

their skills through the adjacent waters and the inhabitants of this volcanic belt live and move with little thought of the mighty forces which have so often demonstrated their powers in the archipelago.

If one is interested in the study of trees, plants and flowers, he can employ himself indefinitely in the famous botanical garden in Buitenzorg. While Batavia is the nominal capital of Netherlands India, the governor general lives at Buitenzorg—a city built on a mountain slope forty miles from Batavia where an altitude of some seven hundred feet gives an average temperature of eight degrees below that of the sea level. The botanical garden surrounds the palace and for nearly a century the authorities have been collecting specimens of the flora of the tropics.

The present superintendent of the garden, Herr Wigman, is an enthusiast in his line, and we are indebted to him for a most enjoyable tour through the garden. The main entrance leads through an avenue of gigantic kanari trees, set some forty feet apart and forming a verdant roof that entirely excludes the sun. The officials believe that they have made this the most attractive driveway in the world, and so far as my observation goes, they are justified in their claim. Climbing vines of every variety have been trained upon these trees until their enormous trunks stand like so many columns draped in living green. One climbing vine, with a trunk which one would mistake for a tree if it stood alone, has festooned a row of trees three hundred feet long and is still reaching out for new conquests. Herr Wigman shows this monster vine with pardonable pride, but he has found on his visits to Europe that he could not give a truthful description of it without endangering his reputation for veracity. We saw, here, also, rattan vines of seemingly endless length, hanging from lofty limbs or coiling on the ground like a colony of serpents. A specialty has been made of orchids, as is evidenced by a collection of between two and three thousand varieties. Some of these are remarkable for their curious and variegated leaves, others for the beauty and delicacy of the flowers. We were shown three kinds of pitcher plants; one kind is fashioned like a rat trap, the tiny spines pointing downward so that the insect can enter but can not escape until the flower withers; another drowns his victims in a syrup-like water; while a third poisons the unlucky prisoners lured into the recesses of the blossoms. Several plants growing on tree trunks have porous bulbs which seem to be designed for ant houses; at any rate the ants are always found in them. By an admirable reciprocity the ants pay their house rent by protecting the plants from other insects. Some of the European nations have defended their occupation of Oriental countries on the same theory, viz., that they give protection in exchange for a domicile, but there is no evidence that the ant lives on the plant, while colonialism is always a burden to the natives.

In the botanical garden as elsewhere in the island are to be found all varieties of the palm—the royal palm, than which there is no more ornamental tree, the cocoanut palm, with its myriad uses, the sugar palm, the sago palm, the oil palm, the betel-nut palm, which furnishes the Malay a substitute for chewing tobacco, the nipa palm, so helpful in building, the fan palm, etc., etc.

Nature has been prodigal in her gifts to the people of the tropics, and besides giving plant life in confusing abundance, her generosity is shown in a number of trees each of which can be put to many uses. Reference was made to the bamboo in one of the articles on Japan, but the Javanese have not only the bamboo, but the palm as well, and from this one tree they could build their houses (though the bamboo is usually used for frames and floors because it is lighter, the trunk of the palm might be employed) and secure food, drink and light, and in addition, a fermented liquor and a narcotic.

The lakes and pools of the Buitenzorg garden teem with lotus and water lilies of many colors. One variety, brought from New Guinea, has blue flowers of various shades and is as yet unknown in Europe and America. One water lily has enormous flat, circular leaves with the edges turned up like a pie pan. Some of these leaves are four feet in diameter, and an imaginative writer has pictured them as frying pans on which the natives bake hot cakes.

The papyrus, from which the ancient Egyptians made their paper, grows here though it is no longer found in Egypt. Here, too, are flowering trees and shrubs of many kinds, one whose pods are so exactly like tallow candles that it is called the candle tree. But it would occupy more space than I have at my disposal to give an adequate

description of the beauties of the garden, with its mighty banyan trees, its waving palms, its graceful bamboos, its odorous sandalwood and tangled vines, its rose garden, its depth of shade and wealth of bloom, its upas tree (not deadly, however, as tradition has it, but quite innocent of any criminal intent), its winding ways and really moss-grown paths and its secluded little cemetery where rest those members of the families of the governors who died on the island. No wonder Buitenzorg is the Mecca of the botanist and the one spot never neglected by even the casual tourist in the island.

Java reminds one of Japan in the appearance of its rice fields, its cultivated hills and its terraced mountain sides. Though the island is diminutive in area, containing a little less than forty thousand square miles, half of which is tillable, the land is so widely used that it supports a population of twenty-eight millions. With so many mountains and with a rainfall amounting to ten feet per annum in some places, the island has, as might be expected, an abundance of springs and running streams, and these make possible a very perfect system of irrigation which has converted Java into a vast garden. Sugar is the chief export, followed by tea, coffee and copra, although rice is the product to which most attention is given. It is the chief article of food, and so much is required to support the dense population that its importance as a crop is not indicated by its place in the table of exports.

As a traveler is more impressed by the unusual things than by things with which he is familiar, one who visits Java immediately notices the numerous fruits peculiar to the island. They have, here, all of the fruits usually found in tropical countries and several that are not found elsewhere. The pineapple grows in perfection and can be bought in the market for about a cent apiece. The Java orange is not equal in taste or variety to those of California or Florida, but the banana, of which there are more than a hundred varieties, makes up for the deficiency. Mrs. Scidmore in her book on Java is authority for the statement that four thousand pounds of bananas will grow on the space required to produce ninety-nine pounds of potatoes or thirty-three pounds of wheat; if her calculation is correct and the ratio of productiveness anything like the same in the case of other fruit, one can understand why the problem of living is so simplified in warm countries. A fruit closely allied to our grape-fruit is found here, a variety of which grows in China and Japan. The papaya, which we first tasted in Honolulu, the mango, whose season had passed in the Philippines, the sour Manila, and the durian are all to be bought in the market here. The last named fruit has succeeded in arraying into ardent friends and unsparing critics the tourists who have ventured to eat it. Some declare that it is delicious while others can not bear the taste, and all agree that the odor is exceedingly repulsive. It is rough-skinned, very large, sometimes weighing ten or fifteen pounds, and resembles in appearance both the bread fruit and the nangka.

