

July 24, 1942 *RW*

State Department of Geology and Mineral Industries *JK*

702 Woodlark Building
Portland, Oregon

Lake Creek Area
Jackson Co

TYRRELL MINE

The property was visited on July 23, accompanied by Francis G. Wells of the U. S. Geological Survey. The object was to check on the development. Nothing new has taken place since the property was visited by Earl K. Nixon, John E. Allen, and me.

Mr. Nixon talked about sending someone from the Portland office down here to assist in making a topographic map of the area. So far as I knew, this has never gone to completion.

The attached sketch map gives a rough idea of the situation. There are about 100 feet difference in elevation between the south and north end of the sketch. The tuff bed underlies a gray, ande-basalt and in turn is underlain by decomposed, flow rock. The bulldozer cuts merely scrape the surface, which makes it very difficult, if not impractical, to sample. The attitude of the ore bed, its thickness, etc., cannot be plotted on the map, as an aneroid barometer would be of little use in this matter.

Dr. Wells and I are both of the opinion that it will be necessary to have an alidade and plane table in order to map the locality and secure any pertinent information.

This area is S.E. of the old workings and might lead one to the assumption that the ore bed in the old workings is more or less continuous through to this spot. However, as pointed out, a plane table survey would be necessary in order to secure the necessary information.

The owners were not at the property. Following this inspection, I attempted to visit the Grand Cove copper but was stopped this time by lack of a permit to enter the Rogue River National Forest. Dr. Wells and I returned through Medford where we both secured permits.

Ray G. Treasher
Field Geologist
July 24, 1942.

State Department of Geology and Mineral Industries

Confidential

MEMORANDUM

702 Woodlark Building
Portland, Oregon

RECEIVED
MAR 16 1958

STATE DEPT. OF GEOLOGY
& MINERAL INDS.

LAUGHLIN ENGINEERING CO.

The concentrating mill of the G.M.C. Division of the Laughlin Engineering Company at Eagle Point was visited. The mill building was locked and no one was there. A few tons of chromite concentrates were on the concrete slab in back of the building and a stockpile of possibly 300-400 tons of chromite (a visual estimate) remained in front of the mill.

An attempt was made to drive to the Tyrrell manganese property south of Lake Creek. The road up Lost Creek to the property was impassable. Mr. Walch who lives west of the covered bridge over Lost Creek--from this point the Tyrrell property is reached via a road up Lost Creek--stated that some excavations had been made at the mine with a bulldozer and the bulldozer was at the mine, but that no one was working there, because even a jeep would be unable to reach the mine with the road in as bad a condition as it was since the current rains.

In the Medford telephone book this company is listed as follows:

Laughlin Engineering Co., Inc.
Milling & Mining Dept. 1011 S. Holly; Ph-3-2557
Smelting Dept. 235 S. Oakdale Ave; Ph-2-6974

J. N. Laughlin is president of the company and his address is the same as that given for the smelting department. D. E. Brundage is vice-president and his address is the same as that given for the milling and mining department. Addresses previously given for the company were 3259 Wilshire Blvd., Los Angeles, California and Box 446, Medford, Oregon.

Dave E. Brundage was contacted and the following information was furnished:

The Laughlin Engineering Company has a lease-option on the Tyrrell property from Mr. C. E. Smith, Medford, Oregon. Some bulldozer work has been done and a 30-foot face has been made in one pit.

The mill is being converted to concentrate manganese ore. He said mill tests of the Tyrrell ore had been made by a New Jersey concern and Southwestern (probably Southwestern Engineering Company, 4800 S. Santa Fe Ave., Los Angeles).

Further exploration and mining will be started at the property as soon as the weather gets better so that a good road to the property can be built.

