

STATE OF OREGON  
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES  
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# THE ORE.-BIN

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\* Announcement is made of the release of Bulletin no.18, \*

\* entitled, "First Aid to Fossils, or What to Do Before \*

\* the Paleontologist Comes", by John Eliot Allen. Copies \*

\* of this bulletin were mailed from this office on Septem- \*

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#### NEW BULLETIN ANNOUNCED

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

"First Aid to Fossils, or What to Do Before the Paleontologist Comes", by John Eliot Allen, field geologist, State Department of Geology and Mineral Industries, Bulletin no.18; 28 pp., 2 plates, 1 map, 1939.

Copies may be obtained from the Department's office, 329 S.W.Oak Street, Portland, upon receipt of 20 cents to help defray cost of printing and mailing.

#### ABSTRACT.

Lack of general public knowledge of the simpler procedures used in the collection and care of fossil material has frequently led to the destruction of valuable specimens. This paper attempts to fill the need for an inexpensive non-technical handbook which will furnish the casual finder or the amateur collector of fossils with information on the proper methods for the collection and preservation of his finds.

A fossil is any evidence or record of past life. It may be original animal or plant matter; it may be carbonized or petrified material; or it may be only impressions, imprints, molds, or casts of the shape of the animal or plant. Fossils are most commonly found buried in rocks which were originally formed as sediments on the floors of shallow seas. They are of value in telling us what the animals that lived in the past were like, and in helping the geologist sort out the layers in the crust of the earth. Departments of paleontology at the various coast universities and colleges are always anxious to learn of new discoveries, and can sometimes help the amateur in his work.

Various tools can be used to remove the fossil from the rock, depending on the type of fossil and the rock itself, but a geologist's pick and some small punches and a brush are indispensable. The fossil is usually painted with shellac to preserve the surface as it is removed, and when especially delicate, it is taken out in a block and then cleaned in the laboratory. It is very important that the exact location of the specimen in the rock and on the map be recorded in a notebook or on cards, in the field at the time of location.

Invertebrate animals (shellfish, etc.) are the most common type of fossils found in western Oregon, and require the least careful treatment.

Vertebrates include all the higher types of animal life, and their skeletons are found preserved in volcanic ash in Eastern Oregon and in gravels in Western Oregon. The bones require more care in removal from the rock, and are usually shellacked as they are found. Large specimens require a special procedure, and the exact position of the bones must always be recorded.

Plant remains appear in clays or ash, and may be split out with chisels, and the surfaces shellacked.

Fossil remains of microscopic life are of greatest importance to the oil geologists, as they enable him to date the formations in the deep wells. The rock in which they appear is dried and crushed and the fossils screened out; the fossils then being mounted on microscope slides for study and identification.

The collector should not try to clean the fossil in the field, as this work should be done in the laboratory where proper tools and time are available. Large fossils can be mounted on convenient tables under bright light and can be delicately cleaned of the rock with small scratchers and needles. Fossil fragments can be fitted together and cemented to form a complete specimen, or lost pieces may be reconstructed with modeling clay. They may be then labeled and mounted for display.

Appendices to the paper include lists of "Don'ts for Diggers"; authorities in the various fields of paleontology upon the Pacific Coast; reference books for those who wish to go into the field of paleontology a bit farther, and a map of some of the fossil localities in Oregon.

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#### NEWS ITEMS.

W. C. Fellows of Baker is bulldozing a road into the Windsor property in the Greenhorn district. A shaft is being sunk, and a small amount of high-grade ore has been taken out.

M. D. Rombough of Baker has installed 500 feet of hoisting cable at the Hidden Treasure Mine. The shaft is being sunk below the 135-foot level and is now down 60 feet below this level. A station will be cut and a drift run to tap ore developed on upper levels.

Eastern interests are considering placer ground at Weatherby. It is planned that the property will be worked on the high benches by bulldozers.

Ike Kusisto has been prospecting in the Steens Mountain area north of Field in Harney County and reports some interesting finds in the way of quicksilver prospects. We understand that Kusisto is looking for financing for development of his prospects. Anyone interested may communicate directly with him, Box 14, Dee, Oregon.

