

stantly observed by inserting the date of flowering and fruiting in the space available.

It must be emphasized, however, that the method of keeping notes is not important. It is the records themselves and their accuracy which are significant.

Period of Observation

Records should be kept for at least a year. This might be timed to correspond to the proposed International Palm Year. But the longer records are kept, the more useful they become, since a much better average estimate becomes possible. At the end of a year's observation and possibly at yearly intervals thereafter a copy of the records should be sent to me on 3 x 5 inch filing cards. Members of the Society will be kept in touch with the progress of this scheme through the pages of PRINCIPES.

Selection of Palms for Study

Unlimited observations are required on all species of palms. The only restriction is that palms under study should have occupied their existing site for at least a year. Palms take a considerable time to recover after transplanting. For similar obvious reasons palms under study should not be moved during the course of the observations. It is, however, quite legitimate to keep records of growth rates in small palms grown in pots, provided these are well established, are not re-potted during the period of study and do not have the environment of the pot drastically changed.

An observer need not feel that records can only be kept by people with large and varied collections. Records are needed of the commonest, as well as the rarest palms. Records are needed of many different individuals of a single species; if these individuals are growing close together we can learn something about individual variation in growth rate, if the palms occupy different localities we can learn something about the effect of soil and climate on growth rates. Thus an individual with only one species available for study might keep just as many records as an observer with dozens of different species available.

Also observations are needed on palms, whether of the same species or not, which are of different ages. Obviously most records are going to come from small palms since these can be tagged at ground level with little effort. But a conscious effort must be made to tag older and taller palms. Information is needed to decide if old palms grow as fast as young ones. As a suggestion a tall palm growing near a building may be easily observed from an upper story. Otherwise a ladder can be used.

One final note should be added. This is not a competition and no prize goes to the observer who sends in the most records or measures the fastest rate of growth. The only reward is the satisfaction of doing something fundamentally useful and perhaps, by watching closely the growth of a palm, of learning to understand it a little more.

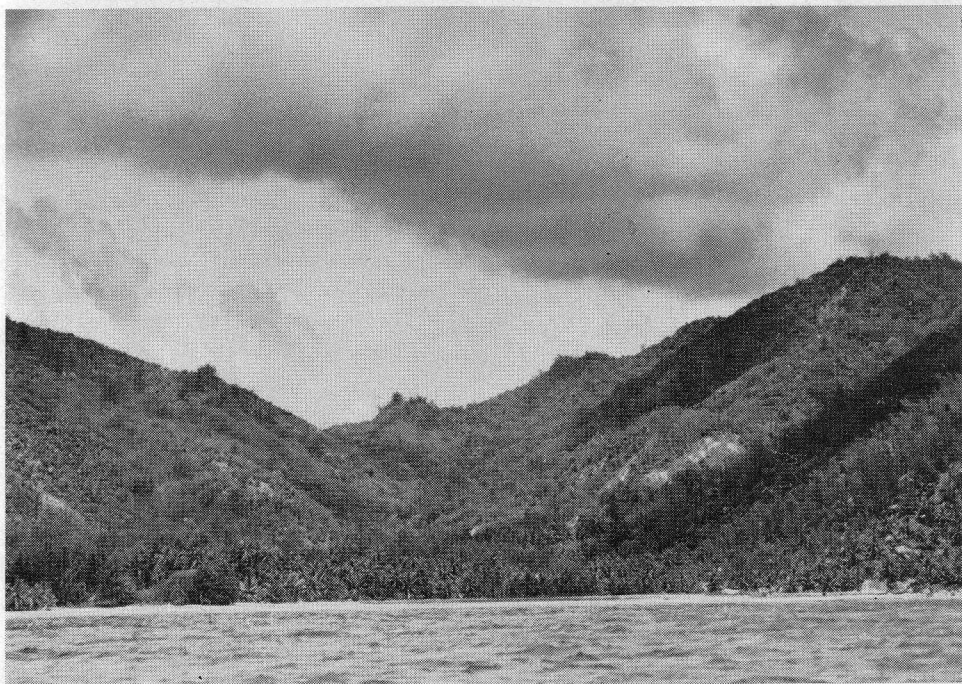
A Visit to the Seychelles

COUNT F. M. KNUTH

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Among the many travellers who visit India are undoubtedly a considerable number of nature lovers, many of whom are not aware that the remote Seychelles

islands are easily reached from Bombay and that a round trip, with a week's sojourn in the islands, can be made in three weeks by the steamers of the Brit-



40. Praslin Island and Vallée de Mai from the sea.

ish India Line which ply between Bombay and Mombasa-South Africa. These steamers are large and comfortable and offer the usual entertainments and good food, of the English type but prepared by Indian chefs. The B. I. Line quotes special rates for such round trips.

