

DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

PRESS BULLETIN

EDITORS PLEASE OBSERVE RELEASE DATES STRICTLY

Washington, D. C.

OCTOBER, 1918

No. 383

For use not before

THURSDAY, OCTOBER 10.

**MANGANIFEROUS ORE IN
LAKE CREEK DISTRICT,
JACKSON COUNTY, OREG.**

Investigations by the United States
Geological Survey.

Deposits of manganese and manganiferous ores in many parts of the United States have been examined during the last two years by geologists of the United States Geological Survey, Department of the Interior. This is essential work, because the limitation of shipping facilities has reduced the imports of manganese ore from other sources than the West Indies and Central America in 1918 nearly one-third below those of 1917 and there is a prospect that they will be still further reduced in 1919. The importation of the iron-manganese alloy ferromanganese has decreased in much greater proportion and probably will soon be stopped altogether. To offset these decreases in the supply of manganese the Geological Survey has assisted in stimulating the domestic and the near-by foreign production by examining the manganese deposits in this country and in the West Indies with the view of determining the availability of the ore. The producers of domestic manganese ore have responded actively to the call made on them and have increased their production from 27,000 tons in 1916 to 116,000 tons in 1917. It now appears that the production of ore in 1918 will be 185,000 tons.

Manganese is used in various ways. Metallic manganese in the form of ferromanganese is alloyed with steel to make manganese steel and manganese dioxide is used in the manufacture of dry batteries, in glassmaking, and in the chemical industries. Manganese, however, is used principally in making all Bessemer and open-hearth steels, in which it is incorporated in the form of iron-manganese alloys, which serve as deoxidizers and purifiers of the molten metal. More than 95 per cent of all the manganese consumed in this country is used for this purpose.

An examination of several manganiferous deposits in Oregon, including a reconnaissance of 150 square miles near Lake Creek, Oreg., was made in July, 1918, by J. T. Pardee, a geologist of the United States Geological Survey, Department of the Interior, in company with Henry M. Parks, Director of the Oregon Bureau of Mines and Geology. Mr. Parks has kindly placed at the disposal of Mr. Pardee the results of his previous work in this area, and Messrs. Parks and Pardee are jointly responsible for the estimates and conclusions here given.

Geography.

So far as known the manganiferous deposits of the Lake Creek district are confined within an area of about 150 square miles in the east-central part of Jackson County, Oreg. The area is rather sparsely settled, and farming is the principal industry. The nearest large town is Medford, which is 15 miles directly southwest of the deposits but nearly twice that distance by the available roads. Eagle Point, a town on the Pacific & Eastern Railway, is the most convenient shipping point. The surface of the region is hilly and in places mountainous, but only moderately rugged. The local relief ranges from a few hundred feet to 2,000 feet or more, and the general elevation is between 2,000 and 2,500 feet. Streams are numerous, though most of the smaller ones become dry in summer. The climate is mild and the year is made up of a wet and a dry season, corresponding to winter and summer. Most of the rather heavy winter precipitation falls as rain. The greater part of the surface that lies below 2,500 feet is covered with a mixed growth of madrona, manzanilla, and chapparal bushes and rather scrubby oaks. At higher elevations fir and pine trees are abundant.

Geology.

The area is underlain by igneous rocks that appear to be chiefly basaltic and andesitic flows and tuffs. The sequence of the rocks in part in the Lake Creek district comprises, beginning with the lowest flow, a platy basalt, 500 feet or more thick; a red basalt tuff, commonly manganiferous, 100 to 300 feet or more thick; a platy basalt, a few feet to 100 or more feet thick; dark gray to buff, locally manganiferous, andesitic tuffs and breccias, a few feet to 500 feet thick; vesicular to compact massive dark gray and purplish gray andesitic flows and tuffs, about 500 feet thick; and dense black basalt that weathers light gray on the surface, a few feet to more than 100 feet thick.

The red tuff is made up chiefly of pumiceous fragments, most of them smaller than a coconut. It is nearly everywhere firmly consolidated and is prevailing of a deep brick-red color. The gray tuffs range from fine compact ash to rather coarse volcanic breccias. Only insignificant amounts of manganese were observed in rocks other than the tuffs. All the layers dip 8° to 10° ENE, and apparently have been broken by faults with downthrow prevailing on the west. At the Tywell mine the red tuff is cut by an andesite dike that appears to lead to an overlying andesitic flow.

The rocks of this district resemble those of part of the middle or later

Tertiary volcanic series of central Oregon and may be of the same age or series.

Manganiferous Deposits.

Manganese oxides are locally plentiful in the gray tuff on the Gus Nichols and Vestal claims but are confined chiefly to the upper part of the red tuff. Most of the outcrops of this rock show considerably more manganese than the other rocks. Pits or other workings show that at the depth of a few feet the rather soft oxides seen at the surface generally give place to hard, compact material containing abundant manganite. In several places bodies of hard oxides have filled cracks and vesicles and have replaced some of the rock. The exposed parts of these bodies appear to be free from foreign matter and sharply distinct from the barren parts of the tuff. The results obtained at a small plant operated by the Manganese Metals Co. appear to show that material rich enough to be called ore should contain not less than 10 per cent of manganese, but most of the manganiferous material seems to be so easily workable that even such as contains only 7 or 8 per cent of manganese might be mined and milled profitably if worked on a larger scale.

