partment Headquarters, we collected a Strongylocaryum, Areca macrocalyx, Caryota Rumphiana, a Calamus, and one of the most elegant palms I have seen, appropriately described as Rhopaloblaste elegans (page 94). As though an unknown species were not enough, this collection extends the range of the genus Rhopaloblaste from the Moluccas and New Guinea well into the Solomon Islands chain and we were later to see it in abundance in the forests at the headwaters of the Matinikau River where it grows with still another palm, the garagara (Physokentia) mentioned above.

Elsewhere near Honiara we collected another Heterospathe very much like $H$. minor from Santa Ysabel in disturbed forest at Mambulu (Mount Austen), Metroxylon salomonense in flower along the Matinikau River and in a swamp in grassland near Konga Road, Metoxylon Sagu apparently native. Sometimes planted, the species here is used for thatch, not sago and is said not to grow well except in very wet ground.

Departure for New Caledonia had been planned and materials packed when a typhoon disrupted air service between Honiara and Vila in the New Hebrides where one transfers for Noumea. Though the delay caused loss of time both in the Solomons and in New Caledonia, it did provide an opportunity for an afternoon and a morning of collecting on Efate where I had to spend a
night. A hired taxicab took me to the Blidiniere Estate near the airport where, coming in, I had seen Veitchia in abundance (as one also sees it near the airport at Santos on Espiritu Santo). With the help of a local boy, a tree was cut and complete specimens obtained which, on study, suggest that the species is very close to V. Montgomeryana, if, indeed, it is not that species which has been known only from cultivated plants. What is probably the same species is cultivated in parts of New Caledonia near Noumea where it would be accessible to travelers and might have been sent elsewhere on the assumption that it was $V$. Joannis with which $V$. Montgomryana has been confused. More collecting is necessary in the New Hebrides, however, before the identity can be more than suggested.

A second palm on Efate, collected near Mele village where both planted and native, proves to be Metroxylon Warburgii, noteworthy for its stiff terminal inflorescence more like that of M. Sagu than that of M. salomonense but with pear-shaped brown scaly fruits several inches long and very bright yel-low-green flowers with orange-yellow stamens which, in mass, attract attention from a distance. Also seen was a Calamus but always sterile so left for a future visit when hopefully two odd palms on Aneityum may also be obtained. On this trip, time in New Caledonia had been closely planned and that fascinating Island was the next goal.

## New Palms from the Pacific

Harold E. Moore, Jr.

Several species of palms were collected during my visit in the Pacific Jslands early in 1964 which appear to be undescribed. Not all have been
studied as yet but those of which I feel certain are described here. One is from New Guinea, two are from the Solomon Islands and one is from the Fiji Islands.

In addition, I have transferred the sole species of Paragulubia to Gulubia and provided an amplified description.* Cyrtostachys glauca H. E. Moore, sp. nov.
Caudices caespitosi. Folia longe petiolata, regulariter pinnata, vaginis glaucis. Inflorescentiae paniculatae, rachillis scabridulis, floribus in foveis non profundis nec densis 5 -seriatis. Flores masculi 3 mm . alti, staminibus 9 . Fructus 11 mm . longus, 5 mm . in diam., ellipsoideus.

Caespitose with usually 1-2 trunks to 9 m . high, 10 cm . diam., and $2-4$ or more less well developed trunks at the base, the trunks bright green becoming gray in age, with prominent nodes, and internodes ca. 7.5 cm . long. Leaves $7-8$, spreading, with spreading or at length somewhat pendulous pinnae; sheaths forming a bright glaucous crownshaft ca. 1.3 m . long, sparsely and minutely lepidote with membranous brown scales; petiole green, elongate, ca. 75 cm . long, rounded and rather densely and minutely brown lepidote below, concave and similarly lepidote or puncticulate above; rachis ca. 2.7 m . long, lepidote or becoming puncticulate below, puncticulate above, with 59-60 regularly arranged pinnae on each side; pinnae green, acuminate, the midnerve prominent above but scarcely puncticulate at the base, clothed below with brown membranous scales to 3 mm . long, the surface very minutely puncticulate, secondary nerves $5-6$ on each side, tertiary nerves very fine, numerous, cross-veinlets evident when dry, the basal pinnae ca. 96 cm . long, 2.8 cm . wide, median pinnae ca. 98 cm . long, 5 cm . wide,

