

a resource of the precious metal which will take generations to exhaust, while adding to the wealth of the country.

The river beds still constitute an important mining resource, having never been exhausted, and their treasures replenished by the waste from the washing of the mines upon their banks. Lower rates of wages and subsistence, with a comprehensive system, will yet enable the extraction of a vast amount of gold from these deposits.

The most lasting of the mineral resources of California is generally conceded to be the quartz veins. From these, it cannot be doubted, came the gold which enriched the placers with a wealth never before known. The gold-bearing veins are found throughout the western slope of the Sierra Nevada, and in the mountains of the northwest coast. The number it would be difficult to estimate, and new discoveries are continually adding to the list. Comparatively few of the many thousands known are developed, and the majority of those worked upon are so indifferently managed that their great value is scarcely known. It has been the misfortune of the State that the most of the mining enterprises of this department have been undertaken by men limited in both means and experience. In some instances they have risen with the occasion, and by skill and energy developed properties of extraordinary value. Small and incomplete mills, with rude methods of saving the gold, incurring expense and loss, have generally been established to aid in the development of a mine, and unless the quartz was exceedingly rich, failure was the natural consequence. A better understanding of the subject is now beginning to prevail; greater confidence is felt in mining interests than formerly; men of wealth and business capacity are turning their attention to it, and we may say that a new era in quartz mining appears to be opening in California. It is well to hope that such is the case. The resource is grand, illimitable, inexhaustible. The gold-bearing veins are in countless numbers, and are found from the extreme southern border of the State to the northern line, and in the Sierra Nevada from its base to its summit. The gold is contained in the rock in various proportions, from a few dollars to several hundred per ton. The rapid mountain streams furnish abundant water-power, or the plentiful forests supply fuel for steam purposes, thus giving convenient aid for propelling the necessary machinery. Everywhere the conditions are most favorable, and it is reasonable to expect that great wealth will result from the full development of the quartz and hydraulic mines.

There are no satisfactory statistics of the amount of gold produced in California since 1848, but it is estimated by the best authorities at \$1,150,000,000, or \$1,200,000,000. The largest amount reported mined in any one year was in 1853, when upwards of \$60,000,000 were exported, and it was believed that nearly fifty per cent. more was mined and retained in use or carried out of the country by private means. At that time the great gold excitement which had stirred the world was at its culmination, the mountains were alive with men, the precious dust was easily obtained, the river beds and bars were yielding their riches, abundant rains gave the "dry diggings" the needed water, and work was conducted with great energy. The discovery of the silver mines of Nevada drew away men and capital, and the gold product declined to about \$20,000,000 in 1870. Latterly the transportation of bullion having concentrated almost entirely in the express of Wells, Fargo & Co., a reliable source of statistical information is established. The general superintendent of that company reports the transportation of \$18,025,722 in 1873, and \$20,000,000 of California bullion in 1874. Of this, in 1873, \$17,280,951 was gold, and \$741,771 in silver and base bullion. The impression is that a considerable amount goes by other means, swelling the aggregate for 1874 to \$20,000,000. The bullion product of Nevada in 1873 was \$35,254,507, and the grand total for all the mining States and Territories west of the Mississippi in the same year was \$72,258,693.

SILVER AND LEAD.—Let us branch off from the royal metal and notice the product of the princely silver. The mines of California are not confined to the western slope of the Sierra, nor is gold the only valuable metal which miners seek. Crossing the mountain—the great treasure-bed of the world—the metal changes from gold to silver. Eastward, in Nevada, the silver is generally very pure or mixed with gold, but the most prominent silver mines of California are of argentiferous galena ores, as are many in Nevada. Such ores are benefited by smelting in stock furnaces, while finer ores are reduced by stamps and amalgamation. The product is a rich lead, usually called bullion, bearing from \$200 to \$300 of silver per ton. The melted matter is run from the furnaces into molds, forming bars of about 100 pounds each, in which shape it is sent to the refineries at San Francisco, in the East, or in Europe, where the silver and lead are separated and both enter their respective channels of commerce.

The principal silver-lead mines of California are in Cerro Gordo District, Inyo County, the leading mines being the Union, Santa Maria, and Belmont, on Buena Vista Mountain. Two companies, the Cerro Gordo, on the eastern shore of Owen's Lake, and the Owen's Lake Company, whose furnaces are at Swansea, on the western shore, whence ores are transported by steamers from the mines.

The product of these mines is enormous, and the working is very profitable. The veins are from 10 to 40 feet in width, the ore being argentiferous and cupriforous galena and carbonate of lead, carrying from 25 to 90 cents of silver per ton, and 30 to 50 per cent. of lead. The ores are smelted by charcoal, which costs 30 to 32½ cents per bushel, about 30 bushels being consumed per ton of ore. The bullion is transported in wagons 250 miles to San Fernando, whence it is taken by railroad, via Los Angeles, to the harbor of San Pedro. About 30,000 pounds of bullion per day is produced, the value of the annual product being about \$2,000,000.

These mines were discovered by some Mexicans in 1855, and their value appears to be increasing annually. The large business of these mines and the valley of Owen's River necessitate improved means of transportation, and for this purpose a company has organized for the construction of a narrow-gauge railroad from the lake to the city of Los Angeles.

The Panamint is a newly organized silver-bearing district, about on the line between Inyo and San Bernardino counties, seventy miles easterly from Indian Wells, a station on the road from Los Angeles to Cerro Gordo. No great developments have, in the latter part of 1874, been made, but it is ascertained that the mineral belt covers an area of two and a half by five miles in extent, and contains a system of wide and well defined veins, carrying an abundance of rich ore. This district has recently been brought prominently before the public, and scientific investigation proves its value. One large, true fissure vein, the Wonder, is known to exist, having several ore chimneys of from 300 to 600 feet in length, and varying from 3 to 25 feet in width. This vein is easily traced for a mile or more in length, and gives evidence of permanency in every respect. The Marvel, Venus, Hudson River, and other claims in the district, are reported rich. From \$75 to \$100 per ton is the average of free milling ore, generally of silver fahlerz, sometimes assaying as high as \$2,000 per ton. The topography of the country is very rough and barren, the mountains high and precipitous, and the cañons deep; but silver exists and an active community is sure to follow. In Surprise Cañon, which the Wonder ledge crosses, will probably be built the "city" of the district. Wood, water, salt and building material, and other necessities for working ores are at hand, and the prospect of an important mining camp is very fair.

In the northwestern part of Inyo County, or perhaps in the eastern part of Tulare, is the Mineral King district, situated high up among the lofty peaks of the Sierra, where a ledge of silver-bearing quartz of great size and supposed richness exists. These mines, lying between Independence, in Inyo County, and Visalia, in Tulare County, are of recent discovery and but slightly developed.

Mono and Alpine Counties contain a vast number of silver-bearing veins, many of which have been developed to a very fair extent, proving of considerable value. Several mills and reduction works have been erected and much silver extracted, but through extravagance and ignorance of management brilliant

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