

A New Palm Hybrid from the Fairchild Tropical Garden*

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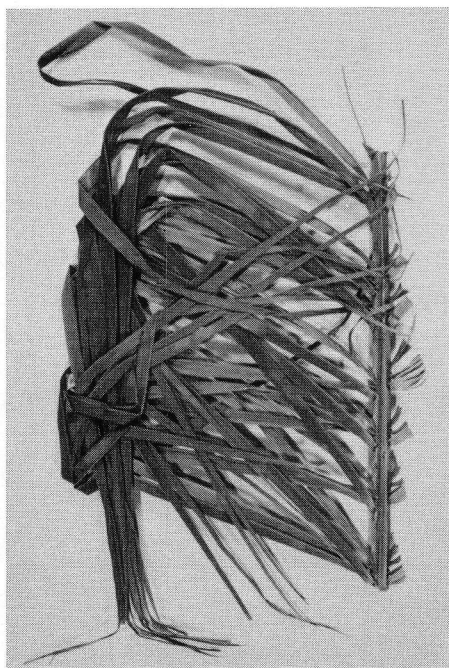
In preparing a taxonomic revision of the palm genus *Syagrus* Mart., I have recognized a total of five hybrids between species in this genus (Glassman,

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1963, 1968a, 1968b, 1970b). *Syagrus coronata* (Mart.) Becc. appears to be one of the parents in four of these hybrids, *S.* × *Camposportoana* (Bondar) Glassman, *S.* × *Matafome* (Bondar) Glassman, *S.* × *Tostana* (Bondar) Glassman, and *S.* × *Costae* Glassman; whereas,



1. *Syagrus Romanzoffiana* N. of Bragança, Minas Gerais, Brazil. Note trunk without persistent petiole bases.



2. *Syagrus Romanzoffiana*. Portion of leaf rachis showing clustered pinnae. From Glassman & Gomes 8000 (CHI).



3. *Syagrus Romanzoffiana*. Sheathing leaf base (right) and adjoining petiole parts showing soft fibrous or smooth margins. From Glassman & Gomes 8000 (CHI).

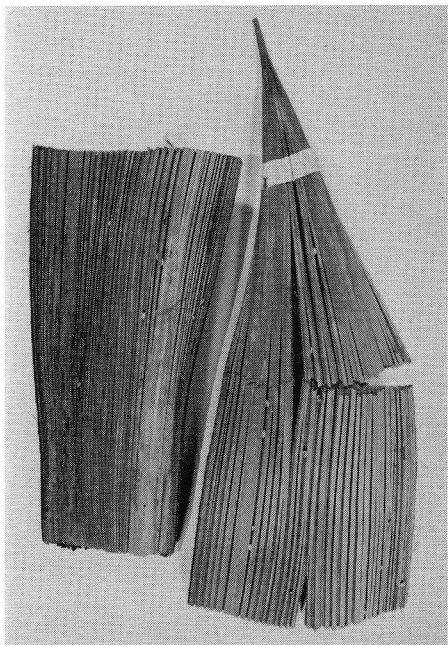
S. Romanzoffiana (Chamisso) Glassman, 1968a (formerly placed in the genus *Arecastrum* by Beccari, 1916) is involved in the hybridization of *S.* × *Camposportoana* and *S.* × *Teixeiriana* Glassman.

Hybridization between *S. Romanzoffiana* and *S. capitata* (Mart.) Glassman, 1970a, (formerly placed in the genus *Butia* by Beccari, 1916) and its varieties has been reported in the literature by Barbosa Rodrigues (1903), Beccari (1916), Bailey (1936) and Burret (1940); but according to descriptions, illustrations and specimens cited in these articles I am unable to find evidence of a clear-cut hybrid between these two taxa.

Barbosa Rodrigues described his hybrid under the following name: *Cocos Romanzoffiana-pulposa* Barb. Rodr. (1903). This palm was reported as

growing wild in Uruguay, but no specimens were cited. There is insufficient information in the description, however, to warrant recognition of this taxon as a hybrid.

