

MEDEDELINGEN VAN DE LANDBOUWHOGESCHOOL TE WAGENINGEN,
 NEDERLAND 61 (4), 1-31 (1961)*

THE LOGANIACEAE OF AFRICA**

II. A revision of *Mostuea* DIDR.

by

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(Received 23.2.'61)

HISTORY OF THE GENUS

Mostuea was described by DIDRICHSEN in 1854 as a genus in *Loganiaceae*. OLIVER described in 1865 the genus *Leptocladus* in the same family, which turned out to be a taxonomic synonym of *Mostuea*. BENTHAM and J. D. HOOKER published in 1876 *Coinochlamys* (a manuscript name of T. ANDERSON'S) as a genus in *Acanthaceae*. BAILLON recognized this genus as identical with *Mostuea*, but did not transfer the species. This was done by BAKER in 1903. Nevertheless *Coinochlamys* has been maintained up to the present by various authors as a distinct genus in *Loganiaceae*.

As in *Anthocleista* many species were described in the second half of the 19th century and especially shortly before and after 1900. Many of these were later reduced to synonymy by BRUCE and LEWIS (1960) who studied the genus for the Flora of Tropical East Africa. By the study of a wider range of specimens than was available at earlier occasions, further reductions appeared to be necessary.

GEOGRAPHICAL DISTRIBUTION

The genus *Mostuea* is restricted to tropical Africa except for one species which occurs in northern South America. *M. brunonis*, a highly variable species, occurs almost throughout the African part of the area and is the most widely distributed. Two species, *M. adamii* and *M. hymenocardioides*, are restricted to West Africa and one, *M. microphylla*, to East Africa.

RELATIONSHIP WITH OTHER GENERA

Mostuea belongs to the tribe *Gelsemieae* and is closely allied to *Gelsemium* by the shape of the calyx, corolla, anthers, and pistil.

* Issued August 17, 1961.

** Continued from *Act. Bot. Neerl.* 10: 1-53. 1961.

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They differ mainly from each other in the following characters:

<i>Gelsemium</i> ¹	<i>Mostuea</i>
Capsule ellipsoid;	Capsule usually bilobed;
seeds several, winged;	seeds 1-4, not winged;
embryo embedded in fleshy endosperm.	embryo embedded in bony endosperm.

Furthermore the seeds and embryo of *Mostuea* resemble strikingly those of *Strychnos* which has baccate instead of capsular fruits. The latter genus belongs to the tribe *Strychneae*.

Mostuea Didr., Vidensk. Medd. Kjoeb. 1853: 86. 1854; Bentham et J. D. Hooker, Gen. Pl. 2: 789. 1876; Solereder in Engl. Prantl, Nat. Pflanzenf. 4 (2): 29. 1892; Baker in Fl. Trop. Afr. 4 (1): 504. 1903; A. Chevalier, Comptes Rendus Séanc. Acad. Sci. Paris 223: 767. 1946; Hutchinson & Dalziel, Fl. W. Trop. Afr. 2: 18. 1931; Bruce & Lewis in Fl. Trop. E. Afr., Loganiaceae 2. 1960.

Type species: *M. brunonis* Didr.

Heterotypic synonyms: *Leptocladus* Oliv., Journ. Linn. Soc. 8: 160. 1865.

Type species: *M. thomsonii* (Oliv.) Benth. (= *M. brunonis* Didr.)

Coinochlamys T. Anders. ex Benth. et J. D. Hook., Gen. Pl. 2: 1091. 1876; S. Moore, Journ. Bot. 14: 321. 1876; Solereder, l.c.; Hutchinson & Dalziel, l.c. p. 20.

Type species: *M. hirsuta* (T. Anders. ex Benth. et J. D. Hook.) Baill. ex Bak.

