiana tabacum as much as 60 percent of potassium oxide, and the pulp of Populus tremula can contain as much as 73 percent of calcium oxide. Chemical analyses of the ashes of plants collected over the nickel deposits of the Ural Mountains have shown an enormous concentration of nickel and cobalt. The author concludes that plants and soils with a high content of certain metals indicate proximity of the corresponding ores and thus emphasizes their importance in prospecting. - S.T.V.

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NEW FLAME RETARDANTS

Tragic fires in public places have focused attention on new flame retardants. Wood, paper, and textiles are inherently flammable, and no method has been devised which will prevent their combustion when sufficient heat is applied to them. However, methods have been developed for retarding flame propagation, and they are effective in preventing the rapid spreading of fire. These have been based chiefly on combinations which included chlorinated compounds but recent developments have disclosed the effectiveness of certain nitrogen-phosphorus combinations. The new retardants have some interesting advantages, particularly in textiles for soft draperies or diaphanous evening gowns.

The chlorinated combinations give excellent performance on heavy canvas for military equipment and circus tents. The flame is smothered partly by chemical action, but principally by a physical blanketing action. However, the large amounts of chlorinated combinations which are required destroy completely the soft "hand" of fine fabrics.

In the new flame retardants the components must be combined correctly, then they have little or no effect on the "hand," they do not reduce the tensile strength appreciably, and they are durable to laundering and dry cleaning. They appear to retard flame propagation by chemical suppression of flammability. This discovery will be a boon to the managers of hotels, theaters, and night clubs who are required to find fine fabrics and still comply with fire legislation.

Of course, the maximum possible fire retardance is necessary for fabrics used in public places. Many clothing fires produce fatal results because the rate of flame propagation is so fast that the wearer cannot remove the clothes quickly enough. Textiles are not considered safe for clothing if the flame propagation rate is greater than six inches of flame spreading in six seconds.

The new nitrogen-phosphorus flame retardants represent another step in reducing the tremendous loss and suffering caused each year by fire.

(From For Instance published by American Cyanamid Company, New York.)

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PETROLEUM DEMAND

The Economics Advisory (Interstate Oil Compact Commission) committee estimated total demand for all products for twelve months ending March 31, 1949, will approach 6,400,000 barrels daily, which will be about 6.4 percent over the preceding twelve months period. The report declared that, "All operations must be expanded promptly above the present high levels if the industry is to meet peak demands next winter, when requirements will far exceed operating capacity. Stocks must be increased by large amounts this summer, particularly for kerosene and distillate fuel oils in the area east of the Rocky Mountains, which will depend on realization of exceptionally high yields of these products for this reason.

"Whether supplies can be increased to the level of requirements indicated in this report will depend on several factors: (1) the availability of materials to expand production and transportation facilities; (2) the ability to maintain capacity operations without interruption; and (3) a large margin of imports over exports. The required supply will exceed slightly the availability recently estimated for the next twelve months by a Subcommittee of the American Petroleum Institute. In case the supply required to meet all demands is not attained, the pressure of demand will probably keep stocks at such low levels that spot difficulties will recur to a substantial extent."

The committee report listed the following conclusions for the 12 months period beginning April 1, 1948:

(1) Domestic demand will average about 6,000,000 barrels daily;
(2) An addition to stocks of at least 28,000,000 barrels, or 75,000 barrels daily, will be required in relation to increasing demands for new facilities;
(3) Imports will exceed exports by about 110,000 barrels daily, making the Continental United States a net petroleum importer for the first time in a quarter of a century;
(4) Production required to meet demand will average 5,550,000 barrels daily of crude oil and 410,000 barrels daily of natural gas liquids, with an increase during the period to 5,625,000 barrels and 420,000 barrels daily, respectively, for the first quarter of 1949;
(5) Refinery crude runs to stills will need to increase to 5,630,000 barrels daily or more by the first quarter of 1949. Exceptionally high yields of kerosene and distillate fuel oils will be required during the period.

(From Compact Comments published by Interstate Oil Compact Commission, Tulsa, Oklahoma.)

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DREDGE RESUMES AT SUMPTER

According to the Baker Record Courier, July 1, 1948, the Harris "doodle bug" gold dredge near Sumpter, Oregon, will be operating for the first time since before World War II. The land and equipment were purchased from L. R. Harris of Portland by the Brockton Nevada Mining Syndicate of Brockton, Massachusetts.

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COAST RANGE MAPPING

Geologic mapping in the Coast Range is being done by a U.S. Geological Survey party under the direction of Dr. H. E. Vokes, Professor of Geology at John Hopkins University, and Donald Meyers, former graduate student at Stanford University, with headquarters at Eugene. Dr. E. M. Baldwin, Assistant Professor of Geology at the University of Oregon, is mapping the Spirit Mountain quadrangle in the northern part of the Coast Range for the U.S. Geological Survey. The investigation of the Coast Range is a part of a nation-wide survey by the Oil and Gas Division of the Survey.

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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.

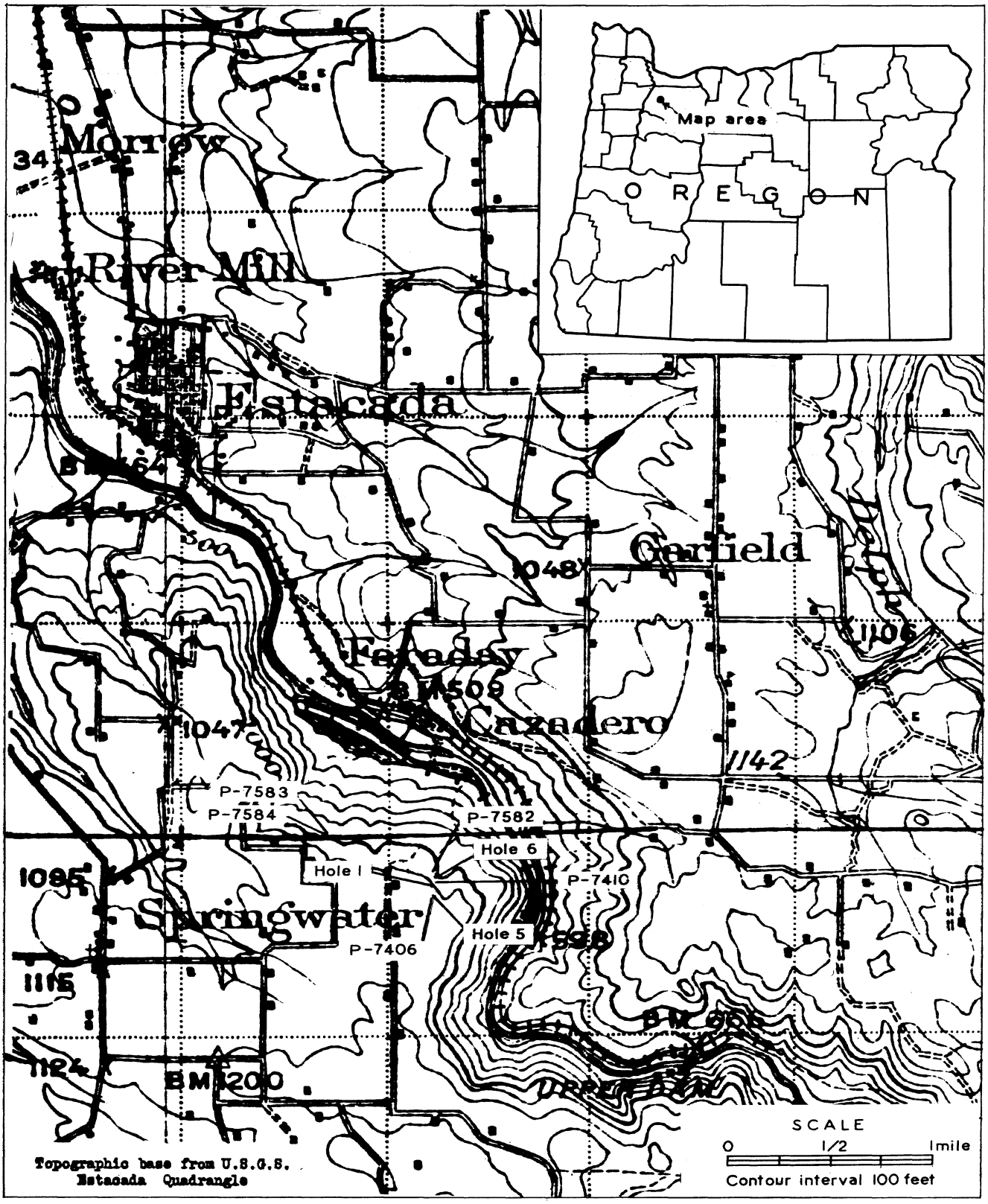
Average analysis, on a dry basis, obtained from about 7 feet of section of two auger holes about 1000 feet apart on the Kiggins farm, is as follows:

