

## NATURAL OYSTER GROUNDS OF SOUTH CAROLINA.

Mr. Bashford Dean, a specialist in regard to oyster culture, and at present engaged in the biological department of Columbia College, is the author of a report, recently published by the U. S. Fish Commission, on the natural oyster grounds of South Carolina, pointing out the advantages offered by the State for successful oyster culture. It is based upon observations made from December, 1890, to March, 1891. The entire coast margin of the State, excepting the immediate ocean shores, is shown to be well provided with natural beds, but they differ strangely from the beds occurring further northward, since they skirt the shore in the fringing tidal reefs in such manner that the oysters live as much of their life in air as in water. At low tide the oyster ledges appear like hedges of frosted herbage, branching clusters or clumps of oysters being so densely packed together that individuals become modified or distorted according to their position on the cluster. The individuals that cap the cluster, projecting upward like flat-tipped fingers, have given them the local name of "raccoons," and these raccoon ledges, as they are called, form vast oyster flats, sometimes miles in extent, but the oysters are never found below the low-water mark except as they have fallen from the neighboring ledges. Our illustration shows the zone for the attachment of these oysters between the levels of high and low water upon stakes and piling everywhere, as represented by a photograph taken March 12, 1891. The maximum size and abundance of the oysters is midway between the tide marks.



TIDAL ZONE OF OYSTER DISTRIBUTION IN SOUTH CAROLINA, INDICATED UPON PILING OF WHARF.

As a simple method of oyster culture, to transmute the tasteless raccoon into a table oyster, it is suggested that the raccoons, raked from ledges, be scattered in marginal waters about a fathom deep, where the bottom is suitably firm, when the time required for the raccoons to acquire the features of single oysters will vary according to season and locality, the period of conditioning being shortened by separating the clustered oysters before planting. The table oysters of the State, in many instances especially well flavored, are said to be almost entirely of this character.

## THE VOLCANO MAUNA LOA.

A new interest attaches to this great volcano since the island in which it is situated is now likely to become practically one of our possessions. All of the twelve islands of the group are of volcanic origin, and are entirely composed of the products of eruption, although volcanic forces are still in operation in the island of Hawaii only. Mauna Loa is 13,760 feet high, and it has slight eruptions, or displays some form of activity, almost every year. There have been several years in which the eruptions were remarkably violent, viz., in 1851, 1855, 1859, 1868, 1881, and in 1887. In the latter year the first eruptions took place in January, when great streams of fiery lava, mixed with smoke and gases, rushed out of a newly opened crater, and during thirty-six hours there was an almost unceasing series of earthquakes, accompanied by tidal waves that were very destructive of life and property along shore. The lava did not flow over the brim of the crater, but seemed to make its way downward by underground passages or through clefts in the mountain side, forming new reservoirs out of which the overflow

of lava poured down upon the plain. A correspondent who visited the scene at the time says:

"The writer in ascending the mountain came on one of these clefts, three-quarters of a mile long, and about 25 feet wide, apparently very deep, out of which the lava was pouring. A quarter of a mile higher up was a cone, the side of which next the sea had fallen in, disclosing a boiling caldron of molten materials. This liquid mass must have found a way underground to the great cleft just mentioned, and discharged its contents by it. Just a little above this cone another great

cleft opened, which proceeded up the mountain in zig-zag fashion to the crater Mokuaweoweo, the chief seat of the lava manufacture. For twelve days it sent down its river of fire fully 20 miles in length. The picture presented to the spectator at the spot was most remarkable—the snow-capped mountain discharging its glowing flood, at its foot the blue Pacific Ocean, with its world of islands. Fifteen pillars of flame shot up from the crater to a height from 150 feet to 200 feet, while lower down the other lava reservoir sent up columns over 40 feet high. The crater at the top of the lava river was about 40 feet or 50 feet across, and it was sometimes girdled by a sort of nimbus of fire.

"In the 53 hours between 2 P. M. on January 16 and 7 P. M. on January 18, 618 distinct shocks of earthquake were noted. The lava stream was much more copious and energetic than in 1868. Then it was accompanied by an incessant rain of ashes, which covered the land