Shrubs, undershrubs, or sometimes lianas, with simple hairs or nearly glabrous. *Stems* much branched; lateral branches mostly with short internodes; twigs usually thin. *Leaves* opposite, those of a pair equal or subequal, shortly petiolate; blade dark green above, paler beneath, mostly papyraceous when dry, ovate to lanceolate, variable in shape and size, on lateral branches often smaller, entire or obscurely sinuate-dentate, pinnately veined; veins conspicuous. Stipules membranaceous, usually triangular, entire, those of a pair united, or all fused into a short ocrea. *Inflorescence* axillary or terminal, usually on short lateral branches, mostly obliquely and incompletely dichasial, 1- many-flowered, sometimes subcapitate. Bracts small and sepal-like or large and approximately orbicular. Flowers dimorphic. *Sepals* 5, green, connate at the base up to half their length, equal or unequal, if unequal the longest up to 3 × as long as the shortest, ovate to linear, obtuse to subulate at the apex, entire or sometimes obscurely sinuate-dentate. *Corolla* white, sometimes pale yellow, orange, or red, yellow at the base or not, infundibuliform, erect in the calyx, 2.5-9 × as long as the calyx; tube not ventricose, about 3-5 × as long as the lobes; lobes imbricate in the bud, subequal, spreading, orbicular or nearly so, rounded, entire or sometimes obscurely sinuate-dentate. *Stamens* 5, included or in long-staminate flowers often exerted, equal or unequal; filaments pubescent or sometimes glabrous (*M. microphylla*, *M. brunonis*), free from each other, inserted at one-quarter to one-third from the base of the corolla tube, at anthesis elongating and if unequal then becoming more unequal; anthers orbicular or oblong, narrower after the pollen is shed; cells 2, discrete, divergent at the base, more or less pointed at the apex and at the base, dehiscent throughout by a longitudinal split.

Ovary superior, ovoid, usually with 2 impressed lines, 2-celled, with 2 ovules

¹ See LEENHOUTS, Revision of *Gelsemium*, ined.

in each cell; style simple, shorter or longer than the stamens, when longer slightly exerted, deciduous, minutely pubescent with glandular hairs; stigma twice dichotomously branched, lobes narrow, pubescent (hairs glandular). Ovules ovoid, attached to the base of the septum. *Fruit* capsular, obcordate, bilobed, or occasionally ellipsoid, flattened, with an impressed line in the middle, loculicidal, 4-valved; valves hinging on the septum, convex, inside paler, glabrous, and often veined; cells with 1-2 seeds. *Seeds* plano-convex (not so if fruit ellipsoid), obliquely ovate-orbicular, minutely reticulate, with a raised line (raphe) in the middle of the flat side, pale brown, dull and densely appressed-pilose (African species) or dark brown, slightly shining, and glabrous (*M. surinamensis*), with bony ochraceous endosperm. Embryo small, white, narrow, nearly cylindrical. Some large colleters in the axils of the stipules, bracts, and sepals.

Distribution: 8 species; one in northern South America, the others in tropical Africa.

Uses: Branches used as brooms (*M. hirsuta*, testibus coll. variis).

Roots, twigs, and leaves have medicinal value. Africans apply a decoction for various purposes, e.g.: for a stimulant (roots of *M. hirsuta*, testibus Couteaux 223 (BR), L. Dubois 211 (BR)), against stomach-ache (roots of *M. hirsuta*, testibus De Bergeyck 2 (BR) and Robijns 964 (BR)); roots of *M. brunonis*, teste Wallace 176 (K); twigs and leaves of *M. brunonis*, teste Jard. Bot. Tananarive 5464 (P)), against vomiting (roots of *M. hirsuta*, teste Haezaert 2 (BR)), against a cold (roots of *M. hirsuta*, teste Erkem(?) 8 Aug. 1913 (BR); roots of *M. brunonis*, teste Claessens 453 (BR)).

