

July 1, 1942

# State Department of Geology and Mineral Industries

702 Woodlark Building  
Portland, Oregon

## COTTAGE GROVE NATIVE COPPER

Lane County

The occurrence of thin sheets of native copper in the cracks of an altered tuff has been proven by test pits and drilling. While the copper itself is very pure, the percentage of copper in the tuff is not over 0.2%. Insufficient work has been done to demonstrate the economic feasibility of working the deposit.

Owner: B.C. Myers, Disston Route, Cottage Grove, Oregon, purchasing on contract from John and Roy Walden, E. 12th Street, Eugene, Oregon.

Location: SW $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 19, T. 21 S., R. 2 W., on Mosby Creek, about seven miles southeast of Cottage Grove.

Area: Deeded land, total acreage unknown.

History: W.L. Cobb, Oakland, Oregon, traced the copper to this farm in August, 1940. The copper was first found in a dug well at a depth of 35'. Kernan, of Roseburg, drilled two holes in the spring and summer of 1941 but work was discontinued because the "copper balled on the bits" and stopped work. A 40 foot (?) shaft was sunk near the old well and native copper was found. Another shaft, some distance east struck no copper.

Development: A dug well, depth 47 feet; a shaft 4 ft. x 6 ft. <sup>cut</sup> 18 feet deep nearby; another shaft 35 ft. <sup>cut</sup> deep, and two churn drill holes, depths 75 ft. <sup>cut</sup> and 85 ft. <sup>cut</sup>. Native copper was found in all except the 35 foot shaft to the east.

Geology: The country rock in the immediate vicinity is a red, altered tuff, now clay like. When wet, it is quite soft and plastic; when dry, it is quite hard. At a higher elevation, and apparently overlying the

# State Department of Geology and Mineral Industries

702 Woodlark Building  
Portland, Oregon

clayoid tuff is a much harder pyroclastic. Heavy vegetation and soil masks most of the bedrock so that no accurate data could be obtained on the attitude of the rocks but it is assumed that the clayoid tuff is fairly flat and is overlain by harder pyroclastics.

Cracks in the clayoid tuff frequently contain thin sheets of native copper of exceptional purity. The source of the copper is unknown, but it is suggested that copper bearing solutions percolated through the tuff and the copper was deposited along the cracks by virtue of the reducing action of the clay. Analysis of the clay itself shows that it contains 0.06 and 0.11 percent of copper.

There are no data on quantity. However, it is reported that the native copper was found over a wide area. The clay readily slacks in water and recovery of the copper sheets should not be difficult.

Report by: Ray C. Treasher, (visited 6/15/42 with John E. Allen).

Analyses by R. G. Bassett.

See C.F.

COTTAGE GROVE COPPER PROSPECT

LANE COUNTY, OREGON

Owner:

Lessee:

Bert C. Meyers, Disston, Oregon, <sup>on purchase contract from John & Roy Walden,</sup>  
L. O. Herold, 1144 Central St.,  
Salem, Oregon. <sup>E 12th St, Eugene.</sup>

Area:

~~Patented land, acreage unknown.~~

Location:

In the S.W.  $\frac{1}{4}$  <sup>NE  $\frac{1}{4}$</sup>  Sec. 19, T. 21 S., R. 2 W., Lane County, Oregon, about  
 $7\frac{1}{2}$  miles south of Cottage Grove on Mosby Creek.

History:

Several years ago small flakes of native copper were discovered on the  
Myers ranch in a water well which was being dug. Since that  
time several drill holes and one other shaft and a number of small open cuts  
have been dug to prospect for the "ore-bearing zone".

Miscellaneous:

The valley of Mosby Creek is about  $\frac{1}{2}$  mile wide at this point with  
a fairly level bottom and gently sloping mature valley walls. The property  
which is on the northwest side of a tributary running into Mosby Creek from  
the north runs along the foot of a ridge. The difference in elevation is  
less than 50 feet. Rainfall and climatic conditions are those typical of  
the upper Willamette Valley in Oregon.

