bulrushes and the spirits sink soddenly low, I like to gaze upon this intrepid botanist, this indomitable man radiating a kind of ferocious determination and patently capable of performing his tasks despite any odds. That is the only excuse for his presence in these pages; I have put him there just to please myself, in lieu of any cash recompense for this temporary descent into journalism, that is to say, for wheedling copy from authors and struggling with typewriter, scissors and paste-pot. But at the same time, I dare hope that others will cotton to old Ekman, too. There are two ways of looking at him. One way is to admire his dogged determination so greatly that a yearning arises to emulate him and to be found in those same circumstances. The other is to thank one's lucky stars not to be in his boots. Both ways are eminently satisfactory, depending upon how one looks at it.

A Walk through the Fairchild Garden

NIXON SMILEY

Accompanying photographs by the author.

My wife and I never tire of walking through the Fairchild Tropical Garden on a sunny day when a blue sky and a few cottony clouds form a background for the hundreds of palms in the botanical garden's large collection.

In a sense, it is like a visit to many tropical lands, for here are the palms of the world. Here an admirer of this great family of plants can see during an hour's stroll as many species as he would be able to discover on a voyage taking him thousands of miles across oceans and through the jungles, savannas and plains of the tropics.

Several years ago a visitor, inspired by the collection, referred to the palms as the "garden's crown jewels." They are that, and more. They are living jewels — if one finds it necessary to make such a comparison — of fantastic forms.

The great variation in palms never ceases to surprise you. Some are scrubby and could hardly be classed as "jewels." Some are of unusual form, even bizarre. Some are colorful — a surprise to those who thought all palms were "green." Some are so stately, so graceful, it is difficult to find anything else in nature to compare with them.

But whatever category a palm falls into, I've never seen one that was so objectionable I wanted to dig it up and toss it out because of its ugliness. There's beauty even in the scrub palmetto (*Sabal Etonia*). If you have ever seen extensive colonies of this deep-green, trunkless palm growing on the floor of a leafless hardwood forest in north Florida during the winter you will never forget it.

Everyone who walks through the Fairchild Tropical Garden must enjoy its plant collections from his own viewpoint. The botanist will have his own interests. He classifies the palms as he strolls among them. He notes the shapes of leaves and the sizes and forms of flowers. The horticulturist is interested in how they are grown. It pleases him to see a plant grown well, displeases him to see a sickly specimen.

The landscape architect will see the

1. Species of *Latania* in the left foreground, royal palms (*Roystonea regia*) on the right.

garden from still another viewpoint. If he knew the architect who designed this garden, William L. Phillips, he would admire the way the plants are grouped; the vistas which permit you to view the plants from a distance, before you approach them for a close-up view. And the landscape architect will study the palms as individuals, as candidates for some future landscape job.

Being none of these, I take a non-specialized view of the palm collection, enjoying it in a very general way. While I like to read the labels and become better acquainted with the palms, I am not a botanist and therefore know the genera and the species only in a superficial way. For instance, I know the difference between a *Sabal* and a *Pseudophoenix*, a *Rhapis* and a *Chamaedorea*, a *Roystonea* and a *Heterospathe*, a *Caryota* and an *Acrocomia;* and I know the difference between a *Veitchia* and an *Archontophoenix*. But don't ask me how I know. I could not "botanize" the differences between these palms.

If I belong to any classification, I'm a horticulturist. I do know when a palm

is in splendid condition; when it is well grown. I like to see a splendidly grown plant, one which is adapted to the soil and the climate and shows it by its thrifty response. Many of the nearly 3,000 species of palms in the world are not adapted to Florida. Many hundreds of species do thrive in the FTG, though. And, I'm not counting those which have been in the ground only a couple of years, but refer to the species which have been planted long enough to have survived frost, monsoon-like rains and long droughts.

Many of the palms have been in the collection since the garden was started in 1938. These older specimens make splendid background for the palms that have been planted since. Some of the young ones are coming along rapidly. In time they will take the places of the older specimens, which fall prey to diseases and insects, and, in rare instances, to lightning.

