

the tall cocoanut trees on the islets that are visible. The land is from six to twelve feet above the sea, as a rule, though occasionally a few feet higher. Approaching the island, the long line of breakers is discerned as the ocean beats with fury upon the outer edge of the massive reef. A narrow brown line gradually coming into view, marks the belt of shallow water varying in breadth from one to several hundred yards, covering the surface of the reef between the breakers and the white beaches of pure coral sand which border the islets or motus (native name) on the reef. The houses of the natives, wherever there are such, peep out from the thick green cocoanut groves. Let a man walk straight through these groves for 100 to 500 yards, as the case may be, and he will have crossed the motu and find himself facing the deep blue water of the lagoon, with another intervening brown belt of shallow water similar to that on the ocean side of the reef. The reef which incloses most of the Tuamotu lagoons are bare at intervals; in fact, only a small portion of them is covered with islets as a rule. Some of the intervals are fordable, so that a person can walk in shallow water from one motu to another, though in many places the sea rolls over them freely into the inclosed area. Some of the motus contain only a few acres of land, while others are several miles long, but seldom attain more than 500 yards at their greatest breadth. "So near the level of the ocean and covered with stately palms, whose crested heads tower above the few trees that find a home among them, the islets scattered on the reef between the deep blue ocean on the one side and the deep blue lagoon on the other, lie like a chaplet of emeralds set in a sapphire sea." The beauty of the "coral gardens" formed in the clear pools on the seaward face of the reef has been described by many travelers in most glowing terms. They certainly are grand and extremely pleasing to the eye. As suming every shape of miniature shrub and tree and with fish of dazzling color and varied hue darting to and fro among the branches, these "fairy gardens," once seen can never be forgotten.

Fred J. Moss, in his book entitled "Through Atolls and Islands of the Great South Sea," published in London, 1889, says after first describing the inhabitants of the lagoon islands: "Scarcely less interesting is the coral polyp, the humble means through which these marvelous atolls have been created. Secreting from the ocean the time of which their minute frames are built, they lived and died, leaving an innumerable progeny planted on the skeletons of their ancestors to continue the process, till, in the course of ages, they formed gigantic bastions of limestone 200 feet in depth, with a width at the surface varying from 500 to 1,500 yards. The width at the base must be in proportion to the height, and the gigantic size of the reef may be easily imagined. As it rises out of the ocean the insects perish, poisoned by the air, without which we, who inherit their work, cannot live. On the narrow surface thus exposed the gales and currents deposit debris and gradually form the detached islets surrounding the lagoon."

The narrowing of the land makes the climate of the Tuamotus cool, and, for a tropical latitude, delightful. The eastern trade winds nearly always pre-

vail, but seldom blows very hard. But a lagoon island has quite a few drawbacks. There are no hills, no valleys, no running streams, no land birds, very few flowers, scarcely any grass and none of the features which in other lands stimulate the imagination and give variety to life. Beautiful as a lagoon island is, its appearance soon becomes monotonous. Nor is this relieved by visiting other islands for they are so near alike in their formation and physical features generally that after a man has seen one island he has virtually seen them all. In his natural state the wants of the Tuamotu islanders are few. For food he has always the cocoanut, which is sometimes called the tree of life, as it affords both food and drink. The sea and the lagoon abound with fish, many of them tasteless and insipid to the inhabitants of a colder climate, but regarded by the natives as delicious and often eaten raw when caught. They have their feasts of turtle and pigs, and on the whole, lead a joyous contented life, marred only by failures in the cocoanut crop, petty family or tribal quarrels, or occasional sickness. Formerly the natives of Tuamotu used no other clothing than their pareu or breechcloth; but now the men wear a shirt in addition and the women a single skirt and a waist detached as a rule. Their native houses are generally low and small with open sides and thatched with braided cocoanut leaves. Generally speaking, the people are cleanly in their habits and bathe very frequently in salt water. Like other branches of the Polynesian family, they are expert swimmers and divers. The capacity for the latter is especially of value to them when fishing for shells. An expert diver can descend in water fifteen fathoms and remain under water several minutes.

