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A New Species of Raphia from Northern Zululand and Southern Mozambique

by

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Abstract

The Raphia Palm from northern Zululand and southern Mozambique has been known for many years as *Raphia vinifera* Beauv., but an investigation of flowering material revealed that it was distinct from that species and represented a new species, which is here described as *R.* **australis** Oberm. & Strey. In addition to the description, notes on the morphology, history, preservation and uses of the plant are given.

Description

Raphia australis *Oberm. & Strey*, sp. nov., *R. vinifera* Beauv. affinis, sed inflorescentia terminali erecta fructu ellipsoideo squamis convexis leviter sulcatis differt.

Caudex simplex. *Spadix* erectus terminalis spicis fertilibus patentibus tortilibus floribus femineis in dimidio inferiore. *Flos masculus* staminibus 6 liberis conniventibus. *Flos femineus* annulo staminodio dentibus inaequalibus aliquot antheris minutis. *Fructus* ellipsoideus squamis convexis 6-orthostichis leviter sulcatis.

Type: Natal, Ingwavuma District, Kosi Bay area, west of Lake Amanzimnyana, 6·3 miles east of Maputa, edge of dense forest which is inundated in the rainy season, November 1967, *Strey* 7785 (PRE, holo.; NH).

A large unbranched stout tree up to 16 m tall. *Stem* up to 10 m tall, covered with the old persistent adpressed erect leafbases. *Leaves* rosulate, younger erect, outer somewhat spreading, pinnate, up to c. 10 m long; petiole unarmed concave and clasping below; the rhachis narrows into a canaliculate stalk for about two thirds of its length with the two spiny margins unequal in height gradually approaching one another until they merge (the lower ridge disappearing); at this point the leaf bends outwards; the pinnae are inserted on the outside of the marginal ridges, linear, 45–65 cm long, 5 cm broad, folded below, pale green above, waxy below, the margins bearing small sharp ascending pale spinules about 4 mm long, midrib raised with a double row of spinules in the lower half which merge to form a single row above. *Inflorescence* apical, erect, exserted centrally above the crown of leaves, conical, up to 3 m tall, its lowest flowering branches in the axils of the upper leaves; the subsequent leaves (c. 13) subtending the flowering branches, gradually reduced, the uppermost c. 50 cm long; peduncle 11 cm in diam. at the base, covered by 2-ranked, clasping imbricate tubular hard bracts; the basal bract of each branch differing from the following ones in shape; it is 2-pronged like a lobster-claw, flattened and bi-carinate, up to 40 cm long and 6 cm broad; it recurs on all the following side-branches becoming progressively smaller higher up; the subsequent bracts tubular with a truncate apex which forms an acute point, the points arranged alternately from side to side; branches exserted, laterally compressed, sub-4-ranked with 2 side-branches close together on each side of the rhachis, erect at first, patent in fruit, bracts similar to those covering the peduncle but reduced in size; the side branches bearing the numerous abbreviated fertile spikes in close proximity to one

another; their arrangement is also sub-4-ranked with two rows of spikes close together on each side of the laterally compressed rhachis; fertile spikes spreading and twisting, with the unisexual flowers 2-ranked, the female occupying the lower part of the spike, the male the upper part; the apical spikes with male flowers only; the lower spikes up to 40 cm long becoming shorter towards the apex; fertile bracts similar in shape and form to those of the branches but smaller. *Male flowers* surrounded by a bi-carinate bracteole; hiding inside it is a small tubular, truncate calyx and exserted from it a corolla consisting of 3 hard linear-falcate segments which are nearly free to the base, 10 mm long, 2 mm broad, with a triangular, slightly swollen apex; stamens 6, free, filaments connivent, swollen, 4 mm long, 3-angled, apiculate, anthers with parallel linear locules 6 mm long. *Female flowers* surrounded by a bi-carinate bracteole and a second one inside it which is short, tubular and truncate, calyx and corolla enlarging after fruit has set, exserted from the bracteoles; calyx tubular, splitting irregularly into 3 truncate lobes when the ovary enlarges, 8 mm long; corolla segments 3, hard, beaked; staminodial ring adnate to the corolla, flattened, with unequal blunt teeth, some bearing minute anthers; ovary 3-celled, uni-ovulate, with the minute scales fimbriate; stigmas 3, sessile, apical, tongue-shaped, erect, at anthesis exposed through a small apical aperture of the corolla before the latter enlarges. *Fruit* one-seeded, ellipsoid, 6–9 cm long and 3–5 cm in diam. hard, shiny yellow-brown, shortly beaked, the reflexed convex scales arranged in 6 vertical rows, median groove shallow, edges with a short golden fringe of hairs.