Development work:

Development work at the present time consists of the following:  
one 47-foot well, one 37-foot well, 2 churn drill holes, 18-foot shaft,  
and two or three small open cuts.

Geology:

The country rock consists of well-bedded, fine-grained <sup>attitud</sup> red tuff (in which  
the copper seams occur) overlain by coarse tuff breccia with occasional  
included water worn boulders. This volcanic series is nearly horizontal  
and probably belongs to the Calapooya formation (Eocene?).

Since the shafts were inaccessible, the only place where the attitude  
of the copper seams were visible was in the bed of the creek where they had  
a general <sup>at time of visit</sup> ~~strike~~ <sup>north-south</sup> and stood almost vertical. The sheets of copper  
occurring in these seams are rarely more than a millimeter in thickness and  
one or two centimeters in diameter. Commonly they are more or less completely

(State Army Laboratory)

altered to malachite.

Mining and metallurgy: Samples were taken of the red tuff from Pit No. 4 and from the shaft near the upper outcrop. Assay values were .06 and .11% copper respectively. In most of the open cuts no seams were visible.

It was my impression that they are very local and restricted in both number and extent, prohibiting large-scale operation. However, since neither of the shafts could be visited, this impression is not <sup>con-</sup>clusive.

June 15, 1942  
John Elst Allington

Sample as is.

General Laboratory Number P2578

Date received

7/31/44

J. E. Allen

Spectrographic Laboratory Number 905

Sample received from ↓

QUALITATIVE SPECTROGRAPHIC ANALYSIS  
(Quantities estimated to nearest power of ten)

1. Elements present in concentrations over 10%.

Cu

2. Elements present in concentrations 10% - 1%.

Si

3. Elements present in concentrations 1% - 0.1%.

Fe

4. Elements present in concentrations 0.1% - .01%.

Ti

5. Elements present in concentrations .01% - .001%.

K, Mn, As

6. Elements present in concentrations below .001%.

Rb, Mg, Ca, V

Dr. H. C. Harrison, Spectroscopist

.....

Acid - Treated

General Laboratory Number P2578

Date received 7/31/44

Spectrographic Laboratory Number ~~2578~~ 905

Sample received from J.E. Allen

QUALITATIVE SPECTROGRAPHIC ANALYSIS  
(Quantities estimated to nearest power of ten)

1. Elements present in concentrations over 10%.

Ca

2. Elements present in concentrations 10% - 1%.

Si

3. Elements present in concentrations 1% - 0.1%.

4. Elements present in concentrations 0.1% - .01%.

Fe, Ti

5. Elements present in concentrations .01% - .001%.

K, Mn, Mg

6. Elements present in concentrations below .001%.

Al, Mg, Ca, V

Dr. H. C. Harrison, Spectroscopist

.....

STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

ASSAY REPORT

Grants Pass, Oregon  
Baker, Oregon

June 30, 1942

Sample submitted by Ray Treasher

Sample description: 42-T-4 red tuff from upper outcrop.

42-T-5 red tuff from shaft near upper outcrop.

*Cottage Grove Copper.*

The assay results recorded below are made without charge as provided by Chapter 176, Section 10, Oregon Laws 1937, the sender having complied with the provisions thereof.

NOTICE: The assay results recorded below are from a sample furnished by the above named person. This Department had no part in the taking of the sample and assumes no responsibility, other than the accuracy of the assay of the material as furnished it by the sender.

Sample Number	GOLD		SILVER		(Cu) Copper			Total Value
	Ounces per ton	Value	Ounces per ton	Value	Percent	Value	Percent	
42-T-4					0.06			
42-T-5					0.11			

Market Quotations:

Gold           \$           per oz.  
Silver         \$           per oz.  
                  \$           per lb.  
                  \$           per lb.

STATE ASSAY LABORATORY

*P. H. Bassett*  
Assayer

*Send copy of report to Higgins*

Submitted by  
O. H. Hutchinson

Native copper  
Property  
Lane County

1305 SE. Ankeny,  
Illinois

BRIEF INFORMATION CONCERNING NATIVE  
COPPER IN STATE OF OREGON

LOCATION:

This property is located seven and one-half miles from the main line of the Southern Pacific Railroad, on a good graveled road which has been used for years, near the Bohemia District, Lane County, Oregon.

