

PART XVIII

REVISION OF THE GENERA  
CYCLOCOTYLA STAPF,  
DEWEVRELLA DE WILD. AND OF  
THE AFRICAN SPECIES OF THE  
GENUS MALOUETIA  
A. DC. (APOCYNACEAE)

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## INTRODUCTION

This publication is a monograph of the genera *Cyclocotyla*, *Dewevrella* and of the African species of the genus *Malouetia*. The study is mainly based on herbarium material.

## CYCLOCOTYLA

### HISTORY OF THE GENUS

*Cyclocotyla* was described by STAPF (1908), with the species *C. congolensis*, on a suggestion of DE WILDEMAN. The latter described in 1919 the same species again as *Alafia vermeuleni*. WERNHAM (1914) proposed a second species, *C. oligosperma* as he found only 1 row of ovules in each locule. The present author however found in the specimen studied by WERNHAM, also ovaries with two rows and therefore he agrees with HUBER (1963) who reduced it to a synonym. STAPF gave the following description to explain the name *Cyclocotyla*: The name *Cyclocotyla* is intended to allude to the fleshy shallow cup (*κοτυλή*), formed by the base of the calyx and the widening of the floral axis, and the ring shaped (*κυκλός*) swelling by which it presents self when seen from without.

### RELATIONSHIP TO OTHER GENERA

PICHON (1948) placed *Cyclocotyla* together with *Bousigonia* and *Leuconotis* in the subtribe *Leuconotidinae* of the tribe *Carisseae*, based on the flower similarities as he had not seen the fruits of *Cyclocotyla*. The *Carisseae* are subdivided in 9 subtribes mainly based on seed and fruit characters. According to Pichon (1952) the *Leuconotidinae* are not very consistent, as *Bousigonia* and *Leuconotis* possess no endosperm, the embryo is of the same length as the seed, and the fruit is 1-locular. In *Bousigonia* the seeds are also enveloped by a thin (rudimentary) pulp. The fruit of *Cyclocotyla* is 2-locular, the endosperm is completely surrounding the embryo, and the embryo is much shorter than the seed. In the publication of 1952 PICHON described the fruits and seeds of *Cyclocotyla* (erroneously the endosperm as the embryo, pl.X, fig.6) but he still maintained it in the *Leuconotidinae* for the flower similarities. I agree for the time being although the fruit and seed resemble those of the *Carissinae*.

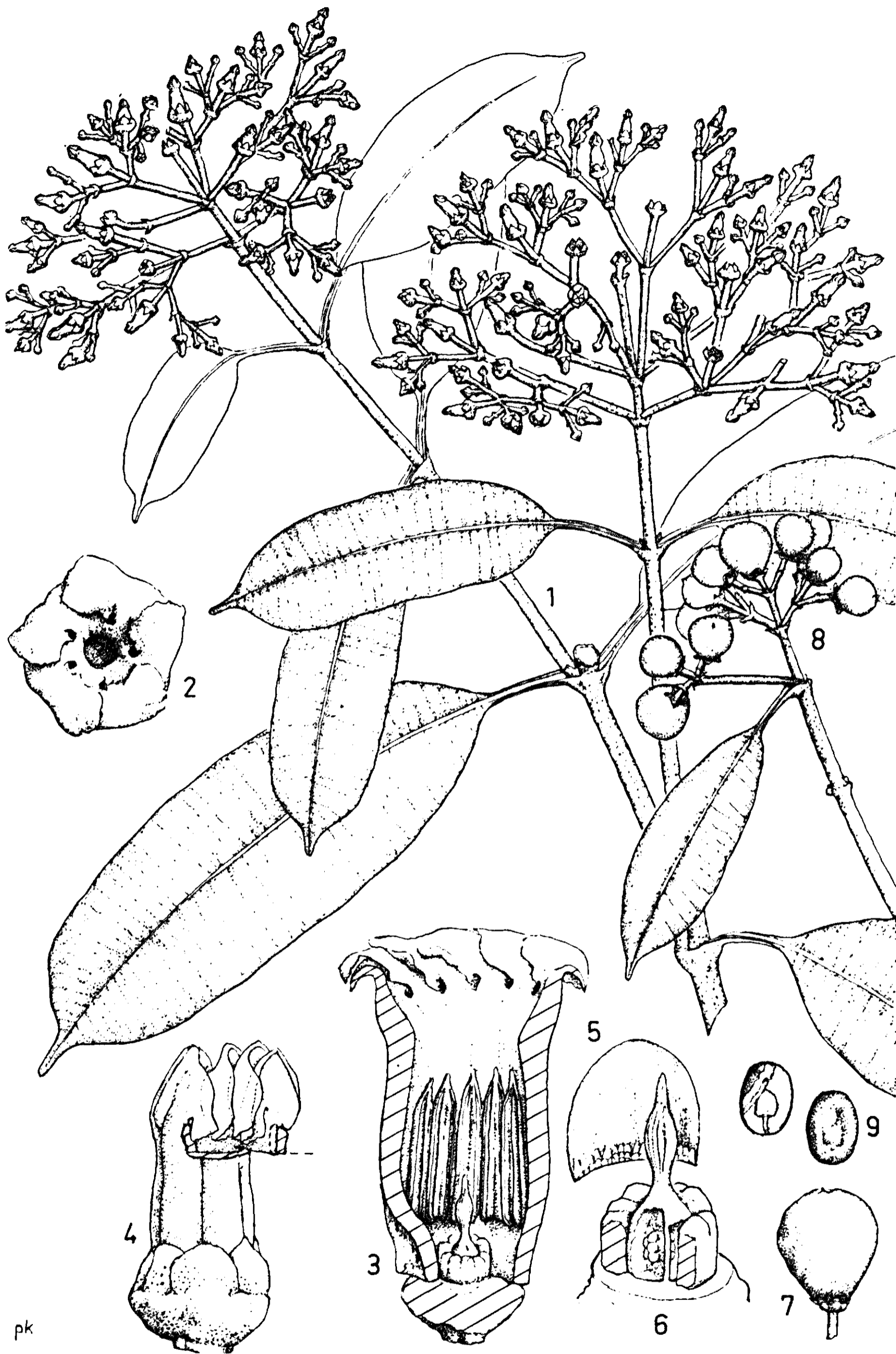


FIG. 1. *Cyclocotyla congolensis* Stapf: 1. flowering branch, 2/3 x; 2. flower, from above, 4 x; 3. opened flower, calyx removed, 4 x; 4. flowerbud, partly opened, 2/3 x; 5. calyx leaf with 2 (3) rows of colleters, 8 x; 6. pistil and discus, 8 x; 7. fruit, 2/3 x; 8. branch with fruits, 2/3 x; 9. seeds, one of them opened, 2/3 x. (1. A. J. M. Leeuwenberg 5080; 2-3, 6. J. Louis 13.786; 4-5. R. Germain 4764; 7 and 9. Tiss 2170; 8. Louis 1348)

## GENUS/SPECIES DIAGNOSIS

*Cyclocotyla* Stapf, Kew Bull. 1908:259; Krause, Nat. Pflanzenfam. Nachträge 4, 4: 244-247. 1915; Pichon, Mém. Mus. Natl. Hist. Nat. Paris nouv. sér. 24: 157. 1948; Pichon, Notul. Syst. 14: 313. 1952.

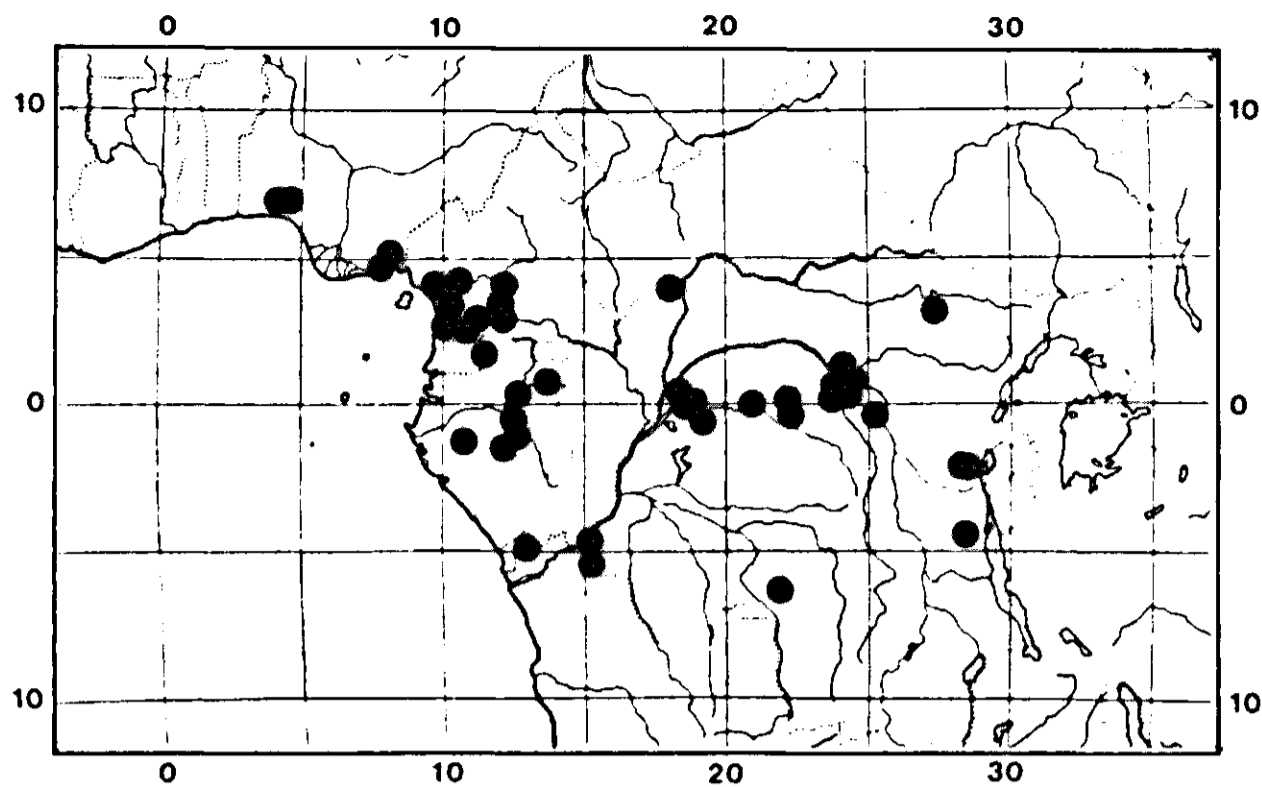
*Cyclocotyla congolensis* Stapf, Kew Bull. 1908:259; De Wildeman, Not. Pl. ut. Congo: 168. 1908; Pichon, Mém. Mus. Natl. Hist. Nat. Paris nouv. sér. 24: 157. 1948; Pichon, Notul. Syst. 14: 313. 1952; Huber, in Fl. W. Trop. Afr. 2nd. ed. 2: 61. 1963. **Fig. 1; Map 1**

Type: Zaire: Eala; Pynaert 1113 (K, holotype; isotype BR)

Heterotypic synonym: *C. oligosperma* Wernham, 1914:28; Hutchinson & Dalziel, 1931:35; Huber, 1963:61. Type: Nigeria: Cross River State: Kwa Ibo River, Mr. and Mrs. Talbot 3052 (BM, holotype; isotype MO).

*Alafia vermeuleni* De Wild., 1919:411; Pichon 1954: 220. Lectotype: Zaire: Bas-Zaire: Sanda, Vermeulen in coll. Gillet 3439 (BR, lectotype); paratype Zaire: Eala, Laurent 1119 (BR, paratype).

