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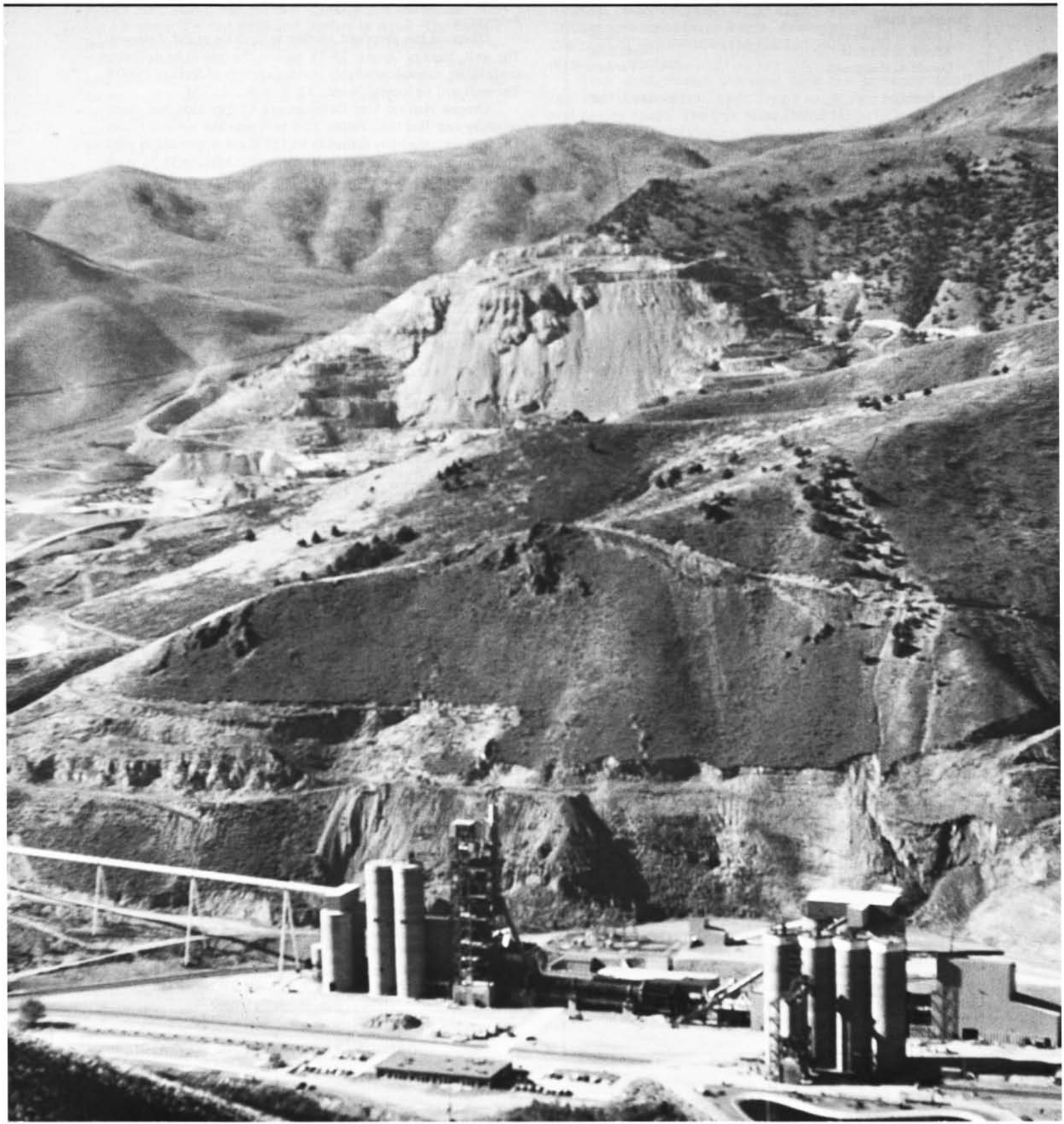

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COVER PHOTO

Oregon Portland Cement Company plant near Durkee, Baker County. Company's limestone quarry is in background. Article beginning on next page summarizes industrial activity in Oregon in 1982.

OIL AND GAS NEWS

Clatsop County

Diamond Shamrock Corporation has changed the name of its Hummel 22-19 well to Watzek 22-19. The proposed depth for the well was 5,000 ft, looking for Clark and Wilson sand, the same sand which produces gas in the Mist field 10 mi to the east. Brinker-Signal was the contractor. The well was drilled and abandoned in February.

Diamond has proposed another well, 5 mi to the southwest. The well, State of Oregon 23-33, will be the first to be drilled on land of State mineral ownership and has a proposed depth of 7,000 ft. The well will be located in sec. 33, T. 6 N., R. 7 W.

Oregon Natural Gas Development Corporation has unsuccessfully redrilled their Patton 32-9 well near the town of Olney. The well was originally drilled to 10,159 ft and suspended in 1982. The company may move next to its suspended Johnson 33-33 or one of two permitted locations, all in Clatsop County.

Mist Gas Field: New pool names

State Geologist Donald Hull has named two new pools at the Mist Gas Field. Reichhold Energy, operator of two new completed wells, suggested the pool names:

Well	Location	Pool name
Columbia County 13-34	SW¼ sec. 34, T. 7 N., R. 5 W.	Adams
Paul 34-32	SE¼ sec. 32, T. 7 N., R. 5 W.	Paul