R. australis is found in swamp forests near the coast in northern Zululand and southern Mozambique.

NATAL.—Ingwavuma: Kosi Bay area, west of lake Amanzimnyana, 6·3 miles east of Maputa, *Strey* 7785; *Strey* 8200; *De Winter & Vahrmeijer* 8617; Cult: Mtunzini, *Garland* in PRE 30368; Durban Botanic Station, *Strey* 7373; 7800; 8060; 8263.

Dr. Gomes e Sousa in a personal communication, 19th February 1969, reported seeing it in fruit on the Boboli River near Marracuene, 40 km north of Lourenco Marques. It is called " Imali " in Ronga.

In the past 40 years much has been written on the Raphia Palm from Zululand but, owing to its size, no complete collections of the inflorescence (only an occasional nut) or photographs of flowering plants have reached herbaria. It was only when two palms in the garden of the Botanic Station in Durban, which were raised from seed collected by Dr. V. E. Wager at Mtunzini, developed erect inflorescences, that it was realized that we were dealing with an undescribed species. Before this, the Raphia Palm from Zululand was referred to *R. vinifera*, but this species bears pendulous inflorescences in the axils of the leaves and its fruits too, have a different shape.

MORPHOLOGICAL NOTES

Roots.—(*a*) Pneumatophores. Around its base the palm forms negatively geotropic roots up to 10 cm high, exserted above the swampy ground which is flooded seasonally. (*b*) Epigeal rootlets. In the axils of the lower leaves rootlets are developed, which penetrate into the fibrous mass seeking moisture and nutrients. The thickness of this root-mantle around the lower part of the stem may be up to 5 cm in thickness.

Leaves.—About two new leaves are formed annually as observed on the palm growing at the Botanic Station, Durban. The dying old leaves gradually fall down backwards leaving only a short clasping leaf-base c. 60 cm wide below. The rhachis is canaliculate for about two thirds of the way up and the rainwater thus runs into the axils, which are filled with humus and harbour epiphytes such as the ferns *Stenochlaena tenuifolium*, *Lygodim microphyllum* and *Psilotum nudum*.

Inflorescence.—The lowest branch of the inflorescence measured up to 3 m long and had a circumference of 50 cm at the base. The terminal shaft was estimated to be c. 5 m tall.

Fruits.—About 8–10,000 fruits are developed on an inflorescence. The weight of 50 fruits averaged about 3 lb. Therefore a fruiting inflorescence may weigh between five and six hundred pounds.

Seed.—The yellow spongy integument under the scales is sweet and sticky and attracts the Palm-nut vultures. The structure of the seed and embryo is typical of the family. The small anatropous embryo has the funiculus situated in a groove of the pericarp where the two aborted locules meet. The endosperm is ruminate and the cotyledon forms a haustorium, which extracts the food for the embryo.

Rate of Growth.—The Raphia Palm is said to reach a height of about 40–50 feet in 20–40 years from seed and then flowers and dies after setting fruit. The specimens growing at the Botanic Station in Durban flowered after 24 years. Regeneration from seed is excellent, but nearly always confined to the immediate neighbourhood of the old palms. It does not sucker.

