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COPPER IN 1899.

Copper production in the United States in 1899 was exceedingly active, but for a number of reasons shows only a moderate increase over 1898. In that year the total output, including copper in sulphate, was 535,000,232 pounds. In 1899 the figures as furnished us by Mr. John Stanton, who acts as statistician for the companies, with the month of December estimated, show a total of 585,616,640 pounds, to which is to be added 7,055,997 pounds of copper in Sulphate, making a total of 592,672,637 pounds, and showing an increase of 56,772,405 pounds, or 10.6 per cent. This production is about 65 per cent of the total output of copper in the world, and the United States, therefore, retains — as it is likely to do for many years to come — a commanding position inthe world's market for this metal. Although the increase in production was only a moderate one, the enlargement in consumption was very great. Our total exports in 1899, estimating December, were 115,050 long tons of fine copper, or a little over 20,000 tons less than in 1898 There was no accumulation of stocks by any producer or dealer during the year, so that the increase in production coupled the consumption in that year was greater to our domestic supply in 1899, and that with the decrease in exports indicates that some 35,000 tons of copper were added than in 1898 by this very large quantity. This is not to be wondered at, when we consider the extreme activity in construction work of all kinds, in which copper and its alloys are used; and especially the very large amount of electrical work — railroad power-transmission, lighting and electrolytic — which has been constructed during the year.

The three important producing states heretofore had been Montana, Michigan, and Arizona. In 1898 Montana produced about 40 per cent, of all the copper mined in the United States, Michigan about 30 per cent. and Arizona 20 per cent. The proportions in 1899 changed somewhat, although the States still hold their relative rank. In Montana there was a relative falling off, which resulted from several causes. The chief of these was the litigation which is now going on in Butte, and which involves three large producers — the Anaconda, the Boston and Montana, and the Montana Ore Purchasing Company, and which, through injunctions and other legal orders has interfered with the output of several of the large producing mines. Another cause has been the decrease in production of the Anaconda properties, the causes of which are not entirely clear, especially as the company has ceased making its reports public. It is said, however, that one reason for this is the fact that the grade of the ore is lower at the depths now reached; and it is certain that there is a considerable waste in the somewhat imperfect methods of concentration and other treatment of the ore now in use in the company's works.

The organization of the Amalgamated Copper Company, which owns a controlling interest in the Anaconda, and is understood to be also a very large owner inthe Boston and Montana, the Parrot and the Butte and Boston companies, and which is also owner of the still undeveloped Washoe property — which is said to be extremely valuable—may have an important effect upon the Butte mines. It was given out at the organization of this company that its object was to consolidate under one head all the copper-producing mines of Butte. So far this purpose has been but imperfectly carried out, and the future of the company is still very doubtful. While little can be expected until the present litigation affecting the title to some of the best mines in the district is settled, it is quite possible that improvements in methods may be introduced which will in time much improve the productive capacity of the district, and will make it correspond much more nearly than it does at present to the great possibilities which it contains.

In Michigan the changes in production have not been very large. In some of the older mines such as the Calumet & Hecla, the Tamarack the Quincy, the Osceola and the Wolverine, production has been pushed as far as possible, and there has been a fair increase in the output of copper. In other mines there has been very little change, and in some even a decrease. Thus the Franklin company has failed to find the expected values in its Franklin Junior property, and may be regarded as a worked out mine, and there are other instances of the same kind. When a rise in prices began early in the year, a large number of new companies were organized to work new tracts in the Lake Superior copper region, and several old mines were revived, reincorporated and development work begun. None of these concerns, however, can be yet ranked as producers; some of them are worth little or nothing, and others, which may have value, cannot be included in the producing list before 1901 or 1902, as it is well known it takes three years and an expenditure of $750,000 to make a mine in the Lake Superior district, and what proportion of the new companies will be able to surmount the difficulties as presented is still uncertain.

The largest increase in production, both actual and proportional, has come from the Arizona mines, where work has been carried on very actively in all the large mines. The Arizona Copper Company, the Detroit, the United Globe, the Copper Queen, and above all the United Verde, have been most actively exploited, and have been large producers throughout the year. Some increase has also come from the smaller mines, especially in Yavapai, county, and in the Dragoon mountains in Cochise county, where some promising developments have been made. Some of those which promised much a year ago have made no returns thus far, and this is especially the case in the Grand Canon district. While something may be done in that district when better transportation facilities are provided, it is apparent that some of the Arizona projects which were brought out during the latter half of 1898, and the first half of 1899, must be classed as failures. Nearly all these appeal to the public on the ground of their neighborhood to some large producing mine.

In California the Mountain Copper Company, at Keswick, has continued to be a steady producer. Some of the mines in Shasta county are under development, but none of them is yet a producer on any considerable scale. In Utah there was in 1899 a large comparative increase in the output of copper, the total amounting to about 9,000,000 pounds. Most of this came from the Highland Boy mine of the Utah Consolidated Gold Mines Company, which has been successfully workedthrough the year so far as the production of ore is is concerned, although the new smelting works have not attained the success which was expected. In this state work on the low grade deposits in the Bingham district has been generally abandoned since it has become almost certain that their operation would not pay. Some other deposits of promise are reported, however, which may develop into mines in the future. In Colorado there has been a gain in production, which comes, however, from ores which are worked chiefly for their gold and silver contents; but developments are being carried on actively in Routt and Montrose counties, where the claims are valuable for their copper contents chiefly. In the other western states no important changes can be noticed. The Seven Devils district in Idaho, for which so much has been promised at different times during the past four or five years, has made very little progress. The Grand Encampment district in Wyoming is still encumbered by lack of transportation and other difficulties.

In the East and South there is a prospect of a large increase in copper production in the future. One of the most important changes has been the purchase of a number of the old properties in the vicinity of Ducktown, in Tennessee, by New York parties, headed by the Lewissohns, who promise to work them systematically and on a large scale. In Vermont the Elizabeth mine, at Strafford, has developed a large and valuable ore body, while the old Ely mine at Copperfield has recently been sold to Mr. George Westinghouse of Pittsburg, who intends to work the property systematically and intelligently. There is a prospect also that the mines at Corinth will soon be in a fair way toward regular production.

Copper Sulphate. — The production of copper sulphate in the United States in 1899 amounted to 67,089,499 pounds, an increase of 11,970,138 pounds over 1898. Of the sulphate made last year 26,235,499 pounds were produced as a by-product in the electrolytic refining of copper, and the metal contained in this sulphate is, therefore, added in the total figures above. The demand for copper sulphate, especially from abroad, has been very large in spite of the increased prices, which followed those in the value of metallic copper.

Foreign Production.— There has been a fair, though not a very large increase in the production of foreign mines. On the American continent, Canada shows a considerable gain in 1899, principally from the British Columbia mines, although there has been some also from the copper-nickel mines of the Sudbery district. In 1900 it appears probable that the increase will be still greater, as preparation has been made for working and smelting on a very considerable scale the copper ores of the Boundary district in British Columbia, as well as those of the West Kootenay division. In Mexico the Boleo company has been a large producer and has made considerable additions to its operating plant. While little has been heard from the Inguaran mines, it is understood that development work is proceeding actively and with success. From the minor Mexican producing districts there has been a considerable gain. In South America the Chilean mines have increased their outputs under the stimulus of high prices.

In Europe nearly all the well known mines made a large output in 1899. The Rio Tinto Company is extending its operations and has ordered a large quantity of machinery of American manufacture for addition to its plant in Spain. The Tharsis, in Spain, the Mason & Barry in Portugal, and the Libiola in Italy, have all

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