Recent permits

Permit no.	Operator, well, API number	Location	Status, proposed total depth (ft)
199	Oregon Natural Gas Dev. Patton 32-9 007-00011-01	NE¼ sec. 9 T. 7 N., R. 8 W. Clatsop County	Abandoned.
204	Reichhold Energy Case 14-32 009-00096	SW¼ sec. 32 T. 7 N., R. 5 W. Columbia County	Location; name change from Case 24-32.
208	Reichhold Energy Wilson 11-5 009-00099	NW¼ sec. 5 T. 6 N., R. 5 W. Columbia County	Location; name change from Wilson 12-5.
226	Diamond Shamrock Watzek 22-19 007-00012	NW¼ sec. 14 T. 6 N., R. 6 W. Clatsop County	Abandoned; name change from Hummel 22-19.
227	Diamond Shamrock State of Oregon 23-33 007-00013	NE¼ sec. 33 T. 6 N., R. 7 W. Clatsop County	Location; PTD: 7,000.
228	Reichhold Energy Columbia County 23-28 009-00111	SW¼ sec. 28 T. 7 N., R. 5 W. Columbia County	Application; PTD: 2,600.
229	Reichhold Energy Columbia County 23-35 009-00112	SW¼ sec. 35 T. 7 N., R. 5 W. Columbia County	Location; PTD: 2,800.
230	Reichhold Energy Columbia County 14-33 009-00113	SW¼ sec. 33 T. 7 N., R. 5 W. Columbia County	Location; PTD: 2,800.
231	Reichhold Energy Longview Fibre 23-12 009-00114	SW¼ sec. 12 T. 6 N., R. 5 W. Columbia County	Location; PTD: 3,000.
232	Reichhold Energy Polak 31-12 009-00115	NE¼ sec. 12 T. 6 N., R. 5 W. Columbia County	Application; PTD: 3,000. □

Mineral industry in Oregon, 1982

by Len Ramp, Resident Geologist, Grants Pass Field Office; Howard C. Brooks, Resident Geologist, Baker Field Office; and Jerry J. Gray, Economic Geologist, Oregon Department of Geology and Mineral Industries

INTRODUCTION

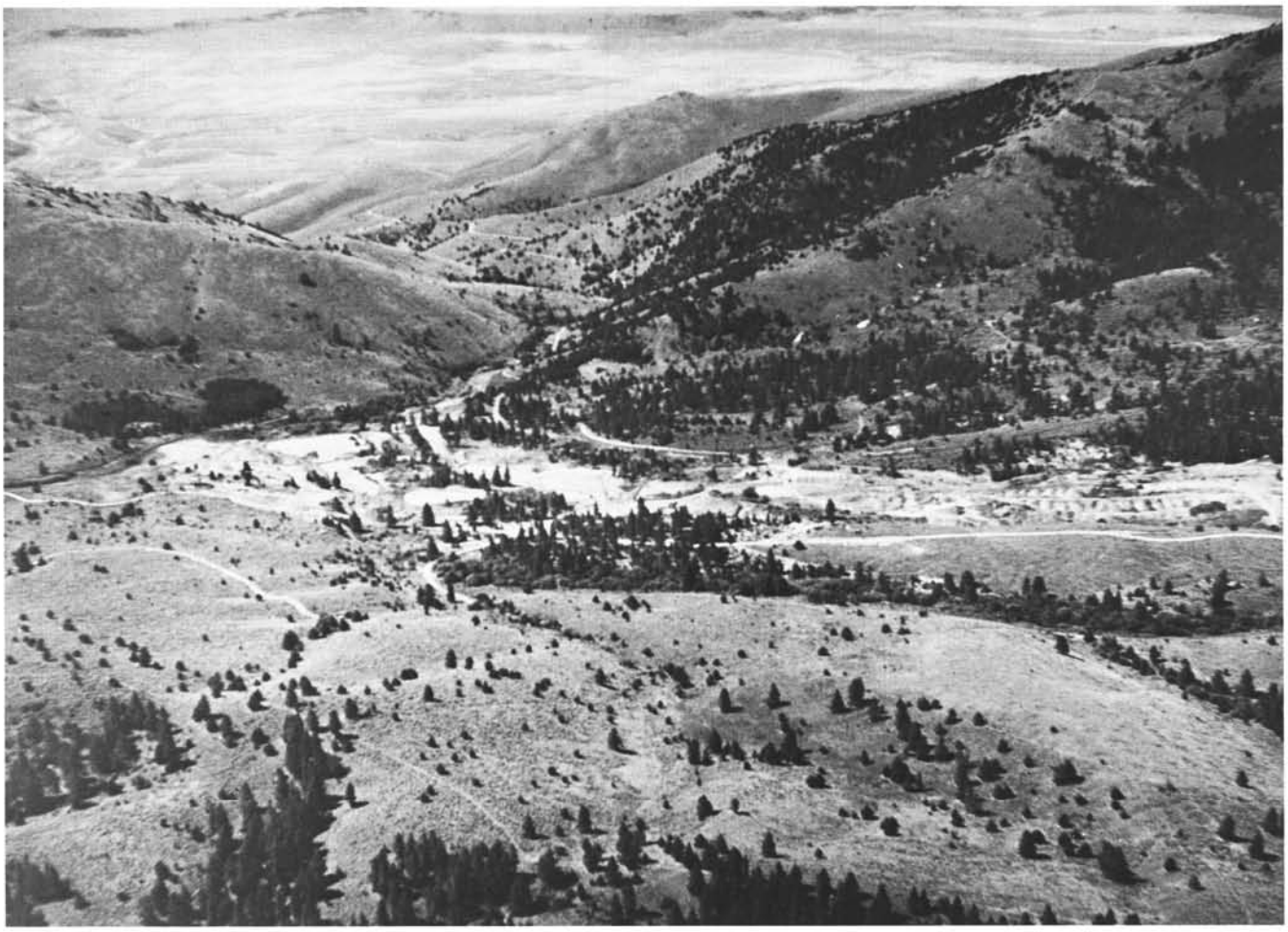
The value of Oregon's 1982 mineral production is down significantly from 1981 due to the serious recession in construction industries and the resulting supply-demand-affected metals price slump that led to a shutdown of the Hanna Mining Company's nickel mine and smelter in April. The Department did not conduct a systematic canvas of 1982 gold production (see *Oregon Geology*, v. 44, no. 4, p. 39), but shutdowns and somewhat reduced activity on the part of a few of the larger gold producers suggest a significant drop in the total production of this metal also.

