

OREGON'S PRODUCTION OF PRECIOUS METALS GAINS

Industry Is Stimulated by War Demands—Output for 1917 Worth \$6,500,000—Copper Increase Big

Electric Gold Dredge of Empire Gold Dredging & Mining Co. in Grant County.

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NEVER before in the history of the world has man's dependence on the metals been so keenly realized as in the present world war. A generation ago battles were won by the momentum and strategic handling of massed troops. Today the measure of victory is decided in terms of the number of tons of steel brought into play against the enemy as guns or hurled as showers of bursting shells.

This is a war of steel—iron alloyed and alloyed with other metals, fashioned into implements and engines of warfare terrible in their destructive force and attaining efficiently their object—that of killing and destroying. The pacifist might be sure of realizing his dream if at one stroke he could eliminate all metals from the prosecution of the war, for weapons of the Stone Age would discourage the host of modern armies.

Metalurgy Achieves Wonders.

Metalurgy has achieved wonders in peaceful pursuits of industry. Now, in time of war, followers of the science are called upon to produce in terms of quality, quantity and power those things that will confound, outdo and conquer the enemy. New armor plate calls for a projectile that will pierce it; this, in turn, another more resisting plate, and so another projectile. We have seen a sky pilot supreme at an elevation of 10,000 feet. The next week he is sent crashing to earth by a bomb from above, the feat made possible by a new engine, a new design and combination of metals. Armored battle-ships, destroyers and submarines, guns of various calibers, steel "tanks," railway equipment, airplanes and projectiles are but a few of the multitude of things requiring metals necessary in the equipping of an army. The waste is regrettable. A torpedoed ship or a shell bursting over "No Man's Land" means an irretrievable loss to future generations, and nature is called upon again and again to produce the raw materials from her hidden storehouses of wealth.

Oregon Produces War Metals.

Iron, copper, gold, silver, lead, zinc, nickel, tin, tungsten, chromium, antimony, molybdenum, platinum, manganese and quicksilver are the war metals, and never before has the industry been called upon to produce them in such enormous amounts. Old mines have been reopened, waste dumps salvaged of their metallic content; mountains and plains scoured and searched for new deposits. Metals formerly of little use and considered a nuisance have found a use and ready markets.

Almost without exception all of these metals are found in Oregon. Not all, however, are found in quantity or under conditions that make their recovery possible, but the mere fact of their presence holds forth the possibility that in future, under stress of increased demand, cheaper transportation or better methods of extraction, they may be utilized. Those metals which are produced are being marketed in quantities of such magnitude that it may be truly said that the mines of Oregon are doing their bit to help win the war. A brief description of Oregon's war metals, with some features

in increasing the copper output of the state are the Copper King mine and the Blue Ridge property.

Gold has depreciated in terms of supplies and labor and a falling off in production is rather to be expected. During the first half of the year a decrease of \$75,000 was recorded by the

restriction of shipping and the unprecedented demand. It has become necessary to develop domestic deposits. In 1905 the total production of the United States was but 22 long tons. In 1914, 600 tons and 47,025 tons in 1915, with imports amounting to 115,945 tons. The estimated 1917 domestic production is 18,900 tons, 12,000 tons of which came from the mines of Oregon, the output being about equally divided between Northeastern Oregon and Southwestern Oregon. At Pacific Coast main line points chrome sold last year for prices ranging from \$18 to \$20 per long ton.

Deposits of chromite are confined to serpentine rocks, and since serpentine is one of the rocks commonly found in Southern and Eastern Oregon, these areas furnish the necessary favorable conditions and search has revealed deposits formerly unknown. There are numerous outcrops of chromite in Jackson and Josephine counties. The most important ones which have produced in the past year were the Goldconda mine, near Waldo, the mines of the California Chrome Company, on the Illinois River, while other deposits are known and being developed near Riddle and on Sexton, Coyote and Starvout creeks. In Eastern Oregon chromium has been produced mainly from the deposits lying near Canyon City and Prairie City, in Grant County.

the ore being shipped from Prairie City over the Sumpter Valley Railway. During the process of weathering and wearing down of the serpentine areas containing chromite the material is found in dark colored grains in the sands and, to some extent, concentrated by water action. This is particularly true of certain sections of the Southern Oregon and California Coast, where the streams drain the water sheds of the serpentine chromite-bearing areas. In the black sands along the coast chromite sand is found to be present in quantity, which has induced some speculation as to its possible recovery.

The Oregon Bureau of Mines and Geology is considering the problem of testing these sands by some method of concentration and obtaining a marketable product. Whenever a cheap, practical method of separating chromite from the other heavy minerals in these sands has been perfected, the ocean beaches and stream deposits of Southern Oregon, and those of Del Norte County, California, doubtless could equal the present total production of chromite in the United States.

The greatest use to which quicksilver is put in the making of war materials is in the manufacture of fulminate and percussion caps used in cartridges and blasting caps and other detonators. In normal times between

and 40 per cent of the domestic production was used in making mercuric fulminate, the remainder being used in drugs, chemicals and scientific instruments.

The United States uses about 165,000 ounces of platinum each year, but has been mainly dependent upon foreign supply. Russia has supplied about 95 per cent of the world's total, but with the closing down of their mines the search for domestic supply has been stimulated greatly. Platinum is used in jewelry, electric apparatus, dentistry, chemical ware and chemicals. One of the most important uses at present is the making of chemical ware used in the sulphuric acid industry, so essential to the manufacture of explosives. The normal price of about \$45 an ounce has risen, with fluctuating tendencies, to about \$100 or more an ounce. Oregon produces some considerable amount each year from placer operations and from the beach sands of the southern coast.