Key to the species:

1. Seeds glabrous; fruit 2-lobed, lobes 1.5-2 × as long as wide; inflorescence lax. South America 1. **M. surinamensis**
 Seeds appressed-pilose; fruit 2-lobed (sometimes by abortion 1-lobed), obcordate, or occasionally ellipsoid, if lobed lobes about as long as wide or shorter; inflorescence lax or not. Africa 2
2. Inflorescence with 2 large approximately orbicular bracts covering the calyx 2. **M. hirsuta**
 Inflorescence with small bracts never covering the calyx 3
3. Plant hirsute with stiff erect hairs, especially on the twigs 4
 Plant pubescent, pilose, or glabrous, hairs never erect 5
4. Leaves obtuse or acute at the apex, never acuminate, more or less hirtopilose above, peduncle obsolete. Camerouns to Congo 3. **M. batesii**
 Leaves distinctly acuminate, densely hirsute above; peduncle conspicuous. East Africa and Madagascar 5. **M. brunonis**
5. Sepals obtuse, shorter than the ovary which has brush-like hairs at the apex. East Africa 4. **M. microphylla**
 Sepals acute to subulate, usually longer than the ovary 6
6. Leaves shining when dry, entirely glabrous; fruits pale, conspicuously veined 7
 Leaves dull when dry, usually with some hairs; fruits usually dark, not or inconspicuously veined 8

7. Leaves oblique at the base; sepals linear-lanceolate, subulate. Cameroun, Gabon 7. *M. neurocarpa*
 Leaves equal-sided at the base; sepals oblong-ovate, obtuse or acute. Liberia, Guinea, Sierra Leone 8. *M. adamii*
8. Fruit shining and pale brown when dry; leaves usually more or less ovate, often abruptly narrowed into the cuneate base; hairs near the apex of the twigs always in 2 lines. Guinea, Sierra Leone 6. *M. hymenocardioides*
 Fruits dull and usually dark brown when dry; leaves variously shaped; twigs variously hairy or glabrous. Ghana to Madagascar 5. *M. brunonis*

1. *M. surinamensis* Benth. in W. J. Hooker, Icon. 12:83, t. 1196. 1876; Pulle, Rec. Trav. Bot. Néerl. 4: 137. 1907; van Raalte in Pulle, Fl. Surinam 4(1): 107. 1932; A. Chevalier, Comptes Rendus Séanc. Acad. Sci. Paris 223: 767. 1946.

Fig. 5 (6-9); map 1.

Type: Suriname: Suriname R., near Victoria Station, Hostmann & Kappler 1128 (K, holotype; isotypes: BM, K, P, 2 sheets, U, W, 2 sheets; BM, both K, and one P sheet distributed as Hostmann 1128, the others as Kappler ed. Hohenacker 1128).

Heterotypic synonym: *M. brasiliensis* Huber ex Ducke, Arch. Jard. Bot. Rio de Janeiro 1:53. 1915; A. Chevalier, l.c. Type: Brazil: Para, Upper Ariramba R., Trombetas R., Ducke 14902 (holotype not seen; isotypes: BM!, G!).

Twigs minutely appressed-pubescent or with two lines of pubescence below the stipules. *Leaf* blade oblong-elliptic or oblong-ovate, 2-3 × as long as wide, 3-10 × 1-4.5 cm, sometimes smaller, acuminate at the apex, glabrous or with scattered hairs on both sides. *Inflorescence* lax, about as long as the leaves or longer, 2-7.5 cm long. *Sepals* connate at the base up to about half their length, equal, ovate, about 2 × as long as wide, 1.5 × 0.8 mm, acute or obtuse, glabrous on both sides. *Corolla* white, with a yellow throat, 6-7.5 mm long. *Capsule* very dark brown to black, deeply obcordate to 2-lobed (resembling the fruit of *Acer*), glabrous; lobes about 1.5-2 × as long as wide. Seeds glabrous, dark brown.