[^0]apical pinnae ca. 25 cm . long, 9 mm . wide. Inflorescence green in bud, becoming yellow in fruit, paniculate, subtended by 2 bracts, the lower bract ancipitous, ca. 42 cm . long, $10-11 \mathrm{~cm}$. wide in bud, the upper briefly rostrate, ca. 42 cm . long, 9 cm . wide; peduncle very short, ca. 5 cm . long, glabrous; rachis ca. 54 cm . long, minutely scabridulous to glabrescent; basal branches borne at about a $90^{\circ}$ angle with the rachis, twice-branched, to 75 cm . long including naked base ca. 19 cm . long, middle branches once-branched, upper branches undivided; rachillae minutely scabridulous especially on the angles, to 37 cm . long, $5-6 \mathrm{~mm}$. in diam. when fresh, drying to $3-4 \mathrm{~mm}$. in diam., not enlarged in fruit, bearing triads of two staminate and a pistillate flower throughout, these arranged in 5 spiralled series at mid-axis, each subtended by a low rounded lip and separated by intervals of ca. 5 mm ., the pits shallow, not congested. Staminate flowers pale yellow in bud, ca. 3 mm . high; sepals 2 mm . high, keeled and ciliolate dorsally, rounded and ciliolate apically; petals symmetric, 2 mm . high above a solid receptacular base; stamens 9 , the subulate filaments inflexed at the apex in bud; pistillode tapered from a broadened base (when fresh) to a minutely trifid obtuse apex, about as long as stamens: pistillate flowers in bud 2 mm . long, the pistillate perianth $3-3.5 \mathrm{~mm}$. high in fruit, subtended by 2 pale brown bracteoles ca. 0.6 mm . high. Fruit black in a yellowish or reddish perianth, 11 mm . long, $5-6 \mathrm{~mm}$. in diam. when fresh, drying 11 mm . long, 5 mm . in diam., ellipsoid with a prominent excentrically apical rostrum when dry; exocarp smooth; mesocarp thin with flat longitudinal fibers; endocarp thin and adherent to seed; seed $7-8 \mathrm{~mm}$. long, 5 mm . in diam., ellipsoid; endosperm homogeneous; embryo basal.

TERRITORY OF NEW GUINEA. Morobe District: forested slopes along logging road just beyond bridge over Markham River on road from Lae to Bulolo, 7 March 1964, H. E. Moore, Jr. 9272 (BH, holotype; LAE, isotype

Cyrtostachys glauca stands out in the forest because of the glaucous leafsheaths which prompt the epithet chosen. Normally, it appears to be caespitose with one or two of the several stems larger than the others. In this caespitose habit, it resembles C. Lakka and C. Renda which (if distinct from each other) are readily distinguished by the bright red or orange-red leaf-sheaths as well as by the presence of 12 (-15?) stamens in the staminate flower. Cyrtostachys elegans, also caespitose and de-


1. The crown of Cyrtostachys glauca.
scribed from cultivation but thought to have come from southern New Guinea, differs as follows:

2. Duna holds an inflorescence of Cyrtostachys glauca loaded with ripe fruit.

## C. glauca

Leaf sheath glaucous.
Pinnae spreading, or drooping only in age.
Petiole elongate, ca. 75 cm . long.
Ultimate rachillae slender even in fruit, ca. 4 mm . in diam. when dry, minutely scabridulous, especially on ridges between pits, these shallow, ca. 5 mm . apart in each series; bracteoles subtending pistillate flowers light brown, low, ca. 0.6 mm . high in fruit.

Fruit 11 mm . high, 5 mm . in diam. when dry, in perianth $3-3.5 \mathrm{~mm}$. high.

The remaining species thus far described appear to have solitary stems and, except for C. compsoclada, have stouter rachillae 5 mm . in diam. or more when dry with congested and deeper pits mostly in seven or nine spiral series. Cyrstostachys Brassii, C. microcarpa and probably C. Loriae, from which the first two may not be distinct, as well as C. Kisu (and perhaps C. Peekeliana) have 12 stamens. Cyrtostachys phanerolepis, also from the Morobe District of New Guinea, has 6 stamens according to Burret, pits in nine series, and larger fruit.

Cyrtostachys Ledermanniana and C. compsoclada have $8-9$ stamens like $C$. glauca but the first differs from C. glau$c a$ in having the pinnae prominently paler below than above, in thicker flowering axes with congested pits, and a fruiting perianth larger in proportion to the fruit. It is difficult to contrast C. glauca and C. compsoclada since the latter was described from very inadequate material. From what we know, it differs from $C$. glauca in having the laxly arranged pits in three series, in solitary, short, thick stem and in purple flower buds. Until more adequate

## C. elegans

Leaf-sheath green.
Pinnae drooping.
Petiole short, $22.5-30 \mathrm{~cm}$. long.
Ultimate rachillae thick even in bud, 6-7 mm . in diam. when dry, glabrous, pits prominent, densely arranged; bracteoles subtending pistillate flowers dark brown, prominent, the larger to 1.5 mm . high in fruit.

Fruit (immature) ca. $11-13 \mathrm{~mm}$. long, $4-5 \mathrm{~mm}$. in diam. in perianth ca. 6 mm . high.
collections of $C$. compsoclada are made in Papua (Boridi), the somewhat remote possibility of identity cannot be ruled out, but certainly C. glauca does not correspond in the particulars noted.

Cyrtotachys glauca should make an attractive foil to the more brilliant $C$. Lakka and C. Renda in cultivation if plants mature from seed sent to the Fairchild Tropical Garden, Miami, Florida, in 1964 and accessioned as FG 64 139.

Gulubia macrospadix (Burret) H. E. Moore, tr. nov.
Paragulubia macrospadix Burret, Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem 13: 84. 1936.

