

*Phoenix zeylanica* is very common in the low country.

Native palms to be seen in the Garden include the above as well as the talipot and palmyra palms (already mentioned), coconut, betel-nut (*Areca Catechu*), wild date (*Phoenix zeylanica*), kitul palm (*Caryota urens*), and water coconut (*Nypa fruticans*).

Besides the palms mentioned above, there are a number of other notable species of interest growing in the Botanic Garden: African oil palm, *Elaeis guineensis*; ivory nut palm, *Phytelephas*

*macrocarpa*, from Colombia; doum palm, *Hyphaene thebaica*, from the Sudan; carnauba wax palm, *Copernicia cerifera*, from Brazil; macaw palm, *Acrocomia sclerocarpa*, from tropical America; cohune palm, *Orbignya Cohune*, from Honduras; sealing wax palm, *Cryptostachys Renda*, from Sumatra; sago palm, *Metroxylon Rumphii* from New Guinea and *Metroxylon Sagu* from Malaya. There are also several species of the following genera; *Aiphanes*, *Arenga*, *Attalea*, *Calamus*, *Latania*, *Licuala*, *Livistona*, *Phoenix*, *Ptychosperma*, *Sabal*, and *Thrinax*.

## PALMS OF CUBA

BROTHER ALAIN

*Herbario De La Salle, Vedado, Habana*

It is always exciting and charming for the visitor in Cuba to contemplate the palm groves that may be seen in every part of the country. The first thing you notice as you travel along the central highway are the slim trunks of the royal palms, their heads high above the sugar cane plantations or mixed with other trees in the woody hills. You may see long rows of them along the roads and between fields in the *guardarrayas* separating one sugar cane field from another. This royal palm is well named as it may be considered the "King of the Palms," and even of the whole world of plants.

But as you drive out from Havana, you may reach places where even from your car you can observe different kinds of palms. There are more than 75 different species of palms in the island, and most of them are not to be found elsewhere. Some are quite rare while the ubiquitous royal palm is everywhere. This is quite unusual for a small area like Cuba to have such a large number of species of palms, and it offers an op-

portunity for the botanist and nature lover to study the different forms and adaptations of these remarkable plants.

The systematic study of the palms in Cuba began only some 30 years ago when the leading Cuban botanist of this century, Brother León (1871-1955), began collecting herbarium specimens in order to know each species and study them in his laboratory. From this long and difficult study came some 37 new species. To collect samples of palms for the herbarium is not so easy as for other plants. For example, if you want the leaves you have to find somebody to climb the tree, and this is not easy sometimes even if you want to pay for the services. The botanist does not want to cut down the palms, but he needs some parts that cannot be obtained unless you kill the plant. The material you have to take home is always bulky, and if you travel by the public means of transportation, somewhat embarrassing to take with you. For all these reasons, the palms of Cuba were little known, and the 38



26. *Roystonea regia*, the royal palm, planted in the Botanical Garden of Havana University, Cuba. Photograph by C. Lauvalle.



27. *Copernicia Torreana*, Las Villas Province, Cuba. Photograph by W. H. Hodge.

species reported from the island were not completely understood. Thanks to Brother León's efforts we have now a fair knowledge of this family; his collections are kept in his own herbarium in Havana City, and may be consulted by the botanists interested in this study. There are duplicates in Harvard University Herbarium, and in Washington at the Smithsonian Institution, and also in the New York Botanical Garden Herbarium. Living collections may be found at the Harvard Tropical Gardens, at

Soledad, Cuba, and also some of them have been planted at the Fairchild Tropical Gardens in Florida.

Of course, we shall begin our study with the royal palm, *Roystonea regia*. As the most abundant palm it is well known, and it is in cultivation in tropical gardens in many parts of the world. In the primitive state of the island, when most of its land was covered with dense tropical woods, there were fewer royal palms than at present. This handsome palm likes open places in rich soil, and



