

NEW GEOLOGICAL REPORT ON LEADVILLE

by

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Released July 14, 1927

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Report by: Courtesy of United States Geological Survey

DEPARTMENT OF THE INTERIOR
MEMORANDUM FOR THE PRESS

Immediate Release
July 14, 1927.

New Geological Report on Leadville.

Big Colorado Mining District Has Produced Over \$400,000,000.

Mining men and others will be interested in a Geological Survey volume just issued by the Interior Department describing the mineral development and the geology of the great Leadville mining district of Colorado --Professional Paper 148.

During 1859 the great "Pikes Peak excitement" lured a continuous stream of emigrants westward, and while many of those whose wagons carried the triumphant device "Pikes Peak or bust" returned later with the device significantly altered to "Busted", the more adventurous and hardy pioneers pushed resolutely up through the rocky gorges toward the sources of the streams. A few of them, early in 1860, found placer gold in the bed of California Gulch, which bounds the present city of Leadville on the south. In spite of the difficulties of communication in this wild region, news of the discovery spread with amazing rapidity, and by July there were about 10,000 people in the camp. It is said that \$2,000,000 worth of gold was taken out during this first summer. The peak of production was soon reached, however, and after the first year the population of this new district, then known as Oro City, rapidly decreased.

Vast Fortunes Overlooked.

Lead carbonate with a high content of silver is said to have been found in the gold-bearing gravel as early as 1861 but was only a source of annoyance because it could not be readily separated from gold in the sluice boxes. In 1868 the first vein was discovered and produced gold, which was found in nests of lead carbonate. This and one or two other veins imparted a fitful prosperity to the district, which seemed to be one of the many small and insignificant producers of gold that abound in the western States. And in 1874 Oro City was almost deserted, and the site of the present city of Leadville was an unbroken wilderness.

If it had not been for the extensive experience of two men equipped with technical skill, it is quite probable that the region would soon have been entirely abandoned and the great bodies of silver-lead ore would have remained securely concealed to await the chance discovery of some future generation. These men, struck by the appearance of the "heavy rock" that annoyed the placer miners, identified it as silver-bearing lead carbonate and quietly prospected the wooded slopes that bordered the gulch. The first lead carbonate in place was found on Dome Hill in 1874, but none was mined until 1876. Production increased rapidly and in 1880 amounted to more than 66,000,000 pounds of lead and nearly 10,000,000 ounces of silver.

Geologist Studied District 45 Years Ago.

In 1880 one of the first undertakings of the newly organized United States Geological Survey was a study of the Leadville mining district. S. F. Emmons was placed in charge of this work, and his preliminary report on the district was issued in 1882. His complete report, which involved a vast amount of laboratory work and preparation of very detailed maps, was issued in 1896. It was known as the Leadville monograph and immediately gained recognition as a classic and as marking a new epoch in the science of mining geology. During the 40 years of intensive mining in the district that have elapsed since its publication this monograph and its maps have been a constant well of information to mining engineers and geologists and especially to local companies, who have called it their miner's Bible.

Mining developments in the district grew so rapidly that Emmons, on revisiting the district after some years, realized the need of a supplementary report and a little later decided that the extent of developments and the vast amount of data available justified a complete resurvey. He planned accordingly, but his administrative duties were so many that his progress with the resurvey was slow. In 1907

he wrote a bulletin on the "Downtown" area. This area had been discovered and developed since the issue of his monograph and maps, which were of much aid in the direction of this new work.

By 1911 he had made a great deal of progress with the resurvey but had made only rough fragmentary drafts of parts of his report when he died. It devolved upon Prof. John D. Irving, of Yale University, who had been Emmons's assistant during much of the resurvey, to carry on the work, but Irving's duties at Yale required the major part of his time, and continued developments in the district made it increasingly difficult to complete the report. A rough draft of most of the report, however, had been made by 1917, before Irving left with the American Expeditionary Forces for France, where he lost his life.

The work was then taken up by G. F. Loughlin, who had studied the newly discovered deposits of zinc carbonate in 1913 and had submitted a report on them. Further field studies were necessary as late as 1925 before the report was completed.

Name Leadville a Misnomer.

After the issue of the original monograph in 1886, important discoveries of lode gold were made about 1890, of zinc sulphide about 1897, and of zinc carbonate in 1911. In spite of the name Leadville, lead has never been preeminent in value in the district's output. After the millions of gold had been taken out silver was the big product until 1903, when it was surpassed by zinc, which has exceeded all the other metals ever since, except in 1922 and 1923, when the zinc market was very dull and silver again became the ranking metal in value. Copper and manganese have contributed annually to the total production, and small amounts of bismuth have been produced intermittently.

Leadville has been hard hit at different times by miners' strikes and industrial depressions, but its most severe depression has been since the World War. Dull markets coupled with labor troubles caused the closing and flooding of some of the most productive mines, which have been reopened only after long, expensive campaigns of unwatering. It is also quite unlikely that such an old district, which has been so thoroughly prospected and has produced a total value of more than \$435,000,000 to the end of 1926, will again attain production figures comparable with those of its most prosperous years, but study of the local mining geology leaves the conviction that, besides the vast amounts of mixed sulphide ore that have been awaiting profitable methods of treatment, considerable quantities of ore remain to be discovered within the heart of the district, and some of the outlying territory is worthy of careful attention.

As mining developments have progressed, geology has become increasingly important in the finding of ore. The new report on the geology and ore deposits of the Leadville district, published as Professional Paper 148 of the Geological Survey, contains a detailed account of the stratigraphic and structural geology, the history of mining developments, statistics of production, mineralogy, character and origin of the ore deposits, and factors controlling their distribution and closes with a chapter on ore reserves. It is accompanied by a number of large-scale geologic maps of different parts of the district.

A short report, omitting detailed descriptions and containing only a few illustrations, was issued a year ago as Bulletin 779, entitled "Guides to ore in the Leadville district, Colorado." This short report is recommended to those interested in ore hunting but not necessarily in the geology of the district.

Professional Paper 148 and Bulletin 779 may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for \$2.50 and 35 cents respectively.

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