Writing this, I find myself thinking along the lines that I think as I walk through the Garden, except the walk is leisurely and relaxed and anything that falls into view is seen and sometimes commented on. There are always different palms in flower or fruit. The flower clusters can be spectacular in size and form. And no other plants have more colorful fruits than some of the palms.

But there are more than palms in the botanical garden. Many kinds of trees, shrubs and vines grow here. The hard-topped road takes you through upland and lowland areas, past vistas and overlooks, through rock gardens, flowering tree collections, cycad collections, vine collections, past lagoons and lakes.

The Garden is a bird sanctuary as well as a plant sanctuary. Bird-watchers are frequent visitors, early of a morning usually. They bring their binoculars to study the birds in detail, especially the ducks which, in the winter months, are seen in rafts on the lowland lakes. The lakes are also popular places for coots and Florida gallinules. Alligators are sometimes seen sunning on the banks.

Two rare birds are frequent visitors, the Guatemala oriole and the smooth-billed ani. The oriole is one of the most colorful birds in Florida, while the ani, a black bird somewhat larger than a grackle, is of particular interest to a bird-watcher anxious to add another name to his "life list of birds seen." From time to time the big green and yellow macaws from the Parrot Jungle, about one-half mile distant, fly over to the Garden and squawk at you from the tops of trees or palms. They like particularly to congregate in a gumbo-limbo tree and snip off the tips of branches with their sharp beaks. I've seen people standing about beneath the tree as they express "ohs" and "ahs" as they watched with upturned faces the antics of the huge birds.

My wife and I have formed the habit of taking a route through the Garden that we seldom vary from, especially the beginning. We turn right just after entering the main gate, taking a hard-topped road which the tram uses for the guided tours.

Immediately on our left after we make the turn is the large, red-trunked gumbo-limbo tree which the macaws like, and just beyond is Plot 110 in the Fairchild Tropical Garden's Catalog of Plants. Here are species of *Mascarena, Pseudophoenix* and the triangular-shaped *Neodypsis*. In this plot there once was a fine specimen of *Jubaea*, the Chilean honey-palm, but it was lost to disease.

On the right is a narrow plot, between the road and the stone wall, containing a variety of palms, including a number of native *Sabal Palmetto* which volunteered. These sabals have been growing here since the time the Garden was

2. A plot containing sundry species of *Thrinax* and *Coccothrinax*.

started. They form a shade and a screen, as well as a "balance" in the landscape design.

Some years ago, while I was director of the Garden, we proposed to remove these native palms and replace them with species of more valuable introduced palms. But the landscape architect, Mr. Phillips, was against it. He thought it would leave an "awkward hole" while the young palms were growing up. Such are the problems of landscape design, and a good reason for having the guidance of a landscape architect. For these palms do provide a quality which would be a great esthetic loss if they were removed.

From here the stroll offers an increasing variety of palms — species of *Butia, Washingtonia, Latania, Copernicia, Aiphanes, Veitchia, Licuala, Thrinax, Coccothrinax, Chamaerops, Caryota, Acrocomia, Phoenix, Dictyosperma, Orbignya, Attalea, Ptychosperma, Livistona, Corypha, Arenga, Hyphenae, Cocos.*

In an opening, at the bottom of a swale, is a group of four kinds of coco-

3. Four different varieties of the coconut palm, *Cocos nucifera.*

nut palms — the Malay orange, Malay yellow, Malay green and common coconut. Along the route, too, is a *Veitchia Montgomeryana,* named by Dr. Harold E. Moore, Jr., in honor of the founder of the FTG, Col. Robert H. Montgomery. It is located near a stone wall where one may stand to look down into a sunken garden.