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.

* * * * *

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.

* * * * *

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.

* * * * *

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.

* * * * *

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.

* * * * *

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

* * * * *

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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STATUS OF THE STRATEGIC METALS INDUSTRIES*

By

Samuel H. Williston**

Mr. Chairman and Members of the American Mining Congress:

If we are to judge the risk of war by the present status of the strategic metal industries we can feel quite safe in saying that our planners in Washington see no danger within the next ten or twenty years. If on the other hand, we are to judge the possible danger of war from the newspaper accounts and from the appropriation requests to Congress, then it would seem highly advisable that our planners in Washington give a little thought to what we are going to fight a possible war with.

Insofar as the atrategic metals are concerned, the operations which were encouraged during the war have since been allowed to die of neglect or else have been deliberately junked. At the present time stockpiling of many of those metals (as we all well know) has sagged well below the irreducible minimum. The statistics make dismal reading.

Manganese, on which our domestic steel industry rests, is obtained from abroad to the extent of ninety percent of our domestic requirements. Close to seventy percent of our domestic requirements comes from countries like the U.S.S.R., India, and Africa. Since domestic consumption is using practically all of western hemisphere production plus imports, the possibility of obtaining metal for stockpiling is somewhat dim and nebulous.

At the present time the Anaconda operations at Butte supply about nine and a half percent of domestic consumption, and four smaller operators in Montana, New Mexico, and Arkansas supply the balance. Imports from Russia alone, of a type not suitable for stockpiling due to physical characteristics, supply twice our domestic production.

Chrome, also of primary importance to the steel industry, is produced in the western hemisphere only to the extent of fourteen percent of our domestic requirements with the balance coming from countries like Turkey, Russia, and South Africa. At the present time not one single chrome operation is producing in the United States and the chrome plants on which much Government money was expended during the war, have been junked or sacrificed. It is even reported that the poor little fourteen percent of production from western hemisphere sources has little or no reserve supply. It took over three years to develop even the beginning of a chrome industry in the first years of the war. I doubt if any considerable portion of our chrome requirements could be obtained from domestic plants in any lesser time if we started to build them today.

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*Presented at the 1948 Metal Mining Convention, Western Division, The American Mining Congress, San Francisco, California, September 20-23. Reprinted through the courtesy of the American Mining Congress.

**Vice President Cordero Mining Company, San Francisco, California.

The tungsten industry, supplying the basic component for high speed steel and for armor piercing shells, was sacrificed on the altar of reciprocal trade treaties and international goodwill. Production of tungsten in this country has been declining steadily since the war, and three properties are now supplying over eighty-five percent of our domestic production. With foreign material available at $23.50 per unit, there seems little if any incentive to keep domestic tungsten mines in operation.

The quicksilver industry has fewer mines in operation at the present time than at any time since 1849, and the current rate of production is now below that of the depression years of 1932 and 1933. After October 1, 1948, with the closing of the nation's largest producer, domestic production will be below the 6000 flasks per year of 1921 and 1922 and at the lowest level since the metal was first mined in this country in 1849. After October 1, 1948, we must count on importing over eighty-eight percent of our domestic requirements.

Antimony, the next on the list of strategic metals, is in its best position in years but the hopeful situation in the antimony industry is solely the result of Russian born dissention in China. At the present time, thanks to the single postwar operation of the Bradley Mining Company in Idaho, the United States is producing forty percent of its requirements of virgin antimony metal, but should antimony shipments be resumed from China, there is little possibility that that operation could long continue.

The principal source of platinum metals is Russia, and at last reports consumption and exports of platinum were greater than imports. The gyrations of the platinum market show rather well the effect of Russian control on the source of supply. Strictly domestic production of platinum is non-existent since most of our domestic platinum supply is a by-product from the gold dredges, and supplies from Alaska and Canada are not too significant. Colombian platinum production is not sufficiently flexible to take up the slack in the ups and downs of Russian shipments.

At the beginning of World War II the Germans had fifty submarines which could be detected by radar whenever they surfaced, could be detected by the magnetic airborne detector whether at or below the surface, and gave a good response to echo sounding and ordinary sound detectors. At the present time it is reported that the Russians have two hundred and fifty 20-knot M-21 latest type German submarines which can neither be detected by radar, by magnetic detectors and only with difficulty by echo sounding. If the Germans could sink sixty-five out of sixty-seven cargoes of chrome from Africa, and with communism rampant in some of our maritime unions, how safe are we in depending upon overseas shipments of our strategic metal supplies.

With the announcement by the Munitions Board that their quotas are only eighteen percent complete and seriously out of balance, how long can we fight a war with little if any production domestically of these metals with an average of less than one year's supply and a grave danger of inability to obtain appreciable amounts from overseas through submarine infested waters.

I will not attempt to answer those questions for the simple reason that there is no answer. The facts remain: we have no strategic metal industry, we have an insignificant stockpile, and we have no assurance of supplies from abroad.

As to the status of the strategic metal industry, we all might well ask "what industry?"

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ACTIVITY IN LITTLE NORTH SANTIAM AREA

The Little North Santiam area of eastern Marion County has had considerable development activity during the past summer. The Pacific Smelting and Refining Company (formerly the Amalgamated), the Northwest Copper Company (formerly the Lotts-Larson), and the Crown mine all have reportedly been doing underground development work on ore.

****

SPECIFICATIONS FOR CERAMIC MATERIALS

By
C. W. F. Jacobs*

Introduction

Other than those used as raw materials for structural clay products the ceramic materials to be of commercial importance must possess one or all of the following characteristics:

(1) Purity - This is the most important, especially that the materials be as iron free as possible, usually below 1 percent and preferably as low as .1 percent in feldspars and flints.

(2) Volume - In order to make the mined material profitable, it is necessary to have a great volume of uniform composition available. Also it will be of little interest to a consumer unless the deposit is large and uniform.

(3) Accessibility - If the material is too inaccessible as regards transportation, the entire profit of the venture will be lost in bringing the product out.

The profit that can be made from ceramic raw materials is low in comparison with metals. However, some materials are very necessary to the industry and a few are actually scarce. In the following listings will be found the main ceramic materials and some of the current analyses on present day standard materials of commercial importance.

Feldspars

The closer the chemical composition can approach the theoretical values of the pure feldspar, the greater the value of the material for commercial market.

