



PRINCIPES

Journal of The Palm Society

October, 1968
Vol. 12, No. 4

THE PALM SOCIETY

A non-profit corporation primarily engaged in the study of the palm family in all its aspects throughout the world. Membership is open to all persons interested in the family. Dues are \$10.00 per annum payable in May. Requests for information about membership or for general information about the Society should be addressed to the Secretary.

PRESIDENT: Dr. John Popenoe, 10901 Old Cutler Road, Miami, Fla. 33156.

VICE PRESIDENT: Dr. Jerome P. Keuper, Florida Institute of Technology, Melbourne, Fla.

SECRETARY: Mrs. Lucita H. Wait, 7229 S.W. 54th Avenue, Miami, Florida 33143.

TREASURER: Wallace E. Manis, 13601 Old Cutler Road, Miami, Florida 33158.

DIRECTORS: 1966-70, Dr. Walter H. Hodge, Japan; Mr. E. D. Kitzke, Wisconsin; Mr. Harold Loomis, Florida; Mr. W. E. Manis, Florida; Dr. Harold E. Moore, Jr., New York; Mrs. L. H. Wait, Florida; Madame Ganna Walska, California. 1968-72: Mr. Otto Martens, California; Mr. David Barry, Jr., California; Mr. Walter J. Murray, Florida; Mr. Dent Smith, Florida; Mr. Harrison G. Yocum, Arizona; Dr. Robert N. Smith, Texas; Dr. U. A. Young, Florida.

PRINCIPES

JOURNAL OF THE PALM SOCIETY

An illustrated quarterly devoted to information about palms and published in January, April, July and October by The Palm Society, Inc.

EDITOR: Harold E. Moore, Jr., 467 Mann Library, Ithaca, N.Y. 14850

ASSISTANT EDITOR: Warren J. Dolby, 6140 Park Avenue, Richmond, Calif. 94805

EDITORIAL BOARD: David Barry, Jr., Walter H. Hodge, Eugene D. Kitzke, Harold F. Loomis, Nixon Smiley, Dent Smith, P. Barry Tomlinson.

Manuscript for PRINCIPES, including legends for figures and photographs, must be typed double-spaced on one side of 8½ x 11 bond paper and addressed to the Editor or the Assistant Editor for receipt not later than 45 days before date of publication. Authors of one page or more of print will receive six copies of the issue in which their article appears. Additional copies or reprints can be furnished only at cost and by advance arrangement.

Contents for October

Cultivated Palms of Venezuela
August Braun 111
Palm Photography
Ken Foster 136
Reflections on a Favorite Palm
Otto Martens 141
Regular Features
Collector's Choice 141
What's in a Name? 142
Index 143

Cover Picture

Pinanga coronata forms a compact clump in the Botanic Gardens, Singapore. Photo by G. Addison.

Mailed at Miami, Florida
November, 1968

Cultivated Palms of Venezuela—Part II

AUGUST BRAUN

Botanical Garden, Central University of Venezuela, Caracas

Manicaria J. Gaertn.

Medium-sized, thick-stemmed, unarmed, monoecious palms with pinnately nerved or irregularly divided robust leaves; spathes fibrous, the upper net-like and rupturing irregularly; inflorescence axillary, simply branched, pendulous; flowers more or less sunken in the rachillae, rose to yellowish-white; male flowers with numerous stamens; fruit warty and corky, with 1-3 seeds. An American genus of few species.

Manicaria saccifera J. Gaertn.

Stem 3-5 m. high, 20-25 cm. in diameter; leaves numerous, usually 5-7 m. long but sometimes to 9 m. long and 1.6 m. wide; sheath clothed laterally in fibers; pinnae of unequal width, frequently to 80 cm. wide; inflorescences numerous, enclosed in the upper spathe, 1-1.3 m. long. This extremely beautiful and stately palm is found in the swampy forests of the Amacuro Delta, in the southern part of Monagas State and in the forests of the upper Orinoco. The vernacular name is *timiche*. It is of great use to the Indian population. The enormous leaves are used for roofing and the little covers made for the *curi-ara*, the Indian boat, are thatched with *Manicaria* leaves. Even now the fibrous bract of the inflorescence is used as a loincloth by a few Indian tribes. The liquid endosperm of the fruit is used as a cure for asthma and coughs.

Cultivation: seeds germinated in Caracas after 115-130 days. The species is rarely cultivated and requires a site with partial to full shade. As these palms grow in marshy land, they must

be amply watered and to guarantee sufficient irrigation the planting level should be somewhat below the surface of the ground.

Mauritia L. f.

Medium-sized to very tall, unarmed to armed, dioecious palms with smooth or spiny columnar stems having a spongy reddish interior; leaves palmate, with numerous segments, in a terminal crown; inflorescences among the leaves, persistent, pendulous, with numerous short tubular bracts and catkin-like branches; male flowers with 6 stamens; fruit 1-seeded, rather dry, reddish to brown and covered with scales; endosperm homogeneous, embryo lateral. A South American genus with about 9 species.

The *Mauritia* or *moriche* palms, with a few exceptions, are indigenous to the southern part of the Orinoco region. They are the typical palms growing along the river beds and in the extensive marshes of open savannas in the Venezuelan Guayana. *Moriches* under a steel-blue sky characterize the hottest climates of Venezuela and are a sight of unequalled picturesqueness. Moreover, they are the most useful palms for indigenous people of the region, providing them with food and clothing.

By felling old stems which no longer flower and fruit, the Indians obtain the soft inner layer which, dried and roasted, furnishes the daily bread of the Guaraos Indians. This *yuruma*, as the Indians call it, is usually obtained in large quantities, packed in bales and stored dry or in a flowing stream as food for the poor time of year. Wine is called *nojobo* by the Indians of the



53. *Manicaria saccifera* in its natural habitat, the marshy forests of the Amacuro Delta.

Amacuro Delta; it is likewise obtained by felling old stems in which they make holes which are covered with leaves. Slowly the holes fill by compression and the beverage can be drunk. A certain

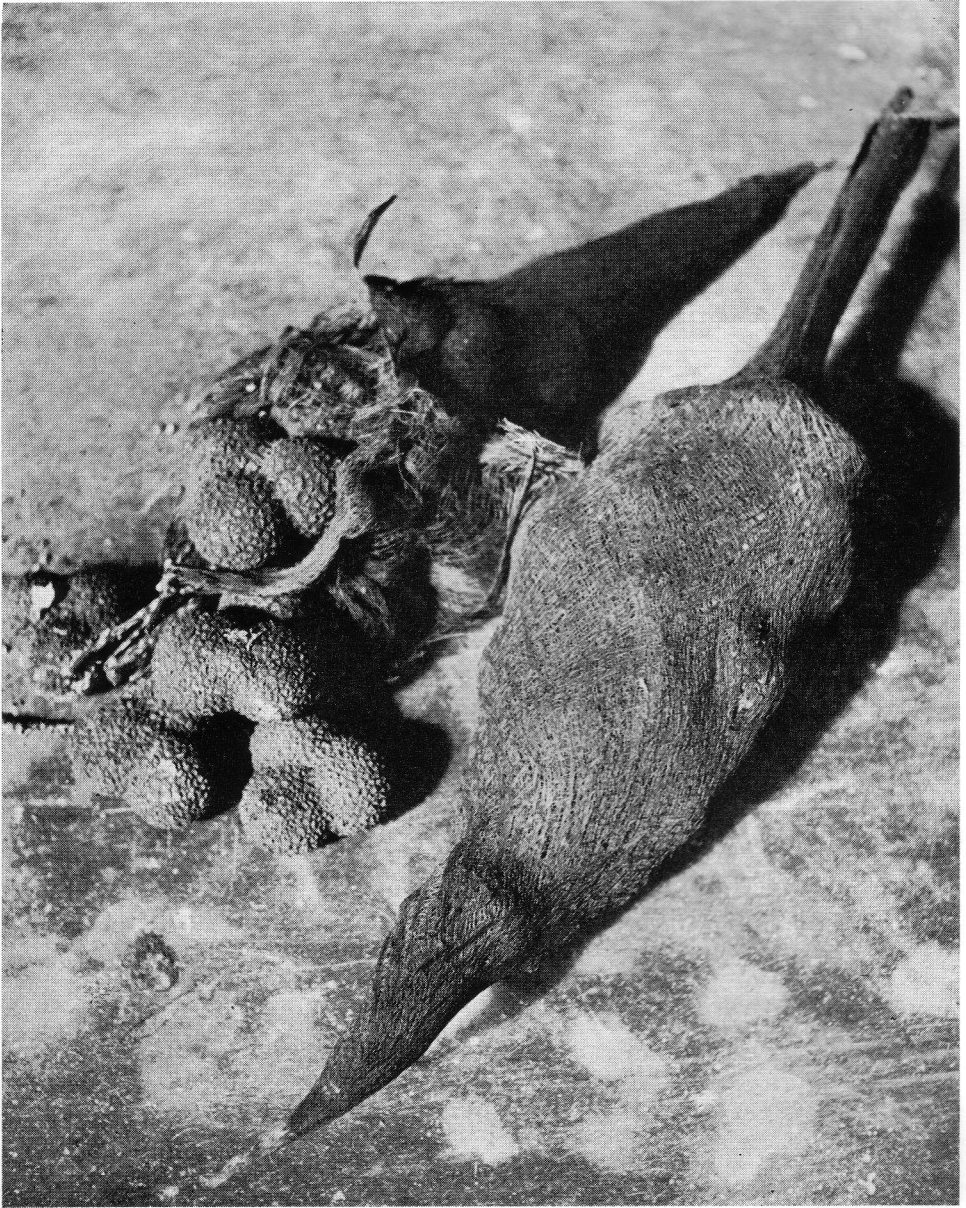
kind of beetle deposits its eggs in the stems of the palm; the fat larvae which later develop, eaten raw or fried, are considered a great delicacy by the natives. Finally the fruits are used fresh



54. Two young plants of *Manicaria saccifera* on the bank of the Mañamito River in the Amacuro Delta.

or various kinds of beverages are made from them. The best known—and a favorite drink of the author—is the *carato de moriche*. It has the property of turning quickly into alcohol which easily leads to trouble if one drinks too much of it. The dried flesh of the fruit is roasted and serves as a substitute for bread. The leaves of the *moriche* serve the Indians as material for thatching their huts and also material for baskets, mats, chairs, and ropes as well as for hammocks in which they spend a major part of their lives and in which they also die. The roots of this palm are even now appreciated for their curative properties; occasionally they are worked into necklaces and bracelets.