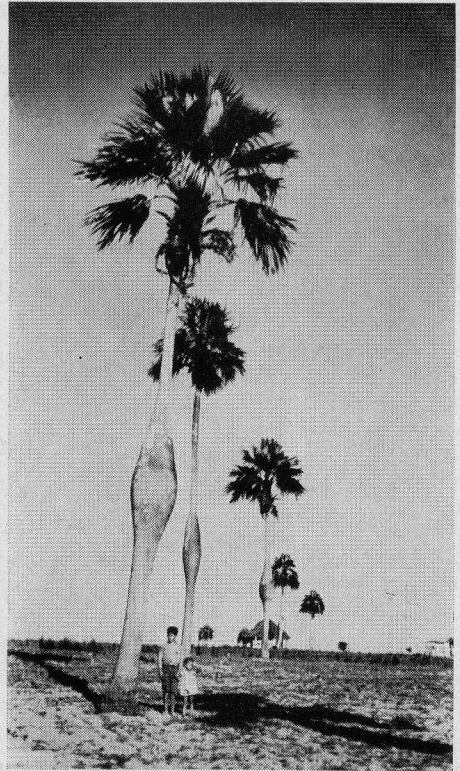
28. *Sabal florida* near Batabano, Havana Province, Cuba. Photograph by Brother León.

in thick woods we only find isolated individuals. As civilization came to Cuba and the woods were cut down to give place to the cultivation of sugar cane, the royal palms found more and more ground for growing without interference of big trees; at the same time, man himself helped the propagation, as the palm was very useful to him for raising pigs, for thatching his house, or even for building his home. Birds propagated the palm rapidly, and where there was open ground there developed palm groves called *palmares*. If a single palm is delightful to the sight, for the grace of its trunk and foliage and the finely cut leaves that move at the slightest breeze, when we contemplate hundreds of them together we admire the beauty of many white trunks standing together and the thousands of leaves alive with the whispers of the evening breeze. There is a scene that always arouses admiration, the time of sunset, with the royal palms standing erect and dark against the red and orange-colored light of the dying sunlight.

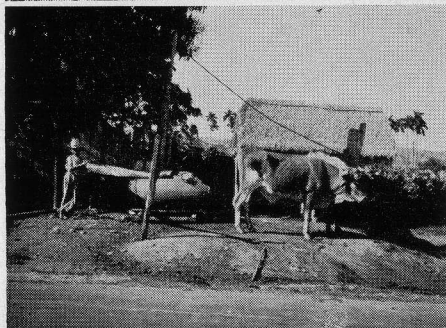
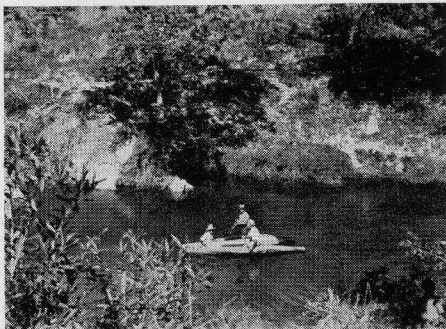
Royal palms like fertile soil and hu-

midity, though they do not grow well in swampy places. Their favorite place is the plains where sugar cane is being planted. Sometimes we can find them along the streams and the rivers, or on hillsides, or crowded in a valley. They have been planted on the farms where hogs are raised and along the roads; we also find them in gardens where their elegant shape and high crown of leaves give an air of greatness to the surroundings.

This tree is one of the most useful in Cuba to the countryman (*guajiro*). There has developed between a man and a tree an association quite difficult to match. The *guajiro* lives in a very simple house, his *bohío*, thatched with palm



29. *Colpothrinax Wrightii*, the barrel palm, savannas of Pinar del Río, Cuba. Photograph by Brother León.



30. *Colpothrinax Wrightii*. Above, a boat made from two trunks tied together; below, carrying water in a barrel made from the palm. Photographs by Brother León.

leaves. The poorest of them also use palm planks, or even the sheaths of the leaves, to make the walls of their houses. The fruit, *palmiche*, is eaten by the hogs and its oil makes them fat for the Christmas feasts, as there is no Cuban house where they do not eat *lechón asado* on Christmas Eve, or *Nochebuena*. The sheath of the leaves is also useful to make small baskets to pack fruits and take them to market, and if the rain comes while you are out in the fields just put one of these sheaths (*yagua*) over your head and you may get home quite dry. So is the life of the Cuban *guajiro* linked to this wonderful palm. Even the housewife will use a broom made with the dry inflorescence of the palm. For the Cuban countryman, food and shelter come from the royal palm.