A large *liana*, up to 40 m high. *Trunk* 2-5 cm in diameter or more, bark dark brown, exuding copious white sticky latex from the pith and cambial zone; branches, dark brown with numerous pale brown lenticels; branchlets terete glabrous, dull, medium green. *Leaves* opposite, petiolate; petiole 1-2 cm long, glabrous, with 1-3 rows of colleters in the axils; blade coriaceous, narrowly elliptic, sometimes narrowly obovate, 2.5-3 x as long as wide, 7.5-12 (-16) x 2.2-5 cm, at the apex acuminate with an obtuse point, cuneate at the base, glabrous at both sides. *Inflorescences* terminal and in the axils of the apical leaves, occasionally axillary, thyrsoid, lax, apices of the inflorescence and its lateral branches dichasially branched, 3.5-8 x 5.5-12 cm, many flowered, glabrous, pale green; bracts triangular, 1-2 mm long; peduncle 0.7-3.5 cm long; pedicels 1.5-7 mm long. *Flowers* 5-merous, actinomorphic, except for the unequal calyx-lobes. *Calyx* pale green to pale red, urceolate, outside glabrous, carnose; tube cup-shaped, 1.2-2 x 3-3.5 mm, lobes unequal, the larger up to 2 x as wide as the smaller, ovate to broadly ovate or broadly obovate 1-2.5 x as wide as long, 0.6-2 x 1.3-3 mm, free or slightly connate at the base, with a diaphanous margin, inside with 1-3 rows of erect yellow colleters of increasing length from the axis 0.1-0.3 mm long, altogether up to 30 per lobe. *Corolla* white or creamy, wine red or pink with reddish longitudinal stripes at the base, in the mature bud 2.5-3 x as long as the calyx, 8.5-10 mm long, glabrous on both sides; tube nearly cylindrical, 2.2-2.5 x as long as the calyx, 6-9 x 1.5-2.5 mm; lobes 1.9-3 x 3.5-4.5 mm, obliquely ovate, auriculate at the right side, inflexed in the bud, contorted and overlapping to the left, spreading, recurved at the margin. *Stamens* included, inserted 1.5-2 mm from the base of the tube; anthers sessile, yellow, narrowly ovate, 4-5 x 0.6-0.8 mm, acute at the apex, cordate at the base, introrse, completely fertile. *Pistil* 2.5-3.5 mm long; ovary conical, gradually narrowing into the style, 0.7-1 x 1-1.2 x 0.9-1 mm, 2-locular; ovules 2-6 in 1-2 series, axile; style



MAP 1. *Cyclocotyla congolensis* Stapf

thick, very short, 0.3-0.6 mm; pistil head, the basal part (receptive zone?) elliptic with 10 longitudinal ridges, the apical part laterally compressed, bifid in the open flower, 1-1.5 x 0.2-0.3 mm. Disk ring-shaped, covering the ovary, 0.8-1.5 x 1.5-2 mm, shallowly 10-lobed (with 5 bigger lobes alternating with 5 smaller). *Fruit* a berry, pale green, pyriform, smooth, 12-22 x 12-25 mm. *Seed* pale brown, glossy, oblong 11-12 x 8-10 x 2-3 mm; embryo spatulate; cotyledons oblong, 5 x 3.5 mm, rootlet 3 mm long.

**Distribution:** West and Central Africa, from Nigeria to Zaire.

**Ecology:** Primary or secondary forest, often near rivers, at low altitude.

**Local names:** ZAIRE: Libobo (Turumbu); CENTRAL AFRICAN REPUBLIC: Holo Holo and Molo Kalabe (Lisongo).

#### Specimens examined:

**NIGERIA:** Ogun state: Omo sawmills, 50 km ENE of Ijebu Ode, van Meer 726 (WAG); Omo forest res., Onochie FHI 15533 (K); Shasha forest res., Ross 39 (BM,K,S); ibid., Richards 3335, 3357 (BM). Cross River State: Kwa Ibo R., Mr. and Mrs. Talbot 3052 (BM,MO); Oban, Ariwado 680 (MO).

**CAMEROUN:** Ndokononoro, Letouzey 10884 (BR,K,P,WAG); Banga, Daramola 29823 (?); Dimako, Breteler 2159 (BR,P,WAG); Doume, Breteler 683 (BR,LISC,M,P,WAG); between Mase and Anpel, Letouzey 4007 (P,WAG); 12 km W of Songbong, Leeuwenberg 5080 (BR,C,LISC,MO,P,WAG); Bipindi, Zenker 2983 (BR,K,L,MO); Biteye, Bates 13339 (BM,MO); km 16 Ebolowa-Minkok Road, J.J. de Wilde 7958 (WAG); Kienke forest res., 15 km SE of Kribi, Bos 4952 (BR,P,WAG); km 14 Edolowa-Ambam Road, J.J. de Wilde 8495 (WAG); near Mendong, Letouzey 4495 (P,WAG). **CENTRAL AFRICAN REPUBLIC:** Boukoko, Tisserant 287 (BM,BR,P,WAG), 897 (BM,P), 1119 (P), 1355 (BM,BR,P,WAG), 2170 (BM,P,WAG).

**GABON:** Oyem, Le Testu 5-Febr.-1934 (BM,LISC,MO,US); Petsyalongo, Le Testu 8932 (P,WAG); Makokou, Caballe 384, 385 (WAG); Lastoursville, Le Testu 7232 (BM,WAG); Pongui, Le Testu 7428 (BM,BR,WAG); Ngwasso, Le Testu 8336 (BM,P,WAG).

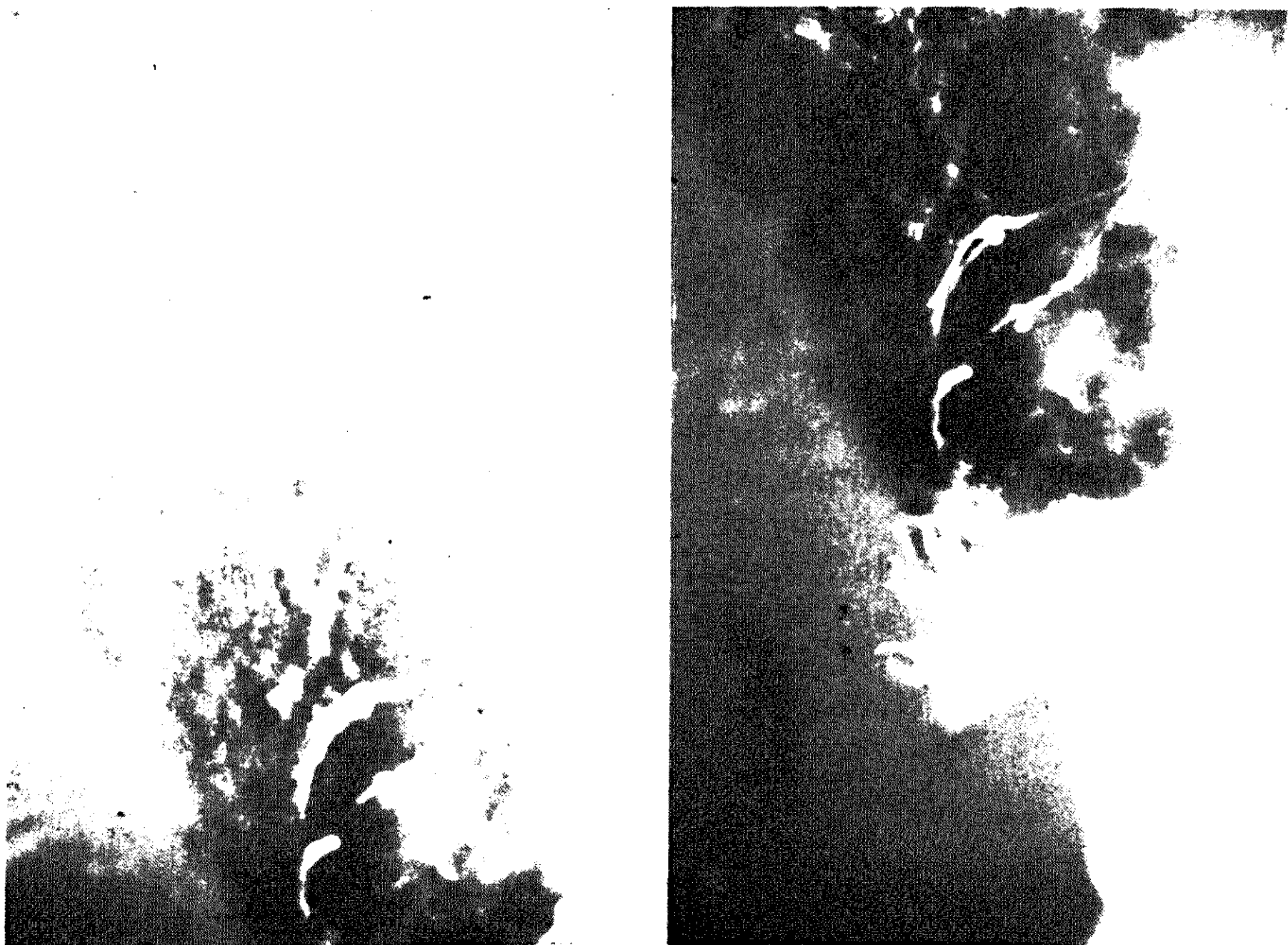
**ZAIRE:** Equateur: Lulonga, Evrard 6003 (BR); Djolu, Evrard 5763 (BR); Djoa, Evrard 5025 (BR,K); Lolengi, Evrard 3520 (BR,WAG); Bantoie, Cousteaux 24 (BR,P,WAG); Bandaka-Nkole (= Mbandaka), Flamigni 130 (BR); Eala, Pynaert 1113 (BR,K), 1634 (BR); ibid., Laurent 1119

(BR); *ibid.*, Leemans 502 (BR,P,WAG); Mondombe, Jespersen nov.1907 (BR); Bolengambi, Evrard 6104 (BR,K). Haut Zaire: Rungu, Seret 5 (BR); Mogandjo, Germain 4764 (BR,P); Ligasa-Mangala, Evrard 2235 (BR,M,K); Yangambi, Louis 5849 (BM,BR,K,P), 7017 (BR,MO,M,W), 8963 (BR,MO), 9158 (BM,BR,C,K,P), 13022 (BR,K), 13027 (BM,BR), 13786 (BR,C,P), 13910 (BR,K,MO,M), 16569 (BR); *ibid.*, Leonard 1060 (BR,K); *ibid.*, Menavanza 123 (BR); Yabahondo, Germain 8732 (BR); Yaosayo, Germain 4872 (BR,M,P,WAG); Ubundu, Lisowski 48096 (BR). Kivu: Kabenga, Pierlot 3314 (BR,WAG); Mingazi, Leonard 4057 (BR,P,WAG); Bunyakiri, Gutzwiller 2259 (BR), 3776 (BR). Banbundu: Madibi, Sapin 16-June-1906 (BR), Mai 1907 (BR); *ibid.*, Bouquet 1790 (P). Bas-Zaire: Sanda, Gillet 3439 (BR, lectotype); Kindamba, Bouquet 501 (P); Madimba, Breyne 3777 (BR). Kasai Occidental: Ndekesha, Liben 3378 (BR,P).

## DEWEVRELLA

### POLLINATION

In the spirit collection of Brussels there is a collection of *Dewevrella* flowers (*Louis 12857*). In co-operation with J.G. VAN DE VOOREN, we studied this naturally pollinated material. We used the u.v. fluorescence method as described by KHO and BAER (1968). On phot. 1 and 2, we can see that the pollen tube enters the pistil head well below the stigmoid apex. So in fact the receptive zone of the pistil head is at the base of the pistil head, as with numerous other *Apocynaceae* (SCHICK, 1980).



PHOT. 1 and Phot. 2: Pistil head of *D. cochliostema* De Wild. (*Louis 12857*, Phot. J.G. van de Vooren).