Cultivation: only within the last few years have *moriche* palms been successfully cultivated in Caracas and seemed to prosper in the Venezuelan capital. Fresh seeds of *Mauritia flexuosa* sown by us in hotbeds germinated after 65 days. Seeds of *Mauritia subinermis* germinated after 79 days. Older seeds of *Mauritia flexuosa* (*M. setigera*) only germinated after 7–9 months. These palms thrive in partial shade as well as in full sun but require hot climates and swampy ground in accordance with their native habitat. Strongly acid soil is indicated by pH measurements of 3.5. In general plants grow readily if well cared for.

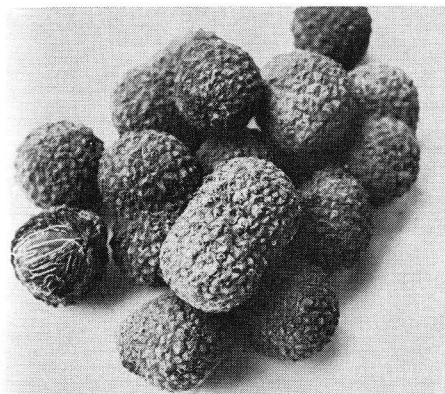


55. Inflorescences of *Manicaria saccifera* open and closed.

***Mauritia aculeata* HBK**

Stem 6–10 m. high, more elegant than that of *Mauritia flexuosa*, armed with thick prickles resembling those on orange trees; leaves about 2 m. long, deeply

divided; segments 0.8–1 m. long, 2–2.5 cm. wide, numerous; main axis of inflorescence surrounded by 6 bracts, each about 20 cm. long; inflorescence pendulous, 1 m. long or more with 20–



56. The warty fruits of *Manicaria saccifera*.

30 branches; fruit ovoid, dented at the tip, 3.5 cm. long, about 2.5 cm. wide. Occurs in Venezuela in the region of the upper Orinoco, in Guainia, on the plains of the Atabapo, and in the region of the Río Negro at altitudes of about 120 m. (Amazon Territory). It is noteworthy that the same species is found in the region of the Río Karuai, south-

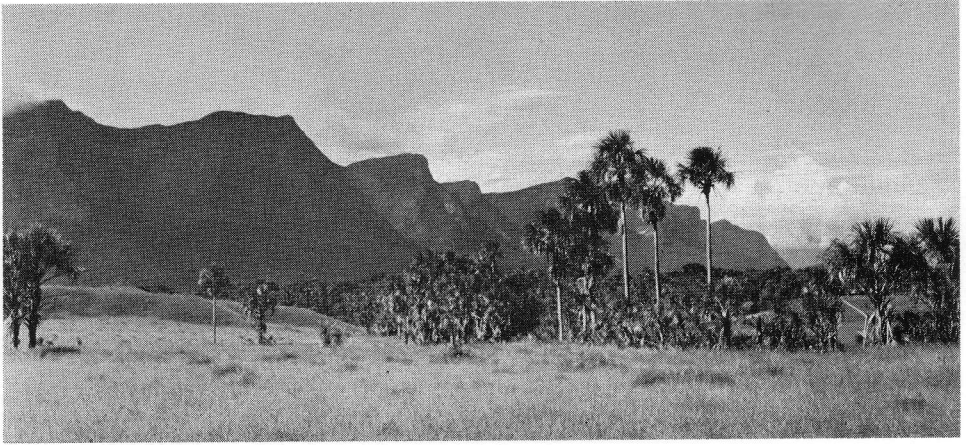
west of Ptari-tepuí, Bolívar State, at an altitude of 1220 m.

***Mauritia flexuosa* L. f.**

Stem 15–25 m. tall, 0.6 m. in diameter, unarmed; leaves deeply cut, glossy deep green; petiole 2–3 m. long; blades 0.8–1.2 m. long, 1.5–2 m. wide; segments stiff, 2–4 cm. wide; inflorescence about 2–3 m. long, with many branches; fruit roundish, depressed at the top, sometimes wider than long, about 4 cm. in diameter, sometimes up to 5 cm., pericarp red when mature. Common name *moriche*, *muriche*, *gae-be*, etc. Occurs between Maturin and Barrancas, Monagas State and from the upper course to the delta of the Orinoco in large stands. *Mauritia flexuosa* is the most widespread species of the genus and varies in size and shape of fruit and nature of prickles on leaves. A variety, *M. flexuosa* var. *venezuelana* Steyermark, with fruit 3.5–4 cm. in diameter occurs on



57. A Venezuelan *morichal* (formation of *Mauritia flexuosa*) between Maturin and Barancas, Monagas State.



58. *Mauritia flexuosa* (?) near Esmeralda, upper Orinoco, Amazon Territory.

the savannas of the Río Caroní and Ciudad Bolívar, Bolívar State.

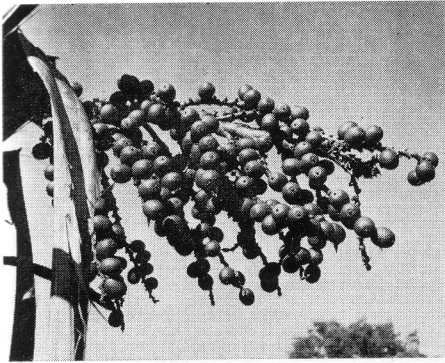
***Mauritia subinermis* Spruce**

Stem 5–6 m. high, armed with wedge-shaped spines several millimeters long;

leaf-sheaths long adherent; leaves 1–1.2 m. in diameter, very deeply cut, with about 30–40 segments 50–60 cm. long and about 4 cm. wide. Occurs in the region of the upper Río Negro and the lower Río Casiquiare.



59. *Mauritia flexuosa*, guard of the vast savannas in the southern part of Bolívar State.

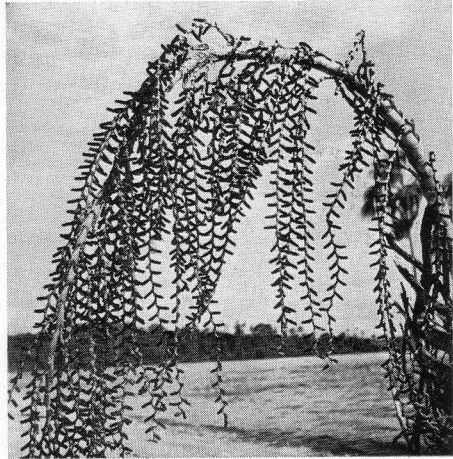
60. The scaly fruits of *Mauritia flexuosa*.

Maximiliana Mart.

Stately, solitary, monoecious palms with medium-sized, erect, smooth, ringed stems and pinnate leaves; wood greyish-yellow; leaves usually very long with numerous pinnae; pinnae closely placed, oblong, drooping; inflorescences axillary, either with male flowers only or with both male and female flowers, simply branched; spathes 2, a smaller lower one and a large, woody upper one; male flowers with 6 stamens longer than the corolla; fruit 1-seeded, with bony endocarp having 3 pores near the base, these covered with net-like fiber; endosperm homogeneous, hollow; embryo near one of the pores. Named after Maximilian Joseph, King of Bavaria (1756-1825). According to Dahlgren, about 9 species grow in the tropics of South America, among them *M. elegans* Karst., *M. macropetala* Burret, *M. Martiana* Karst.

Maximiliana elegans Karst.

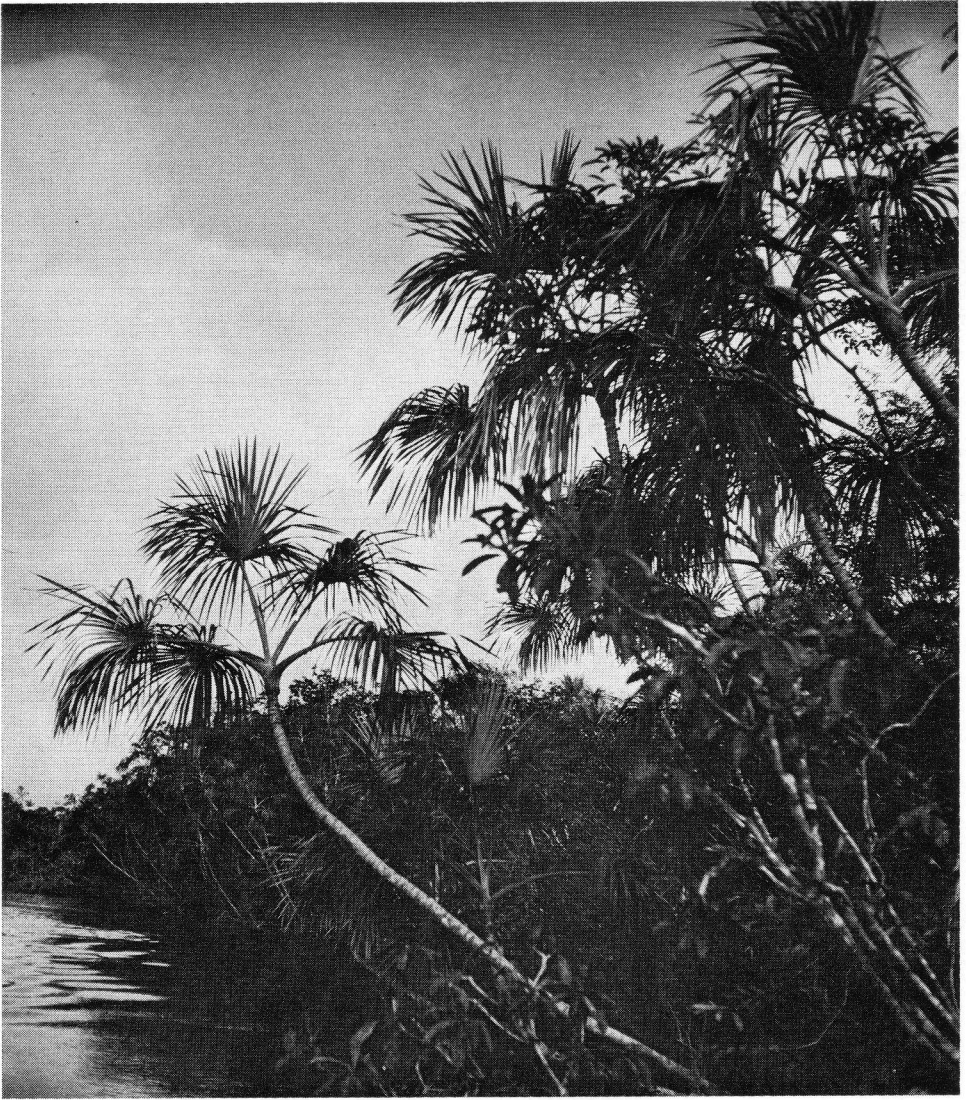
Stem thick, erect; leaves about 5 m. long, erect; pinnae lanceolate, pointed, densely arranged in clusters, the lower ones to 1 m. long; inflorescence pendulous with numerous rachillae, those bearing male flowers about 20 cm. long, those bearing male and female flowers

