

THE EARLY MISSION ESTABLISHMENTS IN CALIFORNIA.

We present herewith, from photographs taken by Mr. W. J. Rea, of Santa Barbara, views of some of the old mission houses established in California by the Catholic missionaries in the last century.

The California mission began at about the period of the American revolution, and attained a wonderful degree of prosperity, but is now as much a matter of the past as are the Iroquois or Huron missions of the North. Generally speaking, a rectangular building of eighty or ninety yards frontage, and about as deep, composed the mission. In one end was the church and parsonage. The interior formed a large and beautiful court, adorned with trees and fountains, and surrounded by galleries, on which opened the rooms of the missionaries, stewards, and travelers, the shops, the schools, store rooms, etc., and the granary. A part, separated off and called the monastery, was reserved for the Indian girls, and here they were taught by native women to spin and weave, and received such other instruction as was suited to their sex. The boys learned trades, and those who excelled were promoted to the rank of chiefs, a dignity being thus given to labor that impelled all to

and other articles. The surplus was spent in the purchase of necessaries for the mission.

The mission of Santa Barbara, shown from two points of view in Figs. 1 and 2, was founded by Father Palou, in 1786, at the foot of a chain of arid mountains. The church is of stone, with two towers and an extensive wing, tiled roofs and arched corridor.

The mission of Santa Inez (Fig. 3) was founded in 1797, on a beautiful prairie embosomed in the hills, a perfect garden of fertility. The building is similar to that of Santa Barbara, but differs in the appearance of the church. In front there was a large brick enclosure where the females bathed and washed. To the right were the gardens, filled with choice fruit trees; and, on the left, a few clusters of Indian huts and tiled houses.

The mission of San Luis Obispo (Fig. 4) was founded by Father Serra, and the church and barracks were begun in 1772. It is built near the extremity of a small pass through the hill, where the sun casts its burning heat in a degree almost insufferable. The mission, though formerly wealthy, is now of little importance. The buildings are in a decayed state, and

four years, over 16,000,000 oz. of silver have been produced from the Broken Hill Proprietary Mine—a record nearly or even exceeding that of the most famous of the Leadville mines.

The European and American exhibits are of a less systematic character than those of the colonies, being confined to comparatively few localities. The Harney Peak tin district in the Black Hills of Dakota shows a large series of specimens of the coarse, tin-bearing granite which represents the most considerable find of the ore of that metal made as yet in the United States. This is very unlike the tin stuff of the older districts of Cornwall, but a similar condition appears to prevail in many of the Australian tin mines. The quicksilver mines at Avala in Servia—a comparatively new find of that metal—are exceedingly well represented, the specimens of crystallized cinnabar being of the highest beauty and interest. The great Bolivian silver mine of Huanchaca is, or rather is to be, represented by a characteristic series of specimens of the rich ores from which from eighteen to twenty-two tons of silver are produced monthly. This is one of the most valuable mines in the world, and is in the comfortable posi-

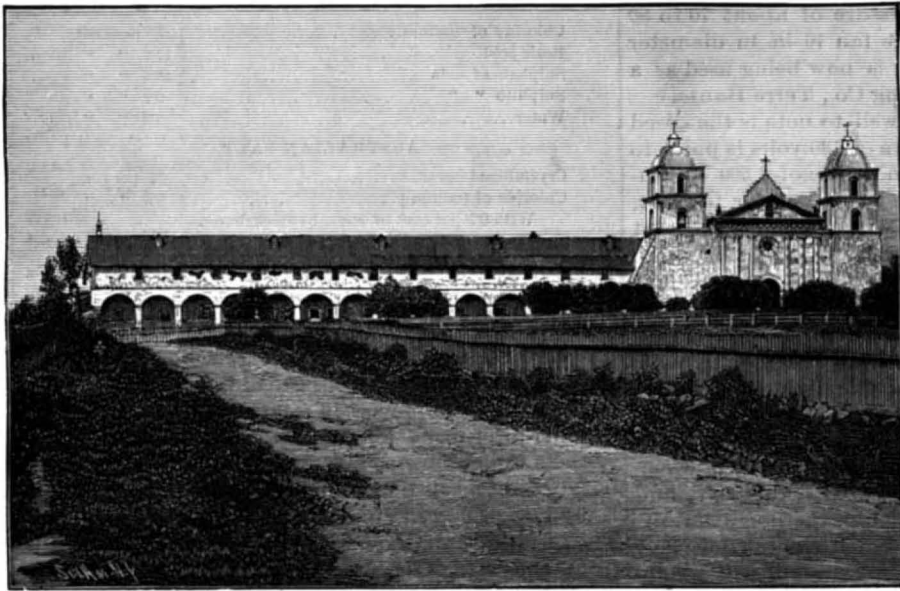


Fig. 1.—SANTA BARBARA MISSION—FRONT VIEW.