Gulubia Niniu H. E. Moore ex T. C. Whitmore, Guide to the Forests of the Solomon Islands, 1966, name only.
Burret distinguished the genus Paragulubia from Gulubia on the basis of ruminate endosperm and pinnae praemorse at the apex. Ruminate endosperm, at least in the Arecoideae, is not a useful generic characteristic when taken alone, witness numerous genera with both ruminate and homogeneous endo-
sperm. The newly expanded pinnae of some species of Gulubia (G. costata and G. Hombronii, for example) are basically praemorse at the apex, though the upper margin may be so extended as to give the appearance of a merely acuminate apex. Morphologically, however, there is no real difference. I do not find it possible to maintain the genus, hence transfer its only species to Gulubia.

In so doing, it may be worth providing some notes on the species as I interpret it on the basis of the type and of collections made more recently on Santa Ysabel in the Solomon Islands, the more so since at one time I had thought these last to represent an undescribed species. Thus the invalid name Gulubia Niniu will be found in the literature as noted in synonymy. I have compared an isotype collection of $G$. macrospadix with specimens from Santa Ysabel and find quantitative rather than qualitative differences. The inflores: cence of the type is more massive, longer ( 9 dm .), with more (20-24) and thicker ( 5 mm .) branches while those of specimens from Santa Ysabel are slender, ca. 5 dm . long, with 7-8 branches only 3 mm . thick. Fruits from the type measure $14-16 \mathrm{~mm}$. long, are strongly lined when dry and are narrowed to a prominent apex while mature fruits of Moore \& Whitmore 9305 are $12-13 \mathrm{~mm}$. long, essentially smooth when dry (though underlying fibers may be seen through the exocarp), and rather abruptly rounded to a less pronounced stigmatic point. But when fruits of this last collection having well formed but not completely mature seeds are examined, they, though smaller, exhibit the same tendency toward a lineolate exocarp and more prominent apical point as is seen in the type where the seeds also suggest that the fruit was not

Dr. Whitmore writes that this species is common throughout the British Solomon Islands Protectorate where it is never found on ultrabasic soils (there replaced by the common and characteristic $G$. Hombronii) but in the lowlands and up to altitudes of 3000 ft . on mountain ridges. Though our Santa Ysabel collections are constant in their small inflorescences, one would anticipate this much size variation either as a result of environmental factors or as a result of population differences from locality to locality.

Because the species yet remains inadequately described, I append a fuller account of it based on collections which include fruits and staminate flowers inserting in brackets measurements from the isotype studied-Kajewski 1787 (A).

Solitary trees to ca. 17 [-20] m. high, with enlarged base above superficial root mass and tapered gray-brown bole from 11.5 cm . in diam. near the base to 7 cm . in diam. at the crown. Leaves 20-25, ascending with arcuate tips; sheaths forming a crownshaft, ca 70 [-90] cm. long bright yellow-green becoming glaucescent at the apex and blackish or olive-green at margins; petiole elongate, 35-37.5 [-50] cm. long, rounded below, slightly ridged above, minutely brown puncticulate with centers of deciduous peltate scales; rachis 1.5 [-1.95] m. long, marked with yellowish line towards apex below, minutely lepidote with brown-centered membranous pale peltate scales, especially on upper surface, or only minutely brown puncticulate; pinnae about 30 on each side, directed forward and upward at an angle of about $45^{\circ}$ with the rachis but with tips recurved and drooping, green above, glaucous below at least when first expanded, very minutely puncticulate on the nerves below and with a few inconspicuous larger membranous pale brown scales on mid-
nerve, secondary nerves $3-5$ on each side and inconspicuous, margins thickened, basal pinnae ca. 50 cm . long, 1.2 cm . wide, obliquely acuminate at tip, median pinnae ca. 82 [-100] cm. long, $2.5 \quad[-3.5] \mathrm{cm}$. wide with obliquely toothed apex, apical pinnae ca. 25 cm . long, 1.4 cm . wide with blunt, toothed apex. Inflorescences glabrous, 5 [-9] dm . long, 4-6 below the leaves, subtended by 2 bracts (not collected), the base very thick; peduncle 5-8 [-11] cm . long; rachis $4.5-6 \mathrm{~cm}$. long with ca. 7 [-11] primary branches to ca. 36 [-40] cm. long, the lower often furcate, the upper simple; rachillae totalling 11-13 [-24] in number; flowers borne in triads in 4 vertical series throughout or nearly throughout the rachillae. Staminate flowers (from BSIP 2325) red or rose, ca. 8 mm . long; sepals acute, ca. 1 mm . long, the margins sometimes ciliolate; petals asymmetric, acute, ca. 8 mm . long; stamens 7-9; pistillode minute, trifid: pistillate flowers ca. $3-5 \mathrm{~mm}$. high; sepals 2 mm . high, sometimes ciliolate along the lower margins; petals 3.5 mm . high, ciliolate along the lower margins; staminodes 3. Fruit 4 -ranked, maturing bright crimson in a green perianth, ellipsoid, 1.2-1.3 [-1.6] cm. long, 7-8 mm . wide, rather abruptly rounded to a mammillate broad excentric stigmatic residue and rounded to a short base, not markedly lineolate when dry though separated longitudinal fibers are visible in the mesocarp; seed broadly ellipsoid, 8 mm . long, [5-] 6 mm . in diam. with 3-4, [-5] lateral branches from the raphe; endosperm ruminate.