61. Male inflorescence of *Mauritia flexuosa*.

about 15 cm. long; fruit 7-8 cm. long; seeds triangular to compressed. This elegant palm is a frequent tree in the Orinoco region. It differs from *M. Martiana* in its stiffer and erect rather than drooping foliage. The upper spathe may reach a length of 1 m. This is a most useful palm. Native huts are roofed with the leaves; the *cocurito*, as it is known locally, also furnishes plaiting material for baskets and mats, packing for the vital cassava (manioc).

Maximiliana Martiana Karst.

Stem 5-7 m. high, 0.3-0.5 m. in diameter; leaves 15-30, closely packed in the crown, slightly drooping, 5 m. long; pinnae numerous, about 30 cm. long, 2.5 cm. wide, arranged in clusters and at different angles; inflorescence pendulous, 0.6-0.7 m. long; rachillae 10-20 cm. long; flowers dense; fruit 4 cm. long. Known locally as *cocurito*, the *Maximiliana* palms are a characteristic feature of the vast tropical Orinoco region. They overtop the forests of Guayana with their rich foliage but also extend on open ground as in the upper

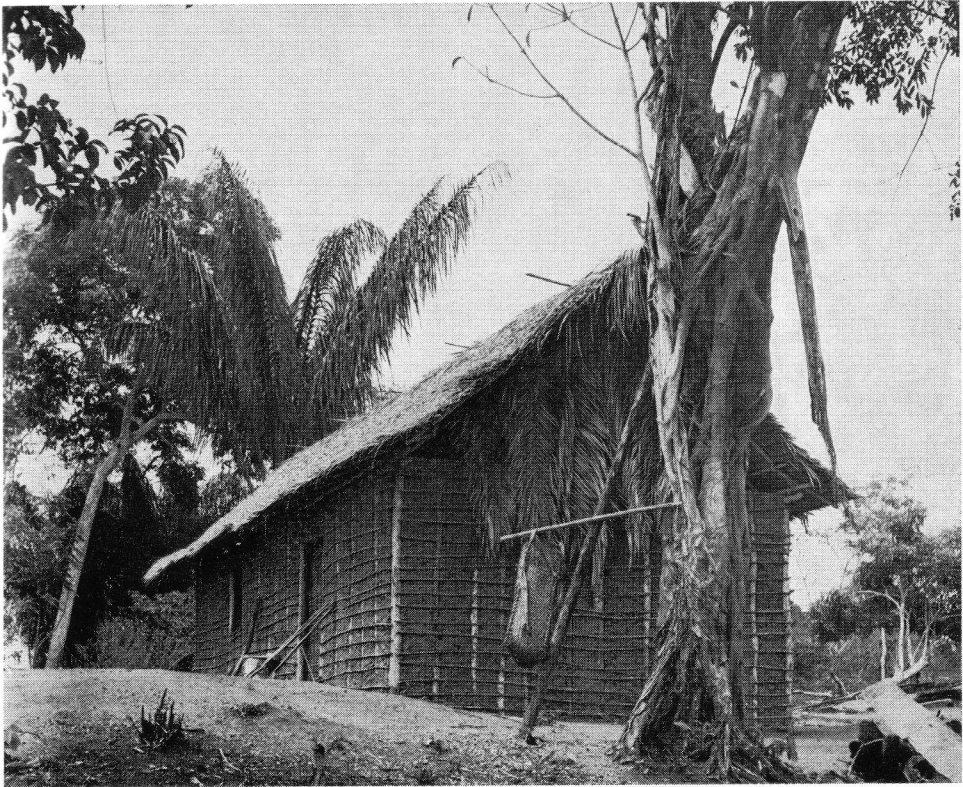


62. *Mauritia subinermis* on the bank of the upper Orinoco, Amazon Territory.

Orinoco region. Whether growing solitary or in large stands, they always offer a picturesque sight.

This palm is very useful. Innumerable huts have been thatched with its leaves. The pinnae furnish material for the basketware of the natives. The ligneous, bowl-shaped spathe is used to collect wild cotton and for many other

purposes. The seeds yield a cooking oil of good quality but which quickly becomes rancid. As yet, this palm has not been grown in any garden of Caracas. Since it is most suitable for parks, efforts should be made to cultivate it as soon as possible. Seeds should be fresh and sown in hotbeds. Fresh seeds germinated in Caracas after 160 days.



63. Settlement of natives in the upper Orinoco region; the roof is thatched with leaves of the *cocurito* palm (*Maximiliana Martiana*) beside it.

Oenocarpus Mart.

Unarmed monoecious palms of tropical America with solitary or clustered, slender, prominently ringed stems and pinnate leaves; epidermis of stem dark; leaf-sheath usually split opposite the petiole; pinnae with conspicuous longitudinal nerves; spathes 2; inflorescence simply branched, with numerous undulate and pendulous rachillae; flowers borne in groups of 2 male and a female toward the base of the rachillae, mostly male toward the tip, the male with 6 stamens; fruit 1-seeded, dry, dark-bluish to purple or shading into grayish-violet, pulp reddish; seeds covered with fibers; endosperm homogeneous. The fruits of several species yield vinous beverages

hence the Latin name which means "wine fruit." Species of *Oenocarpus* are forest-loving palms. While the tall species with single stems may occasionally overtop the surrounding trees, the smaller species with clustered stems grow almost hidden as understory plants in the evergreen forests. Some species prefer the fresh climate of the cloud forests of the coastal range, others are encountered in the hot forests of the Guayana lowland. The epidermis of the leaf-sheath of certain species is used by the Indians to make cigarettes. As noted above, fruits of some species are used for winemaking. Fruits of other species yield a fine cooking oil. Of about 6 species indigenous to Venezuela, only the following is in cultivation.



64. *Maximiliana Martiana* in its natural habitat, the vast savanna near Carmelitas, Río Ventauri, Amazon Territory.

Oenocarpus caracasanus Mart.

Plant with several canelike stems 5–8 m. in height and about 6 cm. in diameter; leaves 3 m. long, about 10 in number; sheath 0.6 m. long, broad at base, reddish; petiole reddish, covered with a downy film; pinnae 35–40 on each side of the leaf, regularly arranged, about 58 cm. long, 4.5–5 cm. wide, tapering in a tip 7–8 cm. long, main nerve on each side dotted with brown tomentum; inflorescences 3–4, arranged around the stem below the leaf-sheaths which occupy an almost horizontal position, 0.6 m. long with rachillae about 20 cm. long thickened at the base; fruit roundish, 1 cm. in diameter, dark blue. Occurs in moist mountain forests affording deep shade below the Avila region and at an altitude of about 1400–1800 m. in the Junquito region (Distrito Federal).

Cultivation: fresh seeds germinated in Caracas after 38–50 days. As plants of cool and shaded mountain forests,

they require a site with temperatures of 15–23° C., well balanced high atmospheric humidity, and partial shade.

Roystonea O. F. Cook

Unarmed, monoecious, pinnate palms with high, columnar stems and prominent rings; leaves in a large terminal crown, with very large deciduous sheaths; pinnae numerous, linear to lanceolate; upper spathe large, club-shaped when closed; inflorescence conspicuous, 2–3 times branched; flowers borne in groups of 2 male and a female, the male with 6–9 stamens; fruit fleshy; endosperm homogeneous, embryo near the base. Bailey lists 12 species growing in the Antilles and from Florida to Venezuela. Species are cultivated as ornamentals in parks and along avenues in Venezuela.

Roystonea venezuelana L. H. Bailey

Stem 20–25 m. or more in height, 0.3–0.7 m. in diameter; leaves about



65. Spathes, inflorescences and infructescences of *Maximiliana Martiana*; on the far left a male inflorescence, a female infructescence with protruding male flowers on top at the far right.



66. One of the most beautiful Venezuelan palms is *Oenocarpus* sp. indigenous to the upper Orinoco region.

4–7.5 m. long, silvery on the lower side and dark green above; sheath 1.5–2 m. long; pinnae biseriate, 0.8–1 m. long and 3–4 cm. wide; spathe 1 m. long, 18 cm. wide, green becoming brown; inflorescence 0.6–0.8 m. long, the rachillae strongly bent and undulate for their entire length; fruit 15–18 mm. long, 12–13 mm. wide, reddish to black; seeds oblong, 10–13 mm. long. The common name of the Venezuelan royal palm is *chaguaramo*. It is the characteristic ornament of all the large squares of the country. During the time of the Spanish conquerors the palm was allowed

to be planted only in official courts and gardens as it was the symbol of special authority. The species is encountered in the following states of Venezuela: Distrito Federal, Bolívar, Anzoátegui, Amacuro Delta, Monagas, and Yaracuy.