Theoretical Composition of Feldspars

(1) Microcline or orthoclase
$K_2O \cdot Al_2O_3 \cdot 6SiO_2$

(2) Albite
$Na_2O \cdot Al_2O_3 \cdot 6SiO_2$

(3) Spodumene
$Li_2O \cdot Al_2O_3 \cdot 2SiO_2$
This material is rarer but of value if of a good purity and large tonnage.

(4) Anorthite
$CaO \cdot Al_2O_3 \cdot 2SiO_2$
Some commercial importance.

Typical Analyses of Four Commercial Feldspars Now on the Market

Source of material	SiO_2	Al_2O_3	Fe_2O_3	CaO	K_2O	Na_2O	Li_2O
1. North Carolina	68.7	18.7	0.02	2.0	5.2	5.3	----
2. Ontario - Canada	65.5	19.3	0.05	0.3	11.7	3.0	----
3. Ontario - Canada	59.8	24.2	0.06	0.3	5.1	9.9	----
4. Maine	70.0	22.0	0.5	---	2.9	4.8	1.9

---

*Ceramist, Oregon Department of Geology and Mineral Industries.

The most important quality in a good commercial feldspar is a very low iron content, so that the fused specimen of material will be as white as possible.

Other than purity and relative evenness of product composition, the material should be available in large masses of at least 100,000 short tons.

The feldspar should show an even, quiescent fusion over a series of at least 5 cones, from initial fusion to a flat, well-fused, glassy mass of relative transparency or translucency preferably below cone 12 (1310° C. at a 20° C. rise per hour).

Some other minerals used in the ceramic industry are:

Dolomite	$CaCO_3 \cdot MgCO_3$
Talc	$3MgO \cdot 4SiO_2H_2O$
Colemanite	$2CaO \cdot 3B_2O_3\ 5H_2O$
Cryolite	Na_3AlF_6
Fluorspar	CaF_2

These materials should be very low in iron, titanium, and other metallic coloring ions. They should be as close to theoretical purity as possible and uniform in supply. Chemical composition is the main test, and working properties in ceramics, when compared to a commercial standard, are also useful in determing the material's relative value.

Clay is by far the most important material to the ceramic industry, although not the most expensive.

Theoretical Compositions of Clay Materials

Kaolin, Ball clay, Fire clay	$Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$
Andalusites	
Sillimanite	$Al_2O_3 \cdot SiO_2$
Kyanites	$Al_2O_3 \cdot SiO_2$

Typical Analyses of Commercial Clays and Andalusites

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	K_2O	Na_2O
Kaolin A	44.4	39.7	0.3	0.2	0.3	0.7	0.1
B	46.9	38.6	1.0	---	0.2	1.0	0.4
C	45.8	38.2	0.14	0.2	---	---	---
Ball clay A	49.9	31.4	0.6	0.2	0.3	1.2	0.2
B	50.3	31.5	0.6	0.2	0.3	2.0	0.3
C	49.4	32.2	2.3	0.3	---	2.0	0.1
Fire clay A	55	42	.06				
B	53	44	.13				
Kyanite	40.4	57.4	.5	.8			
Sillimanite	36	60	.02				

Kaolins (china clays)

Essential characteristics of suitable kaolins are that they shall be white burning, very light in raw color, and possess some grains of weathered feldspar and free SiO_2. The P.C.E.* value should be approximately 32 to 33 +. Very low iron content is of primary importance. A reasonable amount of plasticity is required.

*Pyrometric cone equivalent, which is the point at which the material being tested is fused to the same angle of bending as a standard pyrometric cone with which it was heated at a given rate of time to a given degree of temperature.

Ball clays

Uniformity of product is the primary consideration. Purity of product is almost as stringent as is required of the kaolins, but a higher Fe_2O_3 content is permitted (1 to 2 percent). Extreme plasticity is essential in order to be classified as ball clay (sedimentary deposit). Ball clay usually contains organic matter, like peat or lignite. The material is always white to buff firing and has a P.C.E. of at least cone 30 or above.

Fire clays

(1) Material should be plastic to a greater or lesser extent. (This does not apply to diaspore, bauxitic, or flint clays.)

(2) It must have a total dry shrinkage of less than 7 percent.

(3) It must have a total firing shrinkage of less than 7 percent.

(4) There shall be no cracking, bloating, scumming, or warping.

(5) It must not deform more than 3 to 10 percent under a load of 25 pounds per square inch at a temperature of 2462° F.

(6) It should not shrink (after initial forming and firing) in operation at 2552° F. more than .5 to 2 percent.

(7) The P.C.E. should be at least cone 32+ (3092° F.)

On super-duty clays the limits are much narrower than the above analyses and the P.C.E. shall be at least cone 34.

Other materials of ceramic importance as well as of importance to other industries are:

Bauxite	Ilmenite
Beryl	Pyrophilite
Chromite	Rutile
Cobalt	Zinc
Diaspore	Zircon

These are graded as to purity and amounts commercially available.

The materials of potential ceramic importance are those which contain high lithium compound and any high sodium compound in insoluble form, examples of which are amblygonite, lepidolite, and nepheline syenite.

Prices for commercial ceramic materials vary and depend on the need for the product and the rarity of the material. Any pure material is necessarily worth more than an impure or inferior product.

The average prices paid f.o.b. plant or quarry and processed (washed or air floated) are:

Ball clays	$ 9.00 - 18.00
Kaolin	10.00 - 20.00
Fire clay (grade 1 or better)	4.75
Feldspars	
F.o.b. crushed and ground to 200 mesh and of good purity	30.00 - 40.00
Possible higher price for high lithium spar	
Flints	
F.o.b. crushed and ground to 325 mesh and very low or no iron content (.10 percent or less)	18.00 - 30.00

The materials listed and requirements given are average. Prices are average prices paid as of 1947, and can be used only as guides to relative value.

Sampling of clays

The face of material to be sampled is carefully stripped of overburden (foreign material) and a series of trenches are cut parallel to each other so as to make a vertical section across the face of the outcrop. Each trench should be approximately 12 inches wide and deep enough to produce at least 100 pounds of clay. The samples dug are then mixed, quartered, and a sample taken (no lump over 2 inches in diameter) and shipped for testing. This sample should weigh at least 5 pounds. The rest of the clay should be available for further testing if the clay shows signs of being of commercial importance. The sample should be sent in a cloth sack of tight weave, if possible, and carefully marked by means of two tags, each bearing identification marks. One tag is placed within the bag with the sample, the other secured to the outside of the bag.

Some commercial clays in Oregon

Besides common clays several deposits of ceramic clays in western Oregon have had commercial production; these are as follows:

1. Sig Fransen clay deposit located 6 miles west of Ranier in Columbia County.
2. Molalla-Salem district in southwestern Clackamas and northwestern Marion counties.
3. Bellfountain locality south of Corvallis and southwest of Monroe in Benton County.
4. Mabel area northeast of the town of Mabel in Lane County.
5. Hobart Butte area south of Cottage Grove in Lane County.
6. Willamina deposit in Yamhill County.

Conclusion

The materials considered in this article are those which have a sale to the industry as raw materials. Clays used in structural clay products (brick, hollow tile, quarry tile, sewer tile, etc.) are of such low grade, economically speaking, that a manufacturing plant is usually placed near the sight of the deposit and the finished product is sold rather than the raw material.

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METAL MARKETS

According to the E&MJ Metal and Mineral Markets, New York, issue of October 21, 1948, the demand for practically all metals continues at a high rate. The price of zinc was advanced one-half cent per pound by one seller, making the price 15½ cents per pound East St. Louis.

The price of copper has remained firm at 23½ cents Connecticut Valley. Foreign demand for copper has been strong. The Government stockpiling agency suggested that major copper producers allocate a certain part of their production for the Government stockpile. This method, however, did not meet with favor among copper producers, and the suggestion was made that the Government make its purchases through recognized trade channels by men who have understanding of the copper market.