A trip to the Seychelles is, from all points of view, rewarding. After a normally very pleasant five days' journey under tropical skies you wake up one early morning and feel that the ship is no longer moving; and looking out of your port-hole you discover it is anchored in a wide, calm bay studded with green islands. These are granitic, steep, even mountainous. Barges and launches are on their way out to the ship from the port of Victoria, a mile and a half distant, still partly shrouded in morning mists. You hurry on deck. On one side you see, close to the ship, the towering rocks and coconut plantations of two

minor islands; on the three other sides, the main island of Mahé with the capital town, its houses partly hidden under an open canopy of palms and other trees. Behind the town the impressive Morne Séchellois raises its green-clad head. A hurried breakfast; entry formalities completed in no time and crowned by

41. Entrance to Nature Reserve at Vallée de Mai. The palm is *Lodoicea*.



your being welcomed by a charming representative of the government tourist office. A launch takes you ashore, a taxi brings you to your hotel, and you are "a thousand miles from anywhere."

A plant lover and palm enthusiast will want to see the remaining stands of the coco de mer, *Lodoicea maldivica*, more than anything else. I therefore headed for the Department of Agriculture, the buildings of which are situated in the Botanic Garden of Victoria. I had the good fortune to meet Mr. Guy Lionnet, the Director of Agriculture, and he most helpfully gave me all information needed in order to visit the habitat of the coco de mer and those of some other endemic plants. In the garden proper I noted a magnificent avenue of fruiting or flowering *Lodoicea* and in a shed I saw an impressive quantity of "heavy" (i.e., fresh) seednuts intended for shipment to botanical gardens in other parts of the world. I arranged to have some cases of these shipped to institutions in the South Pacific area where there was an interest in introducing (or re-introducing) this unique plant into their islands.

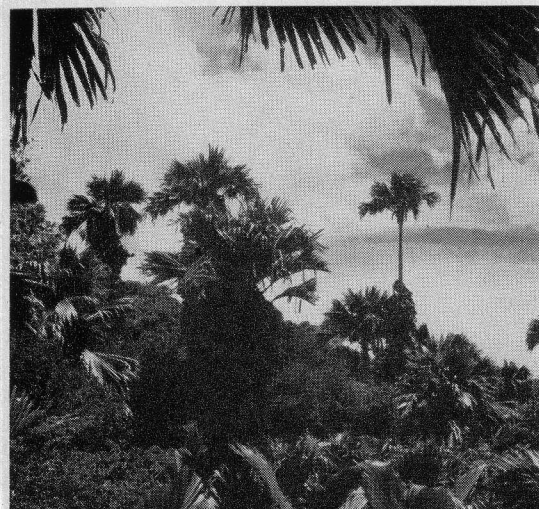
Next day I embarked in the "Lady Esme," a ferry-boat which in three hours sailed me across the open ocean to Pras-

lin island where primary — although not undisturbed — stands of the coco de mer exist. My goal was the Vallée de Mai which is now owned by the government and has been declared a nature reserve.

A driver took me in his VW van along a good, tar-sealed road which leads from the landing pier, through a small village, over steep grades up into the Vallée de Mai, further on across the main ridge of the island and then down again until it reaches the eastern shore. Many houses along the road are thatched with fronds of *Phoenicophorium Borsigianum* (*Stevensonia grandifolia*) and some houses even have walls covered with these strong, durable one-piece fans arranged in symmetrical patterns. On the outskirts of the village I passed a fine vanilla plantation which was at the same time a timber grove. The supports for the vanilla vines were not of the usual worthless species like bauhinia which have little or no timber value but tall, straight casuarinas which would in a few years' time yield a considerable quantity of good timber. Used to seeing casuarina as a greedy shelter-row tree under which scarcely a blade of grass will grow, I stopped and inspected the planting. I found that a heavy mulch of coconut husks had been placed around each tree, and that the vanillas were rooted in this thick, moist layer and not in the underlying sandy soil in which they would have met fierce competition from the densely matted casuarina roots.

Proceeding further upwards I reached a moist ravine in which a small river cascaded over rocks and boulders. Close to the water stood a dense thicket of stilted pandani interspersed with specimens of *Verschaffeltia* and *Phoenicophorium*. On the forest floor the shade was dense but the palm crowns seemed to receive a fair amount of sunlight. I

42. Tall *Lodoicea maldivica* trees silhouetted against the sky, Vallée de Mai.



had now reached an altitude of about 500 feet; the air was fresh. The steep

sides of the valley carried close stands of coco de mer trees. The road continued



43. Young trees of *Lodoicea*.

steeply upwards and soon I reached a point where a footpath branched off,

leading into the depths of the *Lodoicea* forest.



44. *Lodoicea* in fruit.