At the Tywell mine a face of ore estimated to average 20 per cent of manganese is exposed for a length of 150 feet and a height of 10 feet. It extends farther horizontally in two directions for unknown distances—possibly for 1,000 feet—and at some places it may be considerably thicker than it is at the exposure. The information afforded by drill holes and open cuts and the inferences drawn from the distribution of float indicate that this body probably extends through 4 acres or more and contains about 10 per cent of manganese. Though practically no ore has been prospected or mined elsewhere in the district the red tuff in several places at the surface shows a mineralization comparable with that at the Tywell mine, and the areas of tuff that bear promising manganese stains include several hundred acres.

In the most promising areas the tuff is either uncovered or lies beneath only a few feet of overburden. At the Tywell mine part of the tuff area is overlain by lava that ranges in thickness from a few inches to 100 feet or more. In the principal working, a large open cut, the ore has been followed back into the hill to a point where the overlying lava is 15 feet thick. It appears safe to assume that the ore extends at least a few feet farther under the lava, but practically no evidence of its extent could be obtained. As most of the deposits of manganese oxide in the Northwest are superficial, the Lake Creek deposits probably do not extend very far beneath the lava, and the lava-covered areas have therefore been left out in making the estimates of known and probable ore reserves here presented.

The manganese oxides were clearly formed later than the tuff, and in at least one or two places they were evidently deposited by descending solutions. No minerals which suggest that the ore is of deep-seated origin were found, and it is doubtless residual, having been derived by weathering from some rock that contained rather more than the ordinary amount of manganese. The information now available, however, is not sufficient to

indicate whether the original source of the manganese was the tuff itself, the adjacent lavas, or some formation not exposed.

Bodies of jaspery quartz and silicified lava that contain considerable quantities of manganese oxides were found at some places, but their relation to the manganiferous bodies described is not clear. Possibly they may represent siliceous manganiferous lodes of deep-seated origin, which, on weathering, produced manganese oxides that were carried in solution into the readily permeable tuffs.

The manganese oxides have apparently been partly leached out of the weathered tuff. At the Tywell mine, 5 to 10 feet from the surface, there are many cavities that appear to have been filled with manganese oxides but that are now nearly empty, and most of the oxides remaining in other places are soft. Apparently the manganite in the unweathered parts of the deposit was changed by weathering to pyrolusite, part of the manganese being dissolved and carried away.

In addition to the manganese oxides and silicate minerals, the crude ore contains some hematite and limonite and a little gypsum and zeolite. The concentrate is reported to contain a little barite. Data given by the Manganese Metals Co. show that the ore so far mined has averaged about 20 per cent of manganese. Car samples of 2 shipments of concentrate ran 47.5 and 48.5 per cent of manganese, and assays of other samples of concentrates are reported as follows:

Analyses of concentrates of manganese ore from the Lake Creek district.

	Gold.	Silver.	Iron.	Manganese.	Phosphorus.
1.....	0.08	11.1	1.2	52.5	0.09
2.....	.08	14.5	1.4	46.5	.207
3.....	.16	11.15	.9	52.8	.174

Ore Reserves.

About 1,500 tons of ore, containing at least 15 per cent of manganese, is "in sight." In addition, incomplete prospecting by drilling and by open cuts indicates that at least 4 acres are probably underlain by 10 feet of ore (about 120,000 tons) containing probably 10 per cent of manganese. The surface indications in other parts of the district warrant an estimate that they may yield 130,000 tons more of material carrying at least 10 per cent of manganese, so that the probable reserves of ore of this grade amount to at least 250,000 tons.

Mining.

Manganese mining is a new industry in the Lake Creek district, actual development work having been begun late in 1917. Since October of that year the Manganese Metals Co. has explored by open cuts and drill holes 8 or 4 acres on the Tywell ranch, about 5 miles southeast of Lake Creek post office, and has erected a mill capable of treating 20 tons of crude ore in 24 hours. This mill has been in operation intermittently since March 15, 1918, and has produced concentrates that contained an average of about 45 per cent of manganese, 4 tons of crude ore yielding 1 ton of concentrate. Since this company began work the known

limits of the manganiferous area have been considerably extended by prospectors and a large number of claims have been located.

The cost of hauling concentrates by teams from the Manganese Metals Co.'s mill to the railroad at Eagle Point is now \$4 a ton. At a moderate expense the roads could be made usable for heavy trucks throughout the dry season, from April to November. Water for working many of the deposits can be obtained almost throughout the year without great expense, and timber for mine and mill construction is within easy reach of most of the mines. Wages are \$5 or more a day, and mining supplies are about as expensive as they are elsewhere in the Northwest. Electric power is available from a transmission line passing through Eagle Point.

Options on several claims, including the larger part of the holdings of the Manganese Metals Co., have recently been obtained by Victor Rakowsky of Joplin, Mo.