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## HEARD OVER THE DIRECTOR'S TRANSM.

Some day I'm gonna take my hair down and release a flock of picturesque insective about some of the things that have been itchin' me for some time.

First is about run-of-mine citizens "breaking" into the mining business, and how they do it. "Breaking" is right. They have the same chance I would of going broke in the wholesale grocery business, or starting a filling station. That, by the way, would be a real gamble - as I view it.

So many people seem to think that getting into mining is like playing a slot machine. You drop in a coin, pull and lever, and "Bing!" the jack drops, or it doesn't. Usually it doesn't. Getting into mining is like a slot machine for those who play it that way. Point is, they haven't any business playing it that way. It isn't fair either to them or to the mining industry.

Some years ago a man who had become wealthy in the wholesale grocery business came to me and said, "There are some men in town selling stock in an oil shale proposition in Kentucky. It looks fool proof and I'm tempted to shoot a few thousand. Is there any oil shale in Kentucky?" I replied, "Sure". "Have you seen it?" he asked. "Yes."

"Can they really make oil out of oil shale like they say?"

"Certainly", I answered.

"Then it looks pretty good. Thanks", and he started off.

"Hey!" I called. "I've been thinking (I lied) about a little investment in starting a wholesale grocery business -".

I didn't get any farther. He threw up his hands. "For God's sake, don't! It's over crowded, there's no money in it, it's a cutthroat business, you're crazy, you don't know anything about grocers, wholesale or dovetail. You'll lose your -"

By that time he had noted that I couldn't keep my face straight any longer. "I get it," he said.

I rubbed it in. "What in hell do you know about oil shale? You didn't ask me what it costs to mine, or to produce oil from shale, or the plant cost of product per unit, or anything about competition. Fact is, there is so much over-production of natural oil now that you couldn't possibly produce oil and credit by-product cheaply enough to compete."

I went on. "If you want to get into the mining business and run a good chance of winning, I'll tell you how. And mind you, mining is a good business with plenty of profits. First get you a mining expert to advise you - a mining engineer or geologist. And I mean a good one. Pick him like you would a doctor if you wanted your appendix out. Don't pick him out of a phone directory - and don't expect him to work for four bits an hour. If you can get a doctor to take out your appendix at four bits an hour, then get the same kind of an engineer."

"Give your engineer an idea of the type of property or kind of mine you think you are interested in, and say about how much money you are willing to spend. If

properties are brought to you, let the engineer pass on them and take his word just like you would the word of a doctor."

"Remember, mines ordinarily are "made", not found. Pick a likely prospect and develop it. But for heaven's sake, get it properly engineered, or you will indeed just be playing a slot machine".

- E.K.N.

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#### QUICKSILVER.

During the last week in August 1939 the price of quicksilver was between \$80 and \$90 a flask of 76 pounds. Within four weeks this price was doubled. The writer knows of one shipment that sold in New York at \$155 per flask, and there are reports of other sales at \$160 or slightly higher. It is understood that Spain is prepared to dump about 2,000 flasks in the New York market, and the price as of today (October 5) has been diminished, presumably because of this rumor, to around \$135 per flask.

We are led to believe that the German Government in some way has its finger in the commodity exchange setup in Spain so that it will have something to say about the disposition of Spanish quicksilver. Presumably Germany whose deposits are meager, can obtain necessary supplies from Italy and would not thus necessarily prevent Spain from selling a certain amount of this metal to foreign countries for the purpose of establishing credits which she needs badly.

Inquiries for Oregon quicksilver have come in from several foreign countries, which leads to the belief that there really is a healthy demand for this metal, representing critical scarcity of supplies. It is our feeling that Oregon producers may expect a price of in excess of \$100 per flask for many months unless, of course, there should be a sudden cessation of hostilities in Europe, which would cause the bottom to drop out of the market. This appears unlikely.