There is probably no second palm species which develops such a variety of stem forms. There are bottle- and cone-shaped forms, columns and finally bomb-like thickenings at different stem-heights, but only in the first half of its life. The usually regularly spaced rings of the stem indicated the number of shed leaves. Thus the age of the plant



67. *Oenocarpus multicaulis*, specimens with single stem near Santa Barbara, Barinas State.

can be calculated, provided the plant is well cared for and the leaves therefore shed at regular intervals. Depending on adequate site and water supply, the individual plant sheds 8-10 leaves a year. The formula to calculate the age consequently is as follows: total number of rings divided by the number of leaves shed each year with the addition of the number of years in the juvenile

state when no rings are developed. The specimen growing in Mérida (Mérida State) on the Plaza Bolívar, 1641 m. above sea level, probably occupies the highest altitude of any in Venezuela. Most stems of this species are covered with a greyish lichen (*Physia* sp.) and not rarely accompanied by *Tillandsia recurvata*, one of the Bromeliaceae.

Cultivation: fresh seeds germinated



68. *Roystonea venezuelana* in association with *Scheelea* sp. near La Carbonera, Yaracuy State.

in Caracas at different intervals. Of 100 seeds, 15 germinated after 60 days, 45 after 120 days, 29 after 150 days, and the slowest ones required precisely 165 days.

Sabal Adans.

Medium to tall or rarely trunkless palms with perfect flowers and palmate leaves; stems ringed, rising at an angle from the base; leaves more or less round, wedge-shaped at base, unarmed, deeply cut into numerous segments, the main nerves often ending in threads, rachis often continued deep into the leaf (costapalmate); inflorescence among the leaves, with several tubular bracts, paniculately branched; flowers whitish to greenish, stamens 6, pistil trilocular;

fruit 1- or rarely 2-3-seeded, globose, greenish to blackish; endosperm homogeneous, embryo dorsal. A genus with over 15 species occurring in the Antilles and from the southern United States to Venezuela and Colombia.

Sabal mauritiaeformis (Karst.) Griseb. & H. Wendl.

Stem 10-20 m. high, 30-35 cm. in diameter; leaves 12-15, 5-6 m. long, 2-2.5 m. in diameter; petiole 1.5 m. long, smooth, sharp-edged; blades cut almost to base, with about 30 segments, these 7-10 cm. wide, blue-green; inflorescence longer than the leaves, with many branches and whitish flowers; fruit black, 1.4 cm. long, 1 cm. in diameter. Occasionally all carpels mature

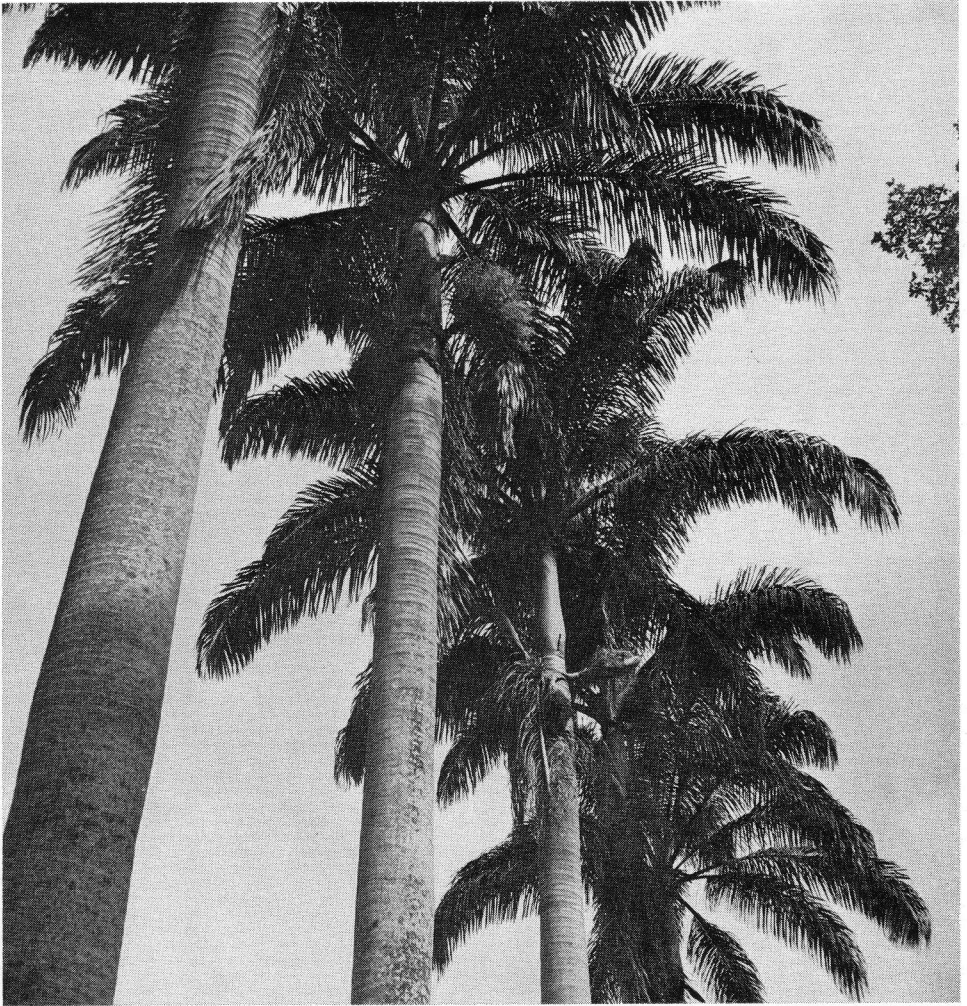


69. The magnificent sight of *Roystonea* planted by the roadside at the Country Club, Caracas.

thus producing a 3-seeded fruit. This palm is known in Venezuela as *palma carata* and *palma redonda*. It occurs in the gallery forests of the Río Motatán region (Trujillo State) and is also a frequent tree in the southern part of Zulia State. A noteworthy occurrence of this species is in Guayana in regions similar to those of rain forests, for ex-

ample 100 kilometers south of El Dorado (Bolívar State) where its leaves have an almost sky-blue cast. Large stands are also found in Yaracuy State. Even now the leaves of this palm are used for thatching country houses.

Cultivation: fresh seeds germinated in Caracas after 55–60 days. The plants are slow-growers and do not develop



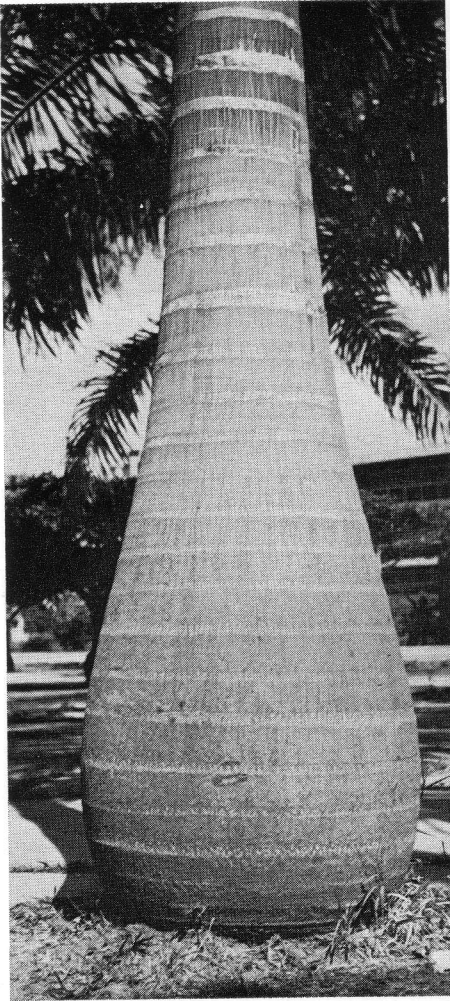
70. Columns and crowns of the Venezuelan royal palm, *Roystonea venezuelana*.

stems within the first 10–15 years. Consequently they remain low for many years which often is desirable for their use in small home gardens. This is a palm recommended for planting in groups in parks. It requires an open and sunny site and until now no susceptibility to disease has been reported.

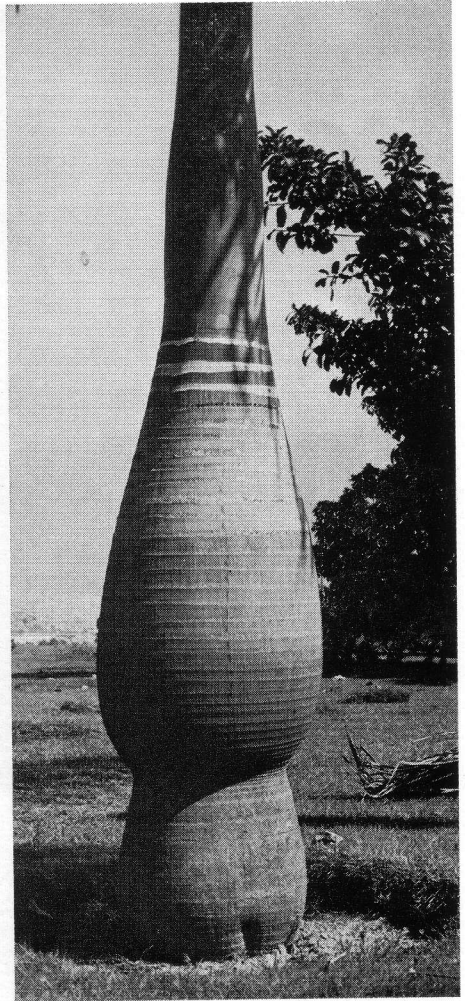
Scheelea Karst.