The market price of lead continues at 19½ cents New York with the price firm and demand strong.

The silver market has been steady with demand about in balance with supply. The New York silver quotation is 77½ cents per troy ounce. This, of course, applies only to foreign silver as the price of silver produced in the United States is fixed by law at 90½ cents.

The New York market for quicksilver appears stronger but the price has remained unchanged at $76 to $78 per flask. Bids for 3000 flasks of Spanish and Italian mercury in Japan are scheduled to be opened on October 25.

The price of primary pig and ingot aluminum was advanced 1 cent per pound effective October 11, making the price 17 and 16 cents respectively.

The price of tin has remained unchanged at $1.03 per pound.

Antimony metal is 41.67 cents per pound boxed, New York, and 38.5 cents per pound bulk Laredo.

Following are market quotations for other metals:

Bismuth, per pound in ton lots	$ 2.00
Cadmium, per pound commercial sticks, wholesale quantities	1.90
Iridium, per ounce troy	110-115
Magnesium, per pound f.o.b. producers' plants, carlots	.20½
One hundred pounds or more less than carlots	.22½
Nickel per pound electrolytic cathodes f.o.b. Port Colborne, Ontario, contract price	.40
Osmium per ounce	100.
Palladium per ounce troy	24.
Platinum per ounce troy	93.
Wholesale lots on sales to consumers	96.

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NEW DANTORE PLANT ON DESCHUTES RIVER

On October 22 Dant & Russell, Inc., announced that a new million dollar processing plant will be erected at Frieda which is located on the Oregon Trunk railroad on the west bank of the Deschutes River about 13 miles south of Maupin in Wasco County. The plant will adjoin the Lady Frances open pit perlite mine. Besides a new furnace, the plant will include an enlargement in capacity of the present mill and other adjuncts required in producing Dantore products.

Perlite is a gray volcanic glass which has the property of expanding in volume or "popping" when heated to the proper temperature. The product has been given the trade name of Dantore by the company and has been used extensively in construction in the Northwest, notably as plaster sand in the new Equitable and Oregon buildings in Portland.

The announcement by Dant & Russel, Inc., means a new industry for Wasco County and a new town along the Deschutes River. It is reported that about 60 men will be employed at the new plant which is expected to begin operations in June 1949.

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GEOLOGY EXTENSION CLASSES

Hollis Dole, geologist for the State Department of Geology and Mineral Industries, is giving a course this year in General Geology at the Portland Extension and at Vanport Extension centers, divisions of the Oregon State System of Higher Education. Mr. Dole reports an enrollment in the two courses of over sixty. Those registered at Portland Extension Center who have indicated their desire to learn more about this Earth Science are from all walks of life and represent all age groups. The majority of those registered at Vanport are veterans.

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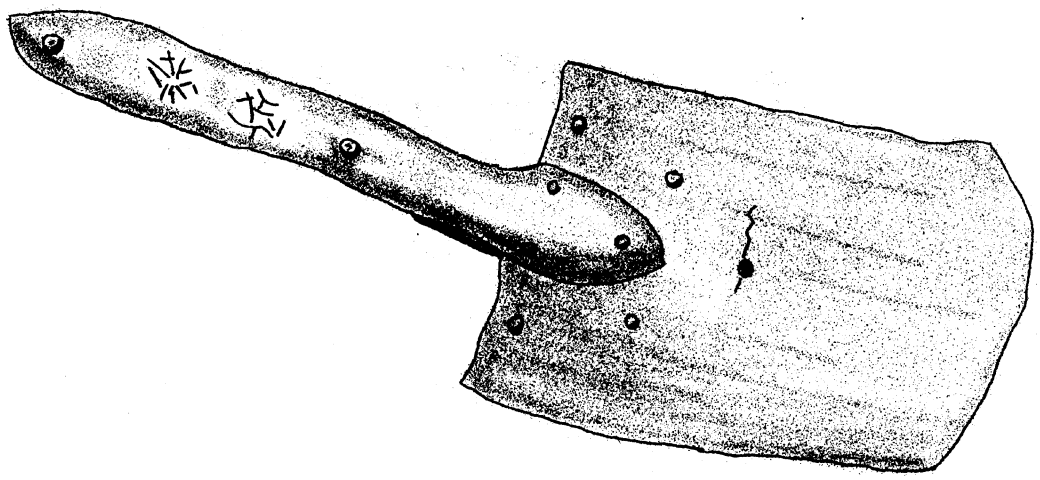
MINING RELIC



Old Chinese shovel found in the Chinese section of the old Auburn townsite by Mr. Leon Brown, Baker, and donated to the Department as a mining relic. The Chinese inscription on the shovel means "good luck" or its equivalent, according to Jack Eng, Baker. Auburn was located about 6 miles west of Baker. The camp flourished in the 1860's and was one of the bonanzas of eastern Oregon. As in other placer camps of Oregon there was an influx of Chinese miners into Auburn in the late 1860's. The Chinese were satisfied with lower-grade ground than the white miners, and in many places they worked over the tailings from previous placer operations.

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RADIO-ACTIVE MINERAL DEPOSITS ON PUBLIC DOMAIN

The Atomic Energy Commission has announced that mineral deposits on unreserved public domain may be staked even if the deposit shows radioactivity provided the deposit is valuable because of other minerals. The announcement reads as follows:

Uranium in deposits on the public lands, and other lands owned by the United States, is now reserved to the United States, subject to mineral rights established on or before August 1, 1946, (the date of the Atomic Energy Act). However, the Commission's guaranteed minimum prices have been made applicable to deliveries to it of ores containing such reserved uranium in consonance with the Commission's authority to pay fair and reasonable sums, including profits, for discovery, delivery, and other services performed with respect to such ores. The commission wishes to encourage prospecting for new deposits of uranium ores on the public domain and has been advised by the Department of the Interior, which administers the disposition of the public lands, that valid locations may be staked on such deposits if the uranium occurs in a deposit which is valuable because of other minerals. In the unlikely event of the discovery of a deposit of uranium-bearing ore which does not contain some other valuable mineral, the Commission, upon notice, will take steps to protect the prospector's equity.

****

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CH-103: FOR SALE 340 h.p. S. Morgan Smith Co. double runner hydraulic turbine 39-ft. head, 750 R.P.M. requiring 90 cu. ft. water per second. Located at Montague, Siskiyou County, California. Also 20-in. DeLaval cent. pump, capacity 12600 G.P.M. at 83-ft. head. W. E. Buell, 227 Sherlock Bldg., Portland, Oregon.

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TWO MULTNOMAH COUNTY BRICK WORKS

Columbia Brick Works (face and common brick, tile)

Operator: Mr. Franze Olbrich, president, Gresham.

Location: The plant is located on the Portland Electric Power Company Railroad, 1½ miles southeast of Gresham at Hogan station, in the SW¼ sec. 14, T. 1 S., R. 3 E., Multnomah County, just north of Johnson Creek at about 350 feet in elevation. The pit lies 2000 feet to the east, where it is excavated in the 400-ft. terrace to a depth of about 30 feet.

Area and development: 50 acres, of which 20 acres has been mined and 20 acres of clay ground remains. Recent work has been done on a lower terrace at plant level, with about 1 acre stripped. The clay here is reportedly of lower grade than the upper level. Thirty men are employed.