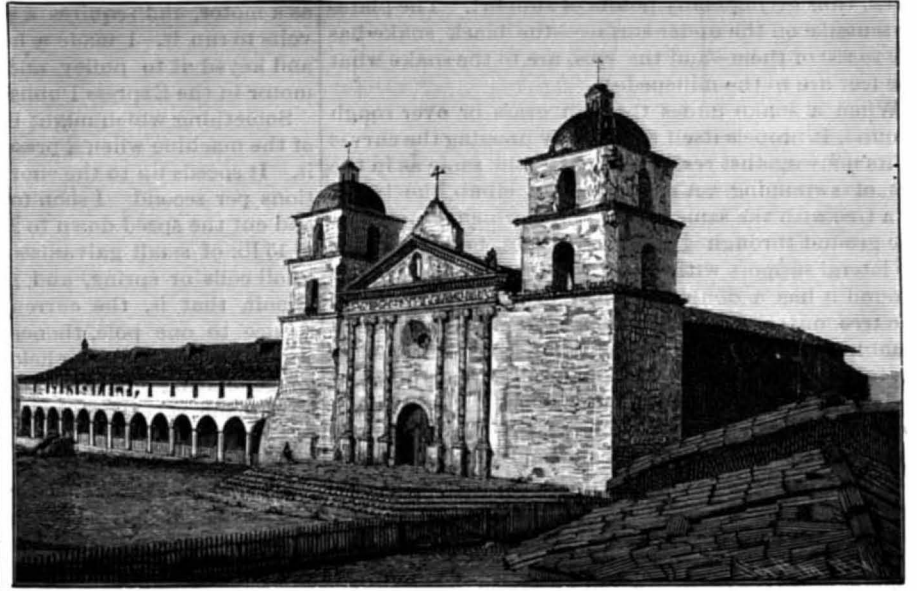


Fig. 2.—SANTA BARBARA MISSION—PERSPECTIVE VIEW.

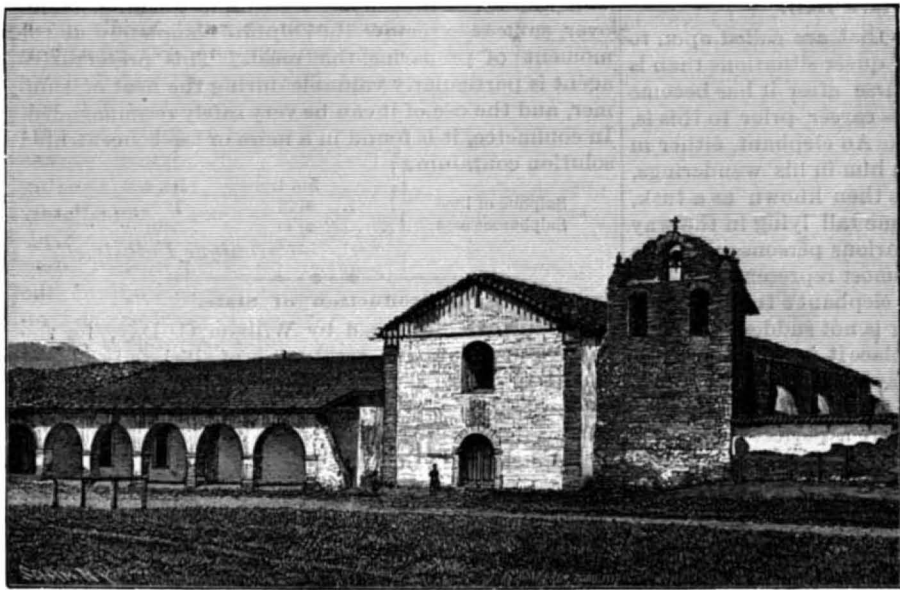


Fig. 3.—MISSION OF SANTA INEZ.