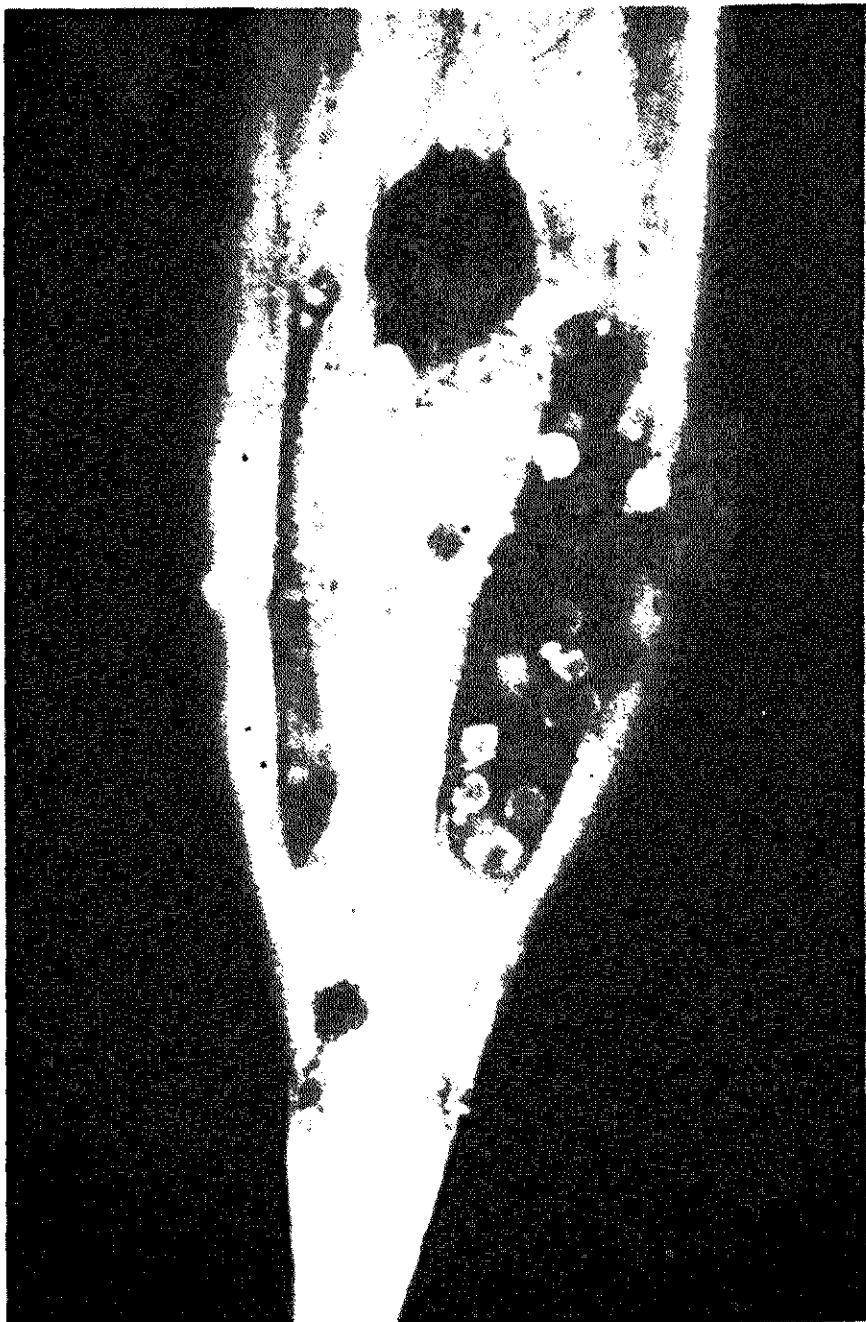
## RELATIONSHIP TO OTHER GENERA

PICHON (1950) located *Dewevrella* in the *Nerieae*, in the subtribe *Neriinae* (which PICHON calls *Amphineuriinae*). I (VAN DER PLOEG 1983 earlier discussed this subtribe, see later in this publication with *Malouetia*. PICHON placed *Dewevrella* in the *Nerieae* because of the brush-like structure of the retinacle (the organ by which the anthers adhere to the pistil head). The present author however observed that the stamens adhere to the pistil head at two places, at the basal part of the pistil head by the brush-like structure (photo 3), and above by a



PHOT. 3. The basal part of the pistil head of *D. cochliostema* De Wild. (*Louis 12857*, Phot. J.G. van de Vooren).

flattened part at the base of the fertile part of the anther (photo 4). The stamens of *Parsonsia* (Fig. 2) resemble much those of *Dewevrella* although the lower brush structure is not cohering with the pistil, but it is more functioning as a scraper (SCHICK, 1980). In *Parsonsia* some species possess the same twisted stamens as in *Dewevrella*, and as there is absolutely no other similarity between *Dewevrella* and any other genus of the *Nerieae*, I place this genus next to *Parsonsia* in the subtribe *Parsonsiinae* of the tribe *Echiteae*.



PHOT. 4. The fertile part of the anther of *D. cochliostema* De Wild. (*Louis 12857*, Phot. *J.G. van de Vooren*).

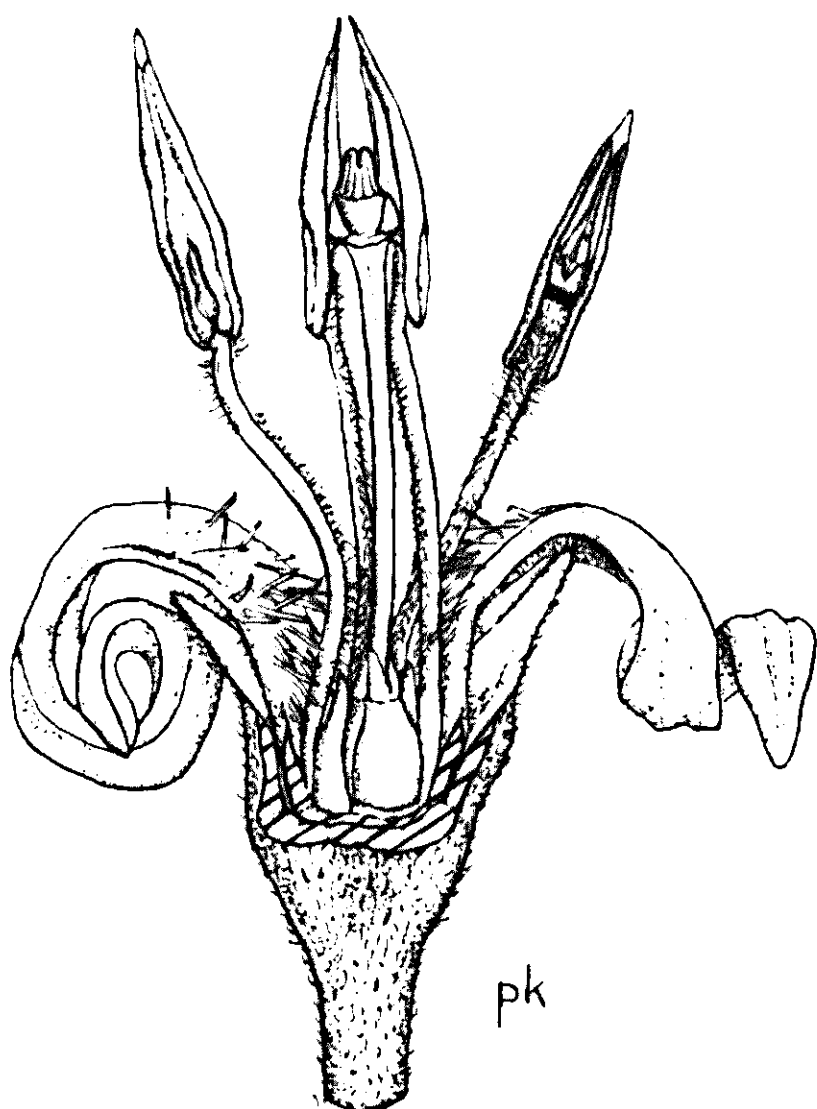


FIG. 2. *Parsonsia eucalyptophylla* F. v. Muell: opened flower, 9 x; (L. Durrington J. Calway 000646, Queensland).





FIG. 3. *Dewevrella cochliostema* De Wild.: 1. flowering branch, 2/3 x; 2. leaf axil with stipulae, 6 x; 3. flower, 10 x; 4. part of flower, discus visible, 20 x; 5. pistil, pistilhead and three stamens, 16 x; 6. fruit, 2/3 x; 8. detail seed and embryo, 4/3 x. (1-2. *J. Louis* 5540; 3-5. *J. Louis* 12857; 6-8. *J. Louis* 2103)

## GENUS/SPECIES DIAGNOSIS

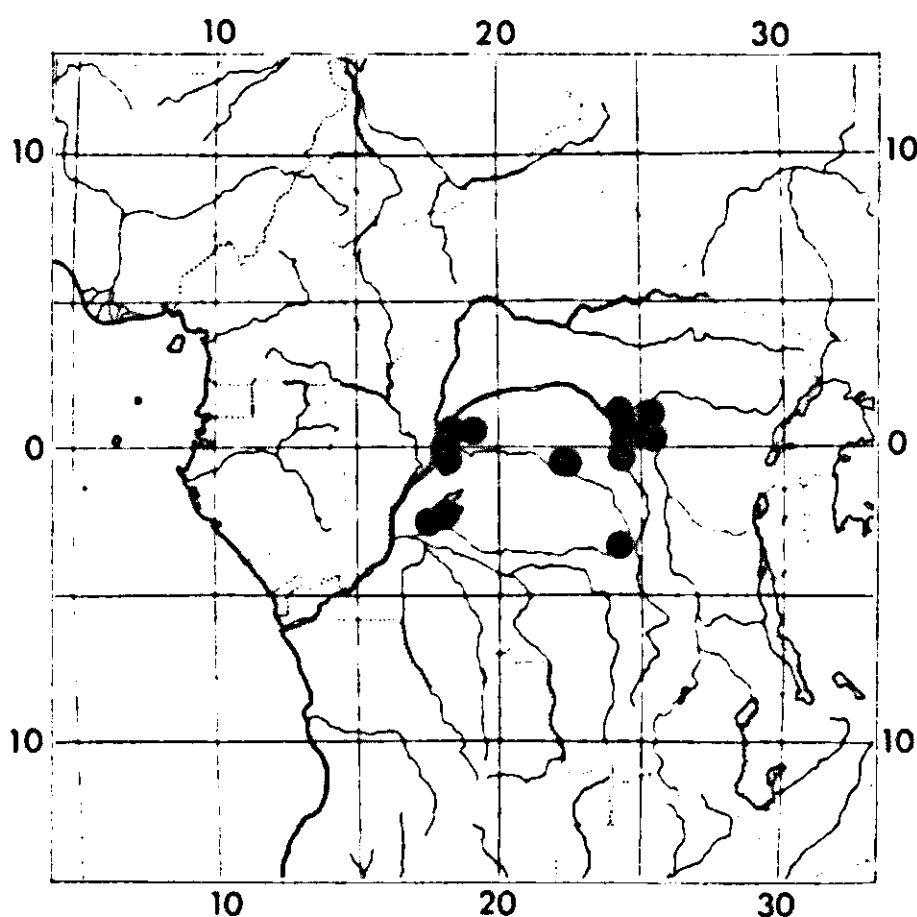
**Dewevrella** De Wild., Miss. E. Laurent 1: 548. 1907; Krause, Pflanzenfam. nachträge 4, zum 2-4: 246, fig.16. 1915; Pichon, Mém. Mus. Natl. Nat. nouv. sér. B: 57, pl.V(1). 1950.