Vernacular name: niniu (Kwara'ae language); kuritu (Bougainville). BRITISH SOLOMON ISLANDS PROTECTORATE: Santa Ysabel: Bogotu Peninsula, slopes of ridge on mainland opposite Horara Village near Tatamba, alt. $0-500 \mathrm{ft}$., 22 March, 1964, H. E.

Moore, Jr. \& T. C. Whitmore 9305 (BH, BSIP). Maringe Lagoon, near Tiratona Village, on broad ridge at $1,600 \mathrm{ft}$. alt., 23 October 1963, T. C. Whitmore BSIP 2325 (BSIP).
TERRITORY OF NEW GUINEA. Bougainville: Kugumara, Buin, 28 May 1930, S. F. Kajewski 1787 (A, isotype).
Physokentia rosea sp. nov.
Palma solitaria quoad radices epigeas Physokentiae Tete et $P$. Thurstonii similis sed ab eis differt inflorescentia et floribus roseis, pinnis acutis, fructibus minoribus in siccu $1.6-1.7 \mathrm{~cm}$. altis, 1.41.6 cm . in diam., semine 1.2 cm . alto, $1.3-1-4 \mathrm{~cm}$. in diam.

Solitary palm ca. 4 m . high from a cone of stout, prickly, basally branched, stilt roots ca. l.' m. long, the trunk green, ca. 10 cm . in diam. above roots, 7.5 cm . in diam. below crown, with prominent nodes. Leaves ca. 9, stiffly spreading to ascending; sheaths forming a crownshaft, 47.5 cm . long, thickened below the petiole, olive-green outside, rose-pink inside, with grayish scales; petiole ca. 22.5 cm . long, densely and minutely lepidote at least when young, with brown-centered pale-margined membranous or even fimbriate peltate scales; rachis lepidote as petiole, ca. 1.22 m . long with ca. 35 pinnae on each side at regular intervals, with the margins curved downward when living, basal pinnae 27 cm . long, 9 mm . wide, median pinnae 67 cm . long, 4 cm . wide, apical 16 cm . long, 6 mm . wide, the midnerve minutely lepidote or becoming brown puncticulate above, minutely lepidote and clothed with larger brown membranous basifixed to medifixed scales to 5 mm . long, the $4-5 \mathrm{sec}$ ondary nerves and thickened submarginal nerves brown-puncticulate below. Inflorescences glabrous, rose-red in bud, becoming green in fruit, to 6 below the crownshaft, in pairs at successive nodes

3. Physokentia Thurstonii ( $\mathrm{a}-\mathrm{h}, \mathrm{p}-\mathrm{v}$ ) and P. rosea ( $\mathrm{i}-\mathrm{o}$ ) . a, portion of rachilla and triad with flower removed $\times 2$; b, portion of rachilla with paired staminate flowers $\times 2$; c , staminate bud $\times 4$; d, staminate bud in vertical section x 4 ; e, staminate sepals x 4 ; f, staminate petal $\times 4 ; \mathrm{g}$, stamens in 3 views $\times 4$; b, pistillode $\times 4 ; \mathrm{i}$, pistillate bud $\times 4 ; \mathbf{j}$, pistillate bud in vertical section x $4 ; \mathrm{k}$, pistillate sepals $\times 4 ; 1$, pistillate bud with sepals removed $\mathrm{x} 4 ; \mathrm{m}$, pistillate petal and staminode x 4 ; n , pistil and staminodes x 4 ; 0 , staminodes $\times 4$; p , fruit $\times 1$; q , fruiting perianth $\times 1$; r, fruit in vertical section $\times 1$; s , fruit in cross section x 1 ; t , endocarp $\times 1 ; \mathrm{u}$, operculum x $2 ; \mathrm{v}$, seed in 4 views $\times 1$. From material of Moore \& Koroiveibau 9347 (b-h), 9353 (p-v), 9363 (i-o) preserved in liquid.
(in the type tree) separated by several sterile nodes, the upper in flower, lower in fruit, horizontal, stiffly branched, the lower branches again branched, the whole subtended by and enclosed in bud by 2 papery bracts, the lower open on abaxial side and incompletely encircling the peduncle, the upper not split in bud and completely encircling the peduncle, both rose-pink shading to white basally; peduncle $6-8.5 \mathrm{~cm}$. long, rachis to 16.5 cm . long, lower branches divided into $4-6$ simple or rarely furcate rachillae to 24 cm . long, upper branches less divided or undivided; rachillae to 19 cm . long, angled and somewhat flexuous to markedly flexuous apically; flowers in triads of a pistillate and 2 staminate to about the middle of the rachillae, paired or solitary
staminate above the triads and staminate clusters subtended by an acute bractlet. Staminate flowers $4-5 \mathrm{~mm}$. long, briefly pedicellate with flat pedicels, one subtended by a low flat bracteole; sepals to 2 mm . long, deep red-black, imbricate, rounded to acutish with membranous, often ciliate margins; petals $4-5 \mathrm{~mm}$. long, rose-red, somewhat asymmetric, valvate; stamens 6 with subulate filaments inflexed at the apex and at anthesis exceeding the petals, those opposite petals with base wider than those opposite sepals, anthers linear, bifid basally, entire apically; pistillode elong-ate-ovoid with rounded briefly trifid apex: pistillate flowers 5 mm . long, in bud, subtended by 2 low bracteoles; sepals 3 mm . long, strongly imbricate, red-black, rounded with membranous
often ciliate margin; petals deep vinous red, ca. 5 mm . long; staminodes 3, subulate; pistil ovoid, ovule pendulous. Fruit reddish-green probably becoming blackish, globose, 1.9 cm . in diam. when fresh, drying ca. $1.6-1.7 \mathrm{~cm}$. high, 1.41.6 cm . in diam., in a perianth 5 mm . long, endocarp 4 -angled and keeled, depressed apically, ca. 1.5 cm . high, 1.4 cm . wide, 1.3 cm . thick, with basal operculum; seed 1.2 cm . high, 1.1 cm . wide, 1.0 cm . thick (from preserved, well-formed but apparently not completely mature material), 4 -angled with obliquely depressed and angled apex; endosperm homogeneous, embryo basal. Seedling leaves bifid.