History and production: The Columbia Brick Works was founded in 1905, incorporated in 1909, and remained under the same ownership until August 1948. The plant originally consisted of scove kilns; at present there is a bank of 22 Hoffmann semi-continuous kilns. Production of tile was almost discontinued during the war years; later the following quantities of brick were produced:

	Brick
1945	3,800,000
1946	3,500,000

Geology: The pit is cut in the 400-foot or highest terrace stage of Pleistocene alluviation. The present pit face consists of 1 to 2 feet of soil, 10 feet of silty yellow clay, 10 feet of gray clay, and 20 feet of yellow sandy clay. The various grades of clay at the face are mixed in mining. The clay is of transported origin. It was probably deposited in a stagnant backwater which had been ponded during the ace-age flooding and valley-filling stage of the Columbia drainage. Bedrock across Johnson Creek to the southwest consists of Boring lava,* and the terrace levels to the southeast at higher elevations consist of glacio-fluvial outwash deposits from the Sandy River drainage.

Equipment and processing: The clay is dug with a ¼-yard dipper electric shovel, which dumps into a 4-yard bottom-dump narrow gauge car, hauled by a small gasoline locomotive over 1500 feet of track to the dry storage shed. Shovel and car are operated by one man, who makes about 30 trips a day, delivering an average of 120 cubic yards of clay.

*Treasher, R. C., Geologic history of the Portland (Oregon) area: Oregon Dept. Geology and Min. Industries Short Paper 7, 1942.

The dry storage shed was completed in 1946, and is 80 by 125 feet in size. The pit car pumps directly into bins from an overhead trestle. A scoopmobile and bulldozer transfer stored clay into bins.

A 300-foot conveyor belt transports the raw clay to the main plant, where it passes through rolls and pug mill driven by a 150-hp. electric motor. The semi-automatic, rotary wire brick-cutter delivers the brick onto a loading belt. Green brick are stacked on steel drying cars, which are then placed in a tunnel dry shed 93 feet long containing 18 tracks, and heated by hog fuel firing together with waste heat from the kilns.

The kilns are the coal-fired, continuous Hoffman type. There are 22 chambers 10 by 25 feet in size, arranged in a single row about 270 feet long. They are fired progressively by coal fed through openings in the top of the chambers. The heat from the chambers being fired is carried into the next kilns to perform the preliminary drying and heating. Wyoming coal is used. Two blowers supply sufficient draft. Each chamber contains 24,000 brick, and there are about 9 kilns fired per week, giving an average monthly production of about 800,000 brick. The long storage shed parallels the railroad track, and is supplied with two sunken roadways for truck loading.

Fired brick are crushed and sacked for "Mortar-Mix." There are a number of car sheds, a change room, oil storage, tool, and smithy sheds, and a small office building.

Sylvan Brick Company (face brick)

Operators: Mr. H. R. Kreitzer, president; Mr. Charles E. Jensen, vice-president and general manager, Sylvan.

Location: Just east of Sylvan and north of State Highway 8 (Canyon Road) on the west boundary of Portland, in the center of the S½ sec. 6, T. 1 S., R. 1 E., at an elevation of about 750 feet.

Area and development: 13 acres. The clay pit has been mined back from the plant a distance of over 100 yards, and now has a face at least 50 feet high and 800 feet long. Thirty-six men are employed.

History and record of production: The clay pit at this locality was first opened up by Randles and Kinsey in 1893. It has been known by many names, among them "Standard Brick and Tile Company." It was taken over in 1933 by the Columbia Brick Works, and in August 1948 became the Sylvan Brick Works. Production during the war years has been restricted to face brick, although the plant is equipped to turn out a large variety of tile. Production since 1945 is given as follows:

	Brick
1945	4,500,000
1946	7,000,000
1947	7,000,000

Geology: The top of the clay lies at about 50 feet above the plant. A well drilled near the plant to a depth of 187 feet was still in clay, whereas basalt outcrops in the walls of the canyon below the plant and over the ridge to the west. The elevation is higher than most known deposits of transported clay in the Portland area. Several isolated, irregularly shaped pebbles of basalt and three or four water-worn pebbles of exotic rocks were found on the surface in the pit; they are reported to have been found in place in the clay. No lenses of pebbles or sandy material were seen or have been reported. At the east end of the pit the clay has a definite vertical structure caused by minute vertical holes, a typical loessal structure which is interpreted to have been caused by grass which was buried by the material. The origin of the thick clay section at Sylvan and of the clays and silts lying upon a weathered surface of Columbia River basalts in the Portland Hills and farther north has been a subject of discussion since it was first described.[1] Diller believed that even the

[1] Diller, J. S., A geological reconnaissance in northwestern Oregon: U.S. Geol. Survey 17th Ann. Rept., pt. 1, p. 485, 1896.

deposits as high as 660 feet in elevation were "evidently laid down in water." Darton[2] described it as a loess; and Treasher[3] states that it is in part water and in part wind laid. Libbey, Lowry, and Mason[4] believe that the presence of quartzite pebbles in the clay at Sylvan is conclusive evidence that it was water laid.

Equipment and processes: The clay is excavated with a bulldozer which moves it into a dry storage shed 100 by 300 feet in size holding several thousand yards. A belt conveyor runs beneath the storage shed, and the raw clay is fed to it by the bulldozer and by hand. It is lifted and dropped through a disintegrator and an 18-inch roll. From there it is carried by a short belt to an American pug mill and auger machine. Power is supplied by a 150-hp. electric motor. A dry pan crushes dried clay and green for a dry clay source which is carried by bucket elevator to a bin above the pug mill.

The auger machine has a capacity of 40,000 brick per day; the brick pass through a semi-automatic wire cutter. Brick are stacked on steel cars, and enter a 2-story tunnel drier by way of narrow gauge track and elevator. They remain in the drier about 3 days. The drying house contains 15 tracks, and is 100 feet long. It is heated by warm air from the cooling kilns, forced into the kilns by 2 small portable electric blowers and into the drier by 2 larger electric blowers.

From the drier house the brick is loaded from both sides into a double row of down-draft kilns, consisting of 11 units (5 on each side and 1 at the end) each unit being 11 by 40 feet in size and 12 feet high, with a capacity of 25,000 brick. The dimensions of the row of kilns are 40 by 230 feet. They are individually fired through 3 ports at each end of each kiln by six electric motor-driven "Enterprise" crude oil burners. There are two electric driven oil pumps which supply oil from the large storage tank, and maintain a closed circuit movement of the oil while the burners are not in operation. About 35 barrels of oil ($1.52 to $1.88 per barrel) are required to fire each kiln, and almost every day one kiln is finished firing (25 kilns during November 1946). The periodic kilns operate on a 12-day cycle as follows:

Stacking and unstacking	3 days
Drying and heating	2 days
Firing	2 days
Cooling	4 days
Final cooling with blower	1 day

The heat from the down draft kilns is carried from the duct beneath the kilns into and up through the next kiln where the brick are given preliminary water-smoking, drying, and heating, and is then pulled through a duct by the exhaust fan and stack. Another duct parallel and below this exhaust duct carries the heat from the cooling kilns to the drier house, thus transferring and using much of the waste heat. A round down-draft or beehive kiln 32 feet in diameter is used as an auxiliary for special work.

Brick from the kilns are stacked on pallets which are loaded directly upon trucks by means of 3-wheeled fork-trucks. There is a large amount of storage space for finished bricks. Other buildings contain a lunch room, small office, and show room, a wash room, and a machine shop.

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[2]Darton, N. H., Structural materials in parts of Oregon and Washington: U.S. Geol. Survey Bull. 387, p. 11, 1909.

[3]Treasher, R. C., op. cit., p. 14.

[4]Libbey, Lowry, and Mason, Ferruginous bauxite deposits in northwestern Oregon: Oregon Dept. Geology and Min. Industries Bull 29, p. 10, 1945.