**Dewevrella cochliostema** De Wild., Miss, E Laurent 1: 549, 2: pl. CLXIV + CLXV. 1907; De Wild., Not. pl. util. ou inter. 2: 250. 1908. **Fig. 3; Map 2**

Twining *liana* 4-20 m high, sometimes sarmentose *shrub*; latex white. *Trunk* at least 4-5 mm, peeling bark, dark brown to black, densely lenticellate. *Branches* brown, lenticellate; branchlets green, terete, pubescent in two lines of upcurved brown hairs above the petioles. *Leaves* decussate and those of a pair equal, petio- late; petiole 1.5-4 mm long, grooved, appressed-pubescent above, glabrous be- neath, in the axils 1 row of 3 colleters, the outer ones simple 0.3-0.4 x 0.1-0.2 mm, the middle one entire or irregularly lobed, 0.5-0.6 x 0.2-0.4 mm; blade when dry papery, when young purple-brown, ovate, elliptic or narrowly so, 2-4.6 x as long as wide, 3.5-7.0 x 0.8-2.2 cm, cuneate or rounded at the base, acuminate at the apex, ciliate with a few hairs near the base and apex, above pubescent on the costa (the same indumentum as the petiole), gradually diminishing to- wards the apex, glabrous beneath; venation not very conspicuous, 1 pair of sec- ondary veins from above the base curved along the margin and a second pair of secondary veins from the base curved along the margin up to about 1/3 of the length of the blade. *Inflorescences* thyrsoid, axillary and terminal, 3.5-8.5 x 2-4 cm, many flowered, with the same indumentum as the branchlets; bracts ovate, 0.6-1.0 x 0.3-0.3 mm, the basal pubescent outside and with some hairs inside, with 3 colleters (as in the leaf axils), the upper ones glabrous on both sides, with only the simple colleters, which are about 1/3 of the size of the bracts; peduncle 0.3-1.4 cm long; pedicels 2.2-4 mm long, pilose or glabrous. Flowers 5-merous, actinomorphic. *Calyx* red or red-brown, green at the base; tube cup- shaped, 0.3-0.5 x 0.6-0.9 mm; lobes ovate, 1-1.75 x as long as wide, 0.5-0.7 x 0.4-0.5 mm, glabrous on both sides, without colleters, entire, ciliate, imbricate in bud. *Corolla* white, in bud purple-brown and at the base green, in the mature bud 3-4 x as long as the calyx, 2.8-3.3 mm long, glabrous on both sides; tube subcampanulate, 0.45-0.8 x as long as the calyx lobes, 0.3-0.5 mm long, 0.5-0.6 mm wide at the base and 0.6-1.0 mm at the mouth; lobes nearly linear, 2.8-4 mm long, at the base 0.5-0.6 mm, at about 1/3 of the length from the base 0.35-0.5 mm, at about 2/3 0.4-0.6 mm wide recurved, the recurved part slightly boat- shaped, acute at the apex, in bud the basal part (about 1/3 of the length) valvate, the apical part contorted and overlapping to the right. *Stamens* well exerted, inserted at 0.1-0.2 mm from the base of the corolla tube, filaments twisted ar- ound the style, to the left for 2/3 of the lower part (with 1-1.5 turn) and from there after a transitional zone twisted to the right (also with 1-1.5 turn and there- fore tighter), the apical part of the filament inside pilose to pubescent grading into the pubescence at the anther base, 2-3 x 0.05-0.1 mm; anthers white, with

a yellow acumen, connivent into a cone, narrowly oblong, 1.1-1.3 x 0.2 mm, acuminate at the sterile apex (sterile part 0.2-0.3 mm), fertile from there for 0.4-0.5 mm, introrse; the connective near the base of the fertile part flattened, glabrous, and there coherent with the apex of the pistil head, below that point glabrous for 0.2 mm long, and basally with short erect hairs coherent to the base of the pistil head; cells 2, parallel, discrete, dehiscent throughout with a longitudinal slit. Disk consisting of 3 free ovate, 0.16-0.25 x 0.16-0.25 mm and 1 bilobed broadly ovate, 0.16-0.25 x 0.5-0.7 mm glands, covering the ovary. *Pistil* 2.5-3.3 mm long; ovary subglobose, 0.3-0.4 x 0.4-0.5 x 0.3-0.4 mm, composed of two free carpels, united just below the apices by the style, pilose at the apex; in each carpel 4-5 series of 2-3 ovules; style 2-3 mm long, consisting of 2 connate strands, sometimes split at the base for 0.2-0.3 mm; pistil head fusiform, 0.6-0.7 x 0.2 mm, bifid for 0.1 mm, sometimes split at the base, coherent with the connective at 2 places. *Fruit* composed of two follicles, being connate at the base; follicles 8.5-14.5 x 0.2-0.3 cm, tapering towards the apex, obtuse at the tip, dehiscent throughout by a longitudinal slit at the adaxial side, many seeded; wall papery; placenta detaching from the carpel. *Seed* fusiform, 1.0-1.2 x 0.15 cm, with an apical coma directed towards the apex of the carpel, laterally compressed towards the apex and the base, hilum raised; coma 3-3.5 cm long, spreading, hairs simple; micropyle apical, endosperm fleshy, surrounding the embryo; embryo fleshy; cotyledons oblong, 7.5-8 x 1.3 mm; rootlet 2.5 x 0.5 mm.

**Distribution:** Zaire. **Uses:** The Turumbus, when they are hunting, wear a twig around the middle as a talisman.



MAP 2. *Dewevrella cochliostema* De Wild.

### Specimens examined:

ZAIRE: Equateur: Bombimba, Laurent 1161 (BR, paratype); Coquilhatville (= Mbandaka), Dewevre 587 (BR), 655a (BR); Eala, Corbisier Baland 1894 (BR,K); *ibid.*, Couteaux 384 (BR,K); *ibid.*, Lebrun 6791 (BR,P,WAG), 6523 (BR,WAG); *ibid.*, Leemans 538 (BR,P); *ibid.*, Pynaert 398 (BR, paratype), 594 (BR,paratype), 733 (BR, lectotype; isotype: BR), 1119 (BR, paratype), 1674 (BR); *ibid.*, Robyns 604 (BR); *ibid.*, Staner 924 (BR,K), 1343 (BR), 1589 (BR,K); *ibid.*, Laurent 1078 (BR); Bolombo, Lebrun 542 (BR), 956 (BR,K,MO); Lolifa, Louis 2013 (BR); Ikua, Hulstaert 655 (BR); Mondombe, Jespersen 72 (BR); Bokota, Evrard 5645 (BR,K). Haut Zaire: Bakuti, Lisowski 18259 (BR,K); Yambuya, Louis 7665 (BR); Yambao, Louis 8828 (BR); Bengamisa, Lisowski 44393 (BR); Yangambi, Louis 1595 (BR), 2232 (BR,P), 2724 (K,L,MO,P), 5540 (BR,P), 5586 (BR,K,P), 6075 (K), 6455 (BR,K,P), 8287 (BR), 9239 (BR,MO), 12782 (BR,K,P), 12857 (BR,BM), 13309 (BR), 13871 (BR), 15579 (BR,MO), *ibid.*, Bolema 804 (BR,WAG); Kisangani, Lisowski 17416 (BR); Opala, Lisowsky 43319 (BR). Bandundu: Bambula, Lebrun 6523 (BR,WAG); Nioki, Goossens 6075 (BR). Kasai Oriental: Katoko Kombe, Claessens 367 (BR).

## EXCLUDED SPECIES

*D. congensis* Wernham, Journ. Bot. 58: 80.1920 = *Secumone dewevrei* De Wild. (Asclepiadaceae).

## MALOUETIA

### RELATIONSHIP TO OTHER GENERA

PICHON (1950) proposed in the *Nerieae* 9 subtribes, in several publications of the Series of revisions of the *Apocynaceae* (editor A.J.M. LEEUWENBERG), part I – XIV, this subdivision was discussed. These publications show that the subdivision does not reflect the close relationship between many genera in the *Nerieae*. BEENTJE (1982) placed together *Strophanthus*, *Nerium*, *Adenium*, *Wrightia* and *Pleioceras*, BARINK (1984) added *Stephanostema*. PLAIZIER (1980) indicated also a relationship between *Pachypodium* and *Adenium*.

The present author would propose to place together the genera *Malouetia*, *Allowoodsonia*, *Mascarenhasia*, *Kibatalia* and *Funtumia* as a second group. The genera *Malouea* and *Allowoodsonia* lack a distinct coma. In *Malouetia* a pilose pubescence at the apex and base of the seed occurs. RUDJIMAN, studying the Asian material of the *Nerieae*, observed that *Allowoodsonia* also lacks a coma (personal communication). In *Mascarenhasia* a deciduous basal coma (only present in the fruit) occurs, the same as with other genera e.g. *Strophanthus*, *Isonema* and *Adenium*. This second group here proposed is characterised by the position and shape of the flowers and the habit of the tree (model of KWAN-KORIBA) and the presence of domatia in the leaves.

## GENUS DIAGNOSIS

**Malouetia** A.DC., in DC., Prodr. 8: 378. 1844.; Woodson, Ann. Missouri. Bot. Gard. 22: 238. 1935.; Pichon, Mém. Mus. Natl. Hist. Nat. nouv. sér. Bot. 1: 76. 1950; Van der Ploeg, Bull. Jard. Nat. Belg. 54: 284-288. 1984.  
*Malouetiella* Pichon Bull. Jard. Bot. Etat. Brux. 22: 131. 1952.

Tree or *shrub* with white latex. *Branches* spreading. *Leaves* petiolate; petiole glabrous; blade elliptic, cuneate at the base or decurrent into the petiole, at the apex acuminate with an obtuse or acute point, glabrous on both sides with beneath in the axils of the main veins domatia consisting of pits with a glabrous or ciliate margin, costa and secondary veins prominent and distinct beneath. *Inflorescences* lax to congested, much shorter than the leaves, terminal seemingly axillary, as it is later overtopped by one or two axillary branches (model of KORIBA); 1-15 flowered; bracts ovate. Flowers fleshy. Calyx tube cup-shaped, lobes imbricate, ovate to broadly ovate; colleters alternating with the calyx lobes, in 5 groups. *Corolla* white; tube consisting of a basal cylindrical part (more or less inflated) below the insertion of the stamens, and a upper cup-shaped or conical part, with a thick throath (*M. mildbraedii*), or with a swollen ring with 10 spongy appendages 2 behind each stamen, (when dry membranaceous), in the species with an inflated tube (*M. bequaertiana* and *M. barbata*) with thick prominent filament ridges; lobes spreading, overlapping to the right, the indumentum consisting of turgid cells. *Stamens* included or exserted, inserted at the base of the cup-shaped or conical part, filaments outside very short, partly adnate to the sterile tails; anthers narrowly triangular; acuminate at the sterile apex, from there fertile for 1/3 to 1/2 of the length, with sterile tails partly adnate to the filament. Disk none or 5-lobed, lobed to 1/3 to 1/1 of the height. *Pistil*: ovary subglobose, up to the height of the disk glabrous; pistil head fusiform, with the obconical basal part minutely pubescent, and at the base of the conical upper part coherent with the anthers, from there the apical exudate zone and the stigmoid bifid apex. *Fruit* composed of two follicles, which are connate at the base, divergent at an angle of 30-130, cylindrical, tapering towards the apex, falcate, opening with a longitudinal slit at the adaxial side. *Seed* obliquely fusiform, grooved at the hilar side, at the base and apex pilose.