The question of obtaining sufficient fresh water on the Tuamotus has always been a serious one. Frequently the people have suffered for the want of it. In earlier days their chief drink was the cool and bright fluid contained in the green cocoanut; but the enormous numbers so used materially affected the production of copra which can only be made from the ripe nut, in which the fluid is neither so abundant nor palatable. Hence, the use of water for drinking purposes is becoming more common. In order to obtain the necessary supply, ponds are dug out of the coral rock, or hollows cut in the cocoanut trees and rain water collected in them. The rocky ponds are also frequently used as bathing places, and the natives it is said, drink the water without suffering the ill effects which a white man naturally would anticipate. In some islands, groups of all ages may be seen disporting themselves in these stagnant pools, and occasionally one of the number will sweep the scum from the surface and drink a handful of the dirty tepid fluid below.

The water question becomes serious also for vessels cruising through these lagoon islands: European and American traders stationed on the Tuamotus take care to bave the roofs of their houses covered with galvanized iron, and catch the rain-water as it falls; but the quantity collected is only enough for their own use, and they have none to spare for the supply of shipping. No wonder that the old navigators dreaded these low and uncomprehensible islands. Their unsheathed, worm-eaten ships and

their scurried perishing crews could find neither help nor health on these waterless shores." ANDREW JENSON.

ROTOAVA, Fakarava, Puamotu Islands, March 8th, 1896.

SYDNEY AND ITS HARBOR.

Coorparoo, Queensland, April 30th, 1896 In sailing down the east coast of Australia it will be seen that a very small indentation in the coast marks the entrance to Sydney Harbor. A person a few miles out at sea would never suppose that such a narrow break in the coast line could possibly be the entrance to the well-known and much admired Port Jackson. But so it is. The high bluffs on the north and south of the narrow entrance are spoken of as the heads, and on the south head is placed a powerful electric light which I am told, flashes the intelligence that Sydney is near for seventy miles through the darkness of night.

On reaching the entrance the vessel slides in so close to the north head that a person could throw a stone from the deck to the fortifications which are ominously visible on the weather-worn and storm-beaten rocks. Passing on inside a large bay is seen to the right an expansive sheet of water stretched away to the left, while opposite to the entrance and less than half a mile inside the heads, a wall of brown sandstone rock stands up in defiance of the waves which roll in through the narrow entrance and break at its base. Very little time is allowed the "new chum" to conjecture as to which way the vessel turns to go to Sydney, for as soon as the vessel is well inside the coast line a sharp turn is made to the left and a few minutes steaming is sufficient to place the ship of rocky coast known as the South Head, between the ship and the ocean's power. Though the waves lash themselves into foam but a short distance astern, no motion is transmitted from them to the ship, and we are very pleasantly made aware that after braving the dangers of the rolling sea we are at last safely ensconced in what is considered the finest harbor in the world. Sydney people point to it in praise. The first question the new comer has to answer generally is, "What do you think of the harbor?" If it were not so beautiful the repeated questioning might become very tiring, and as it is, a person often feels inclined to ask to see some monument of industry wholly due to the energy and thrift of the people, to which they can point with equal pride.

Sydney harbor is not so wide as the harbor of San Francisco but it is spacious for all that owing to the depth of the water and the fact that it is about eight miles from the Heads to the city. The beauty is partly found in the clearness of the water, as there are no muddy fresh water rivers emptying into it, and in the hills which rise somewhat abruptly from the water's edge and which in some places are covered with verdure and extensive forest growth. But to my mind, the numerous bays or horse-shoe bends, as I might call them, with which the shores of the harbor are indented forming ragged rocky "points" or nicely rounded projections here and there with shady nooks or bays between, so suggestive of that solitude where one is least alone, greatly assist in making the harbor so attractive to the eye.