Magnificent, unarmed, monoecious palms with pinnate leaves; leaves very

long, frequently up to 10 m., the rachis rounded beneath, grooved from the base and becoming sharp-edged toward the tip; pinnae borne in series or grouped, long-linear with unequal tips; sheath short, open, split laterally; spathes 2, the larger one spindle-shaped to pointed; inflorescences axillary, either with male flowers only, or with both male and female flowers when the female flowers are borne near the base of the rachilla;



71. The conelike type of swelling sometimes seen on the trunk of *Roystonea venezuelana* during the first part of its life; later the trunk takes on the well-known appearance of a column.



72. These peculiar bulgings on *Roystonea venezuelana* present an unusual appearance.

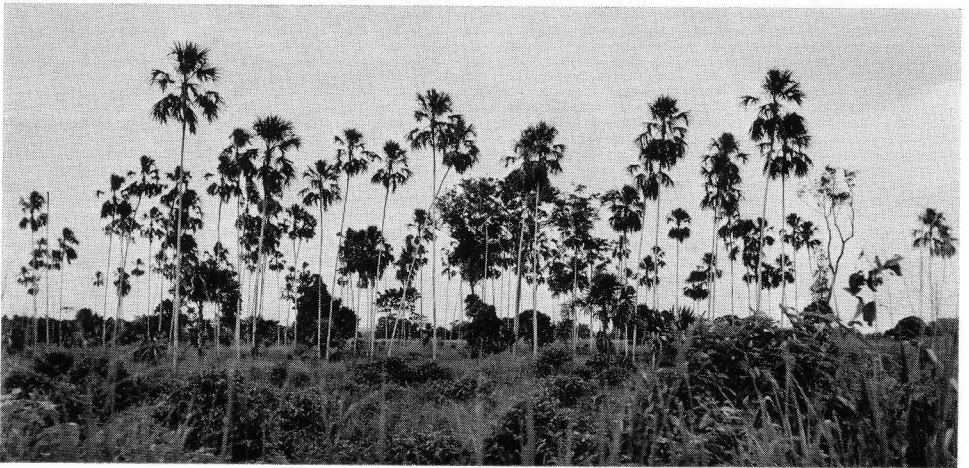
male flowers with nearly terete petals and 6–12 stamens; fruits usually large, ovoid, with bony endocarp having 3 pores near the base which are covered with dense fibrous pericarp. A genus of about 40 species from Mexico and the Antilles to South America where particularly frequent. It is closely related to *Orbignya*, *Attalea*, and *Maxi-*

miliana and cannot always be distinguished without flowers.

Scheelea palms occur in open savannas but also are abundant in the forests of moist and hot regions. During their first years they do not show stems but develop much longer leaves than the adult plants which have thick columnar stems. The great usefulness of many species is well known to the population of the South American tropics. Leaves



73. *Roystonea venezuelana* growing in a foggy valley, Yaracuy State.



74. *Sabal mauritiaeformis* on a grassy plain near El Encontrada, south of Lake Maracaibo, Zulia State.



75. The fanlike leaves of *Sabal mauritiaeformis*.

are used for roofing by cutting them lengthwise. The seeds of many species yield a fine cooking oil which, however, quickly becomes rancid. The stems are used as fire wood or for building purposes. By soaking the fruits of certain species, a fresh and sweetish beverage is obtained which ferments after some time. Several species have been found in all the states of Venezuela but have not yet been identified.

Cultivation: sowing is made in hotbeds and only fresh seeds should be

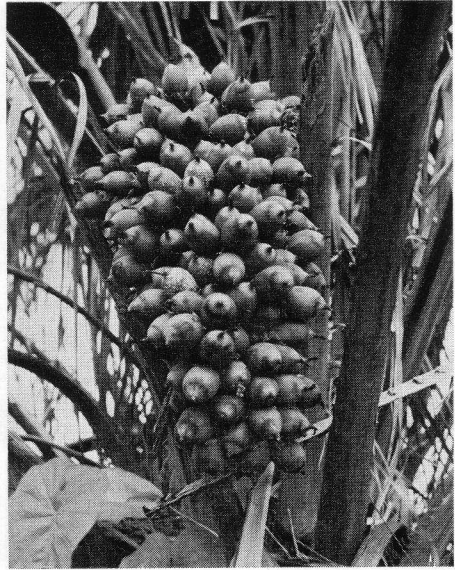
taken. The seeds germinate at irregular intervals, generally requiring 2-4 months. Growth is very satisfactory if the plants are well cared for and ample water and fertilizer are provided. Species are excellent material for tropical horticulture especially if planted in large groups in parks.

Scheelea Humboldtiana (Spruce) Burret.

Stem 7-10 m. high; leaves numerous, to 10 m. long, with more than 200 pairs



76. *Scheelea Humboldtiana*, upper Orinoco, Amazon Territory.

77. Inflorescence of *Scheelea Humboldtiana*.78. Inflorescence of *Scheelea macrolepis*.

of pinnae; inflorescences 4–5, about 2 m. long, 30–40 cm. in diameter; fruit 5 cm. long, brownish-red. Occurs in the region of Río Maypures, upper Orinoco, Río Casiquiare, and Río Negro (Amazon Territory). The common name is *yagua*. The large leaves furnish roofing material for houses in those regions. The ligneous spathe serves as a water scoop in boats or is used to collect and store different objects. The seeds yield cooking oil. Cultivated only in the Botanical Garden of the Central University of Venezuela where growth is very slow. Seeds germinated in Caracas after 22 months.

***Scheelea macrocarpa* Karst.**

Stem 4–6 m. high, 0.4 m. in diameter; leaves 15–20, 8–10 m. long, almost vertical but drooping slightly at tip; inflorescences on older specimens are quite numerous; fruit 7–10 cm. long, 4–5 cm. in diameter. A frequent tree in the region of Río Tui and in Barlovento (Miranda State) but probably to

be found elsewhere. The common name is *yagua* or *corozo*. Leaves are used for roofing and fruits for cooking oil.

Cultivation: rarely cultivated to date. Fresh seeds germinated in Caracas after 2–4 months.

***Socratea* Karst.**

A genus closely related to *Iriartea*, differing mainly in the number of stamens, position of the spathes, open stilt roots, terminal embryo. Three species are known in Venezuela—*S. albolineata* Steyermark in the region of Río Pacairao, Bolívar State; *S. exorrhiza* (Mart.) H. Wendl. in the region of the upper Orinoco, between San Antonio and Ocamo, Río Ventuari, and Río Negro, etc. (Amazon Territory); and *S. microchlamys* Burret from the upper Orinoco.

***Socratea exorrhiza* (Mart.) H. Wendl.**

Stem 10–20 m. high, 10–15 cm. in diameter, greyish, smooth, braced by stilt roots 2–2.5 m. long armed with dark thorns, the wood extremely hard;



79. *Scheelea* sp. near Barinitas, Barinas State.

leaves 7–10, erect and somewhat drooping, deep green; sheath 1.1 m. long, smooth, greyish-green; petiole and blade 2 m. long; pinnae numerous, those at the base of the blade grouped, varying in size and form, frequently rhomboid, 0.8 m. long, 2–5 cm. wide, erose at the tip, the terminal pinnae wider, wedge-shaped and many-nerved; spathes about 4; main axis of inflorescence 35 cm. long, 4–4.5 cm. wide, compressed; rachillae 10–12, 35–40 cm. long and about 1 cm. thick; fruit cylindrical, smooth, 2.5 cm. long, 2 cm. in diameter, the top obtuse, reddish when mature; endosperm homogeneous, hard, embryo terminal.

This palm is highly interesting because of its numerous strongly armed stilt roots and grows mostly in dense

forests which are often flooded for many months, as in the region of the upper Orinoco, Río Negro, Río Ventuari of the Amazon Territory. It is known by the common name *macanilla*. Its extremely tough and erect stems are used in different ways. The Indians of Brazil used the prickly stilt roots to grate their cassava.

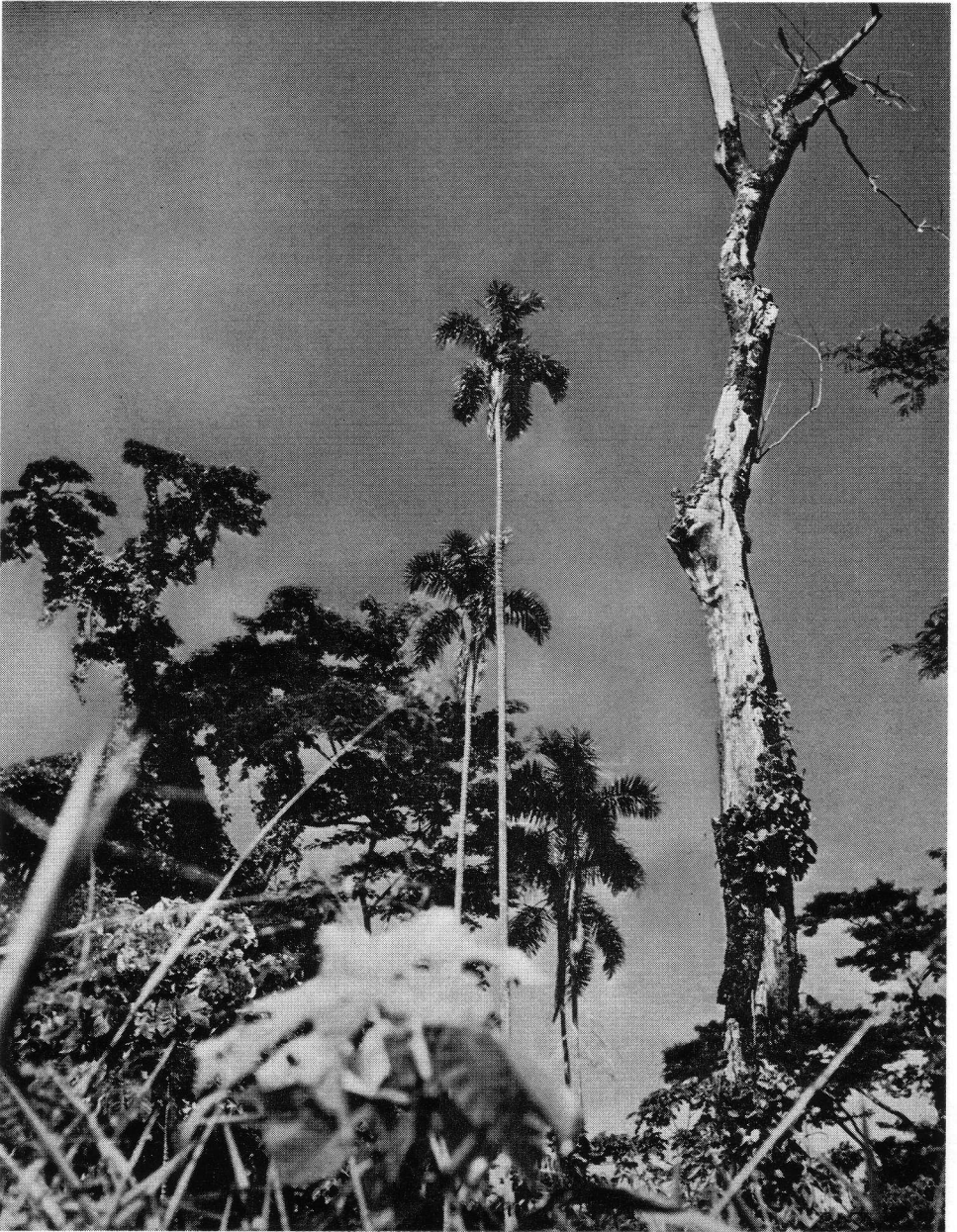
Cultivation: fresh seeds germinated in Caracas after 45–70 days. Requires partial shade.