In order to get the leaves and the

fruits, the *guajiros* have to climb up the branchless trunk, for 30 to 40 feet; the man in charge is called *desmochador*, and he is remarkably skillful in this operation; there is at least one of them for a village, and he is called when there are enough palms with ripe fruits in the estate or *finca*, or when there is need of palm leaves for repairing the roof of the house. He uses a small rope making two loops around the trunk; there are also two small loops hanging from the rope—one is for a knee, the other for a foot. He proceeds to move up one loop at a time, about one foot or two up the tree, and little by little, he climbs up to the leaves and begins to cut them down with his machete. The fruits, or *palmiche* cannot be dropped from the height of the palm without getting loose from the inflorescence; for this reason, he ties a rope to the higher point of the trunk, and another man below takes the loose



31. *Acrocomia armentalis*, Guatao, Havana Province, Cuba. Photograph by Brother León.



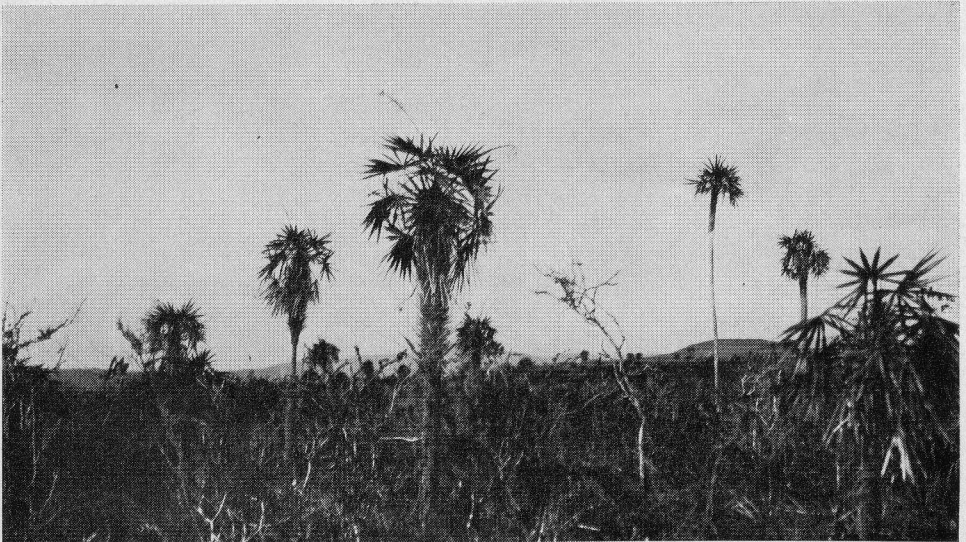
32. *Coccothrinax miraguama* var. *orientalis*, pinelands of Sierra de Nipe, Oriente, Cuba. Photograph by Brother León.

end of the rope and goes some 40 or 50 feet from the base of the palm and ties the rope to another tree, making a low grade slope; the *palmiche* will now come down by the rope without gathering too much speed, and arrive without damage. The *desmochador* charges about \$1 for each palm.

Until quite recently, there was only one known species of royal palm in Cuba, *Roystonea regia*. The famous Cuban botanist, Brother León described three more species found only near the

eastern tip of the island in the region of Baracoa and Maisi, making thus four species in all. There are also several other species in the other Antilles, and each island of the Greater Antilles appears to have its own species. The Cuban ones are: *Roystonea regia*, (*palma real*), *R. lenis* (*palma de seda*), *R. stellata* and *R. violacea* (*palma morada*). But without doubt, the most beautiful and the most abundant is the first species, the one you cannot miss when you set foot on the island.

When a visitor goes from Havana City to the interior of the island, he will soon see another palm, not so beautiful but still very attractive; it is named in Cuba *palma cana*, and belongs to the genus *Sabal*, the same as the palmetto of southern United States. But these sabals are big palms, sometimes up to 40 or 50 feet high; they are nearly always found in savannas and their round heads of palmate leaves crowning a very cylindrical trunk stand high above the grassy plain. They always are a sign of poor soil, and they stand the drought much better than