Production is being stepped up in this state as rapidly as possible. The Bonanza Mining Company at Sutherlin is adding a rotary furnace to its present plant, which includes a Herreshoff. The Mother Lode mine in the Ochocos, Art Champion Manager, is said to be ready to go into production with a revamped plant. At least four other properties in the Ochocos are now under development. A considerable number of inquiries are coming into this office for quicksilver properties, and we are suggesting to inquirers that they look into the merits of properties listed in our quicksilver bulletin no. 4, where the properties are idle, and to consider seriously plans for developing other prospects in well-known quicksilver areas.

Oregon probably has brighter prospects for future production of quicksilver than any other state in the Union, and we are happy to encourage all interested in developing Oregon quicksilver mines and prospects.

#### GALLIUM.

There seems to be considerable misinformation or lack of information about this element. The following, derived mainly from Mineral Trade Notes, may be of



interest:

This metal is somewhat similar to quicksilver in some respects in that it is resistant to chemical influences, is used for a backing for optical mirrors, and as an alloy for dental fillings. The metal was extremely expensive until a few years ago. It was quoted at around \$50 per gram and was produced in very small quantities on a laboratory basis mainly from zinc residues.

Germany now claims to have almost a monopoly on the production of gallium. It appears that Germany, having developed a process of which we have no details, is manufacturing the metal from a smelter by-product of her copper industry. The production is given as about 50 kilograms or 110 pounds per year, and the price has been reduced to about \$2.50 per gram.

This Department has no facilities for making quantitative determinations of gallium or indium. Although we have made a few qualitative tests within the last few weeks, we have, however, made an arrangement with the Rare Metals Division of the U.S. Bureau of Mines whereby we may send them samples from time to time for assay where our tests indicate that the metal is present.

It is suggested that any persons having ores or materials in which they have definite reason for suspecting the presence of gallium, send their samples to some accredited spectroscopic analyst for a report.

#### METHODS OF GOLD RECOVERY.

The seat of a man's pants have been known to serve many uses, not only that of offering a certain amount of protection to the individual's hide but also as flags of distress, and now we find them used to recover gold. A recent bulletin by the U. S. Bureau of Mines <sup>1/</sup> gives tests on the use of corduroy for saving gold in small and large milling plants throughout the world. The mines that produce siliceous ores low in sulphides and gold recover the gold by amalgamation or in traps or jigs or on corduroy and shaking tables. For the small operator inexpensive equipment, such as a corduroy table, sometimes may be adapted to give good recovery of gold and associated minerals.

The corduroy used, however, is not that from which wearing apparel is made. The weave is too narrow, the ribs too closely spaced, and the fibers or threads are not free. Milling corduroy has a slightly wider rib and a space between the ribs with the high side of the rib laid below the pulp flow.

Unclassified and free, coarse pulp may be run over the corduroy. The concentrates are much bulkier than gold amalgam from copper plates. As the strip of corduroy may be easily folded and stolen, it is recommended that tables equipped with corduroy blankets be protected by locked screens or doors. Experience has shown that there is considerable difficulty in securing assays that will check from these corduroy blankets.

The circular mentioned above gives plant practice for many states in the Union, including California, Idaho, Montana, and Oregon; in Canada - British Columbia, Nova Scotia, Ontario, and Quebec; the Phillipines; Costa Rica; Africa;  
<sup>1/</sup> Bernewitz, M. W. von., "Saving Gold by Means of Corduroy", U.S. Bureau of Mines, Information Circular 7085, August 1939.

Australia; and New Zealand. The Oregon property is the White Swan plant in the Virtue district.

Data are also given on the use of corduroy in recovering platinum concentrates.

Copies of the circular may be obtained free of charge from the United States Bureau of Mines, Washington, D.C.

#### DIATOMITE.

We are informed that Mr. E. N. Bennett, Box 741, Ontario, Oregon, is processing diatomite from deposit near Harper and that he is in quest of buyers of this product. Details of grades, prices, etc., may be obtained by communicating directly with Mr. Bennett.