Syagrus Mart.

Medium-sized or dwarf monoecious palms with ringed stems and pinnate leaves; wood light-colored; leaves in a terminal crown, with numerous pinnae; leaf-sheaths fibrous; spathes 2, the larger grooved; inflorescences axil-



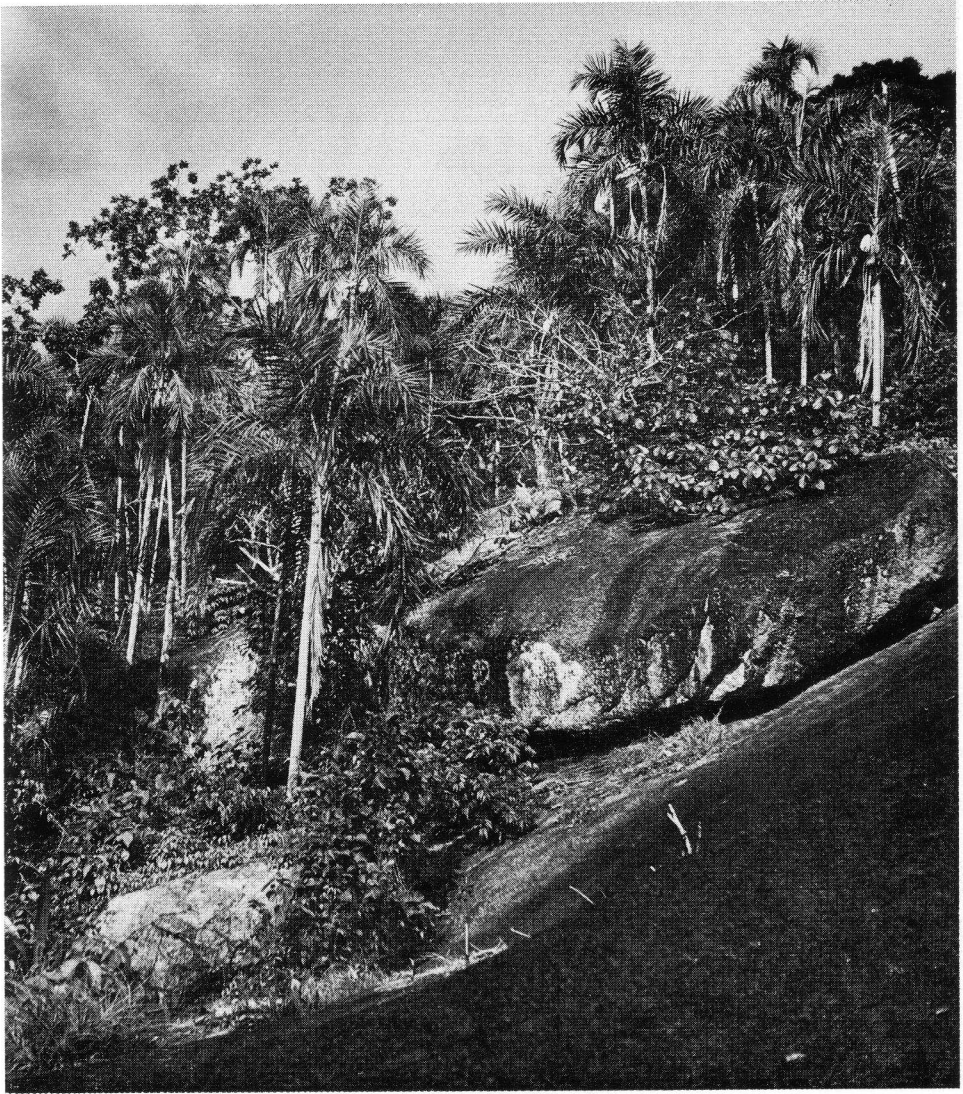
80. *Socratea exorrhiza* in association with *Euterpe* sp. in dense woodland, upper Orinoco, Amazon Territory.



81. *Syagrus* sp. amidst impressive virgin vegetation, Barinas State.

lary, simply branched; flowers borne in groups of 2 male and a female at least near base of rachilla, the male with 6 stamens; fruit with dry or fleshy

pericarp and bony endocarp covered with fibers having 3 pores near the base; endosperm homogeneous, sometimes hollow, embryo near one of the



82. *Syagrus orinocensis* growing on rocky banks of Río Maypures, Maypures, Amazon Territory.

pores. The genus is restricted to South America; about 4 species occur in Venezuela of which the following is cultivated.

Syagrus orinocensis (Spruce) Burret

Stem slender, 5–8 m. high, about 10 cm. in diameter, extremely tough; leaves fewer than 10, about 1.5 m. long,

light green; sheath light brown; pinnae 0.5 m. long, tough; spathe 0.8 m. long, woody; fruit 2.5 cm. long, 2 cm. in diameter, yellow when mature. Known in Venezuela as *cocucito* and *coquito*. This graceful palm is widespread through the river basin of the Maypures (Amazon Territory). In fact, the hilly landscape is characterized by this abundant

species. The palm is extremely resistant to drought and even grows in rocky crevices of granite massifs. During the dry season, the plants are often exposed for months to hot winds but finally they initiate flowers and fruits. The little fruits mature with the beginning of the rains early in May, fall to the ground and germinate quickly in the moist tropical climate. The seedlings produce deep fleshy roots which enable the plant to absorb moisture from the deep-seated granite basins.

Cultivation: fresh seeds germinated in Caracas after 30–40 days. The species is very rarely cultivated and seedlings are rather difficult to transplant; even slight damage to roots may cause loss of the plant. Therefore it is advis-

able to sow seeds directly in their permanent location. The palm is an elegant one for tropical stone gardens.

REFERENCES

- BARBOSA RODRIGUES, J. *Sertum Palmarum Brasiliensium*. Bruxelles. 1903.
 DRUDE, O. *Palmae In Martius, Flora Brasiliensis* 3(2):251–584. 1881–82.
 JAHN, ALFREDO JR. *Las Palmas de la Flora Venezolana*, Caracas. 1908.
 KRAUSE, O. *Palmen In Parey's Blumen-gärtnerei* ed. C. Bonstedt 1:136–154. 1931.
 LEÓN, HERMANO. *Palmaceas in Flora de Cuba* 1:236–269. 1946.
 MCCURRACH, JAMES C. *Palms of the World*, New York. 1960.
 PITTIER, H. *Catálogo de la Flora Venezolana* no. 20. Caracas. 1945.
 STEYERMARK, JULIAN A. *Palmae in Contributions to the Flora of Venezuela*. Fieldiana: Botany 28(4):809–814. 1957.

Palm Photography

KEN FOSTER

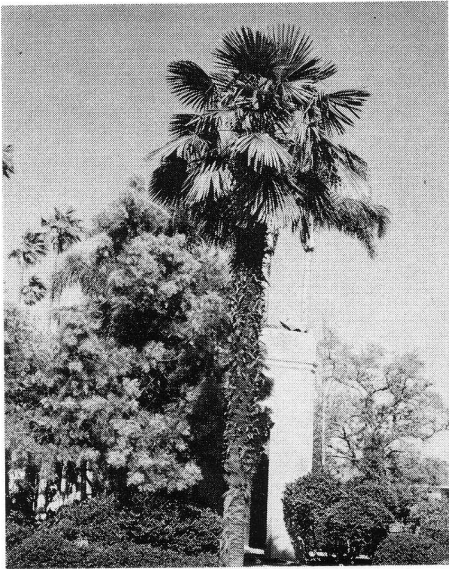
As a professional photographer, I find all phases of photography exciting, but few more challenging than depicting palms in all their natural beauty. A varied set of problems and solutions arises in the photographing of palms, differing from the usual problems of general commercial and portrait rendering. Since the palm tree is normally a stationary object, it is up to the photographer to choose the time, angle, and lighting to show the palm to best advantage. Even though this is not always possible for the botanist in the field, there are tips that can help the botanist and the everyday photographer alike.

I am always amused to see the typical "tourist-type" photographer at work. Bent low with three or four cameras around his neck along with a conglomeration of telephoto lenses and sundry

accessories, he rambles from subject to subject furiously snapping away without giving the subject the attention needed to do a good job. Out of all this, he hopes to get one good shot from rolls of film exposed, relying on expensive equipment to ensure good results. With a few simple rules and an eye to "see" in photography, even the simplest equipment can bring rewarding results.