Visit and report by: DJW Mar. 12, 1953

Informant: Dave E. Brundage

Lake Creek District
Jackson County, Oregon

APR 7 1939

- Name:** Oregon Manganese Mine.
- Owner:** B. M. Bush, Lake Creek, Oregon.
- Location:** The property is located approximately thirty miles in an easterly, slightly south, direction from the City of Medford, Jackson County, Oregon where large mercantile establishments are located which carry stocks of mining supplies, etc. and where camp and food supplies may be had at a reasonable cost.
- Property:** The Oregon Manganese Mine property consists of five (5) mining claims, namely, Manganese Claims Nos. 1 to 5 inclusive, and two tunnel sites (unpatented) known as the Manganese and the West Manganese Tunnel Sites. Also, that deeded land more particularly described as the S. $\frac{1}{2}$ of the N.E. $\frac{1}{4}$ of Sec. 9 and a parcel of land 31 rods in width and 80 rods in length off of the south side of the N.E. $\frac{1}{4}$ of said Sec. 9, and the W. $\frac{1}{2}$ of the N.W. $\frac{1}{4}$ of Sec. 10, and the S.W. $\frac{1}{4}$ of the S.W. $\frac{1}{4}$ of Sec. 3, all of which claims and deeded land are located in Township 37 South of R. 2 E. of Willamette Meridian, Jackson County, Oregon.
- Water:** The water supply for this mine would be derived from Lost Creek and possibly the South Fork of Little Butte Creek. It is believed a favorable mill site may be found where the water supply could be brought in by gravity. If not, same will have to be pumped to the mill installation. During eight months of the year Lost Creek apparently carried several second feet of water, but it is low during the summer season. Little Butte Creek, however, carries a large volume of water and may be depended upon for both mill and camp use during any part of the year.
- Geology:** The Oregon Manganese Mine, formerly known as the Tyrrell Mine, was placed in operation during the World War and a Government Bulletin, No. 725, pages 211 to 220, refers to the operation of the Tyrrell Mine and the surrounding Lake Creek (Manganese) District. The following excerpts are from this Bulletin:
- "Deposits of oxide minerals in open spaces.--
- "The deposit at the Tyrrell mine and other deposits in the Lake Creek District consist of manganese oxides that fill cracks, pores, or other cavities in a Tertiary volcanic tuff. The manganese minerals are distributed over several hundred acres, but so far as known they do not extend more than a few feet below the surface. As a rule the mineralized tuff does not carry more than 1 or 2 per cent of manganese, but in a few places portions that contain from 10 to 20 per cent or more constitute bodies of considerable size.
- "Manganite is the principal ore mineral. Psilomelane

and wad are moderately abundant, and there are small amounts of a soft brown greasy-lustered oxide that appears to be derived from the manganite by alteration in place. A superficial part of the ore-bearing layer generally contains most of the softer oxides and is relatively poor in manganese. Below this is a richer layer containing the harder oxides. Most of the ore is segregated in distinct streaks, grains and nodules and is therefore easily separated by ordinary milling methods from the rather soft tuff. The rocks of the Lake Creek district belong to the Tertiary volcanic series that composes the middle and southern parts of the Cascade mountains".

"Manganiferous Deposits"

"Distribution and General Features"

"Manganese in greater amounts than are ordinarily found in igneous rocks is practically confined to the red tuff and the gray tuff associated with it, described as bed 4 in the table on page 215. Outcrops of the red tuff that are scattered throughout the district and aggregate several hundred acres show noticeable amounts of manganese oxides generally. In most places the material exposed at the surface is estimated to carry from 0.5 to 2 or 3 per cent of Manganese. Locally, at least, there is a lower layer that is much richer. At the Tyrrell mine this layer is as much as 12 feet thick and carries from 10 to 20 per cent of manganese. The total thickness of manganiferous material ranges from a foot or two on the Vestal claims to 30 feet or more on the Tyrrell mine.

"The manganese occurs as oxides that are deposited in cracks and cavities forming irregular streaks, veinlets, nodules, and grains. To a slight extent these bodies have made additional room for themselves by replacing the tuff. In the upper layer as a rule most of the oxides are soft and sooty, and in the lower layer they are rather hard and compact. Owing to the comparative softness of the tuff it is very easily separated from the harder oxides by ordinary means. Tests made by both the Manganese Metals Co. and Victor Rakowsky with jigs and tables show that the production of a concentrate running as high as 55 per cent of the manganese is practicable, and that under the conditions prevailing in the summer of 1918 crude material containing as little as 10 per cent of manganese could probably be worked at a profit."