The Garden has a very good collection of the *Copernicia,* most of them from Cuba. This excellent collection of over 15 Cuban species owes its existence to the late Cuban botanist Brother León, an authority on Cuban plants. He was a long-time friend of Dr. David Fairchild, for whom the Garden is named. He attempted to collect the seeds of every *Copernicia* in Cuba. Some of the Garden's most striking palms are *Copernicia* species, including *Copernicia Baileyana,* named in honor of Dr. Liberty Hyde Bailey, and *Copernicia Torreana**, commonly known as the petticoat-palm. The petticoat-palm is so named because it holds its old leaves for many years,

**Copernicia macroglossa,* see PRINCIPES 7: 140, 1963.

4. Several species of *Copernicia*, including the petticoat palm, *C. macroglossa;* two slender *Veitchia* sp. in bloom; and in center a specimen of *Phoenix Roebelenii.*

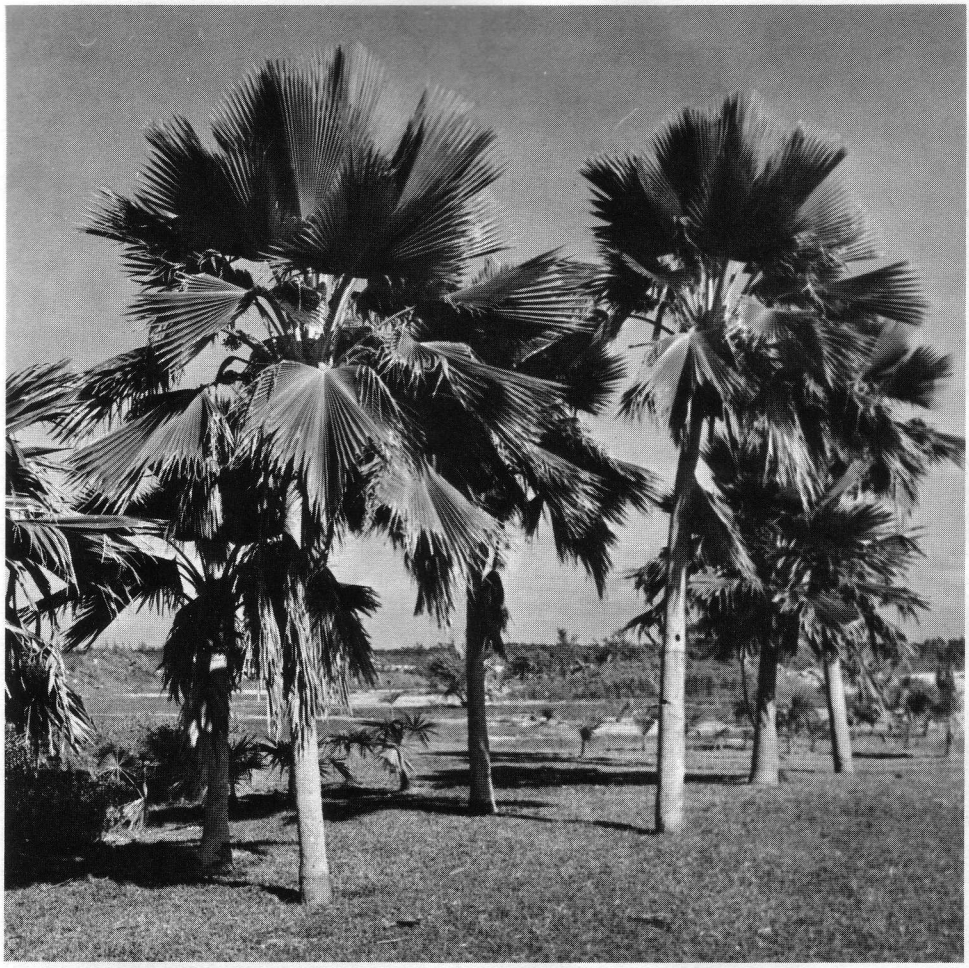
hiding the trunk and reminding one of a woman dressed in an old-fashioned petticoat. But the *Copernicia* species can be unbelievably slow growers. In 1962 I made a photograph of Dent Smith with two palms in his collection at Daytona Beach. One was an *Acrocomia aculeata* nearly 25 feet tall which he had planted in 1954 and another of a *Copernicia Torreana* some 18 inches tall which he had planted in 1956. Once the *Copernicia* becomes well established its growth is much more rapid. The FTG has a number of fruiting *Copernicia* species, although some, planted 20 years ago, have not reached fruiting size.