The largest producer of platinum in

the state is the Logan-Simmons hydraulic gold mine in Josephine County, where the platinum is recovered with the gold. The metal is reported from some districts in Eastern Oregon, but is not recovered in any amount.

There are certain metals found in this state which, while not adding greatly to productive wealth, nevertheless deserve mention as adding to the state's latent resources. Tungsten, molybdenum, manganese and nickel are metals used in the making of alloy steels possessing properties of hardness, toughness and durability which are found indispensable in the arming and equipping of armies. Likewise, antimony is used in certain special alloys, such as type metal, ball-bearing metals for machinery bearings and special types of bullets and projectiles.

War has demonstrated the fact that the United States, under pressure, can be self-sustaining and independent of foreign supply. Why not in times of peace? We have found that the trade-

mark, "Made in Germany," is a colossal myth when the brains of this country once assert themselves. The mining industry, as a necessary unit of our industrial world, is not receiving the support that it merits. Compared with agricultural interests, if the Federal Government should appropriate the same proportionate amounts, based upon production, the mining industry would get more than \$5,000,000 annually. Instead of the \$2,335,000 it now receives. The constructive, helpful aid of Federal and state bureaus is not to be minimized—they have done all that could be accomplished with means at their disposal, but it is a recognized fact that greater aid before and during the earlier period of the war would have saved the Nation millions in increasing our mineral supplies.

The mining industry after the close of the war is sure to grow in importance, along with other industries, and it will be a business calling for the highest type of executive ability, scientific skill and good management.

OREGON'S ANNUAL METAL PRODUCTION.

1911	\$ 478,398
1912	558,899
1913	1,746,402
1914	1,676,153
1915	2,013,000
1916	2,206,000
1917	(estimated) 3,500,000

as to occurrence, use and production figures may be of interest.

Copper Production Increases.

Official statistics for 1917 are not yet available, but when published they probably will show that the total yield of mineral products, both metal and non-metal, will exceed \$5,000,000. In 1916 the production of metals in Oregon increased \$325,969, or 47 per cent, as compared with 1915. For 1917 this figure will be increased substantially. The year just closed has produced some remarkable figures in copper production in the state, and since 1914 a steady increase has been noted. Our copper mines are located mainly in two widely separated districts in Southern Oregon, in Jackson and Josephine counties, and in Northeastern Oregon, in Baker County. The total production of metallic copper in 1914 was 3398 pounds. This increased to 797,471 pounds in 1915 and 2,433,967 pounds in 1916, with an estimated yield of 3,000,000 pounds in 1917. To make the figures more striking the production in pounds increased 276 per cent over 1915, or, in point of value, 974 per cent. Based upon estimated production in 1917, the increase last year was 23 per cent over 1915.

Among the most active producing copper mines of this state may be mentioned the Queen of Bees and Waldo mines, located in Josephine County, owned and operated by Twoby Bros. and associates, and the Irondyke mine in the Homestead district in Baker County. The latter mine has shown some remarkable developments in the last few months, and bids fair to become one of the big producers of the Northwest. During the last Summer, on the lower levels, an ore body was opened up of such width and value as to insure a large tonnage and long life to the mine. The company has installed up-to-date concentrating equipment of the flotation type, and makes regular shipments of concentrates to the smelters. Another large property in the same district which is watched with interest is the McDougall group. This property, of some 48-odd claims, was recently purchased by large interests, and the property is being exploited in a most thorough-going manner. Two other properties in Southern Oregon which promise to do their share

United States Geological Survey, which was accounted for by the closing down of certain small producers until such time as labor and supplies be more favorable to gold mining. An increase of gold, however, from placer workings was noted, and, since gold is associated with copper and other base metals and recovered with them, it is likely that the deficiency has been more than counterbalanced. In 1915 the production was \$1,847,398, which increased to \$1,526,000 in 1916, which figure will be about equaled in 1917.

Baker County produces the greater bulk of gold, the production coming from deep mines as well as placers. Three dredges are working successfully, two belonging to the Powder River Dredging Company, working near Sumpter, and one belonging to the Empire Gold Dredging & Mining Company, working near the town of John Day. Hydraulic mines in Grant, Jackson, Josephine and Baker counties have been active and are producing more than in 1916.

Among the active deep mines are numbered the Cornucopia Mines Company, the Baker Mines Company, both located in the Cornucopia district; the Commercial Mines Company, in the Mormon Basin district; Ben Harrison mine, in the Greenhorn district; and the Taber Fraction, in the Cracker Creek district.

Silver Makes Gain.

As the copper output is augmented, so is that of silver, as silver is commonly associated with copper and recovered with it. In 1915 the silver production of the State amounted to 117,947 fine ounces, which increased to 227,569 ounces in 1917. Due to higher prices occasioned by the demand of foreign countries for silver, the medium of exchange, prices have greatly advanced, which has stimulated the production throughout the country. A conservative estimate of Oregon's production of silver in 1917 is placed at 230,000 ounces.

The importance of chromium as a war metal in the manufacture of armor-piercing projectiles, airplane for high speed tools and automobile and other special steels can hardly be overestimated. This country has heretofore depended upon foreign mines for the greater part of the supply. With the

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