Shrub 1-3 m high. *Stems* erect; twigs glabrescent by shedding of the epidermis. *Leaves* shortly petiolate; petiole sparsely appressed-pubescent to glabrous, 1-4 mm long; blade often obliquely cuneate to rounded at the base, entire or remotely and obscurely sinuate-dentate; secondary veins 4-5 pairs. Stipules about 1-1.5 mm long, acute, outside glabrous or nearly so. *Inflorescence* terminal or axillary, 1-4 × branched, 3-30-flowered. Peduncle slender, 0.3-1 × as long as the leaves, glabrous as the branches and pedicels. Bracts very small, linear, 1-1.5 mm long, long-acuminate, glabrous. *Sepals* entire. *Corolla* 4-5 × as long as the calyx, glabrous outside, inside partially pubescent below the insertion of the stamens; tube 5-6 mm long, about 1 mm wide at the base, 2-3.5 mm at the throat; lobes 1-1.5 mm in diam. Filaments inserted slightly below the middle of the corolla tube; anthers 1 × 0.8 mm. Ovary glabrous, ovoid, flattened, 1 × 0.6 mm. *Capsule* about 2-4 × as wide as long, 7-8 × 12-30 mm, with an impressed line in the middle, obtuse at the base, emarginate to truncate at the apex; lobes rounded at the apex or nearly so. Seeds 6 × 4.5 × 1.5-2 mm, slightly shining.

Distribution: Suriname, Brazil (Para).

Ecology: Rain forests, at low elevations.