There are two important factors in palm photography: a sharp lens in front of the camera and a sharp man behind the camera. While the more expensive camera with advanced accessories may bring ease in shooting, Aunt Betsey's old \$5.00 camera with a reasonably sharp lens should be sufficient.

This paper is not meant to be a primer on how to take pictures, but rather a guide to offer a few pointers on improv-



1. This view of a tall *Trachycarpus Fortunei* does not allow a clear view of the palm because of the background.



2. By moving the camera about ten feet to the left and nearer to the ground, an open spot is found against the sky which makes a more pleasing rendering of the subject than in Fig. 1.

ing your palm photography. Therefore, I assume you are reasonably capable technically in handling your particular camera. The basic information supplied by the film manufacturer on exposure and lighting is really quite adequate for most use.

Pick Your Angle

Palm photography calls for a high degree of angle selection. A plain background is essential if the palm is to stand out and be the center of attraction it deserves to be. The reason is that the color tones of most palms contribute to the subject, but blend in with most backgrounds of plant material in a photograph. In showing a single specimen, change the angle until a plain sky or building serves as a backdrop. Don't assume the best angle is the first one seen on approaching the subject, but rather circle the palm watching for the most interesting view of the trunk and crown, and for an uncluttered back-

ground. Sometimes changing the camera angle only a few inches makes an amazing improvement in the photo. And don't always take photos from the same level (shooting from the hip), because an angle nearer the ground will generally change the perspective, may improve the background, or may even enable you to hide some unsightly object from view.

Fill the Frame

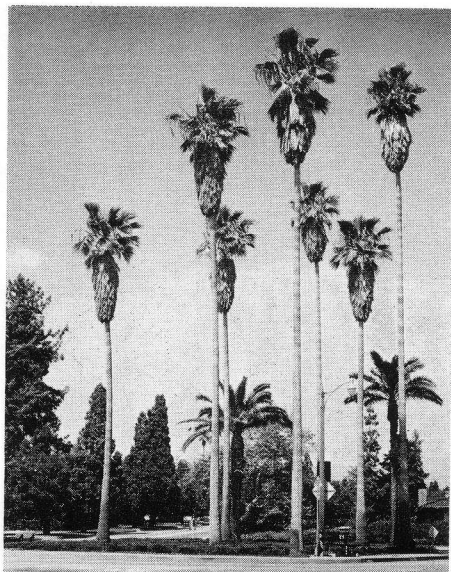
Crop your subject in the viewer as much as possible, or in a sense compose your picture. Why show unwanted distraction that can compete with the palm simply because you are too far back when taking the photo? Don't expect employees in the processing lab to know what you had in mind; they normally print the full negative.

Notes on Lighting

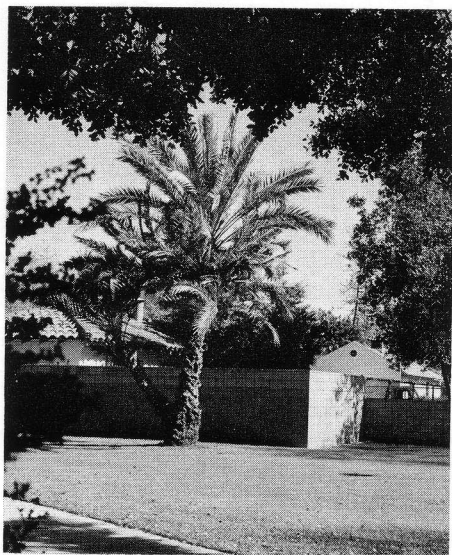
Lighting is important in palm photography in order to show all the detail



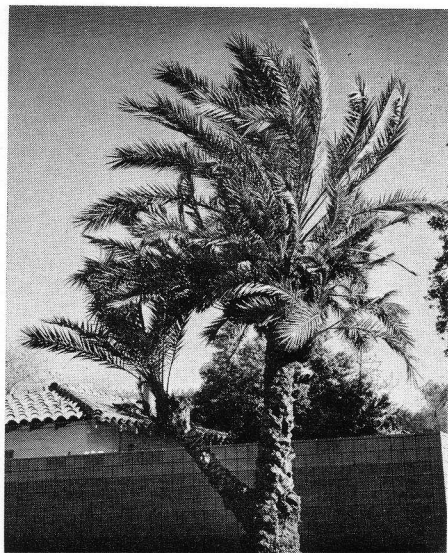
3. A group of *Washingtonia robusta* is photographed against a cluttered background. Too much foreground and vehicles mar the photo.



4. An improved angle against the plain sky and better cropping make this view of the same palms as Fig. 3 a better photo.



5. Unwanted distractions dominate an interesting *Phoenix* because the photo was taken too far back.



6. By composing in the camera view finder, a clear and detailed photo of the *Phoenix* in Fig. 5 is possible.



7. Poor flat lighting is obtained on this *Rhapsis* using the natural light under a dense canopy.



8. The use of flash-fill greatly improves the lighting and permits detail of the palm in Fig. 7 to be seen.

and texture of the subject. Normally the best lighting in black and white photography is what is known as three-quarter lighting—the sun to the photographer's back but somewhat to the side. This affords a skimming light on the palm coupled with minute shadows wherever there is a rough surface, thus giving a textured appearance.

A photographer is indeed lucky when he comes upon a desired palm lit exactly the way he wants it. Too often the palm is only partially bathed in sun or has the sun showing from behind the subject, making a backlighting effect with very flat lighting and no texture as seen from the camera angle. Frequently a palm is under a canopy of trees and has a dark gloomy appearance. And of course there are times when an otherwise well-illuminated palm has poor lighting due to overcast or storm conditions.

The best way to obtain good lighting is to wait for good lighting. Perhaps a palm poorly lit in the morning will look

fine in the afternoon after the sun has changed its position. But for those with less patience, or for the botanist in the field who simply doesn't have time to wait for good lighting, the prevailing light conditions must be altered or new lighting created. The flash-fill serves an important function here. The proper use of flash can create texture and tonal differences which otherwise would be lost if available lighting only were used. Flash is important in photographing a palm under dense cover to give the palm sparkle and detail. In a backlit situation, the main source of backlight can be balanced with a fill-light from the camera angle making a pleasing effect of high light and detail. Flash has its limitations; don't expect it to aid you in trying to light a grove of palms at a fifty-yard distance. There just wouldn't be enough light to make any appreciable improvement. Wait for good natural lighting.



9. Close-up view of a male *Chamaedorea Ernesti-Augusti* showing inflorescences. The detail in the photo is all but lost because of the background.



10. A white card placed behind the palm in Fig. 9 eliminates distracting background.

Selective Focus

Here is a hint when all else seems to fail in trying to photograph a palm or a group of palms in a jungle mass or with a background that does not afford any contrast to the subject matter. Simply throw the unwanted background out of focus by using a large aperture opening on the lens of your camera. This will give you a short depth of field and will tend to detach your subject from the cluttering background effect by keeping your subject sharply in focus while the background becomes softly blurred.

Is Color Photography Easier?

In a sense color photography is easier. A palm may stand out in a photograph simply because the eye sees a distinct difference in the various color tones. Black and white photography, on the other hand, is limited to varying shades of gray. What may stand out in color simply looks like another shade of gray

on black and white film. It is not as important to have textured lighting in color photography. In fact very pleasing effects can be achieved, especially on close-ups, when soft diffused lighting is used.

Close-ups Are Important

Have you ever looked at photos of palms where you unconsciously strive to see more and more detail? It is downright boring to see nothing but long shots of palms. Insert a close-up occasionally and let the viewer really see detail, especially if you can show a close-up of a portion of a palm already seen from afar. If you do take a photo from six inches to two or three feet from the palm where additional light is needed, try holding a large 40-inch by 48-inch silver card at an angle that will bounce sunlight on the subject. On extreme close-ups, even a piece of white paper will help. Try placing a piece of paper behind the palm or the part of the

palm being photographed to make a plain background.

While the tips on palm photography mentioned here are perhaps basic, there are many more that can help make your

palm photos exciting. The most important thing to remember is to "see" the photo first before snapping the shutter and then proceed to apply the technique necessary to do a good job.

COLLECTOR'S CHOICE

Reflections on a Favorite Palm

It is impossible—the more I try to think about it, the more I know it is impossible—to write about my favorite palm. How could there be a favorite palm? One better than the others? Because of its beauty? By what rule do you measure beauty? Because it will grow well in my garden here in California? Because it is rare and few have it? Because it is difficult to grow (except for me)? Or because a dear friend gave it to me for a present? Or a favorite because it sells better and provides my livelihood?

I have seen many, many palms from the distance, from close up—many beautiful landscapes of palms, singles, groups and mixtures with ornamentals of other families. But can one truly say: "There is my favorite"?

We stand in amazement before the masterpieces of *Reinhardtia*, *Microcoelum Weddellianum*, *Linospadix*, *Phoenix Roebelenii*, *Licuala*, *Coccothrinax*—they are so beautiful. Who can pass by a *Bismarckia*, a *Roystonea*, a *Jubaea*, a grove of *Rhopalostylis* without admiration, or by a single clump of *Chamaerops humilis*, venerable and 100 years old?

And also let us think of that group of palms which ekes out a living in misery, the row of *Trachycarpus Fortunei*, the plebian on the narrow divider strip of the busiest boulevard, kissed and hissed at minute after minute by deadly fumes of the exhausts, still doing its best in all its glory to rest the eye of the passing driver; or *Nannorrhops* at 9,000 feet elevation under snow, crawling along, still holding up the banner of *Principes*; and *Rhapidophyllum* which we are told will stand up, be it ever so humbly, at 9° below zero F. Or *Serenoa repens*, Florida's commoner, not pretty, but no less admirable because of its stamina, its will to survive, its perseverance.