Historical Notes

Some of the early history of the Mtunzini Grove is related in an interesting article by Mr. W. M. Austen, a ranger of the Natal Parks, Game & Preservation Board, in *The Ostrich*, September, 1953, where he described his observations made on Palm-nut Vultures that nest in the Raphia Palm and feed on the fruits. He remembered seeing the Mtunzini Grove in 1915; it was established by the late Mr. C. C. Foxon, who was Magistrate and Native Commissioner at Mtunzini and who had collected the seeds near the Maputa village in Tongaland. It occurs there naturally in the fresh-water swamp-forests at the southern end of the five Kosi lakes, either as isolated trees or forming small groups of about 20 individuals. This swamp-forest type of vegetation is also found further northwards in Mozambique and Portuguese botanists believe that it constitutes the climax vegetation of this area.

Preservation

The palm grove near the Mtunzini Railway Station has been declared a national monument. Solitary individuals or small groups are however found in the neighbourhood; in one grove about thirty individuals were counted. Further north in Tongaland they are not protected.

Uses

The Natives use the old leaf-midribs for hut building and rafts. At the bus terminal at Maputa is a fenced-in market place where market-stalls and communal shelters have been constructed from the leaf-midribs. Rafts are also made for crossing the Sihadla River (see photos). The young leaves are not stripped for raffia as in *R. farinifera*, nor is the sap tapped for making wine as in *R. vinifera* and other species.

References

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FIG. 1.—**Raphia australis.** 1, flowering spike showing female flowers in lower half and male flowers above, × ½; 2, young female and male flowers, × ½; 3, male flower showing bract (*b*), bracteole (*br*)-calyx (*ca*) and corolla (*co*), × 2; 4, longit. section of male flower showing 2 petals and 3 stamens × 2; 5, female flower showing bract (5), bracteole (6), inner bracteole (7), calyx (8), corolla and staminodial ring (9) and ovary (10), all × 2; 11, longitudinal-section of a young fruit with embryo, × ½; 12, cross-section of a young fruit, × ½; 13, cross-section of ruminate endosperm, × ½; 14, fruit, × ½; 15, 16, 17, 18, cross-sections of the leaf-rhachis at various points from base to top, (the pinnae cut off), × ½; 19, seed, showing two lateral sterile locules and the groove containing the funiculus, × ½; 20, young seedling, cross-section of haustorium and endosperm, × ½; 21, seedling showing remains of yellow integument and pericarp, × ½. 1–10, *Strey* 7373; 11–13, 19, *Strey* 7785; 14, *Garland* in PRE 30368; 15–18, *Strey* 7373; 20–21, *Strey* 7785.