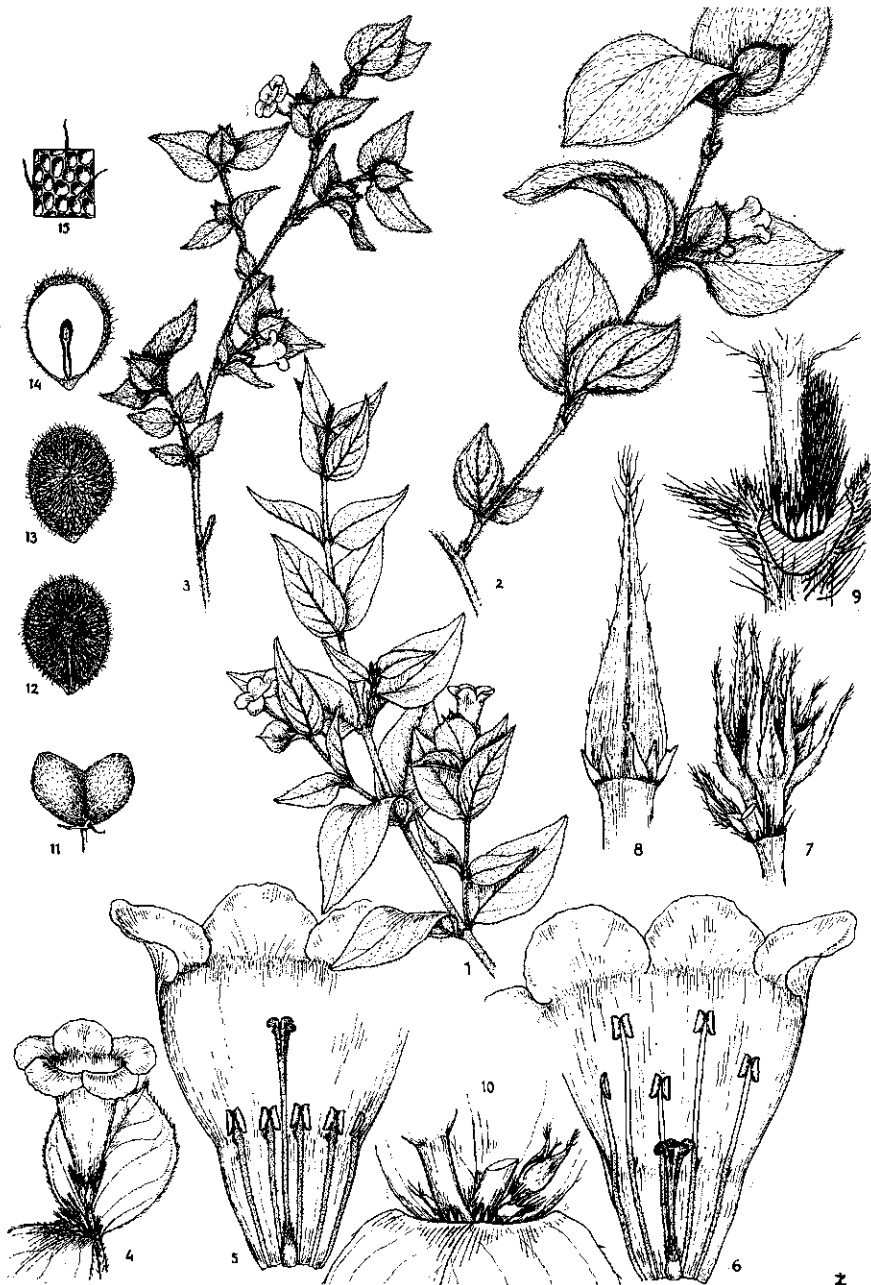
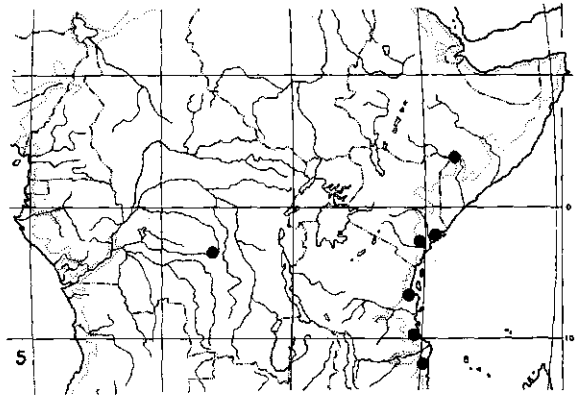
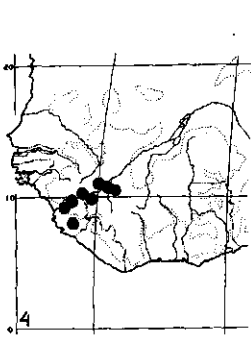
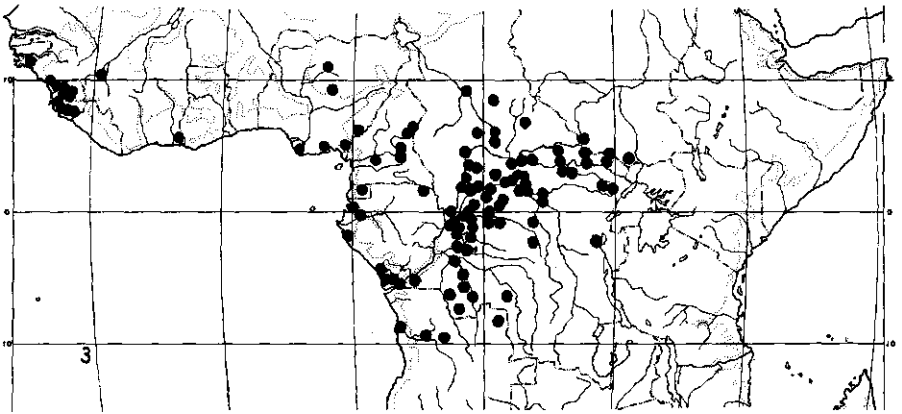
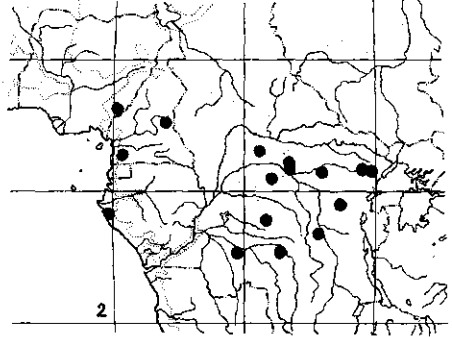
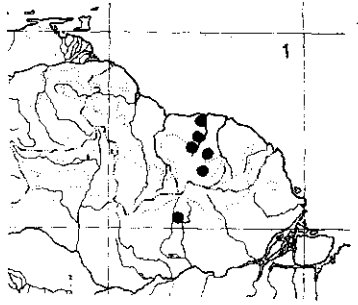