Another hybrid, designated by Beccari as *Arecastrum Romanzoffianum* × *Butia*, was published in *L'Agricoltura Coloniale* 10: 462-464, 1916. The following collection, which I have seen, was cited in the paper: Cultivated, Villa St. Louis, near the boundary of Ventimiglia, Italy, *Berger s.n.* (FI, holotype). The type specimens, consisting of five herbarium sheets, have spadices (branched part) up to 60 cm. long, male flowers 8 mm. long, female flowers 5.5-6.0 mm. long and 4.5 mm. wide, petiole margins with very short spines (Beccari described them as *not* spiny), none of the pinnae are clustered along the rachis, and the



4. *Syagrus Romanzoffiana*. Expanded part of spathe showing deeply plicate-sulcate exterior. From *Glassman & Costa 8742* (CHI).



5. *Syagrus Romanzoffiana*. Cross-sections (extreme left and right) and longitudinal sections (central) showing the very irregular gibbous seeds enclosed in the very irregular endocarp cavities. From *Glassman & Gomes 8000* (CHI).

middle ones are up to 104 cm. long and 2.5 cm. wide, with oblique, split tips. The above information fits the general description of *S. capitata* and there seems to be very little to indicate hybridization with *S. Romanzoffiana*. Beccari, however, did describe the spathes as being plicate-sulcate (in *S. capitata* they are almost smooth), but spathes were not among the type specimens sent from the herbarium at Firenze, Italy. Furthermore, no fruits were described by Beccari in this article. Even though there is some evidence for hybridization (i.e., plicate-sulcate spathes), it is insufficient to recognize *Berger s.n.* as a distinct hybrid between *S. Romanzoffiana* and *S. capitata*.

Bailey mentioned a putative hybrid between the two taxa mentioned above in *Gentes Herbarum* (1936). The tree was growing in the Royal Palm Nur-

series at Oneco, Florida, but he did not see flowers or fruits and no specimens were cited. Although, there are indications of hybridization, such as spiny petioles and plicate-sulcate spathes, the evidence is inconclusive because of the lack of flowers and fruits.

Burret (1940) reported a hybrid between the two species in question in *Rodriguesia*, but he did not give it a formal description. The illustrations show two photos of trees and detailed drawings of the male and female flowers and external views of the fruit. Petioles appear to be non-spiny and the pinnae are not clustered. No specimens were cited. Photos were sent to Burret by Urbano Key from Porto Alegre, Rio Grande do Sul, Brazil, where the plant is thought to be indigenous.

On a recent trip to the Fairchild Tropical Garden, Miami, Florida, I was shown three mature trees labelled "*Butia* × *Arecastrum* hybrid" and was told that these grew much faster than other trees labelled "*Butia capitata*" in the same plot. The hybrid trees were planted in 1960 and were about 6–7 meters tall, whereas, one of the other trees ("*Butia capitata*") was planted in 1938 and was only about 5 meters tall. Superficially, the hybrid trees resemble *Syagrus capitata* because the petiole margins are spiny, the petiole bases are persistent on the



6. *Syagrus* × *fairchildensis*. Trees from which holotype (left foreground) and paratype (middle foreground) specimens were described. Note trunks with persistent petiole bases.

trunk, and the pinnae are not clustered; however, closer inspection revealed that the spathes are plicate-sulcate and the fruits have a thick endocarp and an irregular endocarp cavity characteristic of *S. Romanzoffiana*. At this point I was convinced that I had seen enough material to recognize these trees as clear-cut hybrids. Subsequently, complete collections of leaves, inflorescences and infructescences were made from two trees.

Since previous descriptions of hybrids between *S. capitata* and *S. Romanzoffiana* have been incomplete and inconclusive, I am describing a hybrid between these two species as new, naming it after the

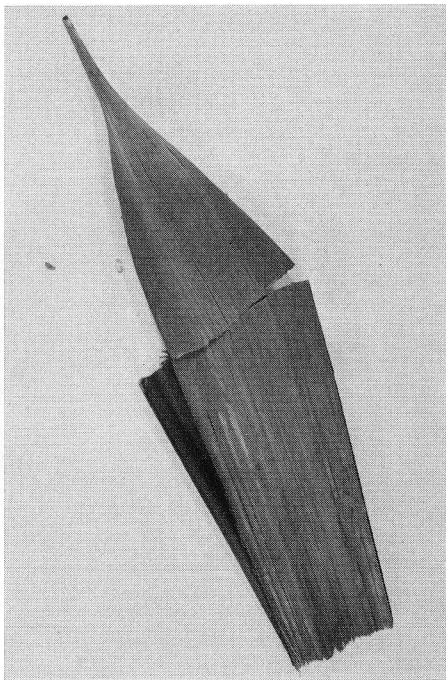
Fairchild Tropical Garden where many fine specimens of palms and other plants are cultivated.