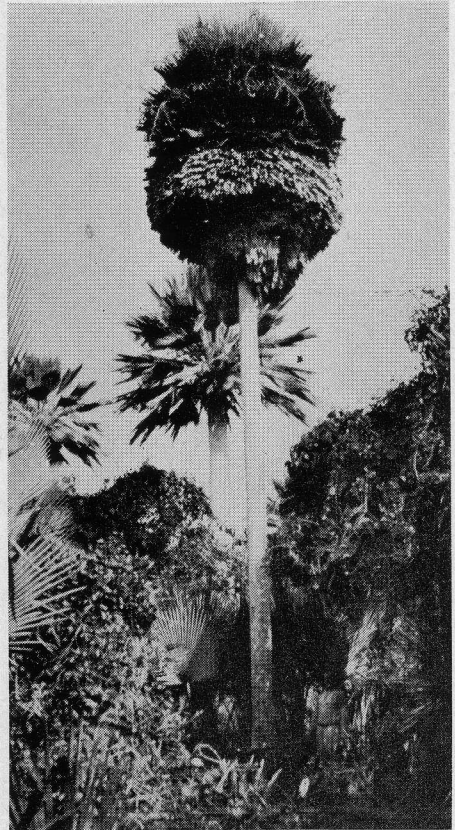


33. *Coccothrinax pseudorigida*, savannas of Camagüey, Cuba. Photograph by Brother León.

the royal palm. Their fruits, though quite abundant, are not used as food for animals, but their leaves are the best thatching material; a house covered with the leaves of *cana* is likely to last from 10 to 12 years, against two or three years for the leaves of royal palm. For this reason, we are likely to see many *canas* with their leaves cut down, leaving only the newest ones at the top of the trees.

Again, we have 4 species of *cana*, two of them are quite widespread while the other two are restricted to smaller areas. *Sabal florida* is to be found in all the Provinces, sometimes in large numbers, sometimes scattered in the dry savannas; they are a sign of poor agricultural conditions and they are likely to be seen in places where cattle are pastured. We also find another quite abundant *cana*, *Sabal parviflora*. This is smaller than the preceding, and grows in swamps in the southern part of Cuba from Pinar del Río to Camagüey. Also in swamps and with bigger trunks and leaves, we can find *Sabal Japa* near Batabanó in Havana Province. This species grows only in the western Provinces of Cuba. The fourth species, *Sabal mayarum*, grows only in the savannas of western Pinar del Río and it is also in Yucatán.

The visitor that goes to Pinar del Río will see when he gets to Consolación del Sur a few miles before reaching the capital city of the province, some remarkable individuals of the *palma barrigona*, the barrel palm, or literally the belly palm. The trunk of this tree is ridiculously swollen at the middle, tapering above and below to a slender cylinder. Your attention is immediately drawn to this unusual shape for a tree, and you wonder, as many botanists have done before, what would be the reason for such a belly. This *barrigona*, *Colpo-*



34. *Copernicia vespertilionum*, foreground; *C. gigas*, background. Southern Las Villas Province, Cuba. Photograph by Brother León.

*thrinax Wrightii*, grows only in the sandy savannas on Pinar del Río and on the Isle of Pines. It is well represented and sometimes hundreds of them grow together near the tobacco plantations or mixed with the pines that gave their names both to the province of Pinar del Río and to the Isle of Pines.

The *palma barrigona* is much used by the Cubans in the region from Sumidero to Guane and in the savannas of southern Pinar del Río. They may cut the trunk, and after taking out the much softer inner part close the ends of the barrel with cement or clay and use it as a container for water; it is used to

carry water from the river to the house transported on the fork of a tree, cut for this purpose, and pulled by oxen. Some have used the trunk to hold drinking water for their cattle, and we may see some beehives kept in a trunk of *barrigona*. You may also enter a home and sit down in a chair made from a hollowed trunk like an armchair. It has also served as a canoe, but since the trunk is round and cannot be made flat because of its soft inside, two trunks are tied together and two men can ride in the river in this twin canoe.

I shall also mention the *corojo* palm, small groups of which can be seen along the roads in Las Villas, Camagüey and Oriente provinces; it is also quite common in some savannas in Pinar del Río. Its trunk is swollen in the middle, though less abruptly than in the barrel palm. Even the royal palm has a tendency to this swelling that must take place during the years of full growth when there is abundant food for the plant, and it seems to store some of the excess food in this swelling. It may also be a question of balance in the weight of the plant and of resistance to the winds and storms. But again, why the swelling of the *barrigona*, the *corojo* and the royal palm, and not of the *cana*? The *corojo* palms belong to the genus *Acrocomia* and are always found in savannas growing in small groups called *corojal*. The leaves are pinnate, like those of the royal palm; the fruit is about one inch in diameter; children like to break the hard shell to extract the fleshy edible nut. As the palm is not too abundant, no other use is made of it, though the leaves make good cover for the *bohíos* and the outer wood makes strong planks.