I followed this path which winds its way over rocks and knolls, past bends

and into hollows. Venerable giants stood in clumps and groups and raised their



45. *Verschaffeltia splendida* (rear) and *Deckenia nobilis* (foreground), Vallée de Mai.

heads into the azure sky, the breeze producing a loud, rattling noise in their fronds. Young specimens in all stages of development were present everywhere, in places forming almost impenetrable thickets of huge, still stemless plants. In such places, mainly in the lower parts of the forest, the ground was covered with thick layers of fallen fronds which made a crackling sound under the feet. It was like walking on roofing iron shattered and crumpled by a hurricane.

The Vallée de Mai forest is no longer a pure *Lodoicea* forest. Scattered trees of *Verschaffeltia splendida* occur, and here and there are seen groups of *Deckenia nobilis*. Other kinds of trees, such as gums (*Eucalyptus* sp.), country almonds (*Terminalia Catappa*) and cashews (*Anacardium occidentale*) have also intruded into these haunts where, maybe for millions of years, one of Nature's great princes has ruled undisputed.

It is an experience not easily forgotten to visit this remote and secluded valley and to wander as in an immense temple where no extraneous sight or sound disturbs the mind. Certainly, it is to be hoped that the Government of the Seychelles may have success in its endeavours to preserve and maintain this unique monument, to defend it against the actions of man and beast, protect it against the ever-present danger of ravaging fire and heal the wounds that have been inflicted during the brief period since the islands were colonized.

I found my way back after an all too short stay under the giants, passed the ravine with the murmuring brook, the well-tended vanilla vines under their canopy of ironwoods, and returned to the village just in time to swallow a hurried lunch at the rest-house and catch the ferry-boat returning to Mahé island. At the pier a crowd of local passengers was

waiting in the shade of a *Phoenicophorium*-thatched roof erected on white-washed pillars; and then the ferry arrived and picked us up.

For the following day Mr. Lionnet had arranged a visit to the reforestation areas in the hills above Victoria. A Land-Rover took me along a steeply ascending road with hairpin bends up to Sanssouci where a forest nursery is operated. There I met the district forester who first showed me the various seedlings grown in his beautifully kept nursery beds and then accompanied me on a walk all the way up to the highest point of the road where it starts its winding descent through the depleted forests of the western side of the island. Above us rose the towering massif of Morne Séchellois, the highest mountain of Mahé and of the group.

We passed through fine, 10-to-12-year-old stands of timber trees, several of which I had not seen used in silviculture elsewhere; *Sandoricum indicum*, *Calophyllum inophyllum*, *Terminalia Catappa*, *Pterocarpus indicus* and the Honduras mahogany (*Swietenia macrophylla*) were among them. This upland country seems to hold great promise for timber growing. Of palms I noticed but few until we reached the watershed near which I noted some magnificent, many-stemmed thickets of *Raphia farinifera* which has become naturalized. The view was breathtaking: hills and mountain spurs; the capital of Victoria; the wide, calm bay with its cluster of hilly islands; and the fertile coastal lands with their unbroken belt of coconut plantations.

We made our way back to the forest station near which I saw numerous plants of *Raphia*, both seedlings and mature specimens. This species is reported to have longer leaves than any other palm in the world, up to 60 feet

long, but I did not see any approaching this fantastic length.

In a water-drenched bog at the edge of a mountain stream I saw several



46. *Raphia farinifera*, Sanssouci, Mahé Island.



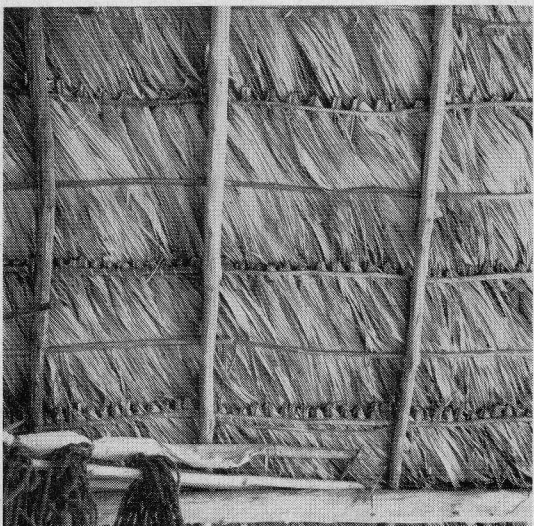
47. *Nephrosperma Vanhoutteanum* in water-drenched bog at edge of mountain stream near Sanssouci forestry station, Mahé Island.

plants of the small, one-stemmed palm *Nephrosperma Vanhoutteanum*, happy and healthy with wet feet and in partial shade from overhanging tall trees.