Syagrus* × *fairchildensis Glassman,
hybr. nov.

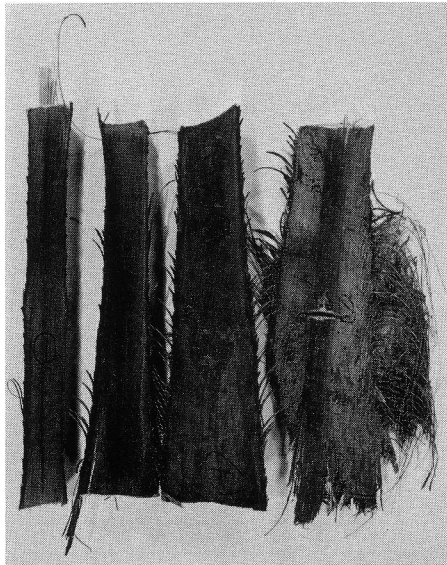
Palma hybrida 6–7 m. alta. Folia aequaliter pinnatisecta petiolo dentato rhachidi 253–293 cm. longa pinnis utrinque 105–113. Spathae pars inflata plicato-sulcata 121–156 cm. longa 14.5–17.0 cm. lata. Flores masculi inferiores 10–13 mm. longi superiores 6–9 mm. longi; flores foeminei 5–7 mm. longi 4.0–4.5 mm. lati. Fructus 1.5–2.1 cm. longus 1.3–1.6 cm. in diam. cavitate endocarpi asymetrica.



7. *Syagrus* × *fairchildensis*. Portion of leaf rachis showing regularly arranged pinnae. From *Glassman 8765* (CHI).

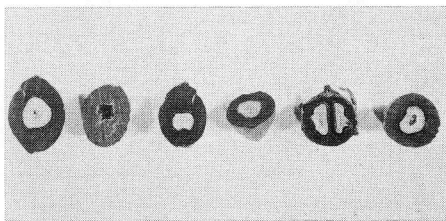


9. *Syagrus* × *fairchildensis*. Expanded part of spathe showing grooves of variable depth on exterior. From *Glassman 8764* (CHI).

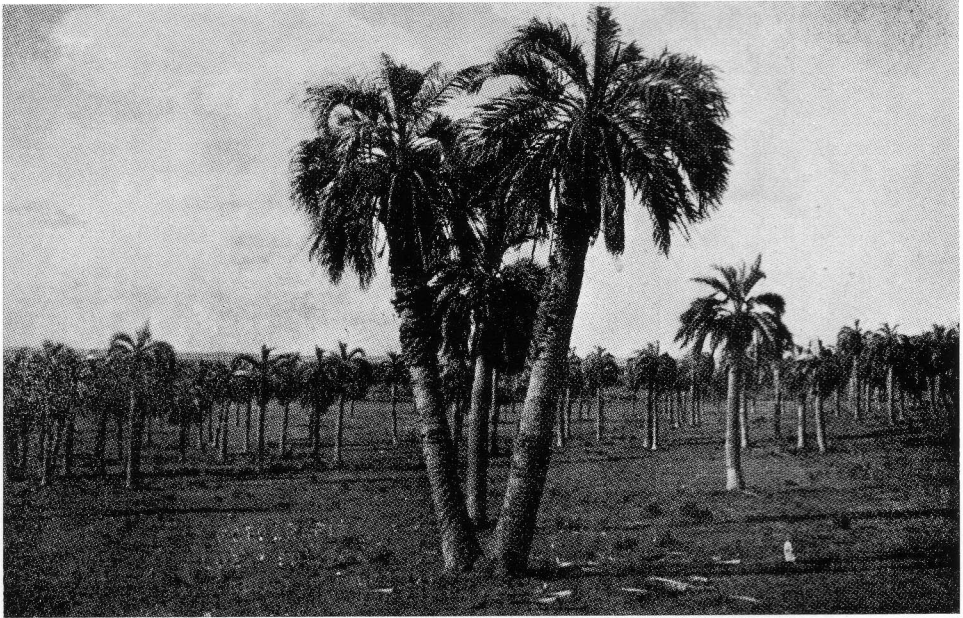


8. *Syagrus* × *fairchildensis*. Sheathing leaf base (far right) showing mixture of soft fibers and stiff fibers on margins, and petiole parts showing stiff fibers on margins (central ones) and short teeth on margins (far left). From *Glassman 8764* (CHI).