The most common species of the *corojo* palm is *Acrocomia armentalis* which is quite widespread in all the Provinces. It belongs to the savannas,



35. *Copernicia glabrescens*, savannas, Pinar del Río, Cuba. Photograph by Brother León.

chiefly on serpentine. The pinnate leaves make a crown two to three feet in diameter above and about one foot at the base. Its trunk is covered with very sharp spines about two or three inches long. *Acrocomia subinermis* is known only from one or two trees near Havana City, and *Acrocomia pilosa* has been described from the Guantánamo region in Oriente. *Acrocomia aculeata* is cultivated under the name *corojo de Jamaica*.

Cuban savannas offer a great variety of palms that are classified chiefly in two genera, *Coccothrinax* and *Copernicia*.

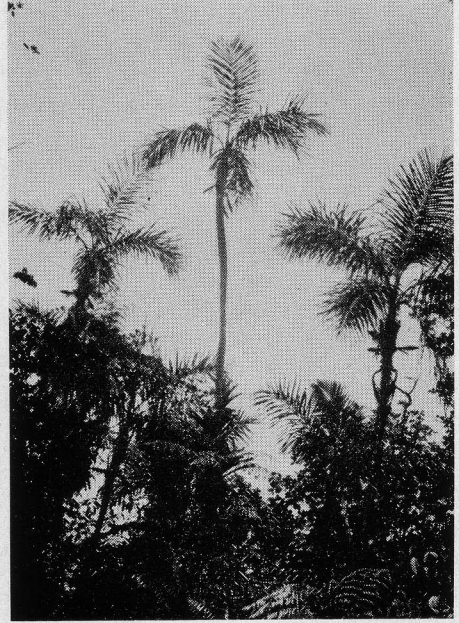
The genus *Coccothrinax* is chiefly West Indian; these are among the smallest of the Cuban palms and may be cultivated for ornamental purposes as they are graceful and not too bulky. They do very well in pots as indoor plants, and Cuban gardens are beginning to display their nice fanlike leaves. They are called



in Cuba *miraguano*. Of these, we count some 21 different species, quite alike in general shape the main differences being technical details of the flowers and leaves. The most common is *Coccothrinax Miraguama*, inhabitant of savannas and serpentine barrens of the six provinces and the Isle of Pines. It gets up to 15 to 20 feet, though younger specimens of 5 to 10 feet high are more common. Its fruits are small and of no use to the *guajiros*. For this reason, many thousands of them have been cut down to make place for pastures or rice plantations. Another cause of its destruction is that it is used as fence posts, its wood being very hard and durable.

There are several species of *miraguano* that may attract the sight of the botanist. One of them, *Coccothrinax crinita*, has the trunk heavily covered with dense hairs, the leaf sheath being so thick as to look like hair, the fibers interwoven like a sort of fabric. They are used for pillows and also this hairlike material is placed at the mouth of charcoal bags to close them. Another of its uses is to make brooms from the quite resistant fibers. It is called *palma petate* and is found in the northern part of Pinar del Río Province near Las Pozas and also in the Trinidad Mountains in Las Villas Province. Several of these *Coccothrinax* palms have a very long and slender trunk, and grow in open places, like the edge of cliffs, between Jauco and Maisi in eastern Oriente. There we can find *Coccothrinax Alexandrii*. On the hills near Santiago can be observed *Coccothrinax fragrans*, a nice palm 5 to 10 feet high with fragrant flowers. All these *miraguanos* are very hardy and usually grow in dry savannas or on rocks and cliffs.