There is a fine specimen of *Copernicia Torreana* in Plot 107 which was one of the most popular palms in the Garden until it lost its "petticoat" a few years ago. When I walk through the Garden and see these fine *Copernicia* palms I recall a trip through the Llanos of Venezuela several years ago. Great colonies of a striking *Copernicia* grow in the fire-swept plains, and in some instances they have been planted about the small thatched homes. (Or maybe

5. Talipot palms (*Corypha* Sp.) and royal palms (*Roystonea regia*) viewed from across one of the lakes.

the homes were built near the palms.) The Llanos palm is *Copernicia tectorum*, but until recently it was known as *Copernicia sanctae-martae*. It is now in the FTG collection but is still small even after several years of striving to establish itself.

One of the Garden's outstanding palms is a native, *Coccothrinax argentata*, the silver-palm, but its fronds are hardly so spectacular in silhouette as *Coccothrinax Miraguama*. The Garden has nearly a dozen of the *Coccothrinax*. Some are such slow growers, like our native, that one doesn't have enough lifetimes to grow them. I could not, at my age, entertain enough anti-statistical arrogance to plant a *Coccothrinax argentata* with the expectation of seeing it reach robust maturity. But I have enjoyed this palm in the Florida pinewoods and the Florida Keys, as well as in the Bahamas where it thrives among the dune scrub on many of the islands. Its ability to withstand winds is remarkable. Frequently its gale-tossed fronds are seen standing out parallel to the ground; but when the gale stops the leaves fall back



6. Species of *Pritchardia* growing near the lowland section yet to be fully planted.

into perfect form as though they had been touched by only a mild breeze.

In general, the palms seem to be more resistant to hurricane winds than any other trees. The Fairchild Garden's palms were hit by three hurricanes between 1960 and 1965, but most of them suffered only superficial damage. Exceptions were the Orbignya and Attalea species, whose immense feather-shaped leaves were badly damaged. While the leaves of the royal palm were badly flayed and stripped from many of the palms, recovery was rapid. Hardly any of the healthy, well-established palms in the Garden were blown down by the high winds. The Garden's collection of trees, on the other hand, took a severe beating in all three storms, especially in the first one. It had been fifteen years since a hurricane had hit the area and a number of the trees had become quite large. Several of these were broken up badly or were toppled.

As already suggested, everyone who strolls through the Garden looks on the palms in a different way, from a different background. The more you know

about them — their history, their botany, their uses — the more you are likely to enjoy these remarkable plants. And if you have seen them in the tropics your memory is immediately transported thousands of miles away to a jungle in Central America, to a plain in South America or to an island in the far-away Pacific.

The less experience you have had with the palms the less you are likely to enjoy them. A member of The Palm Society may find it difficult to believe that some people are capable of walking through the Fairchild Tropical Garden without observing any remarkable differences in these plants.

I used to talk frequently with visitors while I was director. The reactions were sometimes amazing. Some visitors saw "nothing" to the palms. Others were surprised to learn that there were other palms than the coconut. I've frequently heard people say that they could not see any difference in the palms after taking a guided tour of the Garden, even after an experienced guide had pointed out the many differences.

But even after you have strolled through the Garden hundreds of times you find yourself discovering new and interesting things about the palms. For one thing, they are constantly growing and the many palm plots are forever changing, giving new landscape dimension to the scenery. New species, being introduced every year, are planted out for testing. It is interesting to anyone who likes the palms to watch these plants as they "take hold" and grow in a new land and in a different climate.