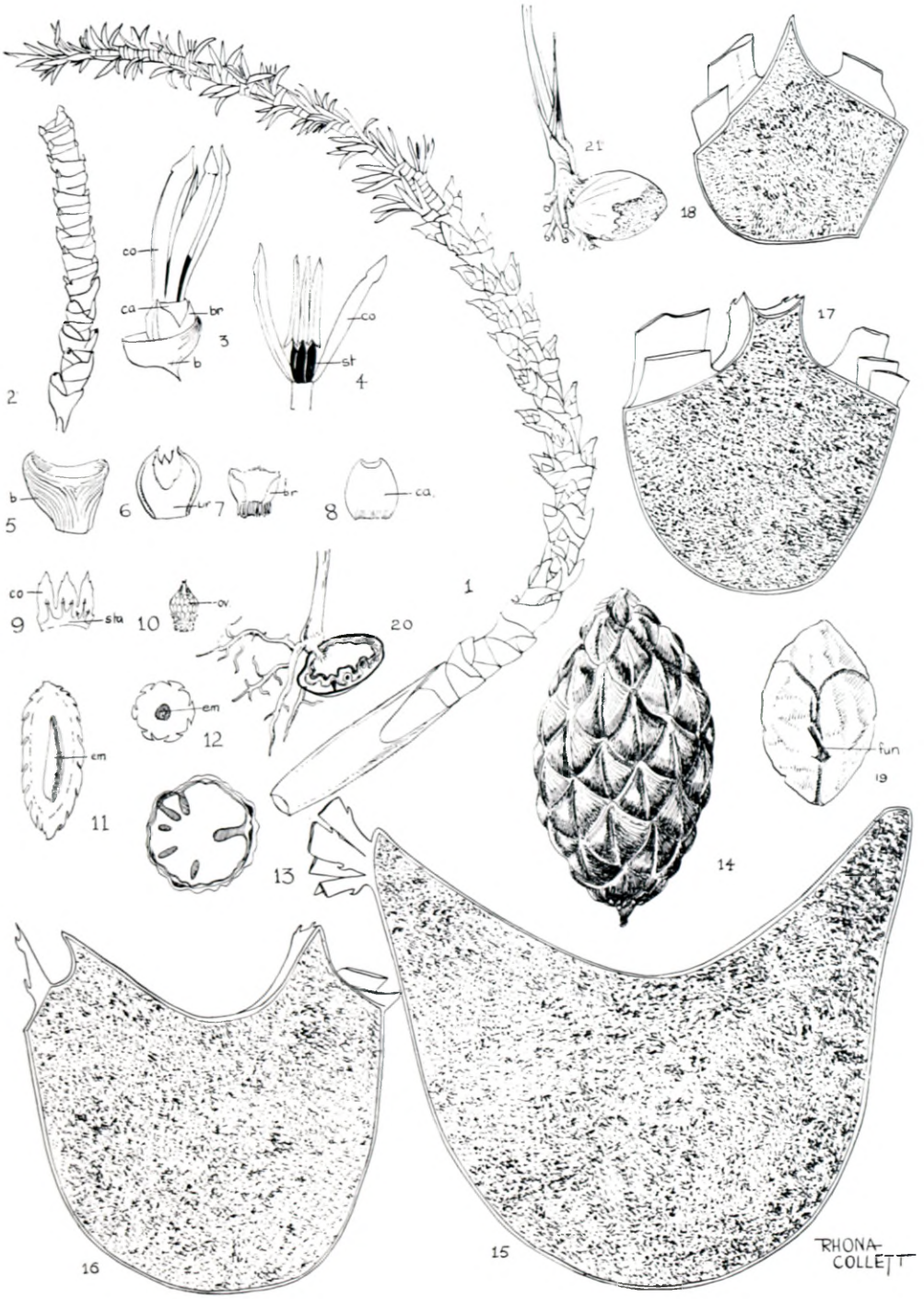
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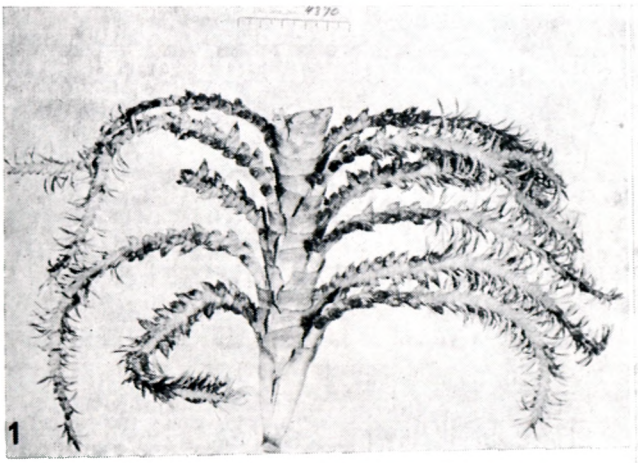
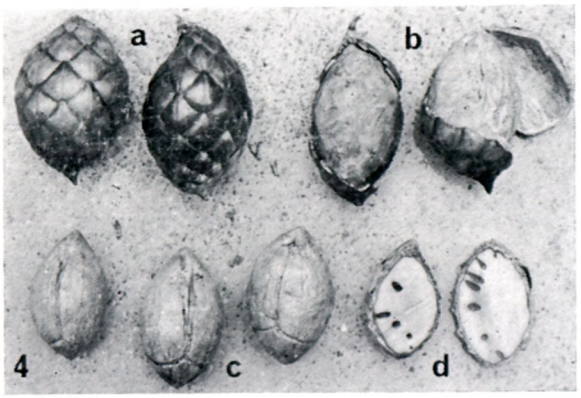
FIG. 1

