

1916

# [Copper in] Peru

Benjamin LeRoy Miller

Joseph T. Singewald Jr.

Follow this and additional works at: <http://preserve.lehigh.edu/early-faculty-publications>

---

## Recommended Citation

Miller, Benjamin LeRoy and Singewald, Joseph T. Jr., "[Copper in] Peru" (1916). *Early Publications of the Lehigh Faculty*. Paper 44.  
<http://preserve.lehigh.edu/early-faculty-publications/44>

This Article is brought to you for free and open access by Lehigh Preserve. It has been accepted for inclusion in Early Publications of the Lehigh Faculty by an authorized administrator of Lehigh Preserve. For more information, please contact [preserve@lehigh.edu](mailto:preserve@lehigh.edu).

*Peru* (By Joseph T. Singewald, Jr., and Benjamin LeRoy Miller).—  
Copper is by far the most important metal produced in Peru, exceeding

in value the total of all other metals. After a great depression in the industry during the latter half of the year 1914, the year 1915 was marked by a rapid recovery, until in the latter part of the year copper was being produced at a rate never before known in that country. At the close of 1914 the Cerro de Pasco Mining Co., the largest producer, was producing at the rate of 2,500,000 lb. per month, whereas, at the close of 1915 that company had increased its monthly production to 6,000,000 lb. The Backus and Johnston Co.'s smelter at Casapalca with a capacity of over 1,000,000 lb. was also producing at full capacity. In addition there were in operation the Hauraucaca smelter with a production of about 100,000 lb. per month, and a small 20-ton plant on Lake Huacracocha in the Morococha district. All of these plants are on the Oroya railroad and connecting lines in the departments of Junín and Lima, and they account for nearly all of the Peruvian copper production, although almost all of the departments in the Andean region of Peru maintain a small output. The Cerro de Pasco Mining Co. and the Backus and Johnston are both American concerns and together produce over 90 per cent. of the Peruvian copper. The great development of the copper mining industry in Peru in recent years is, therefore, the result of American enterprise and capital. The Hauraucaca smelter is the property of a Peruvian, E. E. Fernandini, and the small plant on Lake Huacracocha of an Englishman named John Galliver.

The copper ores treated in the above-mentioned plants come from the Cerro de Pasco, Morococha, and Casapalca districts. The Cerro de Pasco smelter receives its ores from both Cerro de Pasco and Morococha; the Backus and Johnston smelter from Morococha and Casapalca; and the Hauraucaca smelter chiefly from Cerro de Pasco and the silver ores from the Colquijirca silver mine.

Two events of unusual interest in 1915 were the incorporation of the Cerro de Pasco Copper Corporation and the passage of a bill levying an export tax on mineral products after they had been exempt for many years. The Cerro de Pasco Copper Corporation took over the interests of the Cerro de Pasco Copper Co. and the Morococha Mining Co., and has a capitalization of \$10,000,000 convertible bonds and 1,000,000 shares of stock of no-par value. The bonds are convertible at \$30, so that the nominal capitalization is \$30,000,000. The mineral export tax bill levies a duty whenever the London price of copper shall exceed £60 per ton as follows: £60-£65 a tax of 15s. per ton, and an increase of 2s. for each additional pound sterling increase in price.

As regards their mineral composition the ores of the Cerro de Pasco and Morococha districts are similar and are characterized by an abundance of enargite and famatinite and to a less extent tetrahedrite. The

more commonly occurring copper minerals, chalcopyrite, bornite and chalcocite, are not abundant. In the Cerro de Pasco district the ore-bodies are large replacement masses in rhyolite agglomerates and tuffs and fissure veins cutting these same rocks and a rhyolite area to the west of them. The average grade of the ore of the district is about 11 oz. silver and 7 per cent. copper. It contains less than 1 part gold to 100 parts silver by weight. In the Morococha district there is much greater diversity in the character of the ore-bodies. The country rock of the district consists of limestone, quartzite, porphyry, and peridotite, but the important ore-bodies are confined to the limestone and the porphyry. Most abundant and most productive are fissure veins in the porphyry. At flat contacts with overlying peridotite, the mineralization frequently spreads out along the contact giving rise to extensive sheets of ore called "mantos." The veins in limestone are typically replacement veins and are characterized by frequent enlargements as a result of more extensive replacement along certain strata or at the contact with the overlying rock. The average grade of the Morococha ores is higher than that of the Cerro de Pasco district in both copper and silver, though ores running as low as 5 to 6 per cent. copper are now worked.

The ores of the Casapalca district are more highly argentiferous and run low in copper. Whereas the ores of the other districts are smelting ores, the Casapalca ores require either very careful hand sorting or mechanical concentration before smelting. They carry about 25 to 30 oz. silver and less than 2 per cent. copper. Hand-picked ores may carry as much as 150 to 200 oz. silver. Tetrahedrite is the valuable mineral in these ores.