Development:

The development of this property consists of open cuts, pits and tunnels. The portal of the largest or main tunnel located up the hill about 300 feet easterly from the old mill and is caved at the present time. To the south of the so-called main tunnel we find a large open pit, probably 100 feet in length. There is an open pit twenty feet wide about 400 to 500 feet south of this deposit.

The above excerpts were taken from a report by Mr. William F. Hayden. March 18, 1938.

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland, Oregon

TYRRELL MINE (manganese)

LAKE CREEK AREA

(see also Manganese Metals Co.) ~~Oregon~~

Owner: B. M. Bush, Lake Creek, Oregon, and others.

Location: W $\frac{1}{2}$ NW $\frac{1}{4}$ sec. 10, T. 37 S., R. 2 E. Other manganese holdings in W $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 10 and SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3.

Area: 80 acres

History: Pardee (P 218-220) says that the Manganese Metals Co. developed the deposit in 1917, and built a 20 ton concentrating mill. Prior to July 15, 1918, some 200 tons of concentrate were produced. Late in the summer of 1918 Victor Rakowsky, of Joplin, Mo., prospected by drilling a part of the land controlled by the Manganese Metals Co. No work has been done on the property since that time.

Development: The main working is an open cut 100 ft. long and from 20 - 30 feet deep. At intervals for 1000 ft. or more northward smaller cuts were made at the same level. There is a total of 150 feet of tunnel; the tunnel was split in three directions. The workings have partially caved.

Equipment: The mill is in ruins, and all machinery has been removed. The building was about 20 ft. by 40 ft. The mill is reported to have been designed to handle 20 tons of ore in a 24 hour shift. All mining machinery has been removed.

Geology: Pardee (P 219) states that the rocks are nearly horizontal basaltic flows and tuffs. A dense dark gray basalt of a platy habit occupies the lower part of the slope east of Lost Cr. Small laths of feldspar and grains of olivine are visible. Next above this is a layer at least 100 feet thick of soft porous brick-red tuff, and above the tuff, forming the top of the spur is a basalt generally similar to that on the lower part of the slope. At the south side of the mine the rock mentioned are cut by a steeply pitching diabase dike 10 feet wide that strikes east.

Continuing, Pardee says, -- "The ore is found in the upper part of the red tuff as irregular veinlets and nodules. The main cut exposes a layer of tuff 16 feet thick, the lower 10 feet of which is rather thickly crowded with these bodies. The other workings, including the drill holes, show that the ore-bearing layer is practically continuous northward for 1000 feet and that, at least on the nose of the spur, it extends a considerable distance under the basalt. A minimum thickness of 6 feet is shown in places north of the main cut, and one of the drill holes is said to have passed through 30 feet of manganese material. South of the main cut the ore-bearing layer is cut by a diabase dike, beyond which for a short distance a little ore-bearing material is exposed here and there, but its extent in that direction is not determined".

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"The ore consists of manganese oxides, chiefly manganite, with a moderate amount of psilomelane and a little soft black and bronze oxides. These minerals have filled cracks and cavities, replacing the tuff very little if at all". (see Wells' discussion). "The manganite is of fibrous to prismatic crystal habit, the aggregates commonly showing plumose forms. Sections of the ore bodies generally show an outer thin shell of psilomelane, succeeded by one or more concentric layers of manganite. In some nodules an unfilled space remains in the center. The soft oxides are practically confined to the upper or weathered parts of the manganiferous layer. Commonly they preserve the outward crystal forms of manganite. Locally a little gypsum occurs with the manganese minerals, and barite is reported in some of the ore. In the manganiferous layer, especially in the upper part, the tuff is more or less altered to a soft clayey material consisting largely of kaolin and iron oxides. A waxy pale greenish-yellow variety of kaolin is commonly associated with the softer manganese oxides."

"-----Most of the higher-grade material so far developed is within 150 feet north of the diabase dike, though that rock evidently was not the source of the manganese. Probably, however, it shattered somewhat the adjoining mass of tuff, which was thus made more favorable for mineral deposition".

Wells (39), in a general discussion of the manganese-bearing area says, - "solutions permeating the volcanic series leached manganese and silica and transferred them to openings mainly in the breccia member".

