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[Copper in] Bolivia

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Bolivia. (By J. T. Singewald, Jr., and B. L. Miller).—The estimated production of copper in Bolivia during 1915 is about 3000 tons² which is slightly in advance of the 1914 output of 2743 metric tons. The value of the copper output of Bolivia now

ranks second to that of tin due to the increase in production from the Corocoro district since the opening of the Arica-La Paz Railroad. During 1914, there were exported from Bolivia 3874 metric tons of copper concentrates carrying 80 per cent. to 90 per cent. copper and 4793 tons of ore rated at 40 per cent. to 50 per cent. copper. In addition to the Corocoro production, there is a small copper output from the mines of the *Compania Huanchaca de Bolivia* at Pulacayo; from those of the *Aramayo Francke Mines, Ltd.*, to the south of Pulacayo; about 50 tons of cement copper carrying 60 per cent. to 70 per cent. copper resulting from the lixiviation of the Potosi silver ores, and a small amount from the Oruro silver ores.

The Corocoro district is located near the western edge of the Bolivian plateau at an elevation of 13,000 ft., 340 km. by rail from Arica. It is connected with the main line from Arica to La Paz by a 6-km. branch from Tarejra. Before the completion of this line, less than 3 years ago, the products of the district had to go out by way of the Desaguadero River to Lake Titicaca and thence by rail via Arequipa to Mollendo. The advent of the railroad consequently made a great reduction in transportation costs and hence brought on a new era in the development of the district. With the exception of a few very small mines, the operations are entirely in the hands of the *Corocoro United Copper Mines, Ltd.*, of London and Paris, and the *Compania Corocoro de Bolivia* of Santiago, Chile. Rumors were persistent in Bolivia throughout the year that the holdings of these two companies were to be acquired by American interests, and at the close of the year it was definitely announced that the *Anaconda Copper Mining Co.* had the mines under option and their engineers were in Bolivia making an examination of the properties. The advent of this company into Bolivia will mark the first large investment of American capital in a Bolivian mining enterprise and place Corocoro in the front rank among copper-producing districts.

Corocoro shares the distinction with the Lake Superior region of the United States of being the two important copper districts in which native copper is the chief form of occurrence of the metal. Until Corocoro had railroad connections this was the only type of ore worked, but since then the sulphides have furnished an important part of the output of the district. The sulphide ores are hand-sorted to run 20 per cent. copper and are exported to the United States and Europe. The reject is being stored for future treatment by flotation. These ores consist of chalcocite which at the surface has undergone alteration to the green basic sulphate, malachite, and azurite. A curious feature of the mineralization is that the sulphides are found near the surface and in depth give way to the

native copper ores. Both types represent impregnations along the arenaceous beds of a series of red shales and sandstones.

During 1915, the Corocoro United Copper Mines, Ltd., was producing about 300 tons of native copper ore daily, averaging $2\frac{1}{2}$ per cent. to 3 per cent., and the Compania Corocoro de Bolivia about 200 tons daily averaging $4\frac{1}{2}$ per cent. copper. The output of sulphide ores was greatly interfered with on account of a scarcity of cars on the railroad. The Corocoro United Copper Mines, Ltd., was shipping about 30 cars of 22 per cent. ore monthly, and the other company which had several thousand tons in readiness for shipment had stopped mining them temporarily while waiting for the car shortage to be relieved. According to the *West Coast Leader* for Mar. 2, 1916, the production of the entire country for 1915 was 17,872 metric tons of copper, valued at \$3,820,821.