The following days I made trips along the coasts. The scenery is magnificent everywhere: green, coconut-clad hills or, here and there, expanses of level land, also under coconuts. The northeastern coast is rocky in most places, strewn with gigantic boulders, but small sand beaches occur in all sheltered places. Cinnamon (*Cinnamomum zeylanicum*), which was introduced 200 years ago, occurs almost everywhere as a dense coppice under the coconut trees; small cinnamon distilleries take care of a major part of the crop.

On the west coast are some long,

48. Thatch of *Phoenicophorium*.



beautiful beaches and some attractive hotels have been built nearby. The land is under coconuts also there.

The Seychelles race of coconut tree is small-fruited but high-yielding. The most serious pest of the area is the *Melittoma* stem-borer, a pest occurring only in the Mascarene islands. Before the Department of Agriculture brought it under control it caused the death of thousands of trees. The cure is radical: the stems are hollowed out with an adze, sometimes to a height of 6-8 feet, the grubs and the surrounding dead wood are chopped out, and the large wound is then painted with asphalt. Sometimes the treatment has to be repeated the following year.

The largest coconut plantation of the islands is owned by Mr. Douglas Bailey, O.B.E., J.P., a keen writer on botanical and zoological subjects. His "List of the flowering plants and ferns of Seychelles" is familiar to all students of the islands' flora. I had the privilege of meeting Mr. and Mrs. Bailey in their home, a charming old-style tropical house with spacious, airy verandahs and beautifully polished hardwood floors of a timber reminiscent of the famous tamanu (*Calophyllum vitiense*) so highly esteemed in the South Pacific islands. Mr. Bailey's huge copra kilns, which are of the type with a fixed wire-screen floor above a large oven, were a model of tidiness and efficient operation. In co-operation with the Department of Agriculture Mr. Bailey was running extensive mulching trials with spent cinnamon leaves under coconuts on the light, level soils near the coast.

The Seychelles were colonized by the French but came under British rule during the Napoleonic wars. A large section of the population is of African descent and a type of creole French is a language in common use. A visitor will

soon find himself at home in an island atmosphere of peace and tranquility. He

will have no difficulty in finding a nice, quiet hotel in pleasant surroundings but



49. *Phoenicophorium Borsigianum* in deep shade of *Pandanus* thicket near river, about 500 ft. altitude, Praslin Island.

he must not expect to be served French or French-creole food, nor should he expect to meet any expressions of an indigenous culture, be it dancing, music or poetry. What culture originally may have existed appears to have been wiped out or, some say, went underground during the hard times of early colonial settlement. In this

respect the Seychelles stand in a striking contrast to the South Pacific islands and even to the West Indies. Still, the visitor will find much worth coming for — glorious scenery, a unique flora, a near-ideal climate but one in which mosquitoes will not thrive, good roads, good hotels and, first and last, nice, hospitable people.

History of the Coconut Palm in America

O. F. COOK

Cook's views of the origin and history of the coconut palm, as published in *Contributions from the United States National Herbarium* 14: 271-342, 1910, are too lengthy to reprint in their entirety. The summary (pp. 338-342) is reprinted here in conjunction with the reprinting of Beccari's opposing views. Both the above paper and an earlier one "The Origin and Distribution of the Cocoa Palm" in *Contributions from the United States National Herbarium* 7: 257-293, 1901, should be read by those interested in the matter.

SUMMARY OF RESULTS

The history of the coconut palm has relation to several different kinds of scientific questions, so that the facts require to be summarized from several different standpoints.

Botanical Conclusions

All the palms that are related to the coconut, comprising about 20 genera and 200 species, are natives of America, with the possible exception of a single species, the West African oil palm. All the species of the genus *Cocos* and of the closely allied genera are natives of South America. The species of *Cocos* that are most related to the coconut are natives of the interior valleys and plateaus of the Andes, where the coconut also thrives, remote from the sea.

Comparison of the structure of the fruit and the method of germination of the coconut with those of the related palms indicates a high degree of specialization, but not for purposes of maritime distribution. The unusually large, heavy seed and the thick, fibrous husk are to be considered as adaptations for protecting the embryo, assisting in germination, and establishing the young plants in the dry climates of interior localities, the

only conditions where this palm could be expected to maintain its existence in a wild state.

The habits of the coconut palm afford no indication that its original habitat was on the seacoast, and none of its closer relatives have maritime habits or maritime distribution. The coconut palm does not appear to be able to maintain itself under littoral conditions without the assistance of man. Though carried by man to all of the warmer parts of the earth, it has not been able to establish itself as a wild plant on any tropical coast, but is always crowded out by other vegetation after human care is withdrawn.

Wafer's circumstantial account of the existence of large numbers of coconut palms on the Cocos Islands, 300 miles west of Panama, in 1685, taken together with their almost complete disappearance at the present day, affords a striking illustration of the dependence of the coconut upon human assistance not only for its distribution, but for its continued existence on oceanic islands.

The dissemination of the coco palm along the tropical coasts is to be ascribed