Now we come to the genus *Copernicia*. There are in Cuba some 24 species, and we have to go to South America to find



36. *Bactris cubensis*, mountains of Baracoa, Oriente, Cuba. Photograph by Brother León.

more species of these handsome palms, though there are one or two species in the Antilles outside Cuba. The Cubans separate them into two different groups, the *jatas* and the *yareyes*. The *jatas* hold the old dried leaves making a very large head where all kinds of animals may live while the *yareyes* drop the dead leaves early. The most common is the *jata de Guanabacoa*, *Copernicia Torrenana*, named after the famous Cuban naturalist, Don Carlos de la Torre, by Brother León; it is found on serpentine barrens near the ancient town of Guanabacoa east of Havana City. Another location for it is just east of Madruga in the Province of Havana near the border with Matanzas Province. Its height is commonly 10 to 15 feet, and its large leaves 4 to 5 feet in diameter keep on piling one above another. One of the most beautiful Cuban palms is *Copernicia vespertilionum*, *jata de los murciélagos*; it grows in the savannas of



37. *Thrinax parviflora* near Havana, Cuba. Oriente, Cuba. Photograph by Brother León.

southern Las Villas and Camagüey and is a tall palm about 40 to 50 feet high. Bats like to nest between the dead leaves, hence its names, both vernacular and scientific.

I shall also mention the *jata guata-cuda*, *Copernicia rigida*, a very nice palm growing in the wet savannas in northern Oriente. The leaves are among the largest of the Cuban palms, nearly 10 feet long, and are very straight, the plant taking the shape of a giant funnel as the leaves point to the sky.

Among the *yareyes*, the most common is *yarey hembra*, *Copernicia Baileyana*, named by Brother León after Liberty H. Bailey, one of the botanists who knew most about palms. It is found in great quantities in the savannas near Bayamo and Las Tunas in Oriente Province, and it is present also in nearly all the Provinces (it has not been reported from Ma-

tanzas). Its leaves have strong fibers and are used for making baskets, hats and even slippers. It is also useful for the wax covering of its leaves, and it can be used like the wax palm of Brazil, the carnauba palm, though the industry has not been developed in Cuba so far. Several species of *yareyes* are growing in very restricted areas, and are not to be found very easily by the visitor as their whereabouts are quite far away from the main roads. The differences between them are also quite small and you have to get the flowers or the fruits to tell them apart. *Copernicia Yarey* would be the easiest to observe; it grows in some parts of northern Oriente. That and *Copernicia gigas*, a tall tree more than 60 feet high, found from southern Las Villas to the Cauto valley in Oriente, are among the most remarkable. Also in the savannas of Isle of Pines in the vicinity of Nueva Gerona, you cannot miss *Copernicia Curtissii*, one of our smallest *Copernicias*.

Another nice genus is *Thrinax*. Of the three species found in Cuba, one, *Thrinax parviflora* (*T. Wendlandiana*) grows in coastal thickets and on cliffs above the sea all over Cuba. It is named *guano de costa* by the Cubans. The leaves may be used for thatching houses, though they are rather small for this purpose. It is also planted in gardens near the beaches as it resists very well the spray from salt water. The two other species are found inland on limestone cliffs in the western provinces. The best place to observe the small palm *Thrinax microcarpa*, *guanito de sierra*, is at Viñales in Pinar del Río; it is very abundant on the sides of the *mogotes* or limestone hills of this unique region. It likes the steep rocks that form the walls of the *ensenas* or hidden valleys between *mogotes*. The third species, *Thrinax Drudei*, is

quite rare and has been collected only on the steep limestone hills north of Santa Cruz de los Pinos in Pinar del Río.

As we were speaking of Viñales, there is another palm growing only on the *mogotes*; this is *palma de sierra*, *Gaussia princeps*, a tall slim palm resembling the royal palm. The *guajiros* have no special use for this, as it is nearly always out of reach on the ledge of the cliffs.

If by any chance you happen to be visiting the enchanting Isle of Pines and driving through the savannas south of Nueva Gerona you are likely to observe a rather small palm along the clear streams; this is the *palma manaca*, *Calyptrogyne dulcis*.<sup>\*</sup> Its leaves are pinnate, like those of the royal palm, but have no sheath; the compact inflorescence has abundant white flowers that can be eaten and have a sweet flavor, hence the specific name *dulcis*. The tender young leaves also can be eaten as a salad. This palm is said to point to good water; as an old Cuban author said, "Where *manaca* grows there is abundant and good water." There are in Cuba four species of *manacas*. The most common is *Calyptrogyne dulcis* growing in savannas always near the streams or "arroyos." In the Sierra de los Organos in Pinar del Río we find *Calyptrogyne intermedia*; in the Trinidad Mountains, in Las Villas we have *Calyptrogyne microcarpa*, and in the Sierras of Oriente grows *Calyptrogyne Clementis*, named after Brother Clemente, a botanist who collected for more than 30 years in Oriente.