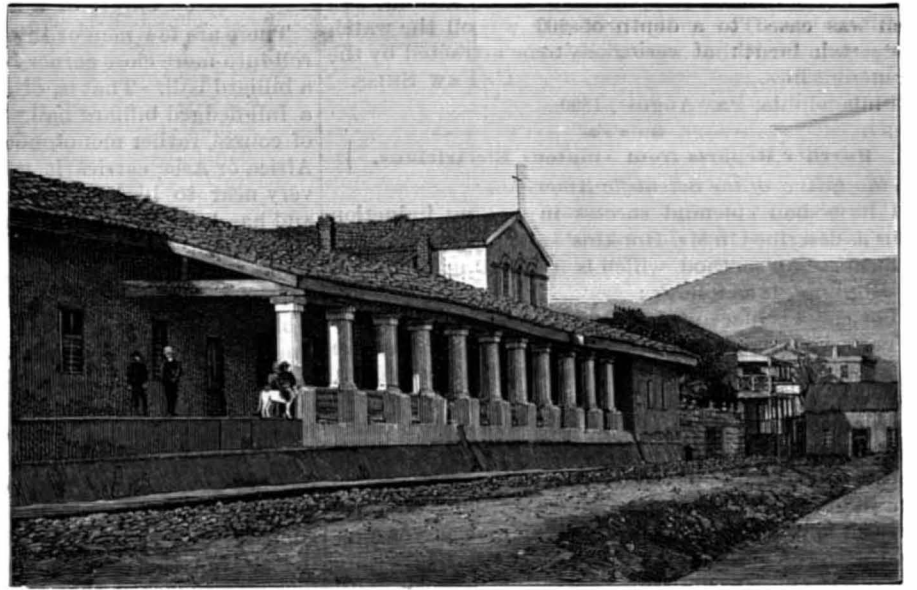


Fig. 4.—MISSION OF SAN LUIS OBISPO.

EARLY MISSION ESTABLISHMENTS IN CALIFORNIA.

embrace it. Each mission was directed by two friars, one of whom superintended the mission building and the religious instruction, while the other superintended the field labors, in which he always took part, teaching by advice and example. The discipline was severe, and the whole establishment was conducted like some vast factory. This, in modern times, has excited great outcry; but the missions have been abolished, and the Indians left to the "enlightened" men of our day, under whose care they have disappeared like smoke before the wind.

Around the mission building rose the houses of the Indians and of a few white settlers, and at various distances were ranches or hamlets, each with its succursal chapel. In a little building by the mission was a picket of five horsemen acting as soldiers and couriers. The Indians of a mission were not all of the same tribe, but perfect harmony prevailed, and when the season of work was over, many paid visits to their countrymen, and seldom returned alone. In this way, the missions constantly received new accessions, for the good friars had the art of making labor attractive. When the crops were harvested, each mission sold or shipped its breadstuffs, wine, oil, hemp and cordage, hides and tallow, and from the returns distributed to the Indians clothes, handkerchiefs, tobacco,

everything about them bears the appearance of neglect. It is surrounded by high and rocky hills.

International Exhibition of Mining and Metallurgy.

This exhibition, lately opened at the Crystal Palace, London, contains many objects of interest. Prominent in importance, says the *Engineer*, is the contribution from New South Wales, which occupies an area of about 15,000 square feet. Among its contents are the coals and bituminous minerals, especially the white cannel—kerosene shale or petroleum cannel—which, since the exhaustion of the boghead mineral, is probably the richest gas-producing mineral in the world, yielding over 15,000 ft. of 48 candle gas or 150 gallons of oil per ton. This, however, is only a subordinate product, the output of ordinary coal, mainly of a coking character, having attained to 3,655,000 tons in 1889, the area covered by coal-bearing rocks being estimated at nearly 24,000 square miles. Gold mining, though still of importance, is less productive than formerly, owing to the exhaustion of the richer alluvial deposits, while the deep vein mines yield refractory minerals, which can only be reduced with difficulty. The most important of the newer mineral developments is that of the silver lead ore deposits in the Barrier ranges, near the western boundary of the colony, where, during the past

tion of having about 1,000 tons of silver in its reserves underground, besides undressed ores and tailings of considerable value at the surface. The chief drawback, namely, the extremely inaccessible position, the mine being situated in the Cordillera of Bolivia, about 14,000 ft. above the sea level, has now been in great part overcome by a railway, 400 miles long, connecting it with the Pacific coast at Autofagasta, where very large reduction works have lately been started.

A Phonograph to Record on Two Cylinders.

A phonograph to record on two cylinders simultaneously, so that one may be retained as a file, or so that a message may be repeated from one cylinder to another, is one of the most recent improvements in this line. The construction is said to permit of listening to the record on one cylinder and simultaneously therewith dictating a reply to the other cylinder, or to allow two persons to dictate at the same time. It will also reproduce two like messages simultaneously, thereby greatly increasing the volume of sound, or a cylinder bearing a record may be placed in the phonograph with one having no record, and the record be reproduced on the plain cylinder while the operator listens. This phonograph is a patented invention of Mr. James P. Magenis, of North Adams, Mass.