FIJI ISLANDS. Viti Levu: Province Ra; vicinity of Nadarivatu, mossy cloud forest on upper slopes and ridges from Mt. Lomalangi beyond second peak in easterly direction, 2 May 1964, H. E. Moore, Jr. \& D. Koroiveibau 9363 (BH holotype; SUVA isotype).

Physokentia rosea differs from the two other species in the genus, $P$. Tete from the New Hebrides and P. Thurstonii from Vanua Levu in the Fiji Islands, in its smaller fruit. Though not completely mature, the endocarp appears to have reached its mature size and is filled, in preserved material, with a well-formed seed which shrinks on drying. In both P. Tete and P. Thurstonii, the mature fruit is 2 cm . in diameter or more when dry and the seed correspondingly larger. Pinnae of $P$. Tete are praemorse at the apex in the fragmentary material described by Beccari and seen by me while those of $P$. Thurstonii and $P$. rosea are acute when first expanded. There is great resemblance in habit between $P$. Thurstonii and $P$. rosea, both having prominent stilt roots, irregularly ringed trunks, and similar leaves. The inflorescences, as I
have seen them, differ strikingly, those of $P$. Thurstonii being white or creamywhite while those of $P$. rosea are deep rose-red; flowers similarly differ in color, being white with sometimes a pinkish cast in the former, deep rosered with red-black sepals in the latter.

These differences, considered with our poor ùnderstanding of infraspecific relationships in palms, lead me to describe the material at hand as a species. In Fiji, each species of Physokentia is also accompanied by different species of Balaka, Veitchia, and Taveunia, though on Viti Levu, Clinostigma exorrhiza - always seen with P. Thurstonii in Vanua Levu and Taveuni - is lacking. Interestingly enough, there is a different species of Clinostigma, C. Harlandii Becc., on Vanua Lava in the New Hebrides where Physokentia Tete is native, though there the genus Taveunia appears to be lacking.

When Burret described the genus Goniosperma he noted the resemblance to Physokentia and also noted that his Goniosperma vitiense was possibly identical with G. Thurstonii. After seeing plants on Mount Mariko and on Taveuni, there is no question in my mind but that they are the same. I have also seen the type of Physokentia Tete at Florence and despite the praemorse pinnae, (which may be so only because of wind or other damage), think there can be little questions of its generic identity with Goniosperma. I have, therefore, taken up the earlier generic name in describing Physokentia rosea and accept for the second Fijian species the name Physokentia Thurstonii.

Three other collections from the same region identified as Goniocladus petiolatus (Degener 14792, Degener 14893, A. C. Smith 5700 ) surely belong here but are not explicitly cited as I have not restudied the specimens. Degener

4. Rehderophoenix subdisticha. a, portion of rachilla with triads $\times 2$; b , triad with flowers removed $\times 2$; c, staminate flower at anthesis $\times 1$; d, staminate bud $\times 2$; e, staminate bud in vertical section $\times 2$; f , staminate sepals $\times 2$; g , staminate bud with sepals removed $\times 2$; h, staminate petal $\times 2$; $i$, stamens in 3 views $\times 2 ; j$, pistillode $\times 6 ; \mathrm{k}$, pistillate bud $\times 4$; 1 , pistillate bud in vertical section $\times 4 ; m$, pistillate sepals $\times 4 ; n$, pistillate bud with sepals removed $\times 4$; 0 , pistillate petal $\times 4 ; p$, pistil and staminodes $\times 4 ; \mathrm{q}$, staminodes $\times 4$; r , portion of rachille in fruit $\times 1$; s, fruit in vertical section $\times 1$; t, fruit in cross-section x 1 ; $\mathbf{u}$, seed in lateral, adaxial and abaxial views x 1 . From material of Moore \& Whitmore 9300 preserved in liquid.
gives the vernacular name as tangandanu in the Sabatu dialect.

Rehderophoenix subdisticha H. E. Moore, sp. nov.
Rehderophoenici pachycladae similis sed fructibus in rachilla subdistiche vel distiche dispositis, minoribus et ad apicem rotundatis, florum masculorum staminibus ca. 190, bracteis inflorescentiarum inter se 2.5 cm . disparatis differt.