PLATE 1.—**Raphia australis.** 1, part of flowering inflorescence, branch of second order. Natal Herbarium garden, 30th May 1967 (*Strey* 7493). 2, same as 1, but lower down showing part bearing female flowers and above male. 3, ripe fruit from Mtunzini Grove, 27th February 1967 (*Garland* in PRE 30368). 4a, ripe fruits showing scales; 4b, inner yellow sticky, sweetish integument; 4c, seed showing 2 aborted carpels and funicle in vertical furrow; 4d, seed cut open showing hard endosperm and resinous intrusions, Lake Amanzimnyana, 20th November 1967 (*Strey* 7785 3879); 5, seedlings showing haustorium, root and shoot, from Lake Amanzimnyana. Photos: 1–3, H. J. Schlieben; 4, 5, R.G. Strey.





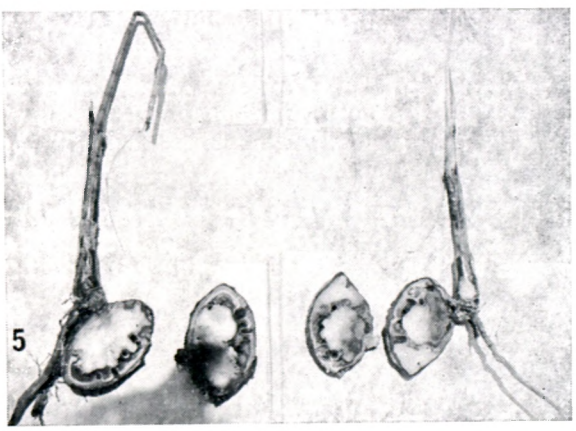


PLATE 1

PLATE 2.—**Raphia australis** in flower in the Natal Herbarium garden Durban, May 1967. Photo: E. J. Moll.

PLATE 3.—Lower part of trunk of palm in Plate 2 with leaf-bases removed to show epigeal roots. March 1967. Photo: R. G. Strey.

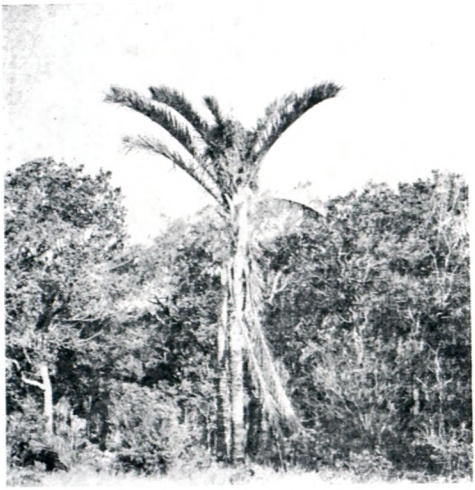


PLATE 4.—Flowering tree at Lake Amanzimnyana near Maputa. October 1967. Photo: B. de Winter.

PLATE 5.—Single leaf of a tree from Lake Amanzimnyana. October 1967. Photo: B. de Winter.

PLATE 6.—Grove of Raphia palms growing on the west side of Lake Amanzimnyana. November 1967. Photo: E. J. Moll.

PLATE 7.—Raft built by the Tongas from the midribs of the Raphia leaves. Sihadhla River. Photo: E. J. Moll.

PLATE 8.—Bus terminal and market place, Maputa, showing communal buildings and stalls made of midribs of Raphia leaves. Photo: E. J. Moll.