METALS

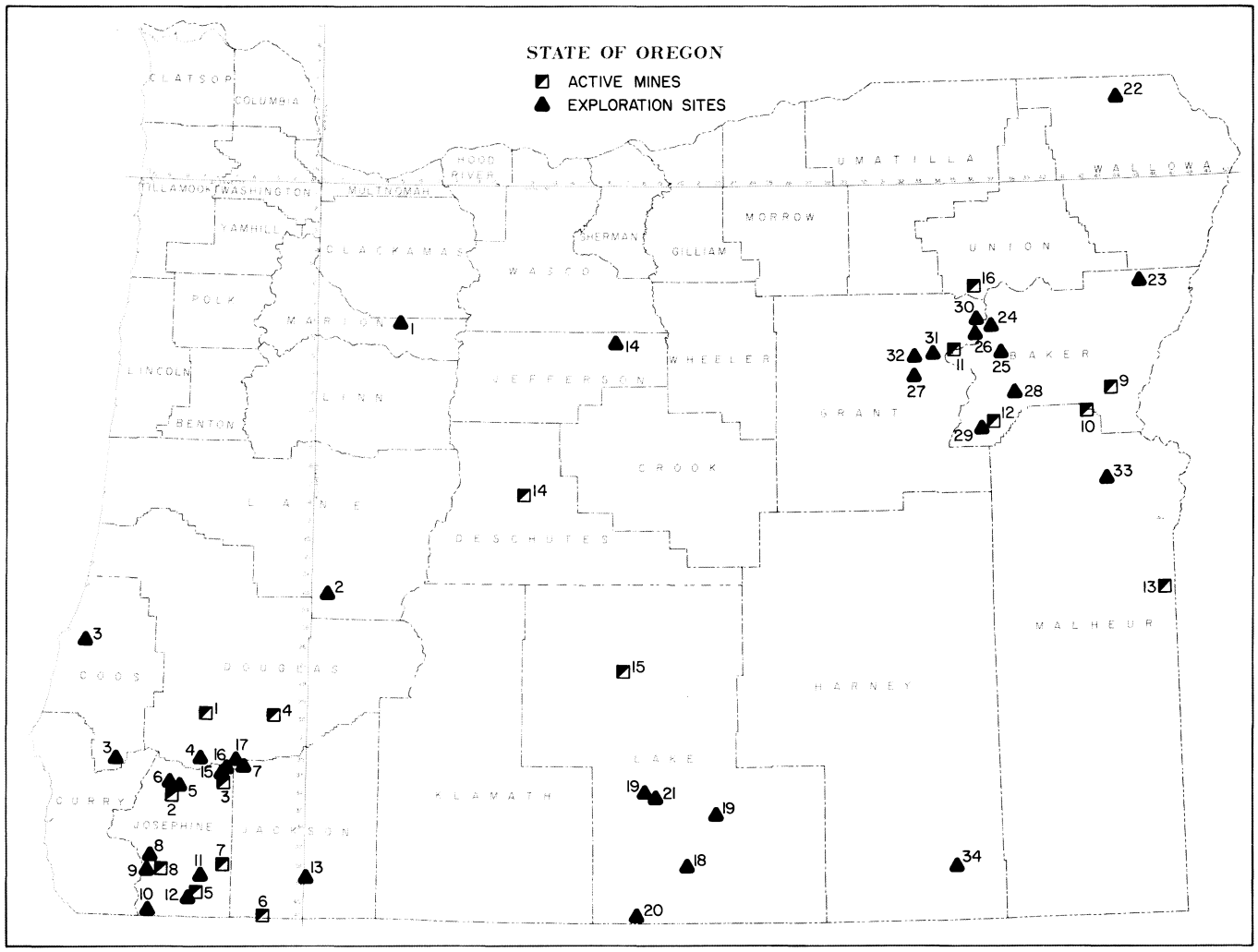
Several placer mines and a few small lode gold mines were in production during the year (see Table 1). The Mormon Basin Placer (Mine 10*), owned by Veta Grande Corporation, operated only sporadically in 1982. The Camp Carson Placer (Mine 16) operated from July through September but reportedly had problems with gold recovery and financing and was shut down through the remainder of the year. Although the Gallagher Placer on Sucker Creek (Mine 5) was shut down and dismantled during the year, several other small placer operations were active farther up on Sucker Creek. Numerous small itinerant placer operators using mostly Venturi-type floating dredges were active in the Rogue, Applegate, and Illinois River drainages of southwestern Oregon and contributed to the overall gold production.

Lode gold mining consisted of a few persistent small operations and several others trying to get into a productive and paying mode. The Pyx Mine (Mine 11) in Grant County was continued in operation by Myron Woodly and partners. Their ore is trucked to a small mill in Sumpter. The Thomason Mine (Mine 12) in Baker County has been operated in the summer months for the past several years by Art Cheatham and partners. Their ore is treated in a 1-ton-per-hour gravity mill near the mine. The old Greenback Mine (Mine 3) in Josephine County was reactivated late in the year by owner Wes Pieren and the newly formed Sunny Valley Mining and Development Company. They have opened up a new vein called the Greenback 2 situated about one-half mile southwest of the old workings. Ore is being processed in a small mill at the mine. Small

* All mine numbers refer to "Active Mines" on location map and in Table 1.



Aerial photograph of placer mine in the Mormon Basin, Malheur County.



EXPLANATION

ACTIVE MINES

1. Nickel Mountain Mine (Ni)
2. Old Channel Placer (Au)
3. Greenback Mine (Au)
4. Coffee Creek placers (Au)
5. Sucker Creek placers (Au)
6. Steatite of Oregon (soapstone)
7. Snowbird Mine (Au)
8. Josephine Creek placers (Au, josephinite)
9. Oregon Portland Cement (limestone)
10. Mormon Basin Placer (Au)
11. Pyx Mine (Au)
12. Thomason Mine (Au)
13. Adrian (bentonite-zeolite)
14. Cascade Pumice, Central Oregon Pumice
15. Christmas Valley Diatomite
16. Camp Carson Placer (Au)