Solitary; trunk to 12 m . high, 10.6 cm . D.B.H., brown and closely ringed, somewhat enlarged at base with emergent adventitious roots to 20 cm . long. Leaves 10-15, spreading; sheaths forming a crownshaft, ca. 6 dm . long, dark green with white indument of floccose scales and dark margin; petiole short, ca. 7.5 cm . long, rounded and floccosescaly or brown-puncticulate below,
slightly concave and puncticulate above; rachis 2.4 m . long, pale-floccose scaly when young becoming puncticulate in age; pinnae ca. 25 on each side, deep glossy green above, dull green below in age but prominently glaucous when young, the apices obliquely to bluntly praemorse, basal pinnae ca. 50 cm . long, 4.1 cm . wide with praemorse-acuminate apices, median pinnae ca. 50 cm . long, 7.5 cm . wide, apical pinnae ca. 20 cm . long, to 3.9 cm . wide, midnerve and margins thick, secondary nerves to 8 on each side, glabrous above, with scattered small white branched trichomes on some of the nerves below when young but not becoming prominently puncticulate. Inflorescences $2-3$ below the leaves, to ca. 50 cm . long, light green in flower, dark green in fruit, white-floccose scaly, especially on peduncle and rachis, when
young but glabrescent in age, stiffly branched into $12-14$ branches, the lower branches once-branched, the upper unbranched, rachillae to 23 cm . long, 4 mm . wide, angled and flexuous especially toward the apex; bracts subtending the inflorescence 2 , not seen but scars of insertion ca. 2.5 cm . apart with the scar of a third and probably incomplete bract above; flowers in triads of 2 staminate and a pistillate for the most part, these slightly impressed and subtended by a very narrow bractlet when fresh, superficial and the bractlet not obvious when dry, arranged subdistichously to distichously in a slight spiral nearly throughout the axes. Staminate flowers light green, ca. 10 mm . long when dry, symmetric; sepals $3-4 \mathrm{~mm}$. high, 5-6 mm . broad, gibbous basally, the margins more or less crenulate and sometimes minutely ciliate; petals ca. 9 mm . high, 6 mm . broad, navicular; stamens ca. 190 with white filaments and light brown anthers; pistillode broadly ovoid, lobed apically: pistillate flowers in bud 6 mm . high; sepals $3.5-4 \mathrm{~mm}$. high, ca. 5 mm . wide, rounded and sometimes crenulate; petals ca. 5 mm . high with brief valvate apex; staminodes 3, dentiform; pistil ovoid, the ovule pendulous. Fruit orange-red when mature, ellipsoid, ca. 1.9-2.0 cm. long, 1.4 cm . in diam. when fresh, becoming $1.1-1.2 \mathrm{~cm}$. in diam. when dry; exocarp densely and minutely roughened over included sclerosomes when dry; mesocarp thin with several layers of longitudinal fibers over the fragile yellowish endocarp; seed oblong-ellipsoid, ca 1.1 mm . high, 9 mm . in diam. essentially terete in cross-section, with impressed anastamosed raphebranches, the raphe extending along one side of the seed; endosperm homogeneous; embryo basal.

Vernacular names: basibasi (Kwara'ae language) : ori (Bogotu language).

BRITISH SOLOMON ISLANDS PROTECTORATE. Santa Ysabel: Bogotu Peninsula, occasional on slopes of ridges behind Nangalao Village near Tatamba, $0-500 \mathrm{ft}$. alt., 20 March 1964, H. E. Moore, Jr. \& T. C. Whitmore 9300 [ = BSIP 2588] (BH, holotype; BSIP, isotype).

Rehderophoenix subdisticha is the second species to be described for the genus. It differs from $R$. pachyclada of San Cristoval Island in the much smaller inflorescence ( 5 dm. vs. 1 m .) with slender rachillae ( 4 mm. vs. 8 mm .) on which the triads are arranged in essentially distichous fashion through a low spiral on the axis, the fruits appearing two-ranked rather than in a distinct spiral with fruits several-ranked. The fruits, themselves, are smaller -(1.9-2.0 cm . vs. 2.5 cm .) and abruptly rounded rather than tapered at the apex, with a smaller perianth in fruit $(6 \mathrm{~mm}$. vs. 9 mm .) the seeds oblong-ellipsoid rather than ellipsoid. Staminate flowers have ca. 190 stamens as opposed to ca. 290 stamens in R. pachyclada.

Bracts subtending the inflorescence of $R$. subdisticha were not seen but are inserted only ca. 2.5 cm . apart with a probably incomplete third bract above them. In R. pachyclada, the cylindrical rostrate upper bract is inserted ca. 13 cm . above the ancipitous obtuse lower bract and according to Burret exceeds it in length by 17 cm .

