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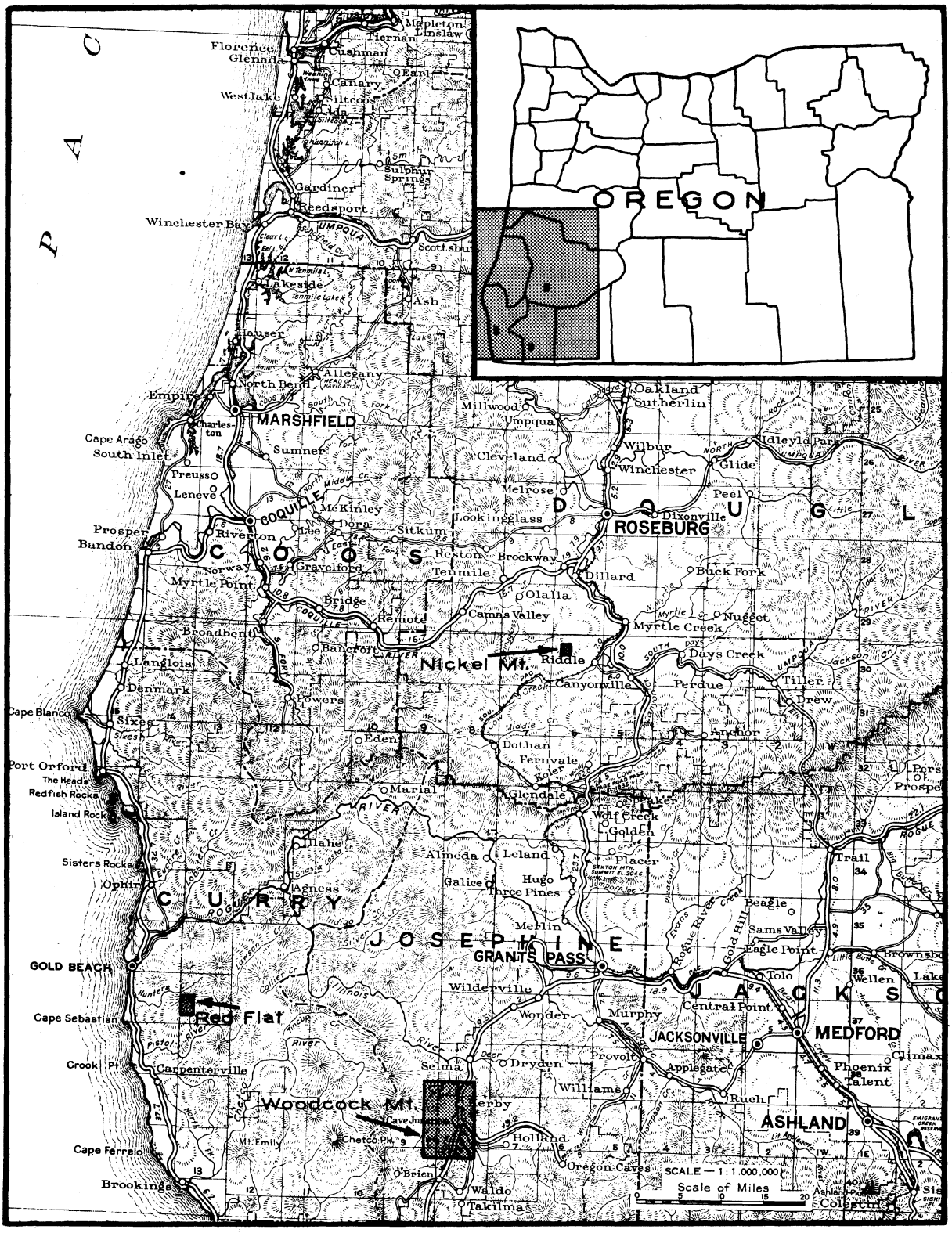
*Supplementary to "Nickel-Bearing Laterite, Red Flat, Curry County, Oregon" published in Ore.-Bin, March 1947.