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BIENNIAL REPORT

The sixth Biennial Report of the State Department of Geology and Mineral Industries covering the period from July 1, 1946, to June 30, 1948, has just been released by the Governing Board of the Department. This report, issued as Bulletin No. 38, contains more than just a description of the activities of the Department. Included also are a review of the State's mineral industries; lists of active mines and prospects, sand and gravel producers, brick and tile producers; and index maps showing topographic and geologic map coverage of the State. The report may be obtained free of charge at the office of the Department, 702 Woodlark Building, Portland, Oregon, or the field offices at Baker and Grants Pass.

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OREGON STEEL CHANGES HANDS

Gilmore Steel & Supply Co., San Francisco, has purchased the Oregon Steel Mills, Portland, according to A. T. Thies, vice-president and manager for the Gilmore organization, and new manager for the Portland plant.

Arthur Mears, Oregon president, will remain as consultant, Mr. Thies stated, and the newly acquired mill will continue under the name of Oregon Steel Mills without changes in operating policy.

Gilmore now operates a fabricating and distribution plant at Swan Island, and the new plant will serve to augment Gilmore operations on the West Coast. Oregon Steel Co. rolls bars, angles and light structurals, with annual capacity of 60,000 tons of ingots from two electric furnaces. The plant was built in 1942 by the Schnitzer interests and taken over by the Mears and Hall control a year later. Portland is a favorable point for the production of steel scrap and warehouse distribution throughout Oregon and eastern Washington, and its fabricating industries have expanded remarkably in the last decade.

Taken from Iron Age, November 9, 1948.

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A PAT ON THE BACK

Each month when the editor of the Ore.-Bin reads the Mining and Industrial News, San Francisco, he is attracted anew by its excellently written material. If there is a more entertaining column than "Rambling Rufe" published anywhere, this writer hasn't seen it.

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NEW DEPARTMENT GEOLOGIST

David White, formerly geologist with Alcoa Mining Company, has joined the staff of the State Department of Geology and Mineral Industries. White graduated in geology from the University of Texas and was in the Army for nearly 4 years, leaving in 1946. He then joined the staff of Alcoa working out of Hillsboro, Oregon.

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URANIUM DISCOVERIES

According to the Grants Pass Courier, the U.S. Geological Survey reports that a rich deposit of uranium has been found in Antelope Valley, Los Angeles County, California. The ore, yellow carnotite, was so close to the surface that it was exposed by gopher holes. The carnotite registers 80 (maximum) on the Geiger counter.

* * * * *

An A.P. dispatch in the Grants Pass Courier tells of the discovery of a new uranium mineral called "sengierite" (named after Edward Sengier, managing director of a mining company in Belgian Congo where the mineral was found). The mineral is green and is related to the yellow carnotite. Like carnotite, sengierite is about 60 percent uranium. The find will be one of utmost importance if the mineral turns out to be practical for uranium extraction.

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OREGON MINING NOTES

Currant Creek Mining, Inc., a company organized in Prineville, Oregon, is driving a crosscut to the southeast from the east side of Currant Creek, Jefferson County. It is said that an occurrence of antimony, known at the surface above, is sought at depth. It is also understood that silver and lead are expected in the ore. The work is located about 8 miles east of Ashwood below the Ashwood-Horseheaven highway.

* * * * *

Morris and Benson, in active charge at the Johnson Creek Mine of the Amity Mining Company, Ochoco area, Crook County, are erecting a 20-ton Nichols-Herreshoff furnace. Completion of the installation has been delayed by numerous obstacles. They hoped to start the furnace this fall. Underground development continues.

* * * * *

According to the Oregon Journal, the Deschutes Geology Club has announced the discovery of a 200-pound agate of gem quality. The location of the mineral has not as yet been announced.

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ART CHAMPION PASSES

Arthur J. Champion, long a familiar figure in the Prineville-Ochoco mountain area, died October 17, 1948. He was 66 years old. He was born in Michigan and came to the Ochoco area in 1909 where he followed his training as sawmill operator and woodsman for years.

His first venture in mining apparently was at the Mayflower gold mine. He and his partners made stakes there in the interval between 1916 and 1923.

He is credited with the discovery of several of the cinnabar prospects and mines in the Ochoco district. He and partners operated some of them.

Champion and partner, Mr. Hunt of Portland, operated the Mother Lode cinnabar mine during the years 1940-1941.

Of late years his natural longing to prospect for cinnabar and gold was prevented by ill health.

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FURTHER STOCKPILING FROM ABROAD IS PLANNED

It is expected that President Truman will recommend a further $600 million for carrying out the stockpiling program through the coming fiscal year. There seems no reason to believe at this time that there will be any improvement in the administration policy as far as domestic procurements are concerned.

The influences which caused the President to state he signed the Stockpile Act of 1946 "with reluctance" because of the "Buy American" clause still remain in the White House. The message still stands as a directive to the agencies concerned with stockpiling. They have deliberately warped the policy laid down by Congress in the opening section of the Act to conform with the President's wishes.

We are beginning to reap the harvest of this short-sighted policy. ECA is not too hopeful of getting much metal from abroad, the stockpiles are only 18 percent complete and

"badly out of balance," industry is short of metal, industrial manganese stockpiles are melting fast, and the morning headlines read "8 Snorkel Subs 'Sink, Wreck' War Game Fleet of 100 Ships." How about some domestic mineral self-sufficiency, Mr. President? Russia is reported to have 200 Snorkels.

From Pay Dirt, November 18, 1948.

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FROM THE GROUND UP*

The book discusses for the lay reader the problems of producing minerals and metals. The title arouses interest, and the reader's interest is held from the title to the end of the book. To anyone who has the welfare of the domestic mining industry at heart, the book is most timely. Mr. Tyler, who is exceptionally well qualified to discuss the subject, has filled his book with nourishing material. It is fervently to be hoped that those who guide our country's destiny will read this book carefully, understandingly, without bias.

*By Paul M. Tyler, Mineral Technologist, Rutgers University, New Brunswick, New Jersey.

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Ralph S. Mason Mining Engineer
T. C. Matthews Spectroscopist
M. L. Steere Geologist
R. E. Stewart Geologist
D. J. White Geologist

Field Offices

2033 First Street, Baker
N. S. Wagner, Field Geologist

714 East "H" Street, Grants Pass
Harold D. Wolfe, Field Geologist

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A REVIEW OF OREGON MINING IN 1948[1]

by

F. W. Libbey[2]

Introduction

Metal mining in Oregon has remained static during 1948 while nonmetals continued to be in large demand especially those nonmetallic minerals used in construction. Total value of production has increased substantially because of this demand.

Metals

Gold

There has been no increase in gold mining throughout the year. In fact, there are fewer dredges operating now than during 1947 (4 against 12); they are all in eastern Oregon. None of the gold lode mines which closed down because of war conditions has resumed production except the Buffalo mine in eastern Grant County. Here high-grade ore is sorted for shipment and the lower grade milled. When a car of Buffalo concentrates is shipped, the high-grade is included in the car. A small amount of exploration work has been done at three or four gold properties in southern Oregon. Twenty hydraulic mines operated when water was available.

The Legislature which meets in January will probably have a bill or bills presented designed to regulate surface mining under the theory that surface mining destroys agricultural land. It seems doubtful if bills of this kind will be passed. Under the present sad conditions in gold mining, gold dredging operators cannot stand regulation which will increase costs. It would be the last straw, and they would say to the chrome and quicksilver miners "move over."

Chrome

One chrome mine which is located on the Illinois River in Josephine County of southwestern Oregon attempted to operate during the first six months of the year. After struggling with rising costs and a low price, the mine closed down in June and pulled out its equipment. About 10,000 tons of metallurgical grade chrome was mined from this property during World War II. Considering the strategic nature of chrome, it would seem to be the part of wisdom for the Government stockpiling agency to contract for this chrome

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[1]Paper presented at annual meeting of Northwest Mining Association, Spokane, Washington, December 3, 1948.