Rhopaloblaste elegans, H. E. Moore, sp. nov.
Caudex solitarius ad 12 m . altus vel altior. Folia regulariter pinnata ad 3.4 m . longa. Inflorescentia breviter pedunculata, ramosa, rachillis pendulis ad 40 cm . longis. Flores masculi $6-7 \mathrm{~mm}$. longi, virescentes. Fructus globoso-obovatus, in vivo ca. $2.6-2.7 \mathrm{~cm}$. altus, 2.3 cm . in diam., in siccu ca. $2.5-2.7 \mathrm{~cm}$. altus, $1.9-2.1 \mathrm{~cm}$. in diam.. semine glo-

5. Rhopaloblaste elegans. a, portion of rachilla with triads x 1 ; b , triad with flowers removed $\times 2$; c, portion of rachilla with paired and solitary staminate flowers x 1 ; d, scars and bracteoles of paired staminate flowers $\times 2$; e, staminate flower at anthesis $\times 2$; f, staminate bud $\mathrm{x} 4 ; \mathrm{g}$, staminate bud in vertical section x 4 ; h, staminate sepals x 4 ; i , staminate petal $\times 2 ; \mathbf{j}$, stamens in 3 views $\times 2$; k , pistillode $\times 2 ; 1$, pistillate bud $\times 4 ; \mathrm{m}$, pistillate bud in vertical section $\mathrm{x} 4 ; \mathrm{n}$, pistillate sepals x 4 ; o, pistillate bud with sepals removed $\mathrm{x} 4 ; \mathrm{p}$, pistillate petal $\times 4$; q , pistil and staminodes $\times 4$; r, staminode $\times 8$; s, fruit $\times 1$; t , fruit in vertical section $\times 1$; u , fruit in cross-section $\times 1 ; \mathrm{v}$, endocarp x 1 ; w, operculum $\mathbf{x} 2 ; \mathbf{x}$, seed in lateral, abaxial and adaxial views x 1. From material of Moore \& Whitmore 9310 preserved in liquid.
boso, $1.7-1.8 \mathrm{~cm}$. in diam., albumine profunde ruminato.

Solitary tall palms tapered from a somewhat enlarged base with a mass of short, stout adventitious roots, ca. 12 m . high or more, 15 cm . in diam. near base, 7.5 cm . in diam. below crown, the bole gray-brown to rather light gray upward with chocolate-brown scales on new internodes. Leaves rather numerous in a handsome spreading crown; sheaths ca. 8.5 dm . long, forming a slender crownshaft, light green with a dense indument of brown scales and appearing brown, pinkish inside, tightly appressed and sticky inside; petiole short, $5-7.5 \mathrm{~cm}$. long, green, concave above, rounded below; rachis straight, covered with dense indument of shining brown fimbriate peltate scales in-
terspersed with deciduous white tomentum below, densely covered with shining fimbriate scales above when young, ca. 3.4 m . long with ca. 76 straight pinnae on each side, these regularly arranged and bent downward at an angle up to $45^{\circ}$ with the rachis, light green, stiff, papery, with prominent pale nerves and appearing sub-plicate above, green below, the midnerve elevated and clothed with dark brown or grayish dull twisted basifixed scales above as are also the margins, below clothed with short and moderate shining brown twisted basifixed scales, the secondary nerves ca. 3 on each side, prominent below and scaly or brown puncticulate; lower pinnae ca. 30 cm . long, 1.1 cm . wide, pinnae at mid-leaf $64-68 \mathrm{~cm}$. long, $2.7-3.4 \mathrm{~cm}$. wide, upper pinnae $41-26 \mathrm{~cm}$. long, 19-8

6. Light breaking through the forest glints on fronds of Rhopaloblaste elegans at the headwaters of the Matanikau River near Honiara on Guadalcanal.
mm . wide, the apex acuminately and obliquely praemorse. Inflorescences 1-3 below the leaves, enclosed in bud in caducous sub-terete green bracts with brown lepidote-tomentose indument, the lower ca. 36 cm . long, laterally keeled,
the keels extending into a flat rostum ca. 2 cm . long, the upper bract enclosed within the lower, slightly keeled and rostrate, more densely lepidote-tomentose; expanded inflorescence with a short peduncle $6-8 \mathrm{~cm}$. long, orange-green at

7. Mr. Dennis holds inflorescences of Rhopaloblaste elegans in bud and expanded. Photograph by T. C. Whitmore.
base, then green, the rachis ca. 30 cm . long, the branches $15-16$, the first two divaricate at about a $90^{\circ}$ angle with the rachis and with a main axis ca. 23 cm . long, again branched into simple or furcate pendulous flowering axes to ca. 40 cm . long, tipped with a brief sterile
spinose apex, middle branches oncebranched, the apical unbranched and to ca. 25 cm . long, triads borne on lower half of the axes, paired or solitary staminate flowers above, the axes somewhat flattened at least basally, the triads scarcely sunken and subtended by a
prominent rounded lip. Staminate flowers glabrous, 6-7 mm. long, greenish, leaving an orange scar on the green axis when fresh, very slightly asymmetric and acutish at apex, the sepals 2 mm . long, 3 mm . wide, slightly keeled basally; petals 5.6 mm . long, 3 mm . wide; stamens 6 , the flat white filaments ca. 2.5 mm . long, inflexed at the apex in bud, the yellow anthers 3 mm . long, dorsifixed, briefly bifid at base and apex; dull yellowish pistillode about as high as the filaments, narrowed from an ovate base to a trigonous 3-lobed apex. Pistillate flowers glabrous, subtended by 2 low imbricate bracteoles ca. 1 mm . high, rounded in bud, ca. 4 mm . high; sepals 3 mm . high, 5 mm . wide; petals 4 mm . high, 3 mm . wide; staminodes 4 , more or less united basally; pistil ovoid with 3 short erect stigmas; ovule attached laterally. Fruiting axes dull green, the fruit successively green, yellow to orange then crimson with a copious glaucescence when ripe, globose-obovate in a perianth 6.7 mm . high, ca. 26 mm . high, 23 mm . wide when fresh, 2.5 cm . high, 1.9-2-1 cm. wide when dry, the exocarp smooth, mesocarp with longitudinal flattish fibers and thin flesh, endocarp thin, crustaceous, shining, not adherent to seed with a basal operculum; seed globose or depressed globose, 1.7 cm . high, 1.8 cm . in diam., raphe impressed, as long as the seed, branches numerous and reticulate dorsally; endosperm deeply ruminate; embryo large, basal.