EXPLORATION SITES AND AREAS

1. North Santiam area (Au, Ag, Cu, Zn)
2. Bohemia District (Au, Ag, Cu, Zn)
3. Coos County coal deposits
4. McCullough Creek area (Au, Ag, Cu, Zn)
5. Almeda Mine (Au, Ag, barite)
6. Yankee Silver Mine (Au, Ag)
7. Warner Mine (Au)
8. Fall Creek Copper Prospect (Cu)
9. Lightning Gulch Group (Au, Ag)
10. Turner-Albright Mine (Au, Ag, Cu)
11. Babcock Prospect (Au, Ag, Cu, Co)
12. Rainbow Mine (Au)
13. Ashland Mine (Au)
14. Oregon King Mine (Au, Ag)
15. King Midas Prospect (Au)
16. Fandora, Spotted Fawn Mines (Au)
17. Black Boy Mine (Cr)
18. Salt Creek area (Au)
19. Paisley Hills-Coyote Hills area (Au, Cu)

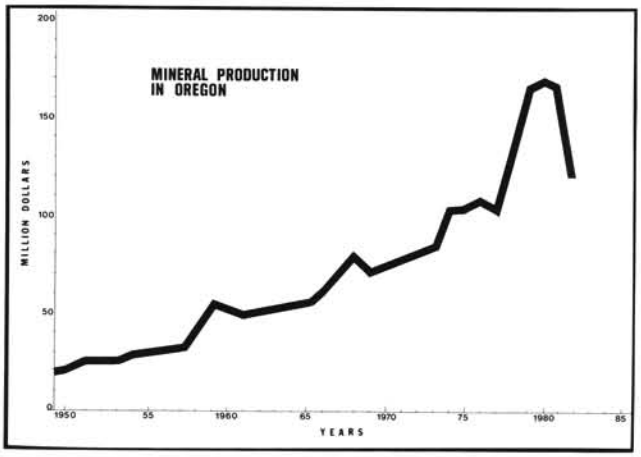
Mining and mineral exploration in Oregon, 1982 (excluding sand and gravel and stone). Active mines are keyed to Table 1; exploration sites are keyed to Table 2.

quantities of ore from the Snowbird Mine (Mine 7) were milled at Dave Vallandigham's mill on Powell Creek near Williams, Oregon. A former important producer of gold, silver, and copper, the Iron Dyke Mine near the Snake River in northeastern Baker County, was idle in 1982.

OREGON'S MINERAL PRODUCTION
MILLIONS OF DOLLARS

	ROCK MATERIALS SAND, GRAVEL, STONE	OTHER MINERALS & METALS CEMENT, NICKEL, PUMICE, ETC.	NATURAL GAS	TOTAL
1982	73	37	10	120
1981	85	65	13	163
1980	95	65	12	172
1979	111	54	+	165
1978	84	44	0	128
1977	74	35	0	109
1976	77	35	0	112
1975	73	33	0	106
1974	75	29	0	104
1973	55	26	0	81
1972	54	22	0	76
1971	56	22	0	78
1970	48	20	0	68

Summary of mineral production in Oregon for the last 13 years.



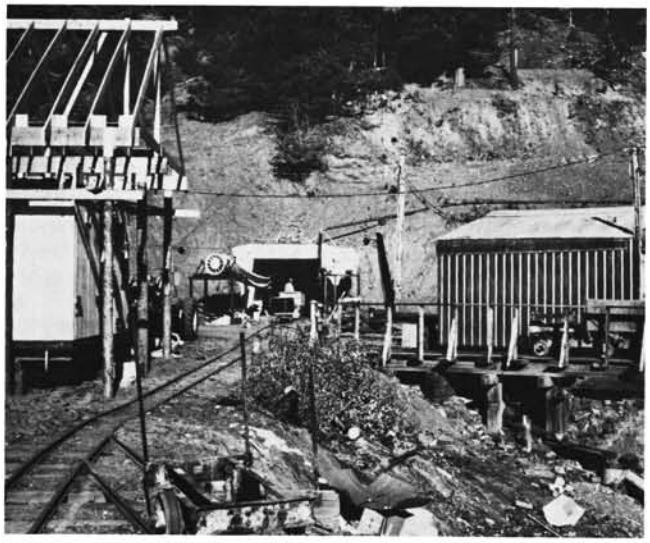
Mineral production in Oregon between 1950 and 1982.

Table 1. *Active mines in Oregon, 1982*

Map no.	Name	Location	Comments
1.	Nickel Mountain Mine	Sec. 17 T. 30 S., R. 6 W. Douglas County	Mine and smelter shut down in April.
2.	Old Channel Placer	Sec. 35 T. 34 S., R. 8 W. Josephine County	Continued production of placer gold from ripped-up bedrock.
3.	Greenback Mine	Secs. 32, 33, 5 Tps. 33, 34 S., R. 5 W. Josephine County	Development and start of production from new vein ½ mi southwest of old workings by Sunny Valley Mining and Development Co.
4.	Coffee Creek placers	Sec. 7 T. 30 S., R. 2 W. Douglas County	Part-time operations. Small production.
5.	Sucker Creek placers	– – – T. 40 S., Rs. 6, 7 W. Josephine County	Several operators.

Table 1. *Active mines in Oregon, 1982—continued*

Map no.	Name	Location	Comments
6.	Steatite of Southern Oregon	Secs. 10, 11 T. 41 S., R. 3 W. Jackson County	Continued production of block soapstone for carving.
7.	Snowbird Mine	Sec. 20 T. 38 S., R. 5 W. Josephine County	Small gold mine reactivated.
8.	Josephine Creek placers	Secs. 30, 36 T. 38 S., Rs. 8, 9 W. Josephine County	Several operators.
9.	Oregon Portland Cement	Sec. 11 T. 12 S., R. 43 E. Baker County	Continued production at reduced rate.
10.	Mormon Basin Placer	Sec. 21 T. 13 S., R. 42 E. Malheur County	Intermittent operation by Veta Grande.
11.	Pyx Mine	Sec. 1 T. 10 S., R. 35 E. Grant County	Myron Woodly and partners continued production. Ore is trucked to small gravity and amalgamation mill in Sumpter.
12.	Thomason Mine	Sec. 6 T. 14 S., R. 37 E. Baker County	Art Cheatham and partners. Small seasonal operation.
13.	Adrian (bentonite-zeolite)	Sec. 29 T. 23 S., R. 46 E. Malheur County	Teague Mineral Products. Continued production. Drying and bagging plant.
14.	Cascade Pumice, Central Oregon Pumice	Bend area Deschutes County	Continued production.
15.	Christmas Valley Diatomite	– – – T. 27 S., R. 17 E. Lake County	Oil-Dri West. Continued production for floor sweep and pet litter.
16.	Camp Carson Placer	Sec. 28 T. 6 S., R. 36 E. Union County	Intermittent production July through September.