[2]Director, Oregon Department of Geology and Mineral Industries.

at a price which would allow production and development in order to keep the mine active and to help build up the chrome stockpile which everybody knows is much too low for comfort in these uncertain times. However, the owner of the property could get no satisfaction from Washington concerning a contract. The underground workings in serpentine will not stay open very long in the absence of repair work. This means that should an emergency come, this property will require complete new reopening because we all know that in the event of war, as in the past, Government authorities would be frantically looking for domestic chrome production.

Mercury

In considering the mercury situation, there is some interest in the fact that one Oregon quicksilver mine, the Bonanza, continues to produce. This mine was one of the large producers during World War II. It is running its furnace about 12 days each month. Part of the ore is coming from development work. Production is at the rate of about 100 flasks a month. Now that nearly all of the country's quicksilver mines have been forced to close down, foreign metal will take over the domestic market. Then, of course, the cartel-controlled European quicksilver will go up in price. There has been a slight strengthening in the market price of quicksilver in the past two weeks and it may be that the rise has begun.

Copper, lead, and zinc

A small amount of new activity has been in evidence during the past summer in some southern Oregon and western Cascade mining properties. These mines, with the exception of the Ruth zinc mine in the North Santiam area, were all originally opened up because of gold values at or near the surface. Sulphides came in a short distance below the surface along with a reduction in gold and silver values. Generally speaking, copper, lead, and zinc are more important than gold in these properties at the present market prices for metals. Some underground work is being done at the Ruth mine but the greatest amount of activity is in the Bohemia district of southern Lane County southeast of Cottage Grove. Here a flotation mill built during World War II by the H and H Mining Company has been put into operation by the owner of the Champion mine, Fred Bartells. The mill treats ore from three properties, the Champion, Musick, and Helena.

Bauxite

Alcoa Mining Company has continued to drill and sample high-iron bauxite deposits in northwestern Oregon, mainly in Columbia County. Churn drilling was discontinued and auger hole drilling has been stepped up to sample areas between churn drill holes. It is impossible now to state whether or not the recently discovered bauxite deposits in Clackamas County are of importance in the picture. Sampling of the original discovery shows high silica material, also relatively high alumina. It may very well be that areal extent of the Clackamas County deposits will prove to be much less than in counties farther west and north.

Nonmetallics

Perlite

Dant & Russell, Inc., has continued to expand its operations. Output has been nearly all for plaster sand. This sand was used in plastering the new Equitable and Oregonian buildings in Portland and its use resulted in a very large saving in weight of the buildings. Recently the company has announced that it will build a $1,000,000 plant at the mine located on the Deschutes River in southern Wasco County. This new plant will consist of furnacing units and an addition to the present mill. Possibly an acoustical tile plant will be built also. The improvements at the mine will include new homes for employees and installation of new water and sewage systems.

Pumice

The demand for pumice has continued excellent throughout the year. Production in 1947 was 33,250 tons valued at $111,400. In 1948 production was greater but no definite estimates have been made. There has been some restriction of output due to scarcity of railroad cars. Central Oregon pumice is shipped to western Oregon, parts of western Washington, and into California. There seems to be no doubt that light-weight building blocks have come to stay. When building materials are in greater supply and competitive conditions return, some producers of the less desirable materials will be forced out of business.

Haydite

This light-weight material obtained by heating suitable clay or siltstone in a kiln is produced in one plant near Portland. The product is reported to be excellent as a light-weight aggregate.

Other construction materials

Sand, gravel, and crushed rock continue to be produced in relatively large quantities. In value this production amounts to nearly half of the total production of the State. Portland cement plants are running at capacity. There is apparently a shortage of portland cement in the Northwest, and because of the big construction program planned by the Corps of Engineers, this shortage is likely to become acute in the next year or two, unless there is a big increase in capacity started very shortly.

Gemstones

One of Oregon's profitable industries which receives little notice in the industrial world is the collection and cutting of agate and similar material. The business has grown by leaps and bounds during the last few years. It is impossible to obtain accurate estimates of value of production since the business is conducted both by hobbyists and commercial lapidary shops. The uncut material collected could be valued in many thousands of dollars. Value of the cut material would be in the hundreds of thousands of dollars.

Mining Regulations on O and C Lands

The so-called Oregon and California Railroad revested lands comprise 2,500,000 acres located west of the Cascades. They were incorporated in the public domain in 1916. From 1916 to August 1937 there was no question concerning the application of the United States mining laws to these lands the same as other public land. In August 1937 Congress passed a law establishing a program of sustained yield of timber on these lands. No mention was made in the law about application of the mining laws. However, the Secretary of the Interior in a formal interpretation of the law prohibited mineral entry and location on these lands and declared that all mining claims located after August 28, 1937, would be invalid. It is not difficult to explain the Secretary's position, as interested persons know that the Interior Department's desire has been and is to replace the mining laws with a leasing system on public land. The Department hoped to gain a foothold by establishing a leasing system on O and C land. In Oregon there was a ground swell of feeling at the injustice of the Secretary's interpretation. This feeling finally resulted in passage of Public Law 477 last April which reopened these lands to mineral entry and location. At the request of the Bureau of Land Management there was inserted in the law an innocent-sounding provision, requiring that copies of location notices as well as records of assessment work be filed in the U.S. District Land Office. This is, of course, in addition to filing under State law. To implement the law the Bureau of Land Management issued regulations which, of course, have the effect of law, establishing rules governing filing of location notices in the District Land Office. One rule is that in filing a location notice, if the claim is on surveyed land and the notice does not include a description of the claim by legal subdivisions,

the copy of the location notice must be accompanied by a letter giving legal descriptions. If the location is on unsurveyed land, and the copy of the location notice does not show the land located as connected by course and distance to the nearest corner of the public land surveys and does not give the probable legal subdivisions affected if the lands were surveyed, the copy of the notice must be accompanied by a statement giving that information or satisfactory reasons for not doing so. Who is to decide whether or not the reasons are "satisfactory"? The Land Office, of course. Will the claim owner be able to find out from the Land Office whether or not his reasons are "satisfactory"? Possibly he will, but it is easy to imagine the difficulties confronting the prospector in trying to get this information from the Land Office. Will the Land Office inform a potential claim jumper whether or not a claimant has filed a "satisfactory" statement? The effect of these regulations will be to cloud the title on many mining locations and will be a further obstacle in the way of the legitimate prospector in Oregon.

Every informed person knows that the country needs positive action in the way of encouraging mineral exploration. Several things are needed including rational tax laws, but from a "grass roots" standpoint ways should be found to encourage prospecting and discourage claim squatting. The mining industry should for once act as a unit in co-operation with federal departments that have to do with public lands so that there may be agreement in possible additions or changes in the mining laws and administrative regulations in order to give definite encouragement to prospecting and discovery. Congress would then be advised properly on how to proceed. This cooperation could be effected best probably by working through the Minerals Advisory Committee of the Department of the Interior, but in any event there should be action and soon.

