THE GEYSERS OF THE AZORES.

We crossed a stretch of the plateau, and suddenly looked down on the other side of it into an immense, deep, nearly circular crater, beautifully green.

Its undulating bottom was dotted over with white houses among gardens and corn fields, and in the distance was seen a small column of steam hovering over the hot springs. We drove down a steep incline for at least a couple of miles, and at last reached the village of Furnas. The road hence to the hot springs led across a small stream fed by them, deeply stained red, and smelling strongly of sulphureted hydrogen. Thence the path went up a little valley, cut out in the low ridge of very fine light whitish ashes which separates the main Furnas valley from that part of it in which the Furnas lake is situated. It is a beautiful tiny glen, with dark evergreen foliage on its steep banks, and on the swamp borders of its narrow bed were masses of the brilliant green leaves of the eatable arum (*Caladium esculentum*), one of the staple foods of the Polynesians, their "taro." The "taro" is cultivated all over the islands, but thrives here, especially in the warm mineral water.

The Furnas lake is about three miles in circumference. There are two groups of boiling springs, the one at the margin of the lake, the other close to the town of Furnas. The boiling springs near the lake are scattered over an area of about 40 yards square, covered with a grayish clayey deposit; a geyser or hot spring formation being composed of matter deposited by the hot water. No doubt the present hot springs are the dwindled remains of former fully developed geysers.

The principal spring consists of a basin about 12 feet in diameter, full, up to within 2 feet of the brim, of a bluish water, which, in the center, is in constant and most violent ebullition, the water being thrown up a foot in height as it boils forth. A constant column of steam rises from the basin.

Near by is a sort of fissure, from which issue, at short irregular intervals, jets or splashes of boiling water mingled with steam and sulphureted hydrogen in abundance.

This spring makes a gurgling, churning sort of noise; the large basin, a sort of roar. In the sides of the fissure grow, in the area splashed by the hot water, some green lowly organized algæ (*Batryococcus*) which form a thick crust upon the rock surface. Similar growths of lowly organized plants in the water of hot springs have been observed in various parts of the world. At a couple of feet distant from this hot spring rushes up a perfectly cold iron spring with a considerable stream of water.

All around are small openings, from which sulphureted hydrogen and other gases issue with a fizzing noise, and coat the openings with bright yellow crystals of sulphur. The ground around is hot, too hot in many places for the hand to rest upon, and it is somewhat dangerous to approach the pools of hot water at all closely, since the hard crust on the surface may give way, and one may be let fall into the boiling mud.

Just above these hot springs is a beautiful mountain stream, which forms little cascades as it tumbles down to the lake valley from the fern-clad moor above.

At the town of Furnas is an inn kept for families who come in the season to drink the waters and bathe. There is a free bath house, built by the government, with marble baths and hot and cold mineral water laid on to each.

The whereabouts of the springs near the town are marked by clouds of steam. The spirngs are scattered over a larger area than at the lake springs, and the gray geyser formation is piled into irregular hillocks around them, instead of presenting a nearly flat surface, as at the other springs.

Here the principal spring is like that at the lake, but the amount of hot steam rushing up is much greater, and the noise is almost deafening. The water is thrown up about two or three feet in a constant hot fountain. Close by are sulphur springs with hot water issuing in violent intermittent splashes; and there is also one deep chasm, from the depths of which boiling hot blue mud is jerked out in similar splashes. The mud hardens on the sides of the cavity into a crust made up of successive laminæ. The natives use the natural hot water to heat sticks or planks, in order to bend them. They also sometimes dig holes in the mud and set their kettles in them to boil. As at the other springs, there are cold springs issuing from the ground close to the boiling ones. One spring has its water charged with carbonic acid and effervescing.

All the springs empty into one small stream, which then runs down to the sea, with a complex mixture of mineral flavors in its water, and retains its heat for several miles.

In the shores of the lake there are large extents of geyser deposit, forming strata 40 to 50 feet in thickness, and evidently resulting from hot springs, now worked out, but with a few small discharge pipes of heated gas remaining active here and there.

Near the seaward end of the lake is a hole, where, as in the Grotto del Cave, an animal, when put into it, becomes stupefied by inhaling the carbonic acid gas discharged.