Fig. 1. 1-3. Branches, $\frac{1}{2} \times$; 4. Inflorescence, $1\frac{1}{2} \times$; 5-6. Opened flower, $3 \times$; 7. Inflorescence in bud, with colleters (lower bracts removed), $4\frac{1}{2} \times$; 8. Sepal inside, $9 \times$; 9. Twig with colleters in axil of stipule (removed), $9 \times$; 10. Central part of 4, $4\frac{1}{2} \times$; 11. Fruit, $1 \times$; 12-13. Seed both sides, $2 \times$; 14. Longitudinal section of seed, with embryo, $2 \times$; 15. Portion of testa, $16 \times$. (1, 4-15 (Erkem(?) 8 Aug. 1913, several individuals as many flowers and fruits in pocket on the sheet(?)); 2 (Gossweiler 9852); 3 (Roberty 3443)).



Map 1. *M. surinamensis*; Map 2. *M. batesii*; Map 3. *M. hirsuta*; Map 4. *M. hymenocardioides*; Map 5. *M. microphylla*.

Suriname: Suriname R., near Victoria Station, Hostmann & Kappler 1128 (BM, K, 2 sheets, P, 2 sheets, U, W, 2 sheets, type); Saramacca R., Pulle 100 (U), 467 (U); Paloemen R., Tapanahoni R., Versteeg 878 (U); Gonini R., Versteeg 222 (U).

Brazil: Para: Upper Ariramba R., Trombetas R., Ducke 14902 (BM, G, isotypes of *M. brasiliensis*); Porteira Fall, Trombetas R., Ducke 22334 (K, P, U, S).

2. *M. hirsuta* (T. Anders. ex Benth. et J. D. Hook.) Baill. ex Bak. in Fl. Trop. Afr. 4 (1): 509. 1903; Pellegrin, Bull. Mus. Hist. Nat. Paris 25: 506. 1919; A. Chevalier, Rev. Int. Bot. Appl. 27: 108. 1947. **Fig. 1; map 3.**

Type: Sierra Leone: Bagru R., Mann 811 (K, holotype).

Homotypic synonym: *Coinochlamys hirsuta* T. Anders. ex Benth. et J. D. Hook., Gen. Pl. 2: 1091. 1876; S. Moore, Journ. Bot. 14: 321, 322, t. 182. 1. 1876; Solereder in Engl. Prantl, Nat. Pflanzenf. 4 (2): 29. 1892; Gilg in Engl. Bot. Jahrb. 17: 559. 1893; Hutchinson & Dalziel, Fl. W. Trop. Afr. 2: 20. 1931.

Heterotypic synonyms: *C. angolana* S. Moore, l.c. p. 321, t. 182. 2; Solereder, l.c. Type: Moyen Congo: Loango, Soyaux 156 (K, holotype; isotypes: K, M). Homotypic synonym: *M. angolana* (S. Moore) Hiern, Cat. Welw. Afr. Pl. 1: 700. 1898; Baker, l.c. p. 510.

M. gabonica Baill., Bull. Mens. Soc. Linn. Paris 1: 245. 1880; Baker, l.c. p. 509; A. Chevalier, l.c. Type: Gabon: near Gabon R., near Libreville, Duparquet s.n. (P, holotype).

Homotypic synonym: *C. gabonica* (Baill.) Solered. ex Durand et Jackson, Ind. Kew. Suppl. 1: 106. 1906.

C. poggeana Gilg in Engl. Bot. Jahrb. 17: 559. 1893. Type: Congo: Kasai District, Baschilange, Mukenge, Pogge 1254 (holotype not seen, destroyed in B; no isotypes seen).

Homotypic synonym: *M. poggeana* (Gilg) Bak., l.c. p. 510; Pellegrin, l.c.

C. schweinfurthii Gilg in op. cit. 17: 560. 1893. Lectotype: Sudan: Niamniam, Linduku R., Schweinfurth 3181 (K, lectotype).

Homotypic synonym: *M. schweinfurthii* (Gilg) Bak., l.c. p. 510