Tenor of ore: Pardee's (P 219) examination showed that:

"The crude ore treated at the mill is reported to have averaged about 20 percent of manganese. This material was selected from the lower 10 feet of the manganiferous layer, in which most of the harder oxides are found. A sample --- representing the lower 12 feet of the layer --- contained 14.86 percent manganese. Other samples mostly representing the upper part of the layer --- is reported ---- being 2.13 percent. Samples of two car lots of concentrate reported by the Manganese Metals Co. carried 47.5 and 48.5 percent of manganese, other samples of concentrate contained from 46.5 to 52.8 percent of manganese, 11.1 to 14.5 percent of silica, 1.4 - 0.9 percent of iron, 0.09 to 0.207 percent of phosphorus, and 0.08 to 0.16 oz. of gold to the ton."

Samples cut by the Hodge survey (H 15) showed:

#87, a 5-lb. grab sample of concentrates:

Manganese	55.00 %
SiO ₂	9.36
Fe ₂ O ₃ & FeO	2.40
P ₂ O ₅	0.045

#88, 23 lbs. across 8 ft. of small ore body in shorter adit assayed for manganese only:

Manganese 12.74

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The tenor of the ore is low, and probably will not average over 10 percent in hand picked ore, at present. In most of the rock it will average between 1 - 3 percent. The total absence of vein structure makes it difficult to predict ore reserves.

There are various stories about the results of the drilling done in section 3, and about the grades and quality of the ore. It must be remembered that it has been many years since the work was done and that memory does peculiar things as time goes on.

References: Pardee, J. T., Deposits of manganese ore in Montana, Utah, Oregon, and Washington: U. S. Geol. Survey, Bull. 725-C, pp. 218-220, 1921.

Hodge, Edwin T., Preliminary report on some Northwest manganese deposits: U. S. War Dept., Corps of Engrs., Portland, Oregon, pp. 15 - , 1937.

Wells, F. G., and others, Preliminary Geologic Map of the Medford quadrangle, Oregon: Oreg. State Dept. Geol. & Mineral Industries, 1939.

Reports in Departments files by Treasher, Libbey, and others.

Report by: RCT 4/9/41.

TYRELL MANGANESE INVESTIGATION

Purpose

A hurried reconnaissance trip to the Tyrell manganese locality was made on October 17th to secure information and impressions. Heavy rain, muddy roads, and poor directions handicapped the time available, and the following is presented as a brief summary.

Location

Claims are located in the W. $\frac{1}{2}$ of S.W. $\frac{1}{4}$ of section 10, T 37 S., R 2 E., in Jackson County, on the Lost Creek tributary to Little Butte Creek. The area is reached from Medford, cut the Crater Lake Hwy., 11 miles to Eagle Point; from Eagle Point on gravelled road to Brownsboro and Lake Creek a distance of 11 miles; at Lake Creek cross bridge, take right hand road to Dead Indian Creek a distance of 4 miles just beyond present crossing to N.E. side of Little Butte Creek to old covered bridge which used to be the crossing turn right (s.w.) thru gate, up Lost Creek, a distance of 0.5 miles to B.M. Bush ranch house. Thence on foot up road-way behind house to the mine workings which are S.E. of ranch house. Road paved to Eagle Point, gravelled, good to Lake Creek, gravelled but slippery to private road; private road impassable in wet weather. Quarry and tunnels are above the ruined mill. Inquire of B.M. Bush for further details.

History

Mr. B. M. Bush has purchased the J. H. Tyrell property as shown on property map. The original 7 claims were staked along the supper slopes of the east side of Lost Creek. Only 3 were on U. S. land, the remainder on deeded land with no provision for mineral rights. Bush states that man-

ganese outcrops on the east side of Lost Creek, running north-south over a distance of 4-5 miles. - He disclaims my knowledge of a $\frac{1}{2}$ mile vein or any vein. An area in Sec. 3 was drilled at one time and 1200 tons of ore blocked out. Man named Scott has the records; Bush can locate his full name and address if desired. This land now owned by Bush.

Bush is familiar with area and states that manganese outcrops over entire hillside at about the same elevation as the Tyrell workings, probably becoming better toward the south, or the head of the creek. He stated that the ore is pockety, occurring as "boulders" in breccia. No persistent vein.