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OIL PROSPECTING

Those who believe that Oregon has been adequately tested for oil and gas possibilities and therefore that the chances of finding oil and gas are nil should read two papers presented at the meeting of the Pacific Section, American Association of Petroleum Geologists, held in Pasadena, October 28 and 29, 1948. One of these papers entitled "Recent Developments in the Salinas Valley" by R. R. Thorup, consultant, King City, California, presents the case of a long search for oil in the Salinas Valley. His abstract reads as follows:

> "The discovery of oil in the Upper Miocene by the Texas Company at San Ardo in November 1947, culminated 47 years of unsuccessful exploration and 91 dry holes. In the ensuing ten months (to October 1948) an additional 38 wells have been drilled. These include three discoveries, 19 producing wells, 15 dry holes, and four wells currently drilling. . . .
>
> "Three different pools have been discovered and oil sands recently encountered by the Cleveland Oil Company north of San Ardo indicate the probability of a fourth pool. Oil sands on both sides of the King City fault suggest that the time of original accumulation was pre-King City fault."

Mr. Thorup makes the additional comment in a personal communication:

> "The discovery of oil in the Salinas Valley should be an object lesson for all those who would condemn a sedimentary basin strictly on the basis of a large number of dry holes drilled in the area, because that in itself is not enough evidence. All the ideas have to be thoroly tested before one can say the basin contains no oil. Practically all of the pre-discovery drilling had been based on the anticlinal theory, which in this area has so far failed to pay off. It was not until exploration was started in another part of the valley, with different geologic conditions, that oil was found in commercial quantities. So the history of drilling in this valley should serve as a warning to some, and a ray of hope to others, that oil can still be found in areas where numerous dry holes have been drilled."

The other paper, entitled "Russell Ranch Oil Field" by Mason L. Hill, geologist with the Richfield Oil Corporation, Bakersfield, California, discusses the recent discovery of two oil pools in Cuyama Valley. This is an excellent example of how an area containing rich accumulations of oil may lie practically unnoticed for years even in a highly petroliferous province like southern California where, during the past three quarters of a century, hundreds of geologists have been engaged in an intensive search for oil and gas. The abstract of Mr. Hill's paper reads as follows:

"The Cuyama Valley, lying in the Coast Ranges midway between the San Joaquin and Santa Maria districts, was established as a commercial oil producing province by the completion of Richfield Oil Corporation's Russell No. 28-5, on June 13, 1948. This new field is known as the Russell Ranch oil field. It is situated in the western portion of the valley and is producing from Lower Miocene sands on fault closures. Previously less than a dozen holes and one small producer from Upper Miocene sand (Norris Oil Company's Cuyama No. 2) had been drilled in the valley.

"Geologically the Cuyama Valley, between the Caliente and San Rafael uplifts, comprises granitic basement and Cretaceous to Pliocene strata folded and faulted in ESE trends. Eocene strata are present only in the eastern part of the valley, the Oligocene (?) is a red bed facies, 5000 feet of Lower Miocene sands pinch out southwestward, marine Miocene shales and sands grade eastward into red beds and the Pliocene strata are entirely non-marine.

"Initial production of the discovery well, Richfield Oil Corporation's Russell No. 28-5, was 508 barrels per day, flowing, 38° gravity oil, from the interval 2970-3360 feet. This interval is Lower Miocene and has been designated the Dibblee zone. Five days later another pool was established two and one-quarter miles to the northwest by completion of Richfield Oil Corporation's Anderson No. 37-30, flowing 3041 barrels per day, 33.5° gravity oil, from the interval 2800-3019 feet, also Lower Miocene. The former, named the Russell area, had on October 1, 1948, eight completed wells with initial rates to 2500 barrels per day, and maximum sand interval of 350 feet. The latter, designated Whiterock area, had nine completed wells with initial rates to 4000 barrels per day, and maximum sand interval of 480 feet. Also, on October 1, 1948, the Russell Ranch field had eight active development wells, while eight wildcats were drilling at locations as far as nine miles from production."

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CHROME ORE PRICE

According to the West Coast edition of Iron Age, issue of December 9, 1948, the Chromium Iron and Smelting Company is offering $21 a gross ton for chrome ore delivered at the Grants Pass, Oregon, area on Highway 199. Minimum specifications call for 45 percent Cr_2O_3 and 2.5 to 1 chrome-iron ratio. This company is treating chrome ore at Meade, Washington, in electric furnaces used during the war for the production of ferro-silicon.

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NEW ENGINEERING FIRM ESTABLISHED

Ivan Bloch and Associates, consultants for the Pacific Northwest and Alaska, announce opening of offices at 621 Park Building, Portland, Oregon. Mr. Bloch, formerly in charge of the Market Development Section of Bonneville Power Administration, includes in the field covered by his consultation service raw materials, power and fuels, water, labor, plant sites, transportation, and market surveys, as well as analyses of area and community development.

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MERCURY CARTEL JUMPS PRICE

The Wall Street Journal, issue of December 22, 1948, under a London date line carries the announcement that the European-controlled mercury cartel has boosted the price of the metal $14 a flask at Spanish and Italian ports. The cartel, called Mercurio Europeo, is a combination of Italian and Spanish producers and this set-up absolutely controls the price of quicksilver. The announcement states that the steep advance came as a complete surprise to the trade, even though a rise of some sort has been expected. The cost to United States consumers will jump from $78 to about $92 a flask owing to $19.25 tariff plus freight and insurance.

Beginning just before World War II the United States quicksilver industry was built up to a point where it could supply domestic demands. The incentive was a market price which allowed producers a profit. At first this price was governed by supply and demand when European quicksilver was cut off. Later the Government established a ceiling of $196 a flask and bought domestic production at that price, at the same time urging operators to produce at maximum capacity. Even before the end of the war when Spanish quicksilver became available, Government buying of domestic quicksilver stopped and the industry was told in effect to shift for itself. It then had to compete not only with cheap European labor and a cartel-controlled price but also had to buck a policy in this country which favored importing cheap foreign quicksilver. The Army did its part in kicking the domestic industry in the teeth by bringing in and dumping large quantities of Japanese quicksilver.

The inevitable results were foretold many times by people who knew the score. The price which had been $196 a flask when domestic supplies were needed for prosecution of the war finally settled down to $78-80 a flask where it has remained for a year or so. This price is the equivalent of about $56 in Europe, the price established by the cartel. Domestic mines operated at a loss for a while but nearly all of them finally gave up the ghost. Only two mines, the Sonoma in California and the Bonanza in Oregon, are producing at present.

S. H. Williston, Vice-President of Cordero Mining Company which operated one of the largest quicksilver mines of the country during the last war, summed up the situation in a talk at the American Mining Congress in San Francisco last September when he said: "The quicksilver industry has fewer mines in operation at the present time than at any time since 1849, and the current rate of production is now below that of the depression years of 1932 and 1933. After October 1, 1948, with the closing of the nation's largest producer, domestic production will be below the 6000 flasks per year of 1921 and 1922 and at the lowest level since the metal was first mined in this country in 1849. After October 1, 1948, we must count on importing over eighty-eight percent of our domestic requirements."

The cheap price set by the cartel and high operating costs in this country have worked according to the cartel's plan. Domestic production has been rendered inconsequential and now the price of the metal has been increased to a point which is just below that which would warrant reopening United States mines. This is the culmination of the post-war throttling of our quicksilver industry.

All of this would not be so very important to the country as a whole if quicksilver were not an essential war mineral. It takes time to reopen mines and build up production. In an emergency we must now depend upon foreign quicksilver.

F. W. L.

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MINERALOGY TAUGHT

Mr. Harold D. Wolfe, field geologist of the Department stationed at Grants Pass, is teaching a class in rock and mineral identification organized among members of the Grants Pass Mineral Society. A course in general geology will also be given.

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CLEARING HOUSE

CH-104:

Mr. Tom Aten, General Delivery, Newport, Oregon, wishes to obtain somebody with a car to help with prospecting and treasure hunting. Mr. Aten states that he has a "doodle bug" metal locator, good camping and mining outfit, and is a member of the United Prospectors (Sourdough) Union, card no. 316.

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