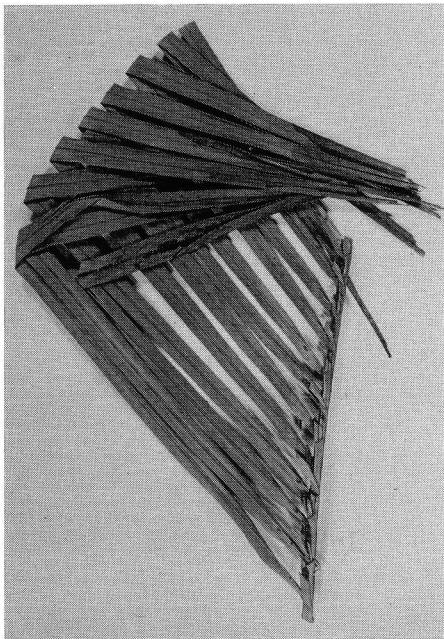
Hybrid palm 6–7 m. tall; sheathing bases and petiole bases persistent along most of the length of the trunk; dividing line between sheathing base and petiole often indistinct; sheathing base up to 27



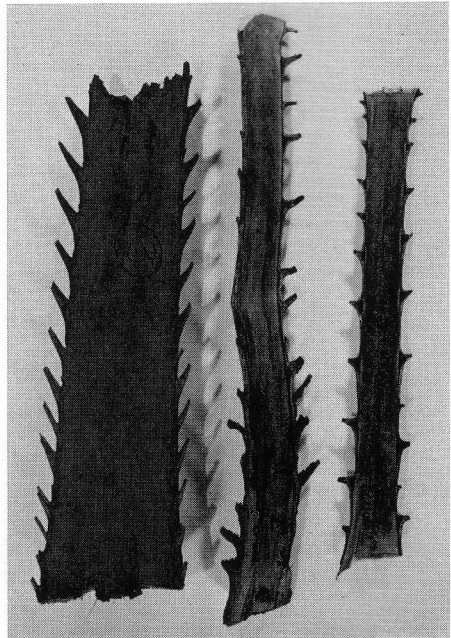
10. *Syagrus* × *fairchildensis*. Cross-sections (third from right and extreme right) and longitudinal sections of fruits showing slightly irregular to very irregular seeds enclosed in the irregular endocarp cavities. Note fruit (second from right) with two irregular seeds in the irregular endocarp cavities. From *Glassman 8765* (CHI).



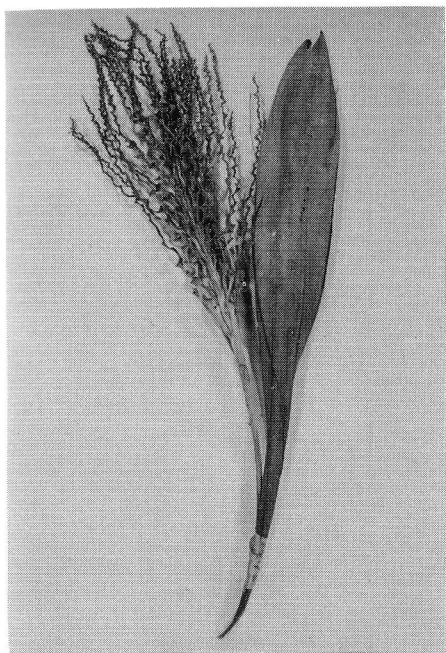
11. *Syagrus capitata*. Stand of trees in Uruguay. After Herter (1930).



12. *Syagrus capitata*. Portion of leaf rachis from tree cultivated at Fairchild Tropical Garden showing regularly arranged pinnae. From Glassman 8766 (CHI).

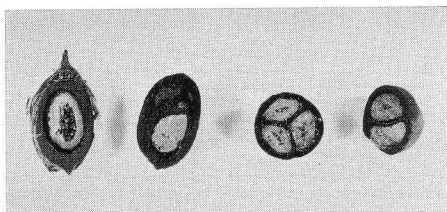


13. *Syagrus capitata*. Petiole parts showing coarse teeth on lower part (far left) and progressively shorter teeth on upper part (far right). From Glassman 8766 (CHI).