Vernacular names: dai'e (Kwara'ae language Kwai dialect) : angiriri (Akui dialect). BRITISH SOLOMON ISLANDS PROTECTORATE. Guadalcanal: north coast, vicinity of Honiara; gully forest 1 mile from coast and 1 mile east of White river headwaters, alt. ca. 500 ft., 27 March 1964, H. E. Moore, Jr., G. F. C. Dennis \& T. C. Whitmore

9310 [ = BSIP 4085] (BH, holotype; BSIP, isotype).

Rhopaloblaste elegans is surely one of the most elegant palms of the Solomon Islands and represents an extension of range for the genus eastward from New Guinea. Near Honiara on Guadalcanal, it forms extensive open stands in disturbed rain forest over coralliferous raised beach sediments on Mt. Austen which give the forest a distinctive appearance, and when brought into cultivation, as in the garden of Mr. G. F. C. Dennis at Honiara, it shows distinct promise as an ornamental palm, being more delicate than $R$. ceramica. Seed was sent to the Fairchild Tropical Garden, Miami, Florida, and accessioned as FG 64-173. Rhopaloblaste also occurs on Choiseul Island where collected three miles inland from Liulu Village in Pometia-dominated forest over a dissected limestone plateau (T. C. Whitmore, BSIP 4097) but the collection lacks fruit and the specimen available (US) differs slightly in other particulars so that assignment to species must be left until further material is collected. Dr. Whitmore writes that this locality is over a substratum similar to that of Mt. Austen and the species composition of the forest is also similar.

The exact number of species truly assignable to Rhopaloblaste is not quite certain but among those described with fruits exceeding 2.5 cm . in length, $R$. elegans differs from both $R$. micrantha Burret* of New Guinea and the type-

[^1]species, $R$. ceramica, in having globoseobovate fresh fruits (ca. 2.6 cm . long, 2.3 dm . diam.) which dry with an abruptly rounded rather than gradually tapered apex and seeds globose and rounded at the apex rather than ovoid and acutish. From R. ceramica, R. elegans differs further in having a much
less robust inflorescence, in having ovoid pistillate buds 4 mm . across subtended by bracteoles 1 mm . high or less as opposed to depressed trigonous-globose buds 6 mm . across subtended by bracteoles to 2.5 mm . high in $R$. ceramica, and in having the triads subtended by a prominent lip-like bractlet.

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Mr. and Mrs. Satake and daughter

## Satakes Visit U. S.

Mr, Toshihiko Satake, prominent manufacturer of rice-milling machinery at Hiroshima, Japan and long an expert on palms, visited Miami from May 28th to 31st. He was accompanied by his charming wife and daughter, Mrs. Fumiko Satake and Mrs. Robert Satake.

Although the two ladies had been here before, this was Mr. Satake's first visit. An expert photographer, he was interested in taking pictures of palms, also in meeting various people with whom he had corresponded, and in trying to find one or more palms not already in his very extensive collection. He was hampered by the fact that the weather was very showery, and that it was the Memorial Day week-end when many persons were out of town. Eventually all aims were achieved, including a one-day trip to Nassau, Bahamas, to see the Langlois and Ericson collections.

Mr. Satake said that he was very much impressed by what he saw, and hinted that he might return before too long. The family had spent a month making a thorough tour of the United States, including a short stay in Ithaca, N. Y. to meet Dr. H. E. Moore, Jr., $\cdot$ Director of the L. H. Bailey Hortorium at Cornell University as well as editor of Principes. Dr. Moore is now spend-


[^0]:    *From work supported by National Science Foundation Grant GB-1354. I should like also to express thanks to my colleague Dr. W. J. Dress for correcting Latin descriptions and to the John Simon Guggenheim Memorial Foundation which supported the study of palm specimens in European herbaria during

[^1]:    *Rhopaloblaste micrantha Burret, Notizblatt Berlin 15: 10, 1940, not $R$. micrantha (Beccari) Bentham et J. Hooker ex B. D. Jackson, Index Kewensis 2: 713, 1895. Burret noted that stamens had been destroyed in the material seen by him. Since I have not seen authentic material nor more recent collections agreeing with the description, and since the spreading pinnae and only slightly dissected staminoidal ring are not in accord with Rhopaloblaste as I know it, it seems premature to provide a new name to replace Burret's later homonym.