## KEY TO THE SPECIES

1. Stamens included; leaves beneath with domatia consisting of pits with a ciliate margin; corolla tube 4.5-5.5 mm long; anthers 2-3 mm long, outside pilose; ovules: 2 series of 2-3 . . . . . **4. M. mildbraedii**  
Stamens exserted; leaves beneath with domatia consisting of pits with a glabrous margin; corolla tube at least 12 mm long; anthers at least 3 mm long, outside glabrous; ovules in 4-6 series . . . . . 2

2. Corolla tube 30-38 mm long; slightly inflated, with prominent filament ridges below; stamens with two pubescent lines on the filaments and connectives uniting at the top; anthers 5-5.3 mm long; ovules: 6 series of 8-9 . . . **1. M. barbata**  
Corolla tube 12-20 mm long . . . . . 3
3. Corolla tube cylindrical; corolla lobes 6-8 x 3.2-5 mm, basally up to 1/3 of the length pubescent; anthers 3-3.3 mm long; ovules: 4 series of 2-5 . . . . . **3. M. heudelotii**  
Corolla tube flask-shaped; corolla lobes 8-17 x 5-10 mm, basally up to 2/3 of the length pubescent; anthers 3.5-4 mm long; ovules: 4-5 series of 5-8 . . . . . **2. M. bequaertiana**

## SPECIES DESCRIPTIONS

**1. Malouetia barbata** Van der Ploeg, Bull. Jard. Bot. Nat. Belg. 54: 285. 1984.

**Fig. 4; Map 3**

Type: Cameroun: Kribi, S. bank of Lobe R., (fl., fr. Jan.) Bos 3690 (holotype WAG; isotypes (partly distributed as *M. bequaertiana*): BR, C, FHI, K, LD, LISC, LMA, MO, P, PRE, UPS, YA)

*Shrub* up to 3 m high. Bark dirty grey to brown, with white latex. *Branches* dark brown; branchlets terete glabrous. *Leaves* petiolate; petiole 3-6 mm long, glabrous with colleters in the axils, with two larger (1 mm) outer ones; blade thinly leathery, 2-3 x as long as wide, 6.7- 18.2 x 2.2-6.7 cm, cuneate at the base, acuminate with an acute point at the apex, beneath in the axils of the main veins domatia consisting of small round pits with a glabrous margin. *Inflorescences* 5-8 x 4-10 cm, 1-4 flowered; bracts ovate with a colleter at each side; peduncle 2-3 mm, glabrous; pedicel green-white, glabrous. Flowers fleshy. *Calyx* pale green, glabrous; tube 1 x 3 mm; lobes ovate, 1.7-2 x as long as wide, 3-3.6 x 1.7-1.8 mm; colleters 0.5-0.8 x 0.2-0.26. *Corolla* white with greenish-white tube, in the mature bud 13-18 x as long as the calyx lobes, 4.5-5.6 cm long; tube 3-3.8 cm long, consisting of a long almost cylindrical part, 2.7-3.6 cm long, 2-2.5 mm wide at the base, slightly inflated and 3.5-4.5 mm wide at about 1/5 of the length from the base, 2-2.3 mm wide at the constriction below the insertion of the stamens, and a cup-shaped upper part 2.5 mm long; inside in the cylindrical part basally glabrous, apically for 10-14.5 mm with long white stiff recurved hairs, especially on the filament ridges, up to just below the glabrous cup-shaped part, and there sparsely pilose on the filament ridges. Lobes united for 2 mm, free part oblong, 12-17 x 6-8 mm, acute at the apex. *Stamens* orange-yellow to yellow-brown, exerted for 2.5-3 mm, inserted at the base of the cup-shaped part; filaments 0.1 mm, at each side with a pubescent line uniting (with the other) ventrally at the connective and there coherent with the Pistil head; anthers narrowly triangular, 5-5.3 x 1.2-1.4 mm, apex sterile (for 0.4-0.6 mm), fertile from there for 1.7-2 mm, tails adnate to the filament for 0.8-1 mm, free at the base for 0.8-1 mm, dorsally glabrous. Disk 1.1-1.3 mm high, lobed for 1/3-1/2 of the height.



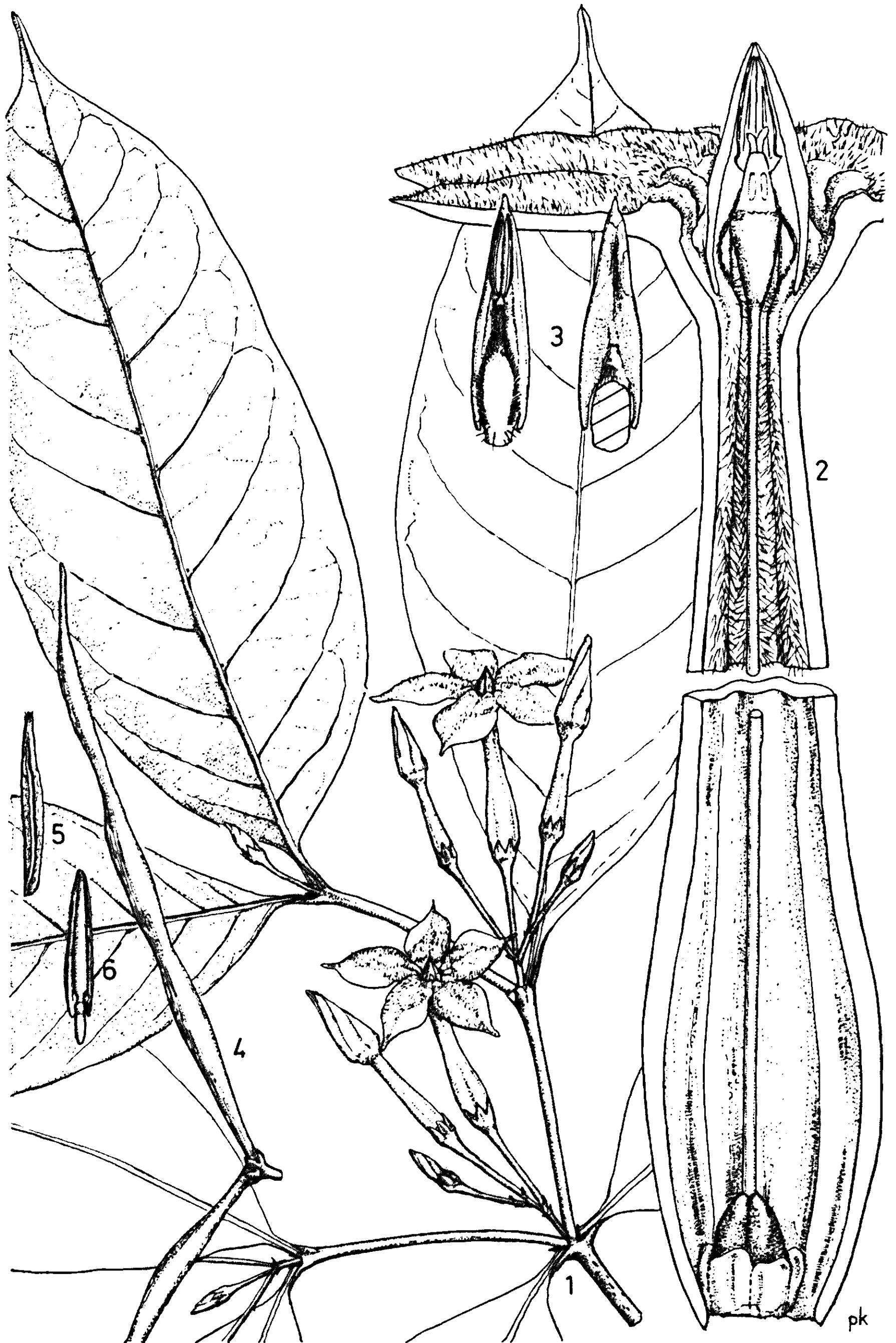
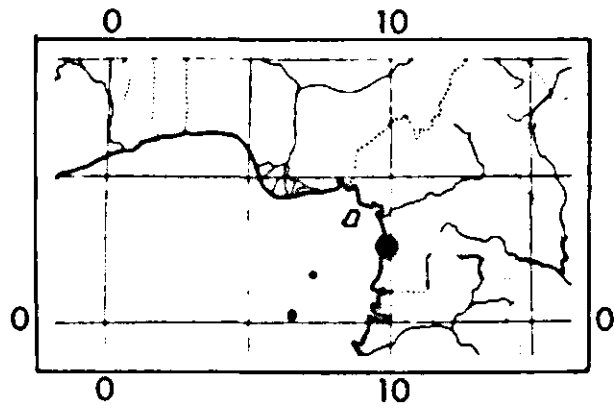


FIG. 4. *Malouetia barbata* Van der Ploeg: 1. flowering branch, 2/3 x; 2. section of flower, tube with middle section removed, 6 x; 3. stamen, left adaxial side, right abaxial side, 6 x; 4. fruit, 2/3 x; 5. seed as it is placed in the nearby carpel (with rootlet at top), 2/3 x; 6. embryo with rootlet at base, 2/3 x. (1-6 Bos 3690).



MAP 3. *Malouetia barbata* Van der Ploeg

*Pistil* 3.1-4.0 cm; ovary subglobose, 2-3 x 1.2-1.8 x 0.6-1.3 mm, minutely pubescent above disk, glabrous at the apex; in each carpel 6 series of 8-9 ovules; style 2.3-3.3 cm long; pistil head fusiform, 3.3-3.6 x 0.8 mm, with the obconical basal part 2-2.6 mm long and minutely pubescent, at the base of the conical upper part coherent with the anther (for 0.8 mm), with from there the apical exudate zone (for 0.5 mm) and the bifid stigmoid apex (0.5 mm). *Fruit*: follicles 12 x 0.5 cm. *Seed* pilose at the rounded base and at the tapering apex, embryo fleshy, cotyledons folded, 1.5 cm long; rootlet 4.5 x 1 mm.

**Distribution:** Only known from two collections near Kribi, Cameroun.

**Ecology:** Periodically inundated riverine forest. Alt. low. Flowering in Jan. and Febr..

**Paratype:**

Cameroun: Kribi, S. bank of Kienke R., (fl. Febr.) Bos 6436 (BR,K,LMA,M,MO,P,YA,WAG).

**2. *Malouetia bequaertiana*** Woodson, Philipp. Journ. Sci. 60: 208. 1936; Pichon, Bull. Jard. Bot. Etat. Brux. 22: 125.1952; Van der Ploeg Jard. Bot. Nat. Belg. 54:288. 1984. Type: Zaire, Stanleyville (= Kisangani), Bequaert 6967 (BR, holotype; isotype:K). **Fig. 5; Map 4**

Heterotypic synonym: *Malouetia brachyloba* Pichon, Bull. Jard. Bot. Etat. Brux. ,2: 129. 1951. Type: Zaire: Yangambi, Louis 3001 (BR, holotype; isotype:K).

*Shrub* or *small tree* up to 7 m high, *trunk* 8 cm in diameter, bark black, thin, minutely lenticellate; latex white. *Branchlets* terete, glabrous. *Leaves* petiolate, petiole 3-6 mm, colleters in the axils, with two larger outer ones, glabrous; blade elliptic, 1.8-3.6 x as long as wide, 5.5-17.5 x 1.5-8.5 cm, cuneate at the base or decurrent into the petiole, at the apex acuminate with an acute or obtuse point, glabrous on both sides, beneath with domatia consisting of round pits with a glabrous margin; secondary veins 6-9 on each side. *Inflorescences* 3.8-4.5 x 2.5-5 cm, 1-15 flowered; bracts broadly ovate 1-1.3 x 1-1.3 mm, peduncle 2-5 mm long, glabrous. pedicel 9-17 mm long, glabrous. Flowers fleshy. *Calyx* tube cup-shaped 1-1.3 x 3-3.5 mm; lobes broadly ovate, 0.8-1.3 x as long as wide, 1.5-2.6 x 1.5-2.6 mm, equal or rarely unequal, glabrous on both sides, ciliate; colleters simple, bi- or trilobed (0.2-0.6 x 0.3-0.5 mm). *Corolla* white, greenish in bud, in the mature bud 8-12 x as long as the calyx lobes, 22-26 mm long;