There are no hills or steep grades on this road as far as the property. It is practically a water grade route.

The property is drained by a creek some fifty feet from bank to bank and by numerous small tributaries. It is believed that sufficient water can be obtained for a fair sized operation throughout the year.

METHOD OF WORK:

This property is a stripping proposition. The overburden thus far known will average ten feet in thickness. The copper bearing rocks outcrop in two of the streams above mentioned so that in the valley floor, the overburden will be thin.

The copper bearing rock is known to outcrop in a wide enough area to warrant the assertion that at least 80 acres are involved in the operation of an open pit mine on the property.

It is quite probable that considerably more than 80 acres will eventually be included in the operations of this property.

POWER AVAILABLE:

Bonneville Electric Power is available at an airline distance of about seven miles. Steam, gas, or electric shovels could be used in the operation for both stripping and mining the ore.

THE COPPER BEARING ROCK:

The rock containing the native copper is a dark maroon to chocolate colored rhyolite; the dark color being due largely to the rotting effect of the downward moving surface waters.

This rhyolite was at one time a molten mass intruding into the country rock as a sill or lacolith. It did not come to the surface but remained under sufficient depth of burial to permit some crystallization of feldspar phenocrysts. The cooling was rapid enough to prevent these feldspar crystals from being pure. They almost invariably include some of the fine grained aphanitic ground mass of the rhyolite.

Innumerable small fractures developed as the result of the rapid cooling, and these fractures furnished avenues which upward moving solutions, carrying copper in solutions, gained access to the rhyolite, and the copper, in the native form was deposited in these fractures in sheets, the thickness of which is largely dependent upon the width of opening in any particular fracture.

Critical temperatures while the rock was cooling may have been one of the chief factors in bringing the metallic copper out of the solution. No sulfides are present and there is no indication that they may be present at depth. In mode of occurrence the copper of the Michigan Copper Range and the Native Copper discussed in this letter are almost identical. From an examination of the rhyolite at and near the surface of this property it is obvious that after the native copper was deposited, shear and torsion, due to local folding and faulting, developed

SW 1/4 Sec. 7, T. 21 S., R. 2 W.



additional fracture systems so that it must not be expected that every fracture will contain a sheet copper. Later, after the present drainage system was fully established, downward moving surface or meteoric waters percolated throughout the rock wherever an avenue of flow was found and the rhyolite is now rotted so that the pick and shovel move it easily. No drilling or blasting being required.

A fragment of this mine run rock, when dropped into water, disintegrates to a finely granular mass in less than two minutes. It does not slime or become muddy and the water in which it was placed is only slightly discolored.

These facts indicate the ease with which the copper can be recovered from the mine run ore. Treatment in a log washer, possibly of the McCully type, and subsequent sluicing are all that are necessary, the native copper landing on the riffles of the sluice box.

No blasting, no crushing, no elaborate system of concentration, no smelting or blister, and no retreatment of that blister. Under these conditions a relatively low-grade ore on this property can be of very commercial value.

The original fractures (cooling fractures in which the native copper was deposited) are wider at a depth of nine feet in the rock than they were at the surface of the rock. This was definitely proven by the greatly increased thickness of the sheets of copper found in the bottom of the No. 1 shaft as compared to the thin sheets of copper at first encountered. The length of the sheets increased correspondingly. A continuance of this increase in the amount of copper for a short additional depth will very definitely prove beyond all question the commerciality of the deposit.

#### THE COPPER:

The Native, metallic, copper occurring on this property is not filled with impurities. It can be treated directly in an electrolytic bath, resulting in the very highest grade copper now produced.

#### VALUES:

In the Michigan Copper Range, where many of the mines are deep and all of them underground operations, two and one-half percent recoverable copper is considered to be of commercial value.