Future Production.

Mr. Rakowsky has arranged to begin working the deposit on the Tywell ranch by churn drilling and has taken steps to obtain water and machinery sufficient to work on a large scale such ore bodies as he may find. He will probably have demonstrated the value of his property and of his other options within a few months and his plans contemplate at least one mill having a daily capacity of 500 tons of crude ore, which is to be in operation before the end of 1918. Unless some unforeseen contingencies arise, the mill of the Manganese Metals Co. will no doubt continue production indefinitely at its present capacity.

The results so far obtained by Mr. Rakowsky on a test shipment and by the Manganese Metals Co. show that a high-grade manganese concentrate can be profitably made from the ore at the Tywell mine and presumably from that at the other Lake Creek deposits. In fact, the richness or purity of the manganese oxides in this region and their sharp, clean separation from the waste make these deposits workable and distinguish them from other low-grade deposits, such as those which are associated with quartz lodes. Though the extent of the workable bodies has not yet been demonstrated there is evidently sufficient ore in this district to warrant extensive operations.

For use not before

WEDNESDAY, OCTOBER 9.

INCREASED PRODUCTION OF ARTIFICIAL ABRASIVES.

A marked increase in the output of artificial abrasives in the first half of 1918, as compared with the first half of 1917, is shown by figures compiled by Frank J. Katz, of the United States Geological Survey, Department of the Interior, and obtained in cooperation with the Mines Branch of the Canada Department of Mines. There was little change in the output of corundum and a decrease in the output of emery in the United States.

Emery and Corundum.

During the first half of 1918 emery ore was produced by seven operators in the Peekskill district, in New York,

and by one in southern Virginia. Corundum is produced from one mine in Macon County, N. C., and by one company operating in Renfrew County, Ontario. The combined mine output of emery and corundum in the United States and Canada from January 1 to June 30, 1918, was 5,455 short tons. During the same period the producers sold, shipped, or used in the manufacture of abrasive articles approximately 4,500 short tons, and the stock on hand at the mines June 30 was about 1,500 short tons. As compared with the same period in 1917, there was a large decrease in the quantity of emery mined, and the output from January to June, 1918, inclusive, was considerably less than half of the mine output of emery for the entire year 1917. During the first half of 1918 corundum was produced at about the same rate as in 1917.

Artificial Abrasives.

Artificial carbide abrasives, including carborundum, crystolon, and carbolon, were produced during the first half of the year 1918 by two companies in the United States, operating plants at Niagara Falls, N. Y., and at Blasdell, N. Y., and by three in Canada, operating plants at Shawinigan Falls, Quebec, and at Chippewa and Thorold, Ontario. The plant output of crude carbide abrasives was 6,583 short tons. During the same period the producers sold or used in the manufacture of abrasive materials 5,633 tons, and on June 30 there remained in their hands as stocks 2,840 tons.

Aluminum oxide abrasives, including alundum, aloxite, exolon, lionite, and natite, were manufactured in the United States by four companies, three of which operated plants at Niagara Falls, N. Y., and one at Blasdell, N. Y., and in Canada by five companies, which operated plants at Niagara Falls, Chippewa, and Thorold, and two at Hamilton, Ontario. The combined output of these plants in the first half of 1918 was 28,341 short tons. During the same period the producers sold or used in the manufacture of abrasive materials 28,161 short tons, and on June 30 there remained in their hands 26,221 short tons. The combined figures for carbide and alumina abrasives for the first half of 1918 are: Manufactured, 34,974 short tons; material sold or used, 33,794 short tons; and stock in hands of producers June 30, 29,061 short tons. As compared with the first half of 1917, there was an increase in production of nearly 60 per cent. The production in the first half of 1918 was approximately equal to 62 per cent of that for the whole year 1917.

For use not before

TUESDAY, OCTOBER 8.

QUICKSILVER DEPOSITS IN THE PHOENIX MOUNTAINS, ARIZ.

The present exceptional demand for quicksilver in the manufacture of fulminate gives the domestic deposits of this war metal particular interest. Deposits recently discovered in the southern part of the Phoenix Mountains, 10 miles northeast of Phoenix, Ariz., are described in a short paper prepared by F. C. Schrader, just published by the United States Geological Survey. The deposits are easy of access, and being near the rich agricul-

Arizona Mining Journal
July 11, 1942

Lohi Co.
Jackson

Examinations for possible development are being made at the Tyrrell mine east of Medford in Jackson County, Oregon. The property, which is owned by B. M. Bush of Lakecreek, Oregon, was a manganese producer during the first world war.

Arizona Mining
Journal - July 29, 1942 Lake Co.
Jackson

It has been reported that the Tyrrell mine east of Medford in Jackson County, Oregon, was sold to George De Martini of San Francisco, California, by B. M. Bush, Underwood, Washington, owner. It is understood that, before selling the property, Bush discovered additional ore which increased the length of the deposit more than 400 feet. The sale included the entire ranch of 200 acres, and De Martini is planning to install milling equipment in the near future. The Tyrrell mine was a manganese producer during the first world war.