Portal of Bald Mountain Mine, Baker and Grant Counties.

Table 2. *Exploration sites and areas in Oregon, 1982*

Map no.	Site or area name	Location	Commodity	Comments
1.	North Santiam area	Sec. 27 T. 8 S., R. 5 E. Marion County	Au, Ag, Cu, Zn	Vicinity of Ruth Mine. AMOCO continued exploration work.
2.	Bohemia District:	Lane County:		
	(a) Champion and Helena Mines	Secs. 7, 8, 12, 13 T. 23 S., Rs. 1, 2 E.	Au, Ag, Cu, Zn	Galactic Resources continued work; reopened 900-ft level of Champion Mine.
	(b) President Mine (El Capitain)	Sec. 23 T. 23 S., R. 1 E.	Au, Ag, Cu, Zn	Work continued on construction of mill by local group.
	(c) North Fairview, Lead Crystal, Elephant II, Lizzie Mines	Secs. 2, 11 T. 23 S., R. 1 E.	Au, Ag	Guy Leabo and associates continued constructing small mill.
3.	Coos County coal deposits	Coos Bay and Eden Ridge fields	Coal	Leasing and exploration continued by American Coos Bay Energy (formerly Canasia), and GCO; joint venture with Kennecott Minerals. Principal activity in Coos Bay field.
4.	McCullough Creek (Glendale) area	Secs. 30, 31 T. 32 S., R. 6 W. Douglas County	Au, Ag, Cu, Zn	Exxon continued exploration on leased acreage.
5.	Almeda Mine	Sec. 13 T. 34 S., R. 8 W. Josephine County	Au, Ag, barite	Comanche Petroleum and Blue Diamond Energy Resources ended their exploration program.
6.	Yankee Silver Mine	Secs. 25, 26 T. 34 S., R. 8 W. Josephine County	Au, Ag	Owner George Reynolds continued exploration of siliceous gold ore and had bulk samples mill tested.
7.	Warner Mine	Sec. 4 T. 33 S., R. 4 W. Jackson County	Au	Galactic Resources continued exploration and development of the gold deposits.
8.	Fall Creek Copper Prospect	Sec. 4 T. 38 S., R. 9 W. Josephine County	Cu	Mining Enterprises exposed a zone of massive sulfides in serpentinite.
9.	Lightning Gulch Group	– – – Tps. 38, 39 S., R. 9 W. Josephine County	Au, Ag	FMC continued exploration in the area.
10.	Turner-Albright Mine	Secs. 15, 16 T. 41 S., R. 9 W. Josephine County	Au, Ag, Cu	Noranda continued exploration program initiated by Baretta Mining.
11.	Babcock Prospect	Sec. 5 T. 39 S., R. 6 W. Josephine County	Au, Ag, Cu, Co	Moly Corporation did preliminary mapping and sampling of this volcanogenic massive sulfide deposit.
12.	Rainbow Mine	Sec. 12 T. 40 S., R. 7 W. Josephine County	Au	Siskron Mining completed a 400-ft crosscut adit intersecting vein about 200 ft below old workings and is drifting south on the vein to intersect a projected ore shoot.
13.	Ashland Mine	Sec. 6 T. 39 S., R. 1 E. Jackson County	Au	Touchstone Resources conducted an exploration program of mapping, sampling, and drilling.
14.	Oregon King Mine	Sec. 30 T. 9 S., R. 17 E. Jefferson County	Au, Ag	Conaka Metals drilled mine. It was also looked at by other companies.
15.	King Midas Prospect	Sec. 28 T. 33 S., R. 5 W. Josephine County	Au	Prospected by local group. Bulk samples mill tested.
16.	Fandora and Spotted Fawn Mines	Sec. 22 T. 33 S., R. 5 W. Josephine County	Au	Fortune Mining Company of Eugene opened mines and plan installation of small mill.
17.	Black Boy Mine	Sec. 5 T. 33 S., R. 4 W. Douglas County	Cr	Dick Webb and associates developing massive chromite deposit.
18.	Salt Creek area	Sec. 18 T. 38 S., R. 21 E. Lake County	Au	Freeport Minerals locating claims, mapping, and sampling. Plan to drill.
19.	Paisley Hills-Coyote Hills area	– – – T. 34 S., Rs. 18, 19 E. and T. 35 S., Rs. 22, 23 E. Lake County	Au, Cu	Chevron exploring, mapping, and sampling.