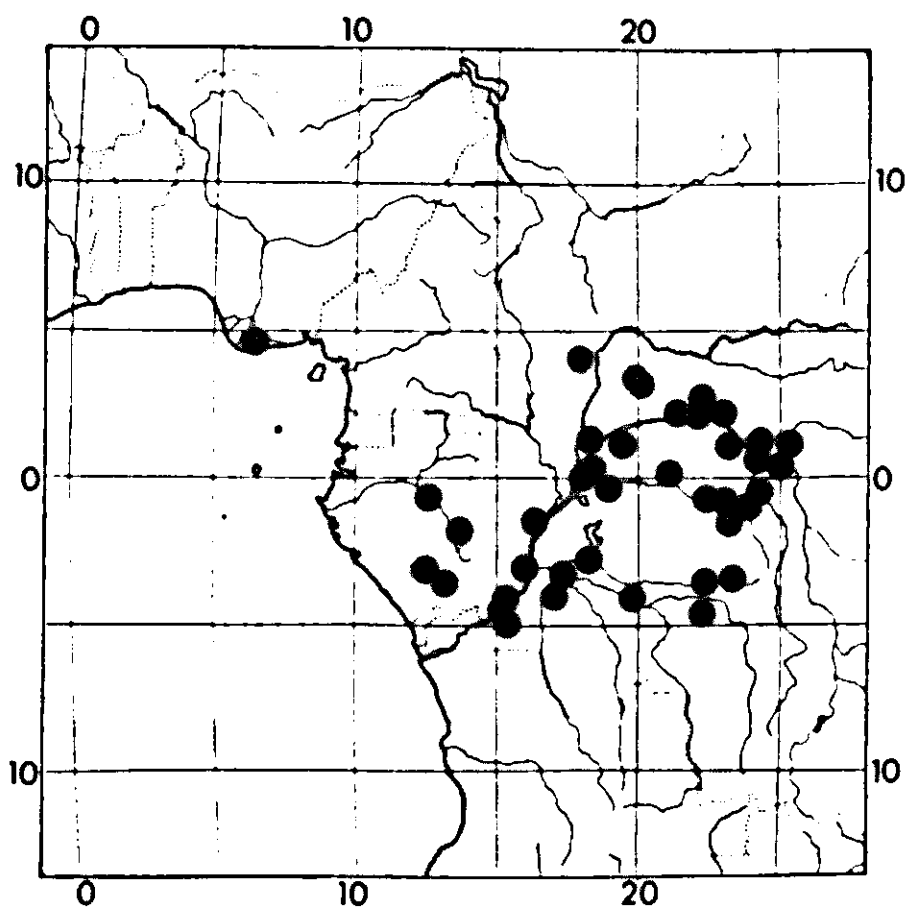


FIG. 5. *Malouetia bequaertiana* Woodson: 1. flowering branch, 2/3 x; 2. flower from above, 2 x; 3. flower, 2 x; 4. section of flower, section of style removed, 2 x; 5. fruit, 2/3 x; 6. seed, 2/3 x. (1. *Le Testu* 8.087; 2-4. *Casier* 283; 5. *Pauwels* 5528; 6. *Breyne* 3441).

tube 12-18.5 mm long, consisting of a flask-shaped part, 11-16 mm long, 1.8-2.5 mm wide at the base, 3-5 mm wide at the inflated part at about 1/4 of the length from the base, and a cup-shaped upper part 1-1.5 mm long and 1.5-2 mm wide at the constriction, 1.5-2.6 mm wide at the mouth; mouth fleshy with 10 (5 x 2) spongy appendages behind the *Stamens* (0.5-0.6 x 0.5-0.6 x 0.4- 0.5 mm), outside glabrous, inside basally glabrous with in the inflated part prominent filament ridges, below the constriction long white recurved hairs for 2-5 mm, especially on the filament ridges, the cup-shaped part glabrous; lobes ovate 8-17 x 5-10 mm, acute at the apex, villose to pubescent with ordinary and (near the margin ) some glandular hairs. Stamens exerted for 2.7-4 mm, inserted at the base of the cup-shaped part; filaments 0.1-0.2 mm outside; anthers narrowly triangular, 3.5-4 x 1.1-1.3 mm, apex sterile (for 0.1-0.3 mm), fertile from there for 1.3-2 mm, glabrous part 0.2 mm, minutely pubescent at the base (for 0.5-0.6 mm) and there coherent with the pistil head, sagitate at the base, (free tails 0.4-0.6 mm), dorsally glabrous. Disk 0.6-1.3 mm high, lobed for 1/3-1/2 (-1) of the height. *Pistil* 12-19 mm long; ovary subglobose (See Note), 2-3.3 x 1.5-1.6 x 1.1-1.3 mm, minutely pubescent above, in each carpel 4-5 series of 5-8 ovules; style 8-13 mm long, glabrous; pistil head fusiform 1.6-2 x 0.6-0.7 mm, at the base for 0.3-0.6 mm minutely pubescent, for 0.5-0.6 mm coherent with the anthers, exudate zone 0.3-0.4 mm, apex stigmoid, bifid 0.2-0.3 mm long. *Fruit*: follicles 16-23 x 0.5-0.7 cm. *Seed* 23-35 x 3.5 mm; embryo 20-30 mm long, cotyledons folded.

Note: PICHON (1952) observed that in 'Louis 14.778' the ovary is tapering into the style; we observed the same in Louis 8005.

Distribution: Nigeria, Gabon, Central African Republic and Zaire.  
Ecology: Riverine forest. Altitude 0 – 500 m.



MAP 4. *Malouetia bequaertiana* Woodson

### Specimens examined:

NIGERIA: Degema district, sin.loc., Mr. & Mrs. Talbot 3651 (BM).

CENTRAL AFRICAN REPUBLIC: Poto-Poto, Eaux, Forêts et Chasses 2137 (P); Bac Bambri, Eaux, Forêts et Chasses 2577 (P).

GABON: Lastoursville, Le Testu 7198 (BM, BR, LISC, MO, P, WAG); Franceville, Le Testu 8087 (BM, BR, LISC, P, WAG); *ibid.*, Peubara waterfalls, Sita 620 (P).

CONGO: Alima R., Thollon 896 (BR, P); Mossendjo, Bouquet 1301 (P); Lefini R., Sita 3060 (P); Idiada R., km 17 Sibiti- Komono Road, de N + Jer + Je 1952 (P); Brazzaville, Thollon 127 (P); km 20 Brazzaville-Mayama Road, de Néré 1162 (P); Djoue R., Bouquet 441 (P).

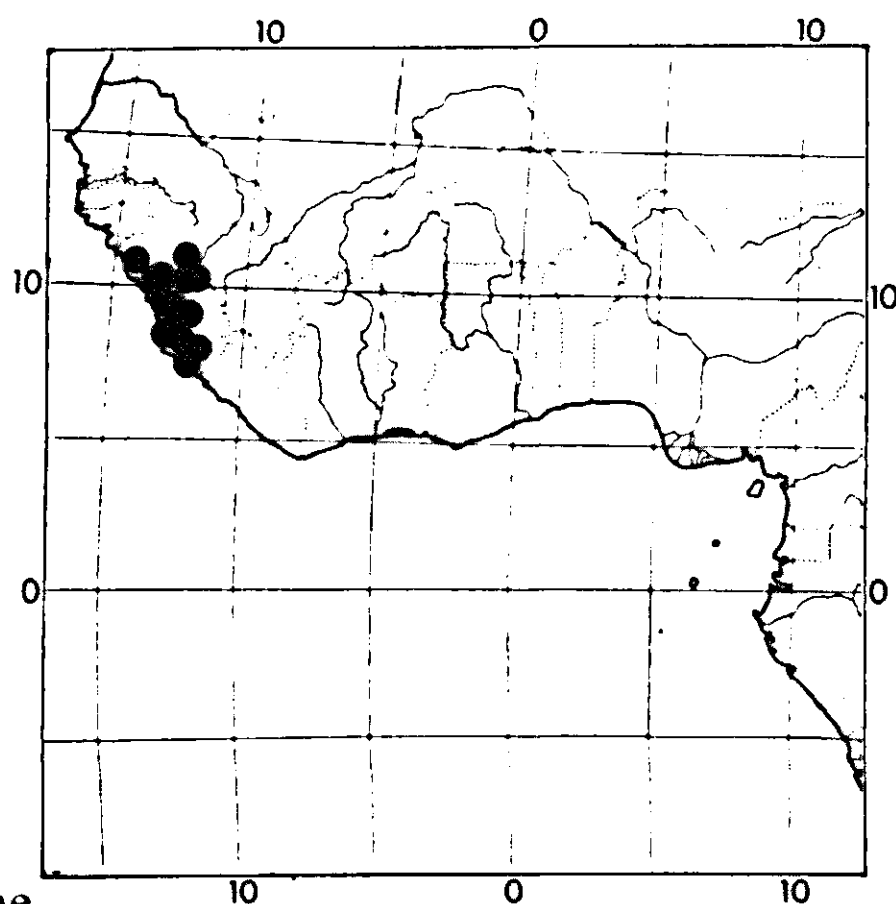
ZAIRE: Equateur: Boyaseganu, Evrard 1490 (BR); Karawa, Libala R., Evrard 857 (BR); *ibid.*, Lebrun 1916 (BR, MO, WAG); Dundusana, Mortehan 435, 508 (BR); Yambata, De Giorgi 1780, 1802 (BR); *ibid.*, Vermoesen 99 (BR); Dobo, Claessens 605 (BR); Bumba, Evrard 3404 (BR, K); Lisala, Dua R., Leontovitch 10122 (BR); Bomongo, Evrard 5929 (BR); Bolumboloko, Evrard 3655 bis (BR, K); Maringa R.- Lopori R., Evrard 4854 (BR); Lopori R., Bieler 4 (BR); Eala, Leonard 400 (BR, MO); Bula, Seret 1843 (BR); Wangata-Mosole Road, Seret 938 (Z); Boteke, Louis 281 (K); *ibid.*, Dubois 281 (BR, MO); Yalikungu, Evrard 5431 (BR); Mondombe, Jespersen 188 (BR); Ikela, Germain 7374 (BR, WAG). Haut-Zaire: Aketi-Bumba Road, Germain 8528 (BR, K, M); Aruwimi R., Evrard 2156 (BR, K, M); Yambuya, Laurent 1023 (BR); Bassao Island, Louis 13450 (BR, WAG); Yangole, Louis 11884 (BR, K, MO, NY, S, UC); Yandja Lake, Germain 5155, 7306 (BR); Yangambi, Bolema 272 (BR, K); Yangambi, Lusambila R., Louis 1826 (BR, K, MO), 2590 (BR, K, MO, UC), 3505 (BR, WAG), 5956 (BR, WAG), 6243 (BR, WAG), 7912 (BR, K), 8622 (BR, K), 8900 (BR, K, MO), 10261 (BR, WAG), 10535 (BR, K), 14357 (BR, K), 14778 (BR, K), 16468 (BR); *ibid.*, Gilbert 1178 (BR), 1330 (BR, K, MO), 7708 (BR, GENT), 8027 (BR, GENT), 8454 (BR, K), 8608 (BR, K), 9723 (BR, GENT); *ibid.*, Donis 2878 (BR), 3801 (BR); *ibid.*, Germain 8186 (BR); *ibid.*, Leonard 200 (BR, WAG), 755 (BR, K); Yangambi, Ilongo R., Louis 8005 (BR, MO, WAG); 7 km N of Yaosuka, Louis 1472 (BR, C, K, MO), 1557 (BR, MO); Yankusu, Louis 8518 (BR, MO, WAG); Romee, Laurent 958 (BR); near Bakuti, Lisowski 18584 (POZG); Bengamisa, Bokdam 3998 (WAG); near Bengamisa, Lindi R., Lisowski 17317 (BR, K, WAG), 17369 (BR, WAG); 40 km N of Kisangani, Lindi R., Lisowski 16487, 16996, 18130 (BR); near Bawombi, Lisowski 47794 (BR); near Bangoka, Lisowski 45571 (BR, WAG); Stanleyville (= Kisangani), Bequaert 6967 (BR: holotype; isotype: K); Kisangani, Tshopo R., Lisowski 50937 (K, POZG); near Kisangani, Lisowski 47369 (BR); Opala, Lombo R., Louis 14173 (BR); Mayoko, Lisowski 43283 (BR). Bandundu: Bokoro, Jans 773 (BR, WAG); Djuma R., Gillet 1784 (BR); valley of Inzia R. and Djuma R., Gentil 90 (BR); Wamba R., Gentil 108 (BR); Lubue R. Vanderyst 12324 (BR); between Kole and Dekese, Lebrun 6368 (BR, K). Kasai Occidental: Mwetshi, Casier 283 (BR), 431 (BR, WAG). Kasai Oriental: Lodja, Lebrun 6246 (K), 6247 (BR). Kinshasa: Kinshasa, Gillet s.n. Aug. 1902 (BR); Mikondo R., Breyne 3441 (BR, WAG); Ndjili-Pic Mense Road, Breyne 2471 (BR); Ndjili, Pauwels 4711 (BR), 5040 (WAG), 5528 (BR, WAG); Lukaya R., Pauwels 6027 (BR). Bas-Zaire: near Sanda, Gillet 3415, 3553, 3639 (BR). sin. loc., Hulstaert 1088 (BR); *ibid.*, Gilbert 2012 (BR).