The Bush family has been using manganese concentrate for fertilizer. He states that it adds color to foliage and acts as a fertilizer; that he can tell acres in his fields where manganese occurs by the more lush vegetation. He would like to sell to some reliable outfit, who, if they purchase, are financially able to handle the situation. A Mr. Hayden of Grants Pass has been up to the place several times.

Workings

A mill about 20' x 40' is now practically ruined, all machinery removed. Buildings is a total wreck and unsafe. Ore was obtained from an open pit and tunnel about 50' above. Another tunnel (reported) several hundred feet in length occurs above these workings; now caved in; would take \$1000 to open it; not visited.

Workings consisted of an open pit with a 30' face. Lower two-thirds is composed of a brick-red agglomerate of tuff, cut by small stringers of

manganese in its lower portion. Upper portion is basalt, fairly fresh, unconformable on the tuff. Basalt is manganese stained and may represent some ore. An upper pit, to the south, is not so deep, extending slightly below the unconformity, and at the south end are two tunnels, one 10' long and the other unexplored. Samples of high-grade and some of the "red-rock" were collected. To the north, a short tram extended, at this upper level. (see photos).

Apparently the manganese-bearing solutions penetrated the rock of the tuff series, depositing the manganese in joint-planes and cracks. At certain places, ore was concentrated, perhaps by some concretionary process, to form "boulders" of high-grade. Method of occurrence would suggest circulation waters as means of concentration; it may be that the deposition of manganese bears some relationship to the deposition of cinnabar and formation of altered rock-clay areas by hydrothermal solutions; ie. after the solutions had lost their heat, and circulated nearer the surface, manganese was taken into solution and deposited in the joint planes and cracks.

The red tuff bed is exposed over a horizontal distance of not over 100' before the overburden of basalt would necessitate underground mining. The ore is supposed to be in the tuff, of low grade. Open pit mining would be practical over a small area only. No evidence of quantity of ore was obtained during brief examination, or probable downward extension of deposit; but in my opinion the "ore-bed" would not have any particular depth. It might underlie the basalt, but probably not for any distance as the deposit appears to be formed by circulation waters near the surface.

Previous reports

This area has been reported by J. T. Pardee, in Bulletin 725-C of the U. S. Geological Survey, in which not only the Tyrell, but the Newstrom to the north, and many others in this area north and east of Medford are treated. A copy of Mr. Pardee's report on the Tyrell property is reproduced herewith and from my hurried examination appears to give a fair picture of the situation. Blue prints in the files of the old Oregon Bureau of Mines and Geology are attached.

Conclusions:

No extended body of high-grade ore is available in this district. It may be that there is a considerable body of low-grade ore in the tuff; the quantity and quality would necessarily be outlined by drilling. This occurrence, and others nearby suggested the possibility of mining and handling the ore in a manner similar to that of the Rustless Iron and Steel Company in their chrome operations in southern Oregon; i.e., from a number of isolated localities to collect ore, which in the aggregate would represent a sizeable deposit. The Lake Creek District, as described by Pardee, the area north of Medford in the Evans Creek area, and occurrences on the southern Oregon coast in Coos and Curry counties should be prospected.

Ray C. Treasher
Geologist

DEPOSITS OF MANGANESE ORE IN MONTANA, UTAH, OREGON, AND WASHINGTON

By J. T. Pardee

UNITED STATES GEOLOGICAL SURVEY

Bulletin 725-C

Tyrell

The Tyrell mine is on the east side of Lost Creek about 15 miles in a straight line east northeast of Medford. The nearest post office is Lake Creek, 5 miles to the northwest, and the nearest shipping place is Eagle Point, on the Pacific and Eastern Railway, 12 miles farther away. The mine is conveniently reached from Medford by automobile over a road 30 miles long that passes through Eagle Point and Lake Creek. Development of the deposit by open cuts and drilling was begun in the fall of 1917 by the Manganese Metals Co., which later built a concentrating mill capable of treating about 20 tons of crude ore in 24 hours. Prior to July 15, 1918, the mill was operated intermittently and produced about 200 tons of concentrate. Late in the summer of 1918 Victor Rakowsky, of Joplin, Mo., prospected by drilling a part of the land controlled by the Manganese Metals Co., on which he had obtained an option.