Table 2. *Exploration sites and areas in Oregon, 1982—continued*

Map no.	Site or area name	Location	Commodity	Comments
20.	Dry Creek-Fitzwater Point area	— — — T. 41 S., R. 18 E. Lake County	Au, Hg	U.S. Steel exploring large group of claims.
21.	Tucker Hill area	— — — T. 34 S., R. 19 E. Lake County	Both metallic and nonmetallic	Houston International exploring large group of claims.
22.	Floral coal deposits	Northern Wallowa County	Lignite coal	Utah International still unable to obtain permit from county to explore and sample.
23.	Cornucopia Mine	Secs. 27, 28 T. 6 S., R. 45 E. Baker County	Au, Ag	United Nuclear (mining and milling) continued work through 1982, reopening, rehabilitating, and sampling old workings. A diamond drilling program is planned.
24.	North Pole, E and E, and Columbia Mines	Sec. 32 T. 8 S., R. 37 E. Baker County	Au, Ag	Brooks Minerals and AMAX continued exploration and development until September when AMAX withdrew. Approximately 5,000 ft of old workings rehabilitated and 3,000 ft of new work done.
25.	Sumpter Valley Placer	— — — T. 10 S., Rs. 37, 38 E. Baker County	Au	Noranda completed drilling program on large area of dredged land but has not reported findings.
26.	Bald Mountain and Ibex Mines	Sec. 4 T. 9 S., R. 36 E. Baker and Grant Counties	Au, Ag	Nerco continued exploration and development work, rehabilitating about 3,000 ft of old workings, driving about 2,000 ft of new drifts, and conducting extensive underground diamond drilling.
27.	Dixie Meadows Mine	Sec. 23 T. 11 S., R. 33 E. Grant County	Au, Ag	Western Nuclear conducting underground exploration.
28.	Hereford area	— — — T. 12 S., R. 38 E. Baker County	Au, Ag, Sb, Mo	AMAX and American Selco have acquired land positions and started exploration.
29.	Grouse Spring Prospect	— — — T. 14 S., R. 36 E. Baker County	Cu, Mo	Manville did some drilling and leased the adjoining Record Mine claims.
30.	Cable Cove district	— — — T. 8 S., R. 36 E. Baker and Grant Counties	Au, Ag	AMAX diamond-drilled the Herculean, Red Chief, and Last Chance veins.
31.	Vinegar Hill-Sunrise Butte area	— — — T. 10 S., R. 34 E. Grant County	Mo, Au	American Copper and Nickel is mapping, sampling, and drilling Sunrise Butte pluton.
32.	Susanville district	— — — T. 10 S., R. 33 E. Grant County	Au	American Copper and Nickel continued work in the area, including trenching and drilling.
33.	Northern Malheur County, including Vale area	— — — — — — Malheur County	Au	Freeport, Homestake, and Manville have established land positions and are prospecting for epithermal gold deposits.
34.	Southern Harney County near Fields	— — — — — — Harney County	Au	FMC and Inspiration Development have established land positions and are prospecting for epithermal gold deposits.

NONMETALS

Steatite of Southern Oregon (Mine 6) continued production of block soapstone for carving at about the same rate as 1981. Stone is shipped as far as New York and Alaska. Alaska, where most of the stone is used in the production of genuine Eskimo carvings, is their biggest customer.

Oregon Portland Cement Company operated its plant and quarry at Durkee only eight months in 1982 due to depressed demand for building materials coupled with high cement inventories. The Lake Oswego plant remained closed. In July, the company celebrated production of the first million tons of cement clinker from the modern coal-fired plant at Durkee. The three-year-old computerized installation has an annual capacity of 500,000 tons of cement. Both limestone and shale used in the manufacture of cement are quarried near the plant site.

The Teague Mineral Products drying, grinding, and bagging plant near Adrian (Mine 13) continued production of bentonite and zeolite. The bentonite is mined from pits near the head of Sucker Creek; the zeolite comes from deposits near Rome, Oregon.

EXPLORATION AND DEVELOPMENT ACTIVITY

Coal

Coos County Coal (Site 3**) is still the subject of considerable interest and exploration activity. American Coos Bay Energy, Inc. (formerly Canasia), has tied up large acreages of county and private leases in the Coos Bay area; GCO Minerals, in joint venture with Kennecott Minerals, has also developed a land position and is conducting an exploration program including mapping and drilling in the Coos Bay field.

** All site numbers refer to "Exploration sites and areas" on location map and in Table 2.

Utah International remains interested in the lignite deposits of northern Wallowa County (Site 22) but has been unable to get a permit from the County to mine 233 cubic yards for bulk sample analysis to check the quality of the resource. Other companies are involved in exploring these extensive lignite deposits across the border in southeastern Washington.

Precious and base metals

Exploration activity around the state continued at a fairly good pace in spite of the depressed metals market. The principal areas of interest continue to be northeastern Oregon, with Baker and Grant Counties, and the southwestern part of the state, with Douglas, Josephine, and Jackson Counties. Interest in Tertiary epithermal gold mineralization associated with siliceous volcanic rocks has centered in southern Lake, Harney, and northern Malheur Counties.

Activity in the Cracker Creek District of western Baker County was continued in 1982. Brooks Minerals and AMAX continued exploration and development at the E and E and North Pole Mines (Site 24) at Bourne, 6 mi north of Sumpter, until late September, when AMAX withdrew from the joint venture. Brooks Minerals acquired the property in early 1980 and was joined by AMAX shortly afterward. Approximately 5,000 ft of old workings on the E and E and North Pole Mines have been rehabilitated, and 3,000 ft of new work was done. The Jevne adit has been driven 600 ft to date. This is a projected 3,800-ft crosscut to intersect the North Pole-Columbia lode about 360 ft below existing adit level access. The lode consists of a mineralized fracture zone in argillite, measures 10 to 300 ft in thickness, and is traceable for about 4½ mi. Total combined production from this zone has been about $9 million, mostly prior to 1916.

The Bald Mountain and Ibex Mines (Site 26) on the Baker-Grant County line about 5 mi southwest of Bourne is being explored by NERCO, Inc., who acquired the properties in 1980. Progress by the end of 1982 included rehabilitation of about 3,000 ft of old workings, 2,000 ft of new drifts and crosscuts, and 39,000 ft of diamond drilling. The company plans to continue exploration and development, mainly by diamond drilling. A moderate-size mill is contemplated, if sufficient reserves can be developed. The Bald Mountain-Ibex vein is a mineralized fault zone in argillite and is from 8 to 20 ft thick. Estimated past production is about 9,000 oz of gold and 150,000 oz of silver.

At the Cornucopia Mine (Site 23), 10 mi north of Halfway, Oregon, United Nuclear Corporation (mining and milling) reopened and rehabilitated both the Coulter and Clark level crosscut adits which were the main accessways to the 36 mi of workings of the old mine which had not been operated since October 1941. Prior to 1941, the mine produced about $10 million in gold and silver from two roughly parallel veins, the Union-Companion and Last Chance, which are about 2,500 ft apart, average 4 ft in width, and dip steeply in granodiorite and hornfelsed greenstone. The Coulter Tunnel, a 6,800-ft crosscut to the Union vein, is the lowest adit level of the mine and was the main haulage way during the last phase of mining in 1936-1941. The Clark level adit, 985 ft vertically above the Coulter, gave access for earlier work on both the Union-Companion and Last Chance veins. UNC's plans include reopening an underground shaft and old workings on the Union-Companion vein below the Coulter level where very little mining has been done. UNC stopped work in October 1982, but local representatives are hopeful that exploration efforts will be resumed in the spring of 1983.