**3. *Malouetia heudelotii* A.DC., in DC., Prodr. 8: 380. 1844; Pichon, Bull. Jard. Bot. Etat. Brux. 22: 122. 1952. Type: Guinea: Karkandy, N.E. of Boke, Heudelot 890 (P, holotype; isotypes: A, K, OXF, photo of P sheet: MO, photo of K sheet: GH, LISC, NY); Fouta-Djalon region, Heudelot 714 (paratypes: A, K, OXF, P, photo of P: MO, photo of K: GH, LISC, NY). **Fig. 6; Map 5****

*M. africana* K. Schum. in Engl. & Prantl. Nat. Pflanzenfam. 4(2):187. 1895, in clavi, type destroyed in Berlin.

*Shrub or tree*, up to 17 m high; bark with circular lenticells, and sticky white latex. *Branchlets* terete, glabrous. *Leaves* petiolate; petiole 2-12 mm long, gla-

brous, in the axils small colleters and two bigger ones at the base of the petiole; blade elliptic or narrowly so, rarely obovate, 2.2-4 x as long as wide, 8.2-19.7 x 2.1-9 cm, cuneate at the base or decurrent into the petiole, acuminate with an acute or obtuse point at the apex, domatia consisting of round to elliptic pits with a glabrous margin; secondary veins 6-11 on each side. *Inflorescences* 2.5-3.5 x 2-5 cm, 1-9 flowered, bracts ovate with a colleter at each side; peduncle 2-9 mm long, glabrous; pedicel 9-15 mm long. Flowers fragrant. *Calyx* tube 0.4-0.5 x 1.6-3 mm; lobes ovate, 1.2-1.4 x as long as wide, 2-2.6 x 1.5-2 mm, minutely ciliate; colleters 0.6 x 0.2 mm, the smaller one about 1/2 of this size. *Corolla* white to pale pink, in the mature bud 6-8 x as long as the calyx lobes, 14-17 mm long; tube 12-15.5 mm long; consisting of a nearly cylindrical part below the insertion of the stamens, 10-12 mm long, 2-2.2 mm wide at the base, 2.5 mm wide at about 1/3 of the length from the base, 1.2-1.5 mm wide at the constriction, and a cup shaped apical part 2-2.5 mm long, 4-4.5 mm wide at the mouth, outside glabrous, inside the basal 5-6 mm of the cylindrical part glabrous then pilose on the filament ridges above more densely so and also in between them; lobes united for 2 mm, free part oblong to obovate, 6-8 x 3.2-5 mm, acute at the apex. *Stamens* exerted for 2-3 mm, filament outside 0.1-0.2 mm, laterally sparsely pilose; anthers 3-3.3 x 0.8 mm, sterile apex (for 0.2-0.3 mm), from there for 1.5-2 mm fertile, pubescent at the connective and there coherent with the pistil head, sagitate at the base for 0.3-0.6 mm, outside glabrous. Disk 0.5-0.6 mm high. *Pistil* 12-14 mm long; ovary subglobose 1.2-1.3 x 0.8-1.0 x 0.5-0.6 mm, minutely pubescent above, in each carpel 4 series of 2-5 ovules; style 10.5-11 mm long, glabrous; pistil head fusiform, 1.7-2 x 0.6 mm, with the obconical basal part 0.4-0.5 mm long, at the base (for 0.8-1.0 mm) of the conical upper part coherent with the anthers, from there the exudate zone (for 0.2-0.3 mm) and the short (0.2-0.3 mm) bifid stigmoid apex. *Fruit* 15-25 x 0.5-0.6 cm. *Seed* obliquely fusiform, 4.5-5 x 0.3 cm, pilose at the base and apex and sparsely pilose on the testa; embryo fleshy, cotyledons 20 x 3 mm, rootlet 5 x 1 mm.



MAP 5. *Malouetia heudelotii* A. DC.

**Distribution:** Guinea and Sierra Leone.  
**Ecology:** Riverine forest. Low altitude.



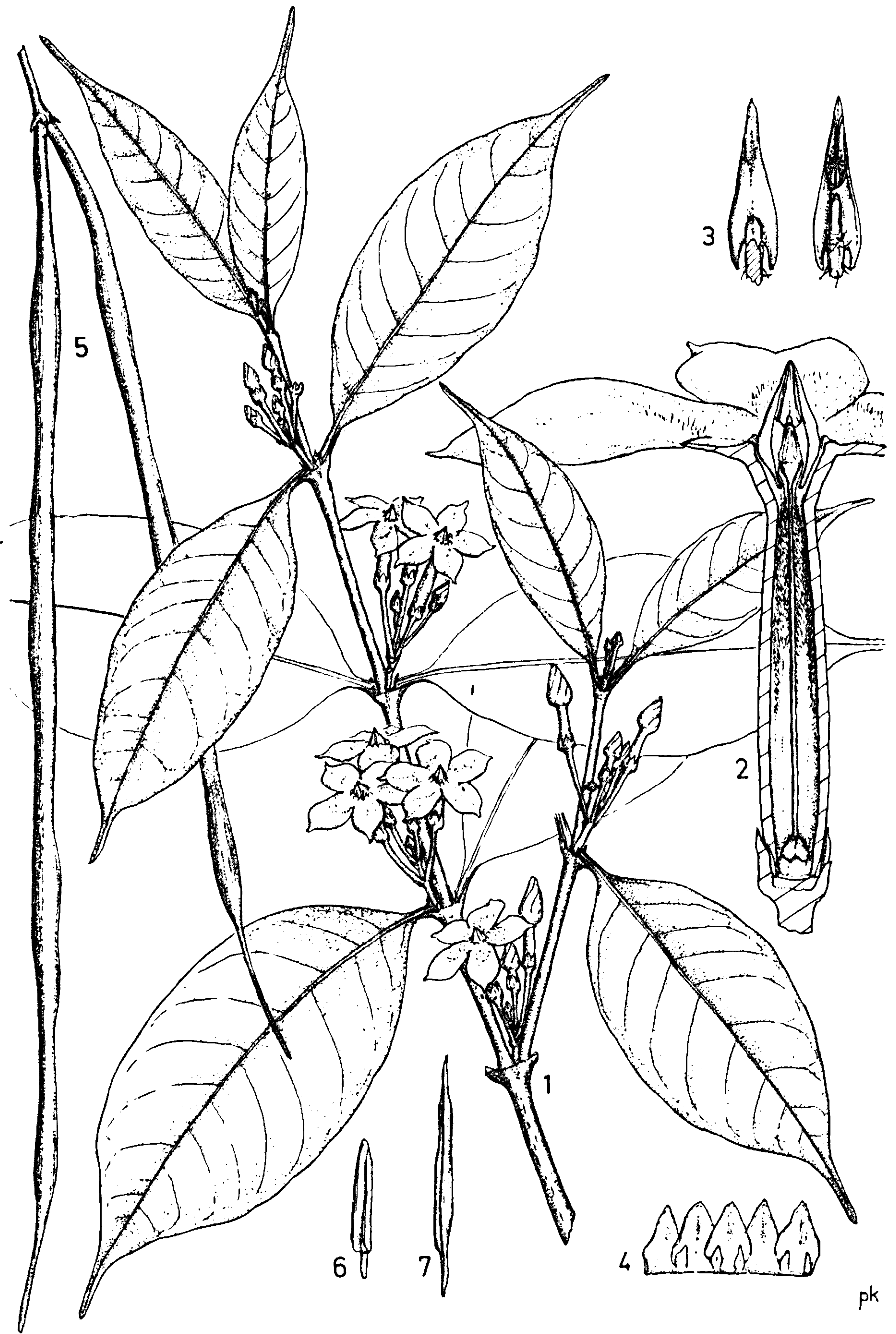


FIG. 6. *Malouetia heudelotii* A.DC.: 1. flowering branch, 2/3 x; 2. section of flower, 4 x; 3. stamen, left abaxial side, right adaxial side, 6 x; 4. calyx with colleters, 4 x; 5. fruit, 2/3 x; 6. embryo, 2/3 x; 7. seed, 2/3 x. (1. *Thomas* 567; 2-4 *Cons. of Forest (Sierra Leone)* 35; *Cole & Jarr.* 35).

### Specimens examined:

GUINEA: Karkandy, NE of Boke, Heudelot 890 (P, holotype; isotypes: A,K,OXF, photo of P sheet: MO, photo of K sheet: GH,LISC,NY); Fouta Djallon region, Chevalier 12861 (P); *ibid.*, Heudelot 714 (paratypes: A,K,OXF,P, photo of P: MO, photo of K: GH,LISC,NY). near Timbo, Chevalier 12804 p.p. (P); between Sougueta and Bandi, Chevalier 12804 p.p. (P); near Kindia, Adam 26781 (MO); *ibid.*, Jacques-Félix 1670 (K,P); *ibid.*, Chute Molota, Lisowski 51516 (BR,POZG); Sasseni, Scarcies R., Scott Elliot 4430 (BM,BR,COI); near Bayan-Bayan, Scott Elliot 4524 (BM,K), 4782 (K); near Oualia, Scott Elliot 4785 (BM,MO); between Forecariah and Pamelap, Lisowski 60798 (BR).

SIERRA LEONE: Samaia, Thomas 240 (BR); near Kukuna, Scott Elliot 4242 (BM,BR,MO), 4626 (BM); Mamaha, Thomas 4495 (LD); Rokupr, Jordan 58 (K); Tendekom, Jordan 898 (K); Port Loko, Thomas 6543 (BM,MO,NY), 6655 (W), 6691 (K); Magbile, Thomas 6295 (K); near Roruks, Deighton 2512 (K); Freetown, Cole & Jarr 35 (K,WAG); Gbatchma, Cole & Jarr 72 (K,WAG); Yonibana, Thomas 3981 (A,K), 4166 (K,Z), 4227 (A,K), 4302 (K), 4765 (-); *ibid.*, Deighton 1762 (BM,K); Pujehun, Deighton 1927 (K); Ronietta, Thomas 3429 (K); Gbeseba, Deighton 6055 (K); Gbap, Adames 24 (K); between Sahn and Mowuto, Deighton 1695 (K); Madina, Scott Elliot 271 (BM,MO), 5566 (BM,MO,NY); between Jama and Magibisi, Deighton 3063 (K); *sin. loc.*, Smythe 25 (K); *ibid.*, Thomas 10 (K,S), 567 (A,K), 4307 (A), 5429 (K); *ibid.*, Dawe 497 (K); *ibid.*, Cons. of Forests 35 (FHO).

#### 4. *Malouetia mildbraedii* (Gilg & Stapf) Van der Ploeg, Bull. Jard. Bot. Nat. Belg. 54: 288. 1984. Fig. 7, Map 6

Basionym: *Alafia mildbraedii* Gilg & Stapf in Mildbr., Wiss. Ergebn. Deutsch. Zentr.-Afr.-Exped. 1907-1908, 2: 538. 1913.

Type: ZAIRE: Forestier Central: near Agwama, between Irumu and Mawambi, Mildbraed 3024 (holotype not seen, destroyed at B; lectotype: K; isotypes: PRE, photo of K sheet: BR,WAG).

Homotypic synonym: *Malouetiella mildbraedii* (Gilg & Stapf) Pichon, Bull. Jard. Bot. Etat. Brux. 24 (3): 219. 1954.