I made an excursion from Ponta Delgada to the Caldeira des Sette Cidades, or Caldron of the Seven Cities. It is a marvelous hollow of enormous size, with two lakes at its bottom and a number of villages in it. One slowly climbs the mountains from the sea and suddenly looks down from the crater edge upon lakes 1,500 feet below. On the flat bottom of the crater, which is covered with verdure and cultivated fields, are several small secondary craters, the whole reminding one of a crater in the moon. One of these small tracers has been so cut up by deep water courses that between them only a series of sharp radiating ridges is left standing, and the crater has thus a very fantastic appearance.—*H. N. Moseley, Notes by a Naturalist.*

The Quality of American Cotton Goods.

An assertion made in a Rhode Island newspaper, to the effect that the best cotton goods sold in that State were of English and French manufacture, naturally stirred up considerable feeling in certain quarters.

The true state of affairs seems to have been correctly described by a representative of one of our largest manufacturers of cotton goods, who frankly admitted to a *Tribune* reporter that the French manufacture a finer quality of cotton goods than we do, but these are principally lawns and light gauzy fabrics, for which a few people pay high prices. Only a small quantity of them comes here, he said, and it is not unfair to say that nine tenths of all the lawns sold in this country are of American manufacture. "Our mills are greatly improved, and the quality of fabrics turned out is far superior to that of last year. We are now making superior lawns, percales and gauze goods nearly equal to the French in fineness and far more serviceable. The very best cotton goods sold in Rhode Island may possibly be French and English, but this is not true of other States. The manufactories of New York, Massachusetts, and Connecticut make splendid cotton fabrics. The same quality of goods as that manufactured in France could be made here, but it would not pay, as these goods are purchased by only a few persons who are willing to pay 35 cents a yard for fabrics which are really not worth over 15 cents. England is not making any finer goods than America, and as a rule English goods are not so fine as American. The body of English goods is made equal to ours in weight frequently by the use of clay instead of cotton. England is even imitating our trade marks for cotton fabrics to be sent to China, and one American house has been compelled to copyright its labels in England to prevent this. A greater quantity of very fine goods for home trade is being manufactured now than ever before, and several large factories are working from 5 A.M. to 10 P.M., on fine lawns to take the place of foreign goods. There have been recently more orders to American manufactories for British trade than ever before."

Another prominent New York firm, admitting the superior fineness of certain foreign goods, said: "American cotton dress goods have greatly improved in quality, and they are taking the place of foreign cotton and worsted goods. This is especially true of the manufactures of Pennsylvania, Rhode Island, Massachusetts, and Connecticut. Within three years over 10,000 looms have been altered, greatly improving piques and light goods for spring and summer wear. There are over thirty different kinds of fine cotton goods now in market which were not manufactured in this country four years ago."

Of like effect was the testimony of a Rhode Island manufacturer, who said, relative to the fineness of American products: "There is a steady improvement going on in American cotton goods. One mill in Rhode Island is now making Victoria and bishop lawns and jaconets that are equal to anything made abroad, and British manufacturers have frankly admitted that they will destroy their American trade. Certain mills in New England are turning out percales equal to the finest foreign fabrics that formerly sold largely in our market, and at a much lower price."

The New Ocean Pier at Long Branch.

The great iron tubular pier at Long Branch is rapidly approaching completion. At the end of the pier, as far as completed, 660 feet, to which some 200 feet are to be added, there is a depth of fifteen feet at dead low water, and when the two hundred additional feet are added the depth will be twenty-two feet at dead low water. The iron spiles supporting the pier are tubular, they being, for the first 150 feet, six inches in diameter, and the remainder are eight and ten inches until nearly the end is reached, when they are twelve inches in diameter They are driven into the sand to the depth of from 14 to 17 feet. Every 20 feet from the commencement of the pier are lamp posts, each with two lamps, and at the top of each post will be a small streamer. Ash wood is exclusively used in the wood work of the structure. The pier is 25 feet in width in some places and 50 feet wide in others. The approach, not included in the total given length of 660 feet, is 94 feet long. On either side of the approach to the pier, running 250 feet each way, is a handsome pavilion, 25 feet wide, of a very pretty design. This pavilion will be fitted up with promenades, restaurants, balconies, etc. Below this are being constructed 600 bathing rooms, all supplied with gas and running water. The bathing grounds are on either side of the pier and are shaded by it. When the season is over it is proposed, says the Philadelphia *Ledger*, to remove the flooring of the pier, so that the waves can break over the iron work without doing any damage.

Coney Island Pier.