Deep winding and consequent restricted tonnage output are the chief factors to be considered there. In the Ajo Mine in Arizona, an open cut operation, rock carrying disseminated copper sulfides up to a percentage of one and one-half recoverable copper metal, became the basis of the calculations upon which they figure their ore reserve.

At the Utah Copper Company's property at Bingham, even less than one percent recoverable copper was proved, by Jackling, to be of commercial value in this large scale open cut mine. In the latter two cases, the ore has to be broken down with powder, after being drilled, then it is power-shoveled into cars and hauled by rail to the concentrators, where it is concentrated by an elaborate system. The concentrates are then melted to an impure blister and this blister is then shipped east to be refined to produce the same kind of copper which occurs native in the rock in this property. It must be obvious that by reducing the number of expensive processes through which the mine-run ore must travel, even a very low percentage of recoverable metallic copper from this property must be considered of truly commercial importance.

With the progress of the exploration work, numerous tests for percentages of contained metallic copper should be made in order to arrive at an average copper content for the entire ore body.

By weighing out one hundred pounds of mine-run ore and then slacking it with water and sluicing it, a recovery of one pound of metallic copper would give a one percent mine-run ore. If the metal was dried, as would be in an assay office, the copper would lose no weight through loss of moisture, while the rock would

loose at least ten pounds (per hundred weight) so that the assay office would return a result ten percent higher in copper than the rough method above suggested.

After all, you would treat the mine-run ore without drying it in actual operation.

-----

The above is a part of a letter written by Mr. Bryant, the geologist, and gives some idea of the possibilities and character of the property. This was written before the drill holes were put down and I was given to understand that the copper content in the rock runs up to ten percent and will average well within the requirements of making it a profitable mine. The holes were put down to a depth of 75 feet with copper showing all of the way and increasing as it went down. The end of the drill fouled up with copper and made drilling very difficult.

It is shown now that the copper covers more than 80 acres of ground. Even at that there is considerable tonnage in the 80 acres at 75' average depth, it undoubtedly goes deeper than this, there would be 9,600,000 yards of material that would produce 192,000 tons of copper at 2% mine run ore.

The information gathered in the drilling and shafting work is still in the form of notes and has not been written up. It will be available when you come on the property. This property will warrant an investigation.

# State Department of Geology and Mineral Industries

702 Woodlark Building  
Portland, Oregon

## COTTAGE ABOVE NATIVE COPPER

Lane Co.

Although John E. Allen had been advised that the shafts and pits were dewatered, we found no pumping had been done. No evidence of copper bearing tuff "in place" was seen. Small pieces of native copper were recovered from clay on the dumps, however.

Insufficient data are available to permit any positive conclusions. The occurrence suggests that the copper will be "spotty" and mining would be expensive. I'm of the same opinion as Lloyd Staples, that it is an interesting occurrence but of little economic value.

I do wish though that something could be done with these buzzards who put the State to considerable expense and inconvenience with stories of the accessibility of their deposit only to find there is no information available. I made a round trip of 240 miles in our State car, shot a full day, at a time when rubber is extremely valuable and time is scarce.

Ray C. Treasher  
July 1, 1942

# State Department of Geology and Mineral Industries

702 Woodlark Building  
Portland, Oregon

## COTTAGE GROVE NATIVE COPPER

Lane Co

Although John E. Allen had been advised that the shafts and pits were dewatered, we found no pumping had been done. No evidence of copper bearing tuff "in place" was seen. <sup>except in creek</sup> Small pieces of native copper were recovered from clay on the dumps, however.

Insufficient data are available to permit any positive conclusions. The occurrence suggests that the copper will be "spotty" and mining would be expensive. I'm of the same opinion as Lloyd Staples, that it is an interesting occurrence but of little economic value.

I do wish though that something could be done with these buzzards who put the State to considerable expense and inconvenience with stories of the accessibility of their deposit only to find there is no information available. I made a round trip of 240 miles in our State car, shot a full day, at a time when rubber is extremely valuable and time is scarce.

Ray C. Treasher  
July 1, 1942.