(Continued on page 45, **Mineral industry***)*

Significant earthquakes up slightly worldwide in 1982

The number of significant earthquakes in the world in 1982 rose slightly from 1981, but the number of people killed in earthquakes was down by one-third, according to the U.S. Geological Survey (USGS).

Only one of 1982's significant earthquakes occurred in the United States and was centered in the Aleutian Islands. This was the lowest number of significant quakes in the United States since 1974 when none occurred. A significant earthquake is defined as one that registers 6.5 or more on the Richter Scale or one of smaller magnitude that causes casualties or considerable damage.

Worldwide, there were 56 significant earthquakes last year, six more than in 1981 and just about the annual average during the past few years, according to Waverly Person, a USGS geophysicist at the Survey's National Earthquake Information Service in Golden, Colorado.

The 1982 death toll was only about two-thirds of the 5,239 persons reported killed in earthquakes in 1981, most of them in two strong quakes in Iran. The long-term average, however, is about 10,000 earthquake-related deaths per year. No one has been killed in the United States by an earthquake since November 29, 1975, when two persons were killed by a tsunami (seismic sea wave) generated by a 7.2 magnitude earthquake in Hawaii.

Based on data collected by the USGS from about 3,000 seismograph stations around the world, Person said the strongest earthquake in the world in 1982 was a 7.7 magnitude quake December 19 in the Tonga Islands region in the South Pacific Ocean. No damage or casualties were reported in this region, where major earthquakes are common.

The Tonga Islands quake was among ten major earthquakes (those registering 7.0 to 7.9 on the Richter Scale) in the world during 1982. The long-term average is 19 quakes per year with magnitudes of 7.0 or more. For the second consecutive year, no great earthquakes (those with magnitudes of 8.0 or more) occurred in the world. The last great earthquake was a magnitude 8.0 quake July 17, 1980, in the Santa Cruz Islands in the South Pacific.

The strongest 1982 quake in the United States was a 6.5 magnitude tremor January 25 in the Fox Islands in the Aleutians, but there were no reports of any damages or casualties. In the conterminous 48 states the strongest earthquake was a 5.5 magnitude tremor September 24 along the California-Nevada border south of Hawthorne, Nev., and southeast of Mono Lake, Calif. No damages or casualties were reported.

There were 404 earthquakes in the United States last year that were reported to the USGS as being felt by people. This was 33 more "felt" earthquakes than reported in 1981.

As in 1981, Hawaii led all other states with 137 quakes, followed by California with 108 and Alaska with 44.

The total number of "felt" quakes in other states were Arkansas 14; Idaho 11; Nevada 10; Maine 8; New Hampshire 7; Connecticut, New Mexico and Washington 6 each; Vermont 5; Massachusetts and Montana 4 each; Arizona, Colorado, Georgia, Tennessee and Texas 3 each; Alabama, New York, South Carolina, South Dakota and Utah 2 each; and Iowa, Minnesota, Missouri, Mississippi, Nebraska, New Jersey, North Carolina, Oklahoma and Pennsylvania 1 each.

Person said the USGS normally locates between 6,000 and 7,000 earthquakes worldwide each year that range in magnitude from about 3 up to 8 or more on the Richter Scale. Probably several million earthquakes occur each year, he said, but most are so small in magnitude or they occur in such remote areas that they are undetected by even the most sensitive instruments in the worldwide seismograph network.

– USGS news release

PUBLICATIONS RECEIVED

From time to time we print information about new publications that have been recently added to our library. These publications are available, for inspection only, in the Department's library, which is located in Room 901, State Office Building, Portland.

Elements of Soil Mechanics for Civil and Mining Engineers, 5th edition, by G.N. Smith. Published by Granada Publishing Ltd.; available in the U.S. from Renouf USA, Old Post Rd., Brookfield, VT 05036. 493 p., 1982, paper $21.75.

The fifth edition of this well-established book is a published response to the rapidly accelerating development in the field of soil mechanics. It covers the changes that have occurred during the last five years in a concise presentation of the applications of soil mechanics that will satisfy today's teaching and professional requirements.

Mineral and Rock Table, compiled by P. Lof. Published by Elsevier Science Publishing Co. Inc., 52 Vanderbilt Avenue, New York, NY 10017. Chart measuring 28 × 52 inches; available in the following quantities: 10 copies, $78.75; 20 copies, $125.50; 50 copies, $293.50; and 100 copies, $510.50.

This wall chart features all the world's important rock-forming and ore minerals. It includes full-color photomicrographs and optical and physical properties of 74 rock-forming and 53 ore minerals taken in plane- and cross-polarized light. The chart also contains comprehensive diagrams featuring all important rock classifications, full indexing, and a Michel-Lévy chart. □

Oregon AEG plans field trip

The Oregon Association of Engineering Geologists' annual field trip is scheduled for June 11 and 12, 1983. The group will leave at 8:00 a.m. from Portland to tour John Day country and the Columbia River Gorge. Topics to be covered during the two days include geothermal resources of Oregon; geotechnical, water-resources, and planning aspects of Rajneeshpuram; and engineering geology aspects of the Columbia River Gorge.

The registration fee of $65 covers transportation, guide books, snacks, lunches for both days, and a banquet dinner at Rajneeshpuram. For approximately $30, overnight accommodations are available at either Rajneeshpuram or Madras.

Reservations and a $20 deposit are necessary by April 15, 1983. The balance is due at registration. Reservations are limited to the first 40 received. Send registration payable to: Tom Kuper, Century West Engineering Corporation, P.O. Box 1174, Bend, Oregon 97709. For more information, contact Tom at (503) 388-3500 or Marie Marshall at (503) 757-4474. □

Wanted: Mined Land Reclamationist of the Year nominees

All our readers are reminded it is time to identify the potential 1983 Mined Land Reclamationist of the Year.