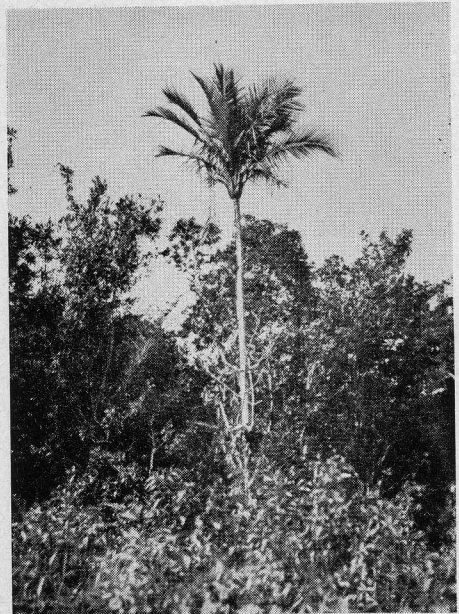
In Sierra Maestra, Oriente, above 2000 feet altitude, we find the *palma justa*, *Euterpe globosa*, one of the few Cuban palms found in all the Antilles

[\*Some botanists, including the late L. H. Bailey, consider that the West Indian species of *Calyptrogyne* belong in a separate genus, *Calyptronoma*. Ed.]



38. *Gaussia princeps* on limestone hills, Pinar del Río, Cuba. Photograph by Brother León.

except Jamaica. It is tall and beautiful and likes the damp and rich soil formed by the decaying leaves of the tropical forest. It replaces the royal palm in the higher mountains. In his classification of the vegetation of the higher Sierras in Cuba, Brother León includes two ecological formations with a palm as altitude indicator: the *manacales*, from 1500 to 2400 feet altitude with the *manaca Calyptrogyne Clementis* as a dominant; the



39. *Calyptrogyne microcarpa*, Trinidad Mountains, Cuba. Photograph by Brother León.



40. *Euterpe globosa*, mountains of Oriente, Cuba. Photograph by Brother León.

*fangales*, from 2400 to about 3500 feet, with *palma justa*, *Euterpe globosa* among the trees though not a dominant.

I shall also mention the horrible *palma pajúa* or *palmilla*, *Bactris cubensis*, found in the pinelands of Oriente. Of medium size, it has the trunk, leaves and inflorescence covered with very long and sharp black spines sometimes two or three inches long, and for this reason it is not used by the Cubans. Its fruit are of a bright orange-red color.

There are, besides four species of *Hemithrinax*. Two of these species grow on limestone cliffs, the other two being restricted to the pinelands of northern Oriente around Moa. These are *H. Ekmaniana* near Sagua la Grande in Las Villas, *H. compacta* on the hills south of Sierra de Nipe in Oriente; the two of the Moa region are *H. rivularis* and *H. savannarum*.

The *palma de Guinea*, *Pseudophoenix Sargentii*, grows near the coast in northern Oriente and Camagüey and is also found in Hispaniola, Florida, the Bahamas Islands, Mexico and British Honduras.

The swamps of Cuba from Havana Province to the west and in the Isle of Pines have the very interesting *guano*



41. *Paurotis Wrightii* forms a fairy ring in savannas of southern Pinar del Río, Cuba. Photograph by Brother León

*prieto*, *Paurotis (Acoelorrhaphé) Wrightii*. It is nearly always found in circular groups like fairy rings or witch's rings. It propagates both by seeds and by its rootstocks, always radiating outwards from the center of the ring. The first plants to die are the ones in the center and the ring widens a little every year, the bigger and older plants being the nearest to the center of the circle. The leaves of the palm have a spiny petiole and the trunk is used for fencing. This particular palm is suited to resist the fires that every year burn the grass of the dried swamps and savannah during the dry season. The bases of the leaves remain attached to the trunk; when the fire comes, they burn only at their tips but the vital parts of the plant are not touched, unless the fire becomes too prolonged because of the presence of shrubs which keep the fire going long enough to damage the plant.

And, of course, we can see everywhere the coconut tree, *cocotero*, and have a treat of coconut juice, or ask at any country grocery store for *dulce de coco*, a sweet made with the pulp of the coconut mixed with raw sugar.

So if you go to Cuba, don't miss the palms that are so beautiful, and make this island "the most beautiful land man has ever seen."