14. *Syagrus capitata*. Relatively smooth spathe (without grooves), and spadix. From *Glassman 8746* (CHI).

cm. long and 17 cm. wide, margins armed with soft fibers only or soft fibers intermixed with stiff, spine-like fibers; petiole up to 108 cm. long, about 8 cm. wide near base and 2.5–3.0 cm. near apex, margins with spine-like fibers near base, these fibers gradually becoming smaller and dentate up to apex; rachis of leaf 253–293 cm. long; pinnae 105–113 pairs, mostly not clustered, slightly glaucous on both surfaces, middle ones up to 106 cm. long and 2.5 cm. wide, mostly with oblique tips; expanded part of spathe 121–156 cm. long, 14.5–17.0 cm. wide and 2–3 mm. thick, plicate-sulcate but depth of grooves variable; branched part of spadix 94–151 cm. long, peduncular part up to 82 cm. long; branches up to 127 or more in number, the lowermost one 67–77 cm. long; male flowers 10–13 mm. long on lower spadix branches, 6–9 mm. long on upper spadix branches;



15. *Syagrus capitata*. Longitudinal sections (left) of fruits showing a single chamber with a single seed, and cross-sections (right) showing three chambers with three seeds, and two chambers with two seeds. From *Glassman 8766* (CHI).

female flowers 5–7 mm. long, 4.0–4.5 mm. wide; fruit broadly ovoid, 1.5–2.1 cm. long and 1.3–1.6 cm. in diameter, with very short beak, endocarp 2–6 mm. thick, mostly with one chamber, cavity slightly irregular to very irregular in shape, trivittate within, when two-chambered, cavities irregular, apparently not trivittate within; seed usually one, conforming to shape of endocarp cavity, easily separating from cavity, ovoid and slightly irregular to very irregular and uncinat in shape, 0.4–0.9 cm. long and 0.6–0.8 cm. in diameter, seeds when two irregular in shape, up to 0.9 cm. long and 0.2–0.4 cm. in diameter; endosperm homogeneous.

Specimens Cited: Fairchild Tropical Garden, Miami, Florida, cultivated tree about 7 m. tall, plot 111, no. FG-60-754A, March 25, 1970, *Glassman 8764* (CHI, holotype); same data except tree about 6 m. tall, no. FG-60-754B, *Glassman 8765* (CHI, paratype).

Both plants cited above came from the Florida Nursery and Landscape Co., Leesburg, Florida, and were planted in the Fairchild Tropical Garden during November, 1960, when they were about 1.5 m. tall.

Seeds of *S. × fairchildensis* are apparently sterile because no developed embryos could be found when several sectioned fruits were examined. Inspection of 5,000 pollen grains from ten different

TABLE 1.

	<i>S. Romanzoffiana</i> (Figs. 1-5)	<i>S. × fairchildensis</i> (Figs. 6-10)	<i>S. capitata</i> (Figs. 11-15)
Height of tree.	Up to 15 (20) m.	6-7 m.	Up to 5 m. or more.
Persistence of sheathing bases and adjoining petiole bases.	Usually dehiscent from trunk for most of its length.	Persistent on trunk for most of its length.	Usually persistent at least on upper half of the trunk.
LEAF			
Sheathing base and petiole margins.	Soft fibrous toward base, becoming smooth toward apex.	Soft fibrous and stiff fibrous toward base, becoming dentate toward apex.	Fibrous and coarsely spiny toward base, becoming coarsely or finely dentate toward apex.
Rachis length.	Up to 320 cm.	253-293 cm.	Up to 183 cm.
Number of pinnae per leaf.	Up to 165 pairs.	105-113 pairs.	Up to 63 pairs.
Clustering of pinnae.	Tight clusters of 2-5.	Mostly not clustered.	Mostly not clustered.
Pinnae tips.	Mostly acuminate.	Mostly oblique.	Mostly oblique.
Length and width of middle pinnae.	Up to 85 cm. by 2-3 (3.8) cm.	Up to 106 cm. by 2.5 cm.	60-75 cm. by 1.5-2.0 (2.7) cm.
EXPANDED PART OF SPATHE			
Length and width.	Up to 150 cm by 21 cm.	121-156 cm. by 14.5-17.0 cm.	40-100 cm. by 4.0-8.5 cm.
Thickness.	5-7 mm.	2-3 mm.	Mostly 0.5-2.0 mm., Occasionally 3-5 mm.
Texture.	Usually tough, woody-fibrous.	More or less brittle, or woody-fibrous.	Mostly brittle, occasionally woody-fibrous.
Grooving.	Deeply plicate-sulcate.	Plicate-sulcate but depth of grooves variable.	Mostly smooth, frequently with shallow grooves.
BRANCHED PART OF SPADIX			
Length.	Up to 125 cm.	94-151 cm.	Up to 94 cm.
Number of spadix branches.	Up to 196.	127 or more.	40-60.
Length of lowest spadix branch.	Up to 62 cm.	67-77 cm.	Up to 69 cm.
Length of male flowers (lower and upper branches).	11-16 and 4-10 mm.	10-13 and 6-9 mm.	7-10 and 4-7 mm.
Length and width of female flowers.	4.5-6.0 mm. by 4-6 mm.	5-7 mm. by 4.0-4.5 mm.	4-8 mm. by 4-6 mm.