The mine is about a mile above the junction of Lost Creek and South Fork of Little Butte Creek, on a northward-descending spur that separates the two streams. The altitude of Lost Creek is about 2,000 feet, and the summit above the mine rises from 400 to 600 feet higher.

The rocks are nearly horizontal basaltic flows and tuffs. A dense dark-gray basalt of a platy habit occupies the lower part of the slope east of Lost Creek. With the aid of a hand lens small laths of feldspar and

grains of olivine are visible in it. Next above this is a layer at least 100 feet thick of soft, porous brick-red tuff, and above the tuff, forming the top of the spur, is a basalt generally similar to that on the lower part of the slope. At the south side of the mine the rocks mentioned are cut by a steeply pitching diabase dike 10 feet wide that strikes east.

The main working is in an open cut 100 feet long and from 20 to 30 feet deep on the uphill side. It is made on the steep west slope of the spur smaller cuts are made on the same level; on the summit, at the same or a slightly higher level, an area of 3 or 4 acres has been prospected by drilling. At a level about 40 feet lower is an adit run part way beneath the main cut.

The ore is found in the upper part of the red tuff as irregular veinlets and nodules. (See Pl. X,B.) The main cut exposes a layer of tuff 16 feet thick, the lower 10 feet of which is rather thickly crowded with these bodies. The other workings, including the drill holes, show that the ore-bearing layer is practically continuous northward for 1,000 feet and that, at least on the nose of the spur, it extends a considerable distance under the basalt. A minimum thickness of 6 feet is shown in places north of the main cut, and one of the drill holes is said to have passed through 30 feet of manganiferous material. South of the main cut the ore-bearing layer is cut by a diabase dike, beyond which for a short distance a little ore-bearing material is exposed here and there, but its extent in that direction is not determined.

The ore consists of manganese oxides, chiefly manganite, with a moderate amount of psilomelane and a little soft black and bronze oxides. These minerals have filled cracks and cavities, replacing the tuff very little if

at all. The manganite is of fibrous to prismatic crystal habit, the aggregates commonly showing plumose forms. Sections of the ore bodies generally show an outer thin shell of psilomelane, succeeded by one or more concentric layers of manganite. In some nodules an unfilled space remains in the center. The soft oxides are practically confined to the upper or weathered parts of the manganiferous layer. Commonly they preserve the outward crystal forms of manganite. Locally a little gypsum occurs with the manganese minerals, and barite is reported in some of the ore. In the manganiferous layer, especially in the upper part, the tuff is more or less altered to a soft clayey material consisting largely of kaolin and iron oxides. A waxy pale greenish-yellow variety of kaolin is commonly associated with the softer manganese oxides.

The crude ore treated at the mill is reported to have averaged about 20 percent of manganese. This material was selected from the lower 10 feet of the manganiferous layer, in which most of the harder oxides are found. A sample obtained by Mr. Parks, representing the lower 12 feet of the layer at one place in the main cut, contained 14.86 per cent of manganese. Other samples mostly representing the upper part of the layer as exposed in the smaller cuts contained less, the minimum reported by Mr. Parks being 2.13 per cent. Samples of two car lots of concentrate reported by the Manganese Metals Co., carried 47.5 and 48.5 per cent of manganese, 11.1 to 14.5 per cent of silica, 1.4 to 0.9 percent of iron, 0.09 to 0.207 percent of phosphorus, and 0.08 to 0.16 ounce of gold to the ton. According to Mr. Rakowsky, the concentrate from a sample treated at Joplin, Mo. showed still more manganese and less silica than the samples mentioned, above.

It is reasonably certain that the Tyrell mine contains a large body of material that carries from 2 to 3 to 15 percent of manganese, the richer parts of which are probably workable under conditions approximately those of 1918. Most of the higher-grade material so far developed is within 150 feet north of the diabase dike, though that rock evidently was not the source of the manganese. Probably, however, it shattered somewhat the adjoining mass of tuff, which was thus made more favorable for mineral deposition.