You never know until you plant a palm at the FTG whether it will grow outdoors. Some refuse to grow because they cannot tolerate the cold, but a large number simply can't survive the dry atmosphere of winter and spring. Many of the palms hail from the moist jungles, while others are native to higher elevations where the high moisture keeps the foliage moist much of the time.

I remember some years ago how reluctant Stanley Kiem, FTG superintendent, was to plant out in the grounds some very fine palms from New Guinea, for there was good reason to believe that they would not thrive here. The seeds had been sent back by Leonard Brass, leader of the Archbold Expedition to the Far East. One of these palms was a new genus — *Brassiophoenix* — which the German botanist, Burret, had named in honor of the explorer. Others were *Ptychosperma* species which had not yet been described and named. Mr. Brass, a careful collector, had thoroughly cleaned the seeds before sending them by air. When some packages arrived the seeds were already sprouting among the moist sphagnum moss.

Under the protection of the greenhouse the Brass palms — as we called the lot — thrived. Then, guided by notes of Mr. Brass which described the locations where the different species were discovered, the thrifty seedlings were planted where they would receive some shade. A few of them were planted in the deep shade of the Garden's "rain forest." Every one of these palms has thrived outdoors almost as well as in the greenhouse. Some have grown into fine fruiting specimens and have been distributed to members of the FTG.

It never ceases to amaze me how much salt so many of the palms can withstand. A large number of palms have been planted in the Garden's lowland which was subjected to three hurricane tides between 1960 and 1965. Yet the palms selected for this area have thrived amazingly well, even though some of them have been completely inundated by salt water while young. Among these have been the *Paurotis* [*Acoelorrhaphe*], *Arecastrum*, *Coccothrinax*, *Thrinax*, *Co-*

pernicia, Roystonea, Corypha, Pritchardia, Borassus, Caryota, Chrysalidocarpus, Latania, Bismarckia, Livistona, Phoenix, Ptychosperma. And many other species are becoming established in the lowland which, in another decade, will make this newly developed area one of the most striking sections of the Garden.

We frequently walk a mile through the Garden, often leaving the paved surface to "explore" some area that has undergone changes since we saw it last. And we feel fortunate to live so close to this botanical garden where it is possible to go at any time we feel the urge for a walk and be assured that we will always find something new and interesting.

Germination Experiments

The Effect of Scarification on the Germination of Seed of Acrocomia Crispa and Arenga Engleri

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Most research on the germination of palm seeds has been on African Oil palm, coconut, or other palms grown as plantation crops. Some work has been done on ornamentals, however, and most of it is reported in the journal PRINCIPES.

From the various studies made on the germination of palm seeds it is found that most species germinate readily and no special treatment is needed to accelerate germination (1, 3).

The methods described for accelerating germination of palm seeds vary from simply removing the exocarp or husk (fleshy part of many fruits) and cleaning the seed to complicated chemical or mechanical treatments such as breaking the seed coat with a hammer and treating the hard seeds with concentrated sulphuric acid. Kitzke (2) working with *Copernicia* got the best germination by scarifying the seeds with 10 per cent sulphuric acid for ten minutes.

High temperatures have also been useful in promoting germination. De Leon (1) had good results in germinating seeds of two difficult species using a hotbed with electric cables which maintained a temperature of 83° F. This same treatment was later recommended by Loomis (3), Lothian (4), and Yocum (5) for different species of palms.

From among the various species of palm that are difficult to germinate two were selected for this study. *Acrocomia crispa* was selected because it is one of the most desirable of its genus for ornamental purposes and most of the other species of this genus are also very slow in germination. *Arenga Engleri* is one of our most desirable ornamentals because of its attractiveness and hardiness in Central Florida and California. *Arenga Engleri* is notoriously difficult to germinate.

Experiments with ACROCOMIA CRISPA

Fruits were obtained from two palms. The first batch was fully mature and beginning to drop. One hundred of these first fruits were cracked open and the kernels given a visual examination.

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