One palm my favorite? How could I tell? Still to me, born in the Nordic country where frigid winter storms howl across the Baltic from Siberia's tundras to meet the murderous gales of the North Sea, the nostalgic longing for palms swaying in tropical breezes is ever present. It's where palms come down to the sea, silhouettes against the sky, it's there that our longing gets stilled. *Cocos* palms—*Cocos nucifera*! Standing in a magnificent grove planted one hundred years ago by Hawaiian



Coconuts line a canal in southern Florida.
Photo by G. H. M. Lawrence.

princes by the lagoons on the island of Kauai, at night, the full moon shining through graceful leaves, the surf breaking in ceaseless effort on the beach—this is the pulse of life, the quiet life. Then, later, at the open window, in the stillness of night, a coconut falling from high up the tree with a thud to the earth.

Cocos palms are majestic. In Waikiki I stayed in a hotel six stories high and out from the balcony across the street grew *Cocos* palms, their magnificent crowns still higher than we were. We were *almost* that high, and felt like kings. Have you ever seen the sun set on the ocean behind a stately row of graceful *Cocos* palms? If you have not, go—if for no other reason—to Florida, to Hawaii to see it. You have not lived until you do.

Cocos nucifera my favorite? Not quite. Only one of the many, one of all, but a grandiose personification of what we call and what we love under the name of palms. No, all are favorites, they all are the 'first ones.' Don't you remember, it was Linnaeus who wrote: "*Palmae sunt principes!*"

OTTO MARTENS

WHAT'S IN A NAME?

Acanthococos (a can tho có cos), *Acanthophoenix* (a can tho fée nix), *Acanthorrhiza* (a can tho rýe za), *Acanthosabal* (a can tho sáy bahl) are all names derived from the Greek *akantha* (thorn, prickle) combined with the generic names *Cocos*, *Phoenix*, *Sabal*, or with the Greek *rhiza* (root). All are armed palms and in *Acanthorrhiza* (= *Cryosophila*) the stem is covered with root-spines.

Malortiea (mal or tée a; mal ór tee a) commemorates Ernst von Malortie, Oberhofmarschall to the King of Hannover during the time of Wendland.

Manicaria (man i cáre ee a) comes from the Latin *manicarius* which means "of sleeves or gloves" in reference to the fibrous bracts of the inflorescence.

Ranevea (ra née vee a) was an anagram of the name *Ravenea* used by L. H. Bailey.

Ravenea (rah ven áy a; rah vée nee a) was named by Bouché for Louis Ravéné, an official in Berlin in the nineteenth century and should not be confused with the different *Ravenia* Vellozo honoring J. F. Ravin, a French professor.

Roystonea (roy stóne ee a) honors General Roy Stone, an American engineer officer "who secured the admi-

ration of the people of Puerto Rico by his fearlessness and conspicuous energy in the Adjuntas road-building campaign which flanked the line of Spanish defenses. . . ." [O. F. Cook, in Bull. Torrey Bot. Club 28:552. 1901].

Schippia (shíp ee a) was named after

William A. Schipp, who collected many plants in British Honduras, including *Schippia concolor*, and who wrote a little book entitled *Flora of British Honduras*, Stann Creek, 1934, in which many of his collections were listed.

H. E. MOORE, JR.

INDEX

Figures in *Italic* indicate pages with photographs or other illustrations

- Acanthococos 142
 Acanthophoenix 142
 Acanthorrhiza 142
 Acanthosabal 142
 Acoelorrhaphé 17
 Wrightii 16
 Acrocomia 42, 57, 64
 aculeata 54, 64, 65
 lasiospatha 64
 Aiphanes 39, 42, 49, 51, 64
 aculeata 54
 caryotaefolia 64, 66
 corallina 16
 Archontophoenix *Alexandrae* 14
 Aristeyera 42, 65
 spicata 54, 67, 68, 69
 Astrocaryum 49, 54, 55, 68, 70
 vulgare 70
 Attalea 53

 Bactris 47, 49, 51, 52, 70, 71, 72, 73
 Gasipaes 48, 51, 54, 71, 74, 75
 major 54, 76
 Barry, David Jr.
 The semi-hardy mountain Caryota 3
 Braun, August
 Cultivated palms of Venezuela 39, 111
 Buhler, Mrs. Theodore
 Experience with manganese sulphate 32
 Butia capitata var. *strictior* 35

 Caryota 3-9, 16
 aequatorialis 8
 bacsonensis 6
 furfuracea 3
 maxima 3
 mitis 3, 8, 52
 ochlandra 1, 2, 3, 4, 5, 6, 7
 propinqua 3
 Rivieri 3
 Rumphiana 3
 sobolifera 3
 urens 3, 6, 7
 Catoblastus 42, 77
 praemorsus 52, 54, 77, 78, 95
 Ceroxylon 42, 62, 63, 77, 80
 ceriferum 78
 Klopstockia 52, 54, 77, 79

 Chamaedorea 8, 42, 57, 63, 80
 Ernesti-Augusti 140
 pinnatifrons 54, 81
 Chrysalidocarpus 9
 madagascariensis 13, 14, 20
 Climbing palms, problem of 33
 Clinostigma 25
 Coconut 41, 81, 142
 Cocos 53, 81
 nucifera 39, 53, 61, 82, 83, 84, 141, 142
 Collector's choice 27, 141
 Copernicia 16, 57, 85
 tectorum 42, 47, 85, 86
 Cyrtostachys *Lakka* 25

 Daemonorops *mollis* 24
 Desmoncus 42, 44, 51, 54, 86
 horridus 87, 88
 orthacanthos 52, 54, 56, 87, 88
 Dictocaryum 62, 63, 90
 fuscum 52, 54, 89, 90
 Dictyosperma 13
 album 10, 11, 13
 Dolby, Warren J.
 Foster botanical garden 9
 Editor's corner 30
 Dypsis *pinnatifrons* 20

 Editor's corner 30
Elaeis guineensis 59, 61
Euterpe 42, 47, 52, 54, 90, 92, 93
 precatória 91

 Fossils 108
 Foster botanical garden 9
 Foster, Ken
 Palm photography 136
 Furtado, Dr. C. X. studies *Hyphaena* 105

 Garden tour 9
Gaussia attenuata 16
Geonoma 42, 44, 45, 46, 47, 62, 63
 pinnatifrons 42, 54, 92, 94, 95
 Greenberg, Burt
 A sideshow *Trachycarpus* 31

Howeia 13, 26
 Belmoreana 52

- Hyphaene 105
 benguellensis 106
 coriacea 105
 crinita 105
 doreyi 106
 guineensis 106
 indica 106
 Schatan 105
 thebaica 18, 23, 24
 togoensis 106
 ventricosa 37, 38, 104, 107
- Iriarteia 54, 97
 ventricosa 45, 96, 97
- Iriartella 98
 setigera 47, 98
- Jessenia 45, 49, 51, 98
 Bataua 49, 54, 98, 100
 polycarpa 49, 54, 99, 100
- Kentiopsis 25
- Latania 16
 Loddigesii 19
- Leopoldinia 42, 100
 Piassaba 45, 47, 48, 49, 100, 101
 pulchra 102, 103
- Lepidocaryum 42, 45, 102
 casiquiarensis 102
 gracile 103
 guainiensis 103
 tenue 103
- Licuala 24
 grandis 24, 25
- Livistona 11, 13, 27, 28
 australis 29
 chenensis 27
- Lodoicea maldivica 13, 14
- Mahabele, Prof. T. S. requests fossils 107
- Malortiea 142
- Manganese sulphate, experience with 31
- Manicaria 111, 142
- Manicaria saccharifera 44, 47, 49, 54, 111, 112,
 113, 114, 115
- Martens, Otto
 Reflections on a favorite palm 141
- Mascarena
 hybrid 16, 17
 lagenicaulis 17
 Verschaffeltii 17
- Mauritia 42, 44, 47, 49, 51, 52, 111
 aculeata 114
 flexuosa 48, 54, 113, 115, 116, 117
 var. venezuelana 115
 setigera 113
 subinermis 54, 113, 116, 118
- Maximiliana 47, 57, 117
 elegans 54, 117
 Martiana 44, 117, 119, 120, 121
- Metroxylon amicarum 25, 26
- Microfilming Gentes Herbarium, Principes 107
- Moore, Harold E. Jr.
 Editor's corner 30
 What's in a name? 142
- News of the society 32, 105
- Oenocarpus 45, 119, 122
 caracasanus 54, 120
 multicaulis 123
- Oncosperma tigillarum 17, 21, 22
- Orbignya Cohune 11, 14
- Palm briefs 31, 103
- Palm Society
 News of the 32, 105
- Palms of Venezuela 39
- Parajubaea cocoides 8
- Phoenix 33, 34, 138
 canariensis 25
 dactylifera 52
- Photo gallery 35
- Pinanga coronata 109, 110
- Pritchardia 9, 11, 16
 Hillebrandii 13
 macrocarpa 15
- Ptychoraphis augusta 15
- Ptychosperma 16, 17
 Macarthurii 17, 18
 Sanderianum 17
- Ranevea 142
- Ravenea 142
- Read, Robert W. 32
- Raphis 17, 139
- Rheinfelder, William
 Letter re Phoenix 33
- Rhopaloblaste ceramica 24
- Roystonea 57, 120, 142
 venezuelana 39, 52, 54, 57, 120, 124, 125,
 126, 127, 128
- Sabal 52, 124
 mauritiaeformis 12, 14, 39, 42, 44, 47, 54,
 124, 128, 129
- Scheelea 42, 47, 49, 51, 57, 126, 132
 Humboldtiana 44, 129, 130, 131
 macrocarpa 39, 54, 131
 macrolepis 52, 131
- Schippia 143
- Smith, Dent
 A very special Livistona 27
- Socratea 42, 131
- exorrhiza 45, 47, 49, 54, 131, 133
- Syagrus 42, 52, 53, 54, 73, 132, 134
 orinocensis 43, 54, 135
- Thrinax 58
- Trachycarpus 5, 30
 Fortunei 137
- Veitchia Merrillii 9
- Venezuela, cultivated palms of 39, 111
- Verschaffeltia splendida 14
- Wait, Lucita H.
 News of the society 32, 105
- Washingtonia 5
 robusta 36, 138
- What's in a name? 142
- Xavier, Susai
 Letter re climbing of palms 32