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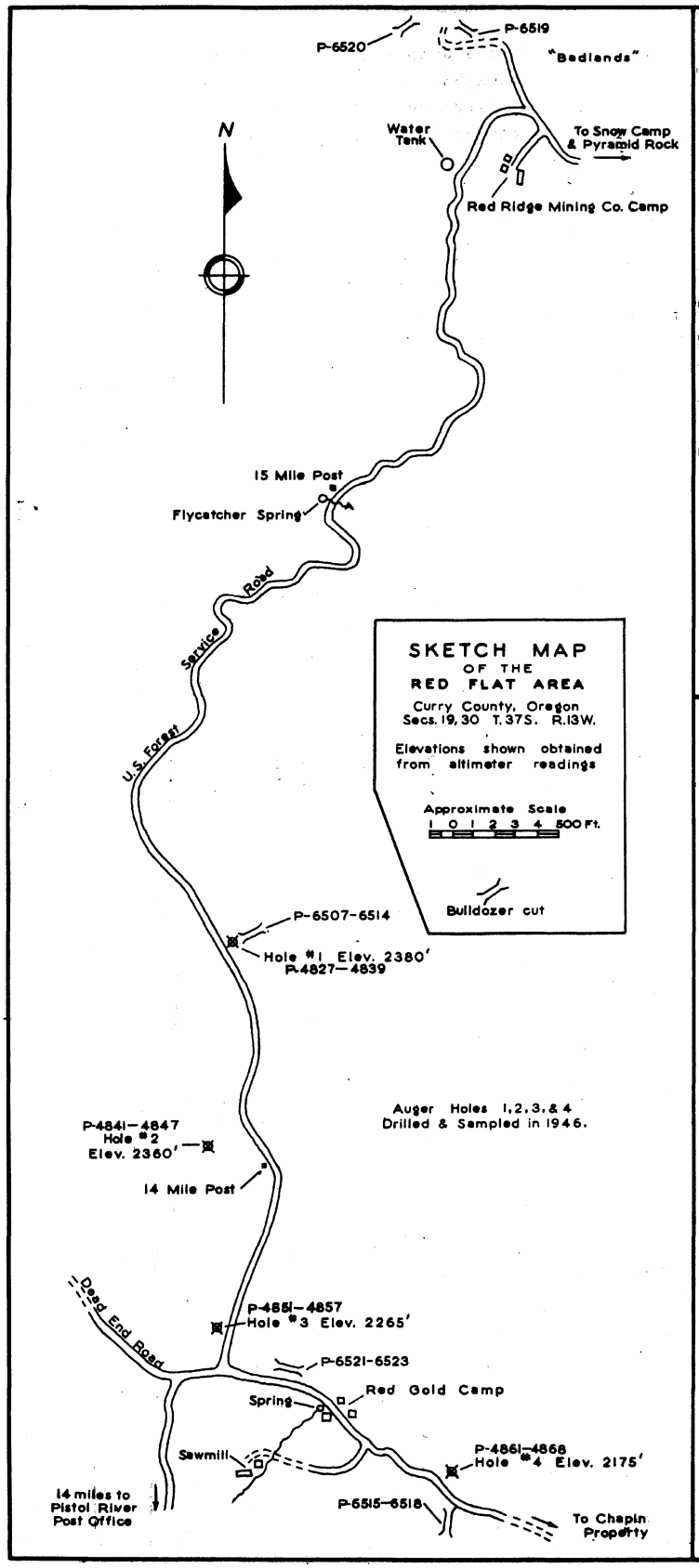
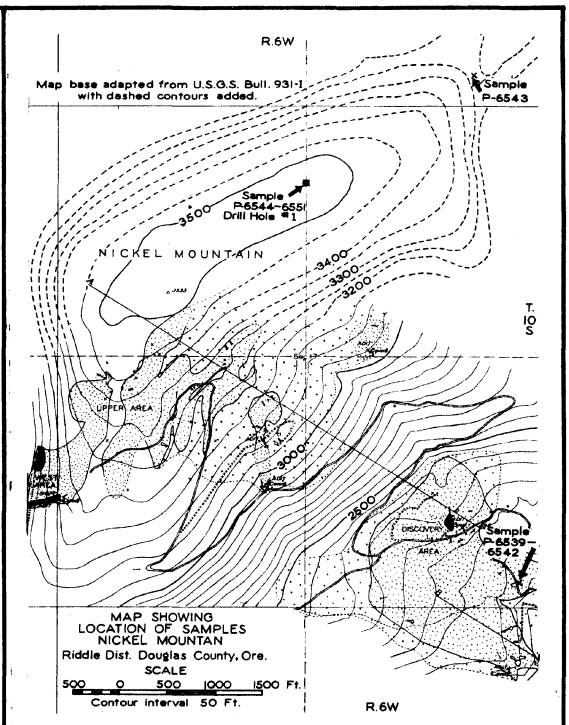
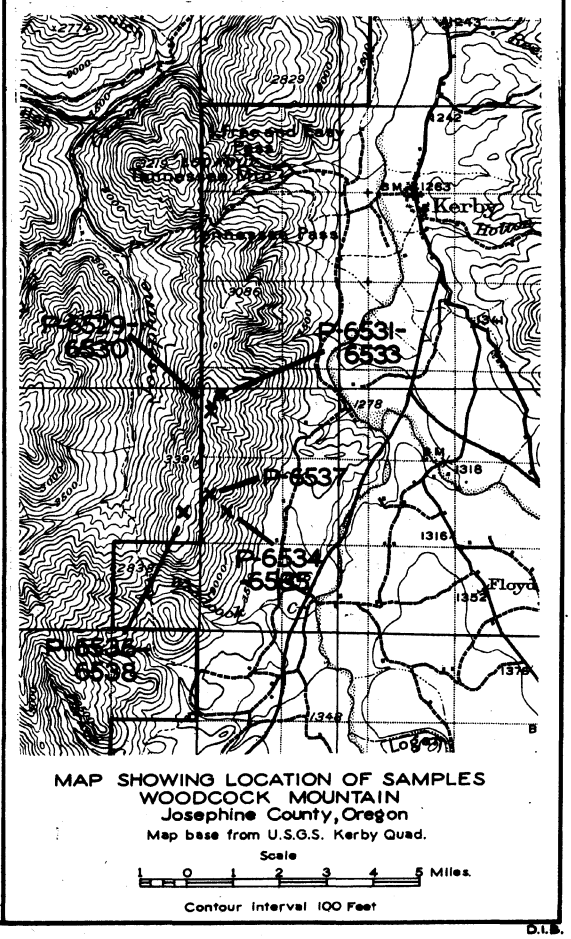
*Nickel deposit near Riddle, Douglas County, Oregon: U.S. Geol. Survey Bull. 931-I, 1942.


P-6520
P-6519
"Badlands"
N
Water Tank
To Snow Camp & Pyramid Rock
Red Ridge Mining Co. Camp
15 Mile Post
Flycatcher Spring
Service Road
U.S. Forest
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
1 0 1 2 3 4 500 Ft.
Bulldozer cut
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
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


Kerby
Holmes
P-6529-6530
P-6531-6533
P-6537
P-6534-6535
P-6536-6538
Floyd
Log
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

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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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