

success has not followed mining. The Dunderberg, and Pioneer, are prominent mines in Mono County, and the Exchequer, IXL, Tarshish, Northwestern, and Pennsylvania, are the representative mines of Alpine. Recently a renewed interest has been taken in the silver mines of these two counties, and large returns are hoped for.

In other localities in California, silver is produced, considerable quantities being obtained from the gold of the placers. New and most encouraging developments have, in the summer of 1874, been made in St. Helena Mountain, near Calistoga, in Napa County. One or more silver-bearing veins, with a percentage of gold, have been found, and a ton-stamp mill has been erected for beneficiating the ores. The Calistoga Vein has been explored to a depth of several hundred feet, and found rich. The first product of \$12,000 was received in San Francisco October 3d, 1874. This is considered of unusual importance, from the circumstance that it is in a section formerly regarded as valueless in minerals, but by this development it is shown that no limit can be put to the gold and silver bearing region.

The annual product of silver obtained from California mines, and separated from the gold, is about \$3,000,000. Of this \$2,000,000 comes with the lead bullion of Inyo, \$200,000 from Mono and Alpine.

In San Diego and San Bernardino counties are several now silver-bearing districts, which, with Panamint and Calistoga, will soon be adding large figures to the list of treasure statistics.

**COPPER.**—Mining for copper has not been conducted with much energy for several years past, although ores of this metal are found in various parts of the State. From the extreme northwestern to the extreme southeastern border of California, cupriforous veins and masses of ore exist. In Del Norte, now added to Siskiyou County, large masses of red oxide and metallic copper have been mined, and but for the inaccessibility of the region, mining operations could be conducted with profit, as there can be no doubt of the extent and value of the ore.

At Copperopolis, in Calaveras County, are several large copper-bearing veins, which were formerly mined with great profit. The Union mine, for several years, gave out a profusion of wealth, and obtained a world-wide reputation, but a decline in the price of copper, rather than the exhaustion of the mine, caused a suspension of mining. In 1863 a copper-mining excitement prevailed, and in different sections of the State veins of the mineral were found and partial developments made, but as the excitement abated copper mining ceased. The fact of its existence, however, is established, and under more favorable circumstances copper mining will be resumed.

**QUICKSILVER.**—Contemporaneous with the development of the gold mines of California came the discovery of the gold-minors assistant—the quicksilver of New Almaden. This liquid metal is almost indispensable in the mining of gold and silver, and it is a most happy condition of circumstances that all the metals should exist in the same country and in such quantities. Seldom has there been found in the world such a grand deposit of cinnabar as existed at New Almaden, which for more than twenty years supplied the gold mines of California and the silver mines of Nevada with quicksilver, besides furnishing large quantities for export. During this prolific period the price of the metal was from forty to seventy-five cents per pound, at which comparatively low rate large fortunes were made in its extraction. From this mine has been taken during the twenty-five years of its operation, 583,200 flasks of quicksilver of seventy-six and a half pounds each, or 44,614,800 pounds. The mines of New Almaden do not furnish the quantity nor the quality of ore of former years. In 1850 the ore returned thirty-six per cent of quicksilver, and 23,875 flasks were produced, while at the present time the production does not exceed 15,000 flasks annually, and the percentage is under ten. The quicksilver mines of Idria, in Austria, return about two per cent, and those of Almaden, in Spain, about eight per cent.

The New Idria quicksilver mines were discovered in 1856, by prospectors in search of silver. They are in the southwestern part of Fresno County, on the eastern slope of the Mount Diablo range. The principal veins are the Idria, San Carlos, Cerro Benito, Panoche, and Molino. The product from these mines is from 7,000 to 12,000 flasks per annum, the former figures covering the amount for some years past, though recently mining has been pushed with vigor.

The Redington mines were discovered in 1861, and from 1862 have been quite vigorously worked. They are situated in the southeastern part of Lake County, and the thriving town of Knoxville has grown up about them. For several years the product of the Redington mines was about 5,000 flasks annually, but recently, under the stimulus of high prices and freedom from a contract that limited production, the amount has largely increased.

The three mining companies named have been the principal quicksilver producers previous to the year 1874, and absolutely governed the market. During that year the price of the metal had rapidly appreciated and it is now a cash article at \$0.55 per pound. This advance in price, and new discoveries being made, a quicksilver mining excitement was the consequence, and a large number of mines are now worked as a consequence. The Coast Range system of mountains is the principal field of the prospector, and from Lake County in the north, to Santa Barbara in the south, many veins of cinnabar have been found. The locations and companies organized are very numerous, and without our range to detail, but promise to bring forward Lake, Sonoma, Colusa, Solano, Napa, Santa Clara, San Benito, Fresno, Monterey, San Luis Obispo, and Santa Barbara as prominent mining counties. In several of the counties named extensive and expensive furnaces have been erected, the returns from many of which indicate the most favorable results. At Cambria, in San Luis Obispo County, very promising developments have been made.

In the range of mountains along the borders of Sonoma and Lake Counties, at Pine Flat, are the Rattlesnake, Flagstaff, Oakland, Annie-Belcher, Sonoma, and many others, that give high promise, and from some has already commenced to flow the stream of quicksilver which is so much needed in the gold and silver mining of the Pacific Coast. The Oakville, Washington, Valley, and other mines of Napa County have shipped considerable quantities of quicksilver, and will hereafter figure in the statistics of production. Recent reports announce rich quicksilver mines in Del Norte County. As silver and gold mining extends, the demand for quicksilver increases, and as those interests are rapidly extending the recent quicksilver discoveries seem most providential.

**IRON.**—Royally endowed as is California with the noblest of metals, she is by no means deficient in those the most useful, chief of which is iron. Although there are no blast-furnaces nor iron mines in development, there is an abundance of iron ore of a high percentage, which seems capable of supplying the great demand of the State. A company was formed several years since to work an iron mine in Sierra County, where a large body of ore exists contiguous to limestone, and in the midst of a densely wooded region. Charcoal could be had in unlimited quantities at low rates for smelting, limestone flux was at hand, and all the conveniences requisite for carrying on the business appeared to be supplied, but the enterprise is still in abeyance. Perhaps the more active or speculative employment of capital in gold and silver mines, or stock transactions, prevents the tamer investments in iron mining.

An extensive bed of stratum of magnetic iron ore, showing over 64 per cent. fine metal, is found near Clipper Gap, in Placer County, on the line of the Central Pacific Railroad. A company was once organized to work this mine, and considerable developments were made, of a most favorable character, but still iron mining is not yet reckoned among our industries.

Beds of like character are found in nearly every county in the State; one in Butte County, at Chapparral Hill, on the road leading from Oroville to Susanville, has been penetrated by shafts and tunnels, showing an unlimited quantity of ore, which yields by assay 65 per cent. metal.