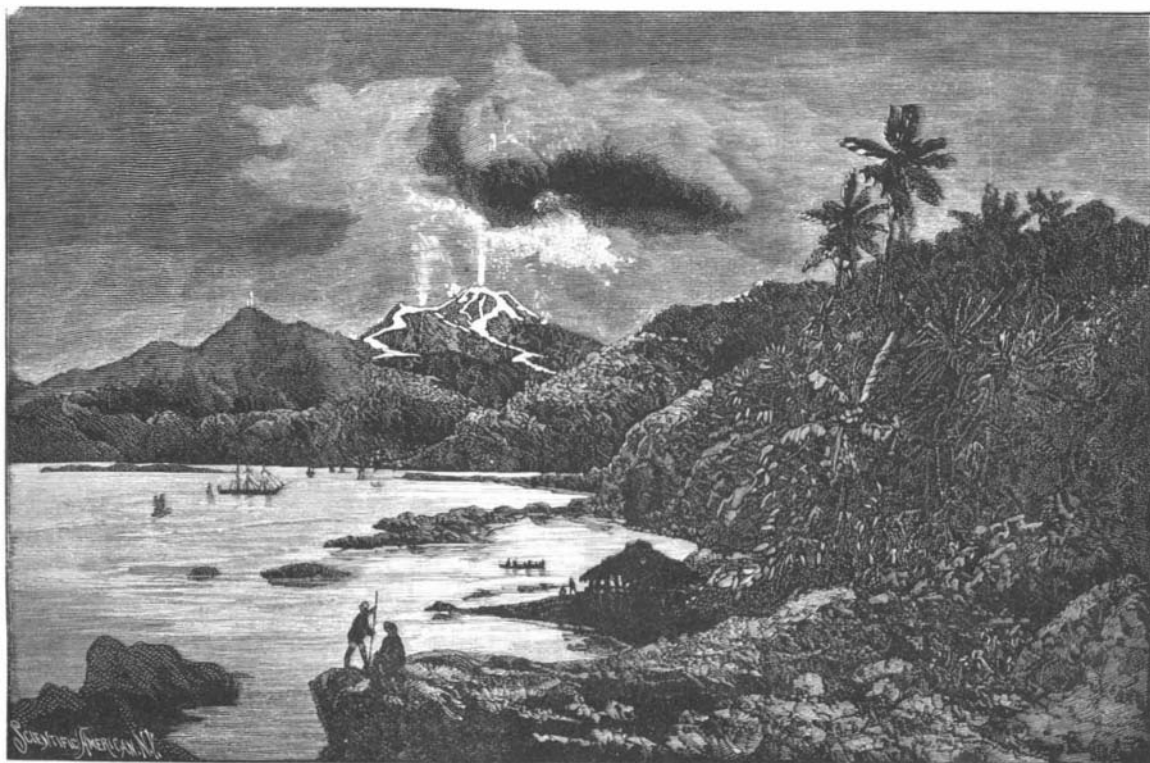
of the eruption immediately after the series of subterranean shocks, the island escaped the horrors of a regular earthquake, and the mischief was confined to great destruction of the plantations. Several days after the first outflow of lava (which lasted a fortnight) a fresh outburst occurred about 1,000 feet below the Mokuaweoweo, and a new outflow established itself, following the direction of the stream of 1859, when the discharge continued with little interruption for 15 months. Explosions were being frequently heard, caused, no doubt, by expanding gases, which were followed by the projection into the air of columns of fire to a height of 500 feet."

## Cobalt Plating.

The cobalt for plating is now bought up in bulk by two or three chemical manufacturers, and is almost entirely used at present for blue coloring of glass and pottery and blue glaze. Its cost in reality is not more than that of nickel, but it is retailed at something about five times this cost. If cobalt plating, as suggested by Dr. Silvanus Thompson, were to come in, cobalt, being used more largely, would soon become as cheap as nickel. The process was patented, but the patent has now dropped through, and is therefore open to the world. The chief ingredient of the most practical process is Epsom salts, through which the silvery metal is deposited. The polishing is done with scratch brushes, and the resultant white coating is almost indestructible by damp or smoky air. Cobalt plating, in place of nickel, should be invaluable.

## The Electric Lighting of Rome.

One can hardly imagine, says the *American Architect*, what Julius Cæsar, or, let us say, Cato the Censor, would have said, if he had read in the Sibylline books that a company of Scythians would, two thousand years after his death, install an apparatus through which the streets of Rome would be illuminated every night by a cascade at Tibur, twenty miles off in the Alban Hills; yet that is just what has come to pass. Several years ago an Italian company undertook the utilization of the Tibur, or Tivoli, water power, by means of turbine wheels and dynamos, for the purpose of lighting the little town of Tivoli. Soon afterward, the establishment passing under the control of the Roman Gas Company, the plant was increased, until it now collects and transmits a force of twenty-seven hundred horse power, and wires have extended to Rome. The experiment proved so successful that it has now been determined to utilize the whole available force of the cascade, amounting to about five thousand horse power, and the contract has been intrusted to a firm in Buda-Pesth, Hungary. The current will be transmitted, at a pressure of fifty-one hundred volts, through copper cables, protected with special care, as they must cross the desolate Campagna, and would otherwise be at the mercy of brigands. The cables enter Rome at the Porta Pia, where the current is converted by thirty-two transformers into one of two thousand volts, this being the pressure for which the city system of electric lighting is designed. In the city itself preparations are being made for increasing greatly the lighting plant. In place of two hundred and fifty arc lamps, the present number, six hundred will be installed, and the system, when complete, will be the most important example of transmission of electric force in the world.



THE 1887 ERUPTION OF MAUNA LOA, HAWAIIAN ISLANDS.

for miles around; but this time it was clear, thick lava. The upper portion of the mountain seemed for miles wide to be a sea of fire, which swept away in its course great blocks of stone. Owing to the rapid development