Criteria to consider include the future value of the site to the owner and the community; the imagination, innovativeness, and effectiveness of the completed reclamation; safety; aesthetics; and general appropriateness to the local environment.

Anyone can nominate a site deserving of recognition by calling 967-2039 or by writing to Mined Land Reclamation Program, 1129 SE Santiam Road, Albany, OR 97321. May 31, 1983, is the deadline. □

Mount St. Helens revisited

The U.S. Geological Survey has published a new account of the Mount St. Helens eruptions of 1980: *Volcanic eruptions of 1980 at Mount St. Helens. The first 100 days*, by B.L. Foxworthy and M. Hill (USGS Professional Paper 1249, 1982). The 125-page report was designed to be of interest to, and understood by, a general audience. It is extensively illustrated with maps, diagrams, and photographs, most of them in color. It was also intended to serve public land managers by demonstrating day-by-day reactions during a natural disaster.

The report uses information obtained from published reports, eyewitness accounts, news releases, and scientific studies as it recounts the events of each single day from March 20 to June 27, 1980. This chronology is complemented by introductory discussions of the Cascade volcanoes, the volcanic history of Mount St. Helens, and early warnings of the hazards and concludes with summaries of conditions, continuing hazards, and the Survey's hazard responsibilities; finally, a glossary explains technical terms, and a bibliography lists titles for further reading.

This publication complements USGS Professional Paper 1250 (1981), which is a detailed account of the scientific aspects of the several eruptions at Mount St. Helens and their aftermath. Both reports are dedicated to David A. Johnston, a 30-year-old USGS volcanologist from Menlo Park, California, who was killed at an observation post on a ridge about six miles north of the volcano's summit when the May 18 eruption occurred.

The new report, Professional Paper 1249, is available from the regional USGS Public Inquiries Office, 678 U.S. Courthouse, West 920 Riverside Ave., Spokane, WA 99201, at a price of $8.50. □

GSOC luncheon meetings announced

The Geological Society of the Oregon Country (GSOC) holds noon meetings in the Standard Plaza Building, 1100 SW Sixth Avenue, Portland, in Room A adjacent to the third floor cafeteria. Topics of upcoming meetings and speakers include:

May 6—*Cascade Stream and Pond*, by Roger Yerke, education specialist, Washington Park Zoo.

May 20—*Mayan Culture*, by Betty Ferguson, Audubon representative and naturalist.

For additional information, contact Viola L. Oberson, Luncheon Program Chairwoman, phone (503) 282-3685. □

(**Mineral industry**, *continued from page 44)*

In southwestern Oregon, most of the exploration activity reported for 1981 (*Oregon Geology*, v. 44, no. 4) continued into 1982 (see Table 2). The Turner-Albright Mine (Site 10), explored by Baretta in 1981, was taken over by Noranda in 1982. They did additional drilling, mapping, sampling, and evaluation of all the accumulated data which indicate important bodies of gold-bearing massive sulfides. Work ended late in the year. Noranda has recently dropped its option, and future plans for development are indefinite.

The shutdown of Hanna Mining Company's nickel mine and smelter in Douglas County reflects the status of the nation's steel industry, and this overall picture has resulted in the ending of many years of nickel-laterite exploration in southwestern Oregon. Virtually no activity took place in 1982.

Geologic maps of mineralized areas in Baker and Grant Counties published by the Oregon Department of Geology and Mineral Industries (DOGAMI) in 1982 include GMS-19 (Bourne quadrangle) and GMS-22 (Mt. Ireland quadrangle). Maps of the Granite, Greenhorn, and Bates quadrangles are in progress, and mapping projects of a similar nature have been started by DOGAMI in Josephine County, southwestern Oregon. □

Results of southeastern Oregon geochemical sampling program released

During the 1982 field season, the Oregon Department of Geology and Mineral Industries (DOGAMI) conducted a geochemical sampling program evaluating the mineral potential of 18 Bureau of Land Management (BLM) Wilderness Study Areas in Harney and Malheur Counties, southeastern Oregon. As part of this project, 1,491 stream, rock-chip, and soil samples were collected and analyzed for gold, silver, arsenic, barium, beryllium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, tin, tungsten, uranium, and zinc.

Raw data from this study were released on microfiche in February 1983. DOGAMI now announces the publication of the final results of this study in Open-File Report 0-83-2, *Geology and Mineral Resources of 18 BLM Wilderness Study Areas, Harney and Malheur Counties, Oregon*, by Jerry J. Gray, Norman V. Peterson, Janine Clayton, and Gary Baxter.

Before this study was undertaken, only two of the areas, Steens Mountain and the Pueblo Mountains, were known to be mineralized, mainly for mercury. This study, however, has identified the Owyhee Reservoir and the Pueblo Mountains as areas of gold potential, as well. The study, in fact, showed that all of the wilderness study areas had scattered anomalous gold values, the Pueblo Mountains have high potential for copper and molybdenum, all the areas have geothermal potential, and most have oil and gas potential.

Jerry Gray, principal investigator for this study, taking rock-chip samples for analysis.

Mark Ferns, DOGAMI geologist, taking silt-size stream sediment samples from a dry wash.

Red Butte, BLM Wilderness Study Area 3-56 (Dry Creek Buttes), located on the north shore of the Owyhee Reservoir, Malheur County. This butte, which is formed from silicified and mineralized lake bed sediments, was identified by this study as a gold exploration target. In this photo it is seen from the top of Quartz Mountain, which is out of the study area and which has been staked by a mining company.

Included in the just-released open-file report is a 106-page text containing descriptions of the sampling and analytical techniques, geochemical-data statistical analyses, and discussions of each of the areas including the geology, stratigraphy, structure, mines and prospects, geochemical sampling results, and a summary of mineral potential. Microfiche accompanying the report present raw assay and site data, area summary tables, frequency tables, histograms, scattergrams, and maps showing the location of each of the sample sites.

DOGAMI Open-File Report 0-83-2 is now available at the Portland office of the Oregon Department of Geology and Mineral Industries. Purchase price is $15. Orders under $50 require prepayment. □

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