Heterotypic synonym: *Malouetiella parviflora* Pichon, Bull. Jard. Bot. Etat. Brux. 22: 133. 1952. Type: Zaire: Forestier Central: Nala, Boone s.n. (BR, holotype)

*Shrub* or *tree* up to 17 m high; *trunk* up to 40 cm in diameter; bark smooth, white milky or sticky latex from petioles and cambial zone. *Branches* dark greyish-green, spreading; branchlets dark green, terete, glabrous. *Leaves* petiolate; petiole 3-7 mm long, glabrous, with in the axils a dense group of small colleters; blade coriaceous, elliptic or narrowly so, (1.5) 2.5-3.5 x as long as wide, 5.5-13 x 2.4-4.2 (6.2) cm, cuneate at the base or decurrent into the petiole, short- or long acuminate with an obtuse point at the apex, sometimes unequal sided, beneath in the axils of the main veins with domatia consisting of pits with a ciliate margin; secondary veins 6-10 on each side. *Inflorescences*, 1.5-2.5 x 1.2-2.5 cm, 1-6 flowered; bracts ovate with small colleters; peduncle 2-3 mm long, minutely pubescent; pedicel dark green, 3-8 mm long, minutely pubescent mainly at the base. Flowers thickly fleshy. *Calyx* dark green; tube 0.3-0.4 x 0.8-1.0 mm; lobes ovate, 1.1-1.5 x as long as wide, 0.6-1.0 x 0.5-0.6 mm, ovate, minutely pubescent outside, minutely ciliate; colleters 0.3-0.4 x 0.25-0.3 mm. *Corolla* white, in bud

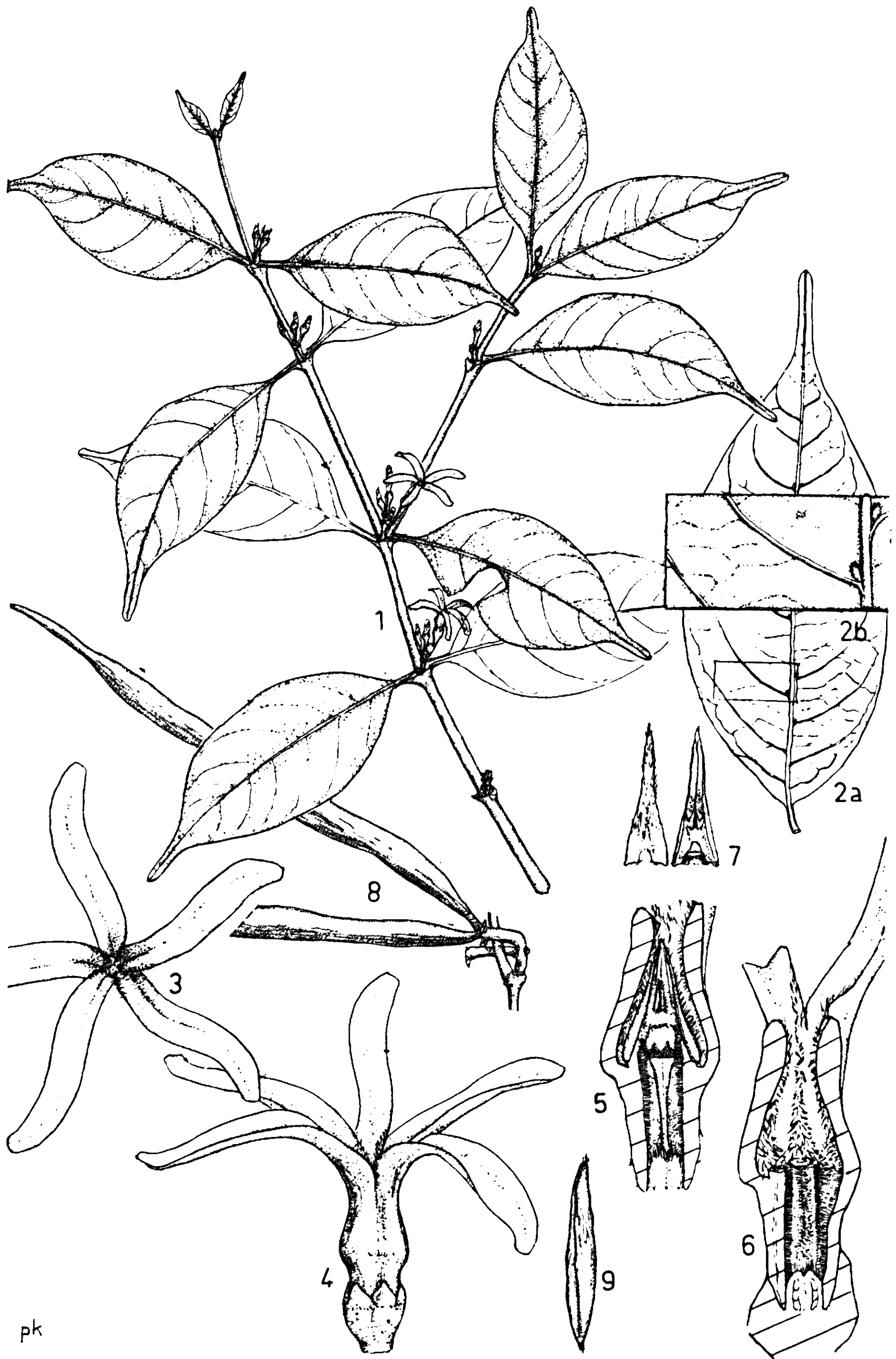
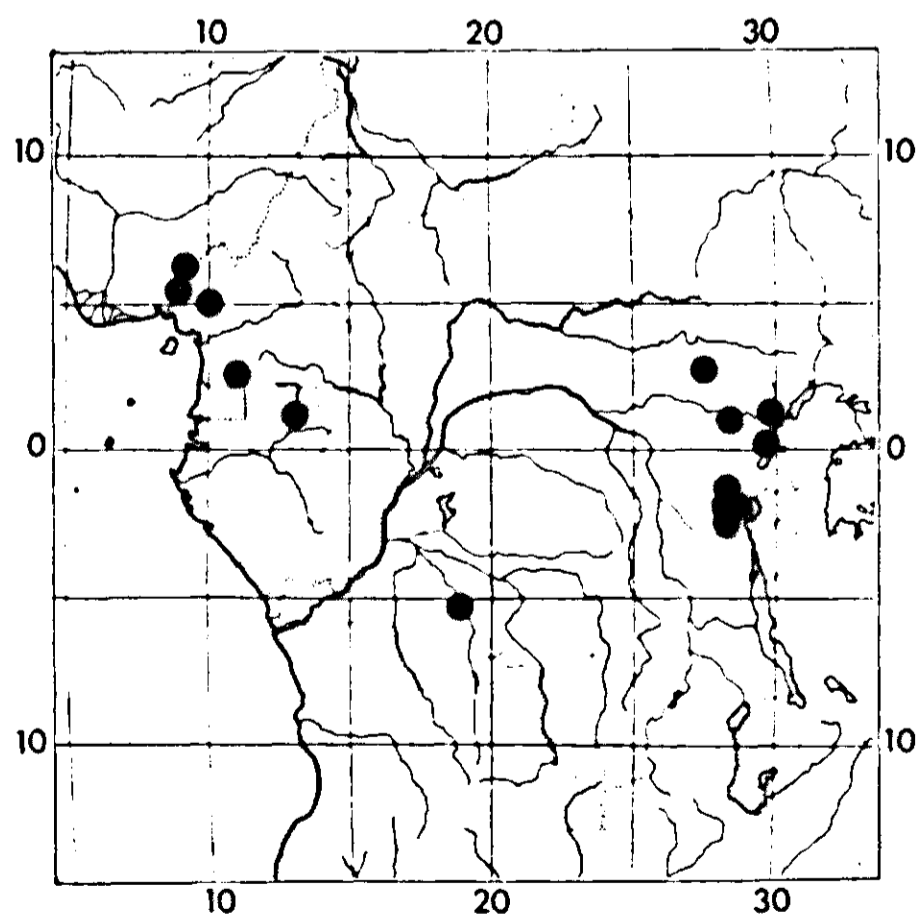


FIG. 7. *Malouetia mildbraedii* (Gilg & Stapf) Van der Ploeg: 1. flowering branch, 2/3 x; 2a. leaf beneath 2/3 x; 2b. detail of domatium, 2 x; 3. flower from above, 4 x; 4. flower, 4 x; 5. section of flower, 8 x; 6. section of flower, anthers removed, 8 x; 7. stamen, left abaxial side, right adaxial side, 8 x; 8. fruit, 2/3 x; 9. seed, 2/3 x. (1, 3-4. Gutzwiller 1832; 2. Pierlot 2434; 5-9. Van Meer 1785).

pale green, in the mature bud 11-18 x as long as the calyx lobes, 10-12 mm long; tube 4.5-5.5 mm long consisting of a cylindrical part below the insertion of the stamens, 2-3.5 mm long, 0.8-1.3 mm wide at the base, and a conical upper part, 2.6-3.3 mm long, 2.9-3.2 mm wide at the insertion of the stamens and 2-2.2 mm at the throat, outside glabrous, inside in the basal part velutinous (continuing into the base of the connective), glabrous at the base for 0.2-0.3 mm, in the upper part 5 pilose zones (narrowly triangular, 3-3.3 x 0.8-1 mm, basally united) ending in pilose lines in the throat, and then continuing and slightly widening on the basal part of the lobes (for 1-1.3 mm), glabrous in between; lobes narrowly oblong, 4.5-6.5 x 0.9-1.5 mm, incurved, obtuse, acute or apiculate and minutely ciliate at the apex. *Stamens* included, inserted at the base of the conical apical part; filament outside 0.06-0.1 mm, inside 0.8 mm long, velutinous and continuing into the base of the connective; anthers triangular, 2-3 x 0.6-0.8 mm, acuminate at the sterile (for 0.2-0.3 mm) apex, from there for 1.3-2 mm fertile, apiculate at the base for 0.1-0.2 mm, velutinous at the base of the connective and there coherent with the pistil head, dorsally pilose except for the glabrous (adnate) tails. Disk none. *Pistil* 3.3-5 mm long; ovary subglobose, 0.6-1.3 x 0.5-0.8 x 0.3-0.6 mm, at the apical 2/3-1/2 part pennicellate, glabrous at the base; in each carpel 2 series of 2-3 ovules; style 0.8-2.3 mm long, glabrous, not split at the base; pistil head fusiform, 2-2.6 x 0.5-0.6 mm, the obconical basal part minutely pubescent, at the base (for 0.3-0.5 mm) of the conical upper part coherent with the anthers, from there the apical exudate zone (for 0.3-0.5 mm) and the stigmoid (0.5-0.8 x 0.1 mm) split apex. *Fruit* 8-11 x 0.7-0.8 mm. *Seed* 36 x 6 mm, immature.

**Distribution:** From Nigeria to Zaire.

**Ecology:** In mountain forest, 900-1400 m.



MAP 6. *Malouetia mildbraedii* (Gilg & Stapf) Van der Ploeg

### Specimens examined:

NIGERIA: Cross River State: Obudu plateau, van Meer 1785, 1860 (WAG).

CAMEROUN: slope of Nta-Ali crete, Letouzey 13856 (BR,K,P); Mt. Nlonaka, 5 km SSE of Ngong-samba, Letouzey 14475 (P,WAG); between N'Kolandom and N'Koemvone, J.J. de Wilde 8405 (WAG).

GABON: Belingua, N.Halle 3871 (P), 3453 (P,WAG).

ZAIRE: Haut-Zaire: Nala, Boone s.n. (BR); near Mawambi, Mildbraed 3024 (K,lectotype; isotype: PRE; photo of K sheet BR,WAG); Mt. Hoyo, Bokdam 4414 (WAG). Kivu: Kolombuni, De Witte 10723 (BR); Kembe, Leonard 1411 (BR,WAG); Kishanga, Leonard 2408 (BR,WAG), 2804 (BR,MO, WAG); Walikale, Pierlot 2210 (BR,WAG); *ibid.*, Gutzwiller 1184 (BR); km 120 Sake-Walikale Road, Pierlot 2336 (BR); between Walikale and Kalehe, Lebrun 5278 (BR); Kakuku, Gutzwiller 1445 (BR); near Bunyakiri, Gutzwiller 1832 (BR,MO,WAG); Turole, Gutzwiller 2105 (BR,WAG); Lumondo, Leonard 4052 (BR,WAG); Rwamba, Leonard 3883 (BR,WAG); km 132 Bukavu-Shabunda Road, Pierlot 2434 (WAG). Kasai: Kiyaka, Devred 2612 (BR,WAG).

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