TABLE 1. (Continued)

	<i>S. Romanzoffiana</i> (Figs. 1-5)	<i>S. × fairchildensis</i> (Figs. 6-10)	<i>S. capitata</i> (Figs. 11-15)
MATURE FRUIT			
Length and diameter.	2.0-2.6 (3.0) cm. by 1.2-1.7 (2.4) cm.	1.5-2.1 cm. by 1.3-1.6 cm.	1.8-2.6 cm. by 1.5-2.2 cm.
Number of chambers.	1.	1-2.	1-3.
Thickness of endocarp (along sides).	2-7 mm.	2-6 mm.	1-3 mm.
Shape of endocarp cavity.	Very irregular.	Slightly irregular to very irregular.	Regular.
SEEDS			
Length and diameter.	0.8-1.2 cm. × 0.6 cm.	0.4-0.9 cm. × 0.6-0.8 cm.	1.8-2.4 cm. × 1.0-1.4 cm.
Shape.	Gibbous-uncinate.	Ovoid and slightly irregular to very irregular and uncinata.	Ovoid or triangular.
Separation from endocarp cavity.	Not separating.	Readily separating.	Readily separating.
GEOGRAPHIC DISTRIBUTION			
	Brazil: Bahia, Minas Gerais, Goiás, Mato Grosso, São Paulo, Guanabara, Paraná, Santa Catarina, Rio Grande do Sul; Bolivia?, Paraguay; Argentina; Uruguay.	Only known from cultivation.	Brazil: Minas Gerais, Goiás, São Paulo, Paraná, Santa Catarina, Rio Grande do Sul; Uruguay.

male flowers revealed that less than five percent were fertile. The fertility was tested by staining pollen with aniline blue powder dissolved in lactophenol.

The above chart (Table 1) shows similarities and differences between the hybrid and its two parent species. It is not known for certain whether *S. capitata* and *S. Romanzoffiana* hybridize in nature, but such a union is possible where the ranges of the two species overlap (see Table 1).

When Table 1 is analyzed, it shows that *S. × fairchildensis* is similar to *S. capitata* in the persistent petiole bases on

the trunk, the toothed petiole margins, the regularly arranged pinnae with oblique, split tips and the seeds which easily separate from the endocarp cavity; and it resembles *S. Romanzoffiana* in the plicate-sulcate spathes which are approximately the same size, and in the irregular endocarp cavity and irregularly shaped seeds. The hybrid is more or less intermediate between the two parent species in the relatively narrow spine-like fibers on the sheathing base, the relatively smaller teeth on the petiole margins, size of rachis, number of pinnae per leaf, texture, thickness and grooving of the

spathe, number of spadix branches, length of male flowers, and shape of both the endocarp cavity and seeds. *Syagrus* × *fairchildensis* differs from either parent in the longer pinnae, longer spadices, and smaller fruits. Greater dimensions in the first two characters probably could be attributed to conditions of cultivation, whereas, fruit size can be explained by the fact that measurements for the hybrid were made from old fruits in which the exocarp and mesocarp had fallen off.

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EDITOR'S CORNER

Erratum

The name of the palm in the first line on page 35 of this volume should have been set in italic rather than boldface since the citation is for a synonym, not an accepted name, thus:

? *P. cycadifolia* Hort. Athen ex E.

H.E.M.

Editor returns

Dr. Moore will return shortly from a highly successful palm-collecting journey around the world. Material collected on this trip of rare and little-known palms will fill in some of the major gaps in our understanding of the palm genera and their interrelationships. Beginning with the next issue of PRINCIPES, Dr. Moore will give a full account of his latest adventures and discoveries.

F.B.E.