Among the fruits which we have tasted for the first time the mangosteen and the rambutan are rivals in popularity. The first is a delicately flavored, orange-shaped morsel of pure white, encased in a thick hull of deep red. It melts in the mouth, and leaves a memory of mingled flavors. Its fame has spread abroad, and there was for years a standing offer of thirty pounds to anyone who would put Queen Victoria in possession of a ripe mangosteen, but it decays so quickly that not even ice will preserve it during a long sea voyage. The rambutan has not received as much praise as the mangosteen, but I am not sure but that it is superior for continuous use. The word rambutan means hairy, and the name was given to this fruit because it has a covering something like a chestnut burr, except that the so-called hairs are soft instead of spine-like. There is a variety of the rambutan which has a smoother covering without the hair-like projections, and this is very appropriately called the kapoelassen (which means bald) rambutan. The usual color of the covering is a bright crimson, but there are several different shades, and the trees present a very attractive appearance when laden with ripe fruit. The pulp of the rambutan resembles a pigeon's egg in size and shape and contains a single seed. The flavor is half tart and half sweet, and recalls all the good things one has ever tasted.

Another Javanese fruit is the doekoe, which on the outside looks like an apricot, but is divided into sections like an orange and has a taste peculiarly its own. The jamboa, or Java apple, is conical in shape and has a white, wax appearance. But enough has been said to indicate the variety of fruits exposed for sale on the street

and peddled at railway stations. The natives usually carry an assortment of fruit as they go to or return from market, and the floor of the third class railroad coaches is always littered with rinds and peelings. Verily, one can revel in fruits to his heart's content in Java.

One of the most interesting days that we spent in Java was devoted to a trip to Boro Boedoer, the great Hindu temple near Djokjakarta. Leaving the through train at this station with the jaw-breaking name, we went by tram line about twenty miles and then drove six miles farther. Near the temple the road crosses a ferry, the substantial bridge which once spanned the river there having been swept away, and when we reached this point we found the stream so swollen by recent rains that the natives were not willing to risk their boats in the angry flood. We returned to the tramway station and spent the night in the hospitable home of the Dutch stationmaster, the only white man in the town. Returning to the river early the next morning, we found that the waters had sufficiently subsided to enable us to cross, and we reached Boro Boedoer while yet the sun was low. And what a monument is Boro Boedoer to the zeal of the Buddhist priests, the skill of the Hindu architect and the patient industry of the Javanese! As a temple it is not surpassed, in labor expended upon its construction it is comparable with the pyramids, and in artistic skill displayed in design and execution, it is even superior to them.

According to archaeologists it was built about twelve hundred years ago when the Javanese were worshippers of Buddha, but the invasion of the Mohammedans of the fifteenth century was so complete that that stupendous pile was first neglected, then deserted and at last forgotten. It was so overgrown with trees and shrubbery that the Dutch traders were in the country for two centuries before its presence was discovered. When it was found and unearthed during the occupancy of the English under Sir Stamford Raffles in 1814, the people living in the vicinity were as much surprised as the foreigners, for all tradition of its existence had been lost. This seems hardly possible when it is remembered that the temple stands upon the summit of a mound, is five hundred feet square at the base and towers to the height of a hundred feet. The structure is pyramidal in form and rises in eight terraces, the first five being square and the last three circular. Each terrace has a wall at the outer edge, which, with the wall of the next succeeding terrace, forms a roofless gallery, either side of which is ornamented with bas reliefs descriptive of the life of Buddha. These carvings if placed side by side would, it is estimated, extend for three miles, and the story which they tell has been interpreted by eminent archaeologists who have visited the place. These pictures in stone not only portray the rise and development of the great Indian teacher, but they preserve a record of the dress and customs of the people, the arms and implements used, and the fauna and flora of that time.

At the center of each side there is a covered stairway leading to the summit, and there is evidence that the galleries were once separated from each other by doors. In the niches along the gallery walls there are four hundred and thirty-two stone images of Buddha, life size and seated on the ever present lotus. On the three circular terraces there are seventy-two openwork, bell-shaped structures, called dagabas, each containing a stone image of Buddha. Surmounting the temple is a great dagaba, fifty feet in diameter, and in it was found an unfinished statue of Buddha similar to those found on the various galleries.

As the stone employed in the construction of the temple was of a hard variety, the bas reliefs are well preserved. No mortar was used for cementing the stones and no columns or pillars were employed.

Besides Boro Boedoer there are hundreds of other temples scattered over the island. Within two miles of the elevation upon which the great temple stands, there are two religious edifices, one, a shrine of exquisite proportions, restored in 1904, and another, a temple of considerable size, now being restored. At Brambanan, about twenty miles east of Djokjakarta there is a large group of temples scarcely less interesting than Boro Boedoer. One of the reports received by Sir Stamford Raffles describes this territory as the headquarters of Hinduism in Java and the temples as "stupendous and finished specimens of human labor and of the science and taste of ages long since forgot."

I must reserve for another article my observations upon the people and upon Dutch rule of the island, and will conclude this paper with

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