A new and splendid iron pier has lately been constructed at Coney Island, the celebrated sea shore resort, near New York City. Although the pier stands directly out in the ocean, the largest passenger boats have no difficulty in landing. On the 27th of June the first landing was made, by the steamer Grand Republic, from Bridgeport, Conn., with 4,000 passengers. At about 500 feet from the pier she slowed up, and was made fast in two minutes from the time of touching. There was a considerable swell at the time, but owing to the fender piles surrounding the pier head, there was no concussion. The band on board played, flags were waved, and the cheers from the throng on the pier were answered by cheers from the boat. The Grand Republic was received by Capt. Griffin, the pier superintendent, and his officers, and Messrs. Maclay & Davies, the constructing engineers of the work. The pier is of iron, and its construction has been remarkably rapid. The first pile was driven on April 22, and although a few finishing touches, that will require an additional two weeks, are yet to be applied, the work is practically finished for landing purposes.

There are two decks, or stories, and landings are made on the lower one, which is lined on each side with bathing houses, from which steps project into the water. On ascending by stairs to the upper deck it is found to be roofed, and bordered with restaurants, pavilions, and offices yet uncompleted. The pier is 1,000 feet long and 50 wide, with enlargements at the approach, center, and head of 120, 83, and 100 feet respectively. The upper story is 24 feet above high water, and the lower 12 feet. The pier at Scarborough, England, is of the same length, but less than half the width. The Douglas pier at the Isle of Man is also as long, but only 17 feet wide, and the celebrated Westward Ho pier is only half the length and width of the Coney Island pier. The pier stands on 260 piles, all sunk to a depth of 15 to 20 feet into the sand, and well braced. The deck floors are of Georgia pine, and the structures on the top have towers, gables, etc., giving them a picturesque appearance. The structure will be illuminated with both gas and electric lights. The depth of water at the outer end is 20 feet at high tide and 15 at low tide. The cost of the work has been over $200,000.

The Exportation of Machine Made Joinery.

The Baltimore *Sun* describes a new American enterprise in the exportation of machine made doors, window sashes, window blinds, and similar articles of joinery. The first shipment to England of this sort of goods took place in 1877, and although it was confined to doors for the cheaper class of houses, it at once met with a demand that justified the expectations of the shippers. A few window sashes and blinds were also sent; but they were chiefly intended for the British provinces, as Venetian blinds are not used in England. This new trade is, however, only in its infancy. For the first time, in 1877, some 19,000 doors and 6,284 pairs of sashes and blinds were shipped from New York to England, the greater part of which went thence to Australia and New Zealand. Since then California has supplied machine made joinery to Australia, sending there 27,000 doors last month as against some 5,000 sent direct from New York. But the transfer of the Australian demand for machine made doors to California, and its consequent loss to the Eastern States, has been compensated for by an increase in the British demand for local use. The shipments of doors to England and Scotland in 1878 were about 45,000, as against 2,800 in 1877. Up to June of the present year these shipments show a slight increase. It is a trade that is evidently capable of great extension, for all the pine lumber used in England is brought from Norway and the United States. It is a trade, too, that affects the English workman in two ways. For many years past there has been a large annual demand upon England from Australia and other British dependencies where wood of the proper kind is scarce for the doors of warehouses and private dwellings, and to economize the cost of the doors so exported they were made up into packing boxes, four doors placed longitudinally forming each box, the two ends being doors for small closets. As all the doors were hand made, the trade of making them gave employment to quite a large number of English workmen, and the diversion of this trade to California, coupled with the demand that has sprung up in England itself for the machine doors of the Eastern States, must cause a good deal of anxiety among English joiners and carpenters, in the present depressed condition of the labor market there.

A Successful Inventor and Manufacturer.

Sir Henry Bessemer has had an experience that few inventors are allowed to have, in living to see the world-wide results of his invention, and to realize the economy in resources which has been made possible by its use. The sewing machine and electric telegraph have been labor saving in their effect to an enormous extent, but with these it would have been difficult for their originators when alive to estimate the monetary value to mankind of the discoveries. With the making of steel the case, however, is different, for the saving can be figured down to a nicety on every ton made, and the annual product of the various civilized countries is pretty accurately known. From data thus collected it is estimated that in labor and material the world is a gainer to the amount of $100,000,000 a year by using the Bessemer process in converting ore into steel. Or considered in another way, the advantage of a low-priced enduring material, such as Bessemer steel, when compared with iron, has been made a matter of calculation, as far as railroad tracks are concerned, with the following astonishing results: Mr. Price Williams, who is an expert in matters of this kind, has stated that by substituting steel for iron a saving in expenditure will be made during the life of one set of steel rails on all the existing lines in Great Britain of not less than $850,000,000. In view of these facts, says the New York *Sun*, if Sir Henry has obtained in royalties the sum of $5,250,000, most persons will concede he has got no more than he deserves.