#### BERYLLIUM.

Our May issue of The Ore.-Bin carried a brief discussion of beryllium. Whether this or something else was responsible we don't know, but we have been receiving inquiries and occasional samples from various parts of the state, particularly from southwest Oregon, and letters indicating that people have "mountains" of the material ready to be dug and sold at so many dollars a pound.

It is not our wish or habit to deflate the ideas of people who are enthusiastic about Oregon's mineral resources, but we believe it advisable to caution the uninformed in regard to this matter of beryllium. In southwest Oregon especially we have noted that parties have been led to believe that they have deposits of beryllium by finding greenish rocks. In every case that we know of the green stain comes either from a small amount of copper or one of the two common nickel minerals, arsenide or garnierite (the first a nickel arsenide, and the second a nickel silicate), or from green-stained quartz of the chalcedony variety. If the green stain comes from copper or nickel, it can be determined very readily indeed in the laboratory by simple qualitative tests. If the stain comes from chalcedonic quartz, the nickel and copper tests will be negative, but a light iron reaction should be obtained for the reason that this green stain, in almost all cases, is caused by a small amount of ferrous iron in the vein and not from beryllium.

Because the metal beryllium has so definite a habit of association, that is to say, it is not known to be found in commercial quantities except in an acid igneous environment, we can say pretty well that there is just about a Chinaman's chance of finding a commercial deposit of beryllium in southwest Oregon.

When one recognizes that the metallurgy of beryllium is very difficult and expensive and there are only one or two buyers in the United States, so far as we know, it is our feeling that Oregon prospectors are probably wasting their time looking for beryllium, especially in the southwest part of the state.

We may suggest instead that prospectors who confine their work to the serpentine areas, while looking for chromite, keep their eyes peeled for asbestos. They should remember that this is a low value commodity, and a deposit would have no value unless it has substantial tonnage. We will be pleased to assist any prospectors who find samples of asbestos and who will take them in to the Grants Pass laboratory or the Baker laboratory or send them to the Portland office for inspection.

## COBALT.

Demand for cobalt is increasing, but all of the metal consumed in the United States has, so far, been imported. In 1937 slightly over  $2\frac{1}{2}$  million pounds of cobalt ore, metal, and oxide were imported for use by United States plants. There has been no marketed production of cobalt from domestic deposits. The U.S. Bureau of Mines Minerals Yearbook for 1938 reports the discovery of a deposit in the Tombstone district, Arizona, from which samples assaying up to 21% cobalt were obtained. The Cobalt Gold Mining Company, Gold Hill, Colorado, was reported to be considering exploration of its nickel-cobalt properties by core drilling.

The July 1939 California Mining Journal reports a recent discovery of cobalt in the Turnbull district west of Stafford, Arizona. The new find is in the Bluebird property which has been leased by Ralph L. Crothwaite of Shepherd Chemical Company of Chicago, who has already started development. The Journal also reports a cobalt property owned by Preston Nuner, Mokelumne Hill, in the southern part of Amador county, California.

Oregon has several reported occurrences of cobalt. One of the most famous of these is the old Standard Consolidated Mines in the Quartzburg district, Grant county, north of Prairie City. The proper location, however, is section 12. T.12 S., R.33 E. Assays of 6.34% cobalt and 0.75% nickel have been reported. Apparently no effort has been made to produce the ore commercially.

Cobalt has also been reported from Jackson county by Dr. W. P. Chisholm in Gold Hill near the "Meadows". The ore is reported to carry  $4-4\frac{1}{2}\%$  cobalt.

In Josephine county samples from the Cobalt Group in the Illinois River district, are reported to carry cobalt. Curry county is reported to have erythrite (cobalt bloom) in the ore of the Bunker Hill Group, Collier Creek district.

A more recent deposit was reported in the Mining and Contracting Review of June 28, 1938, which states that "Gus Schermer continues to develop recent cobalt-nickel showings on his Clover Creek property, located about six miles from Keating."

Considering the fact that large amounts of cobalt are used each year in the United States, it is important that domestic deposits be developed to compete with imported ore. Occurrences and evidences of cobalt and nickel should be reported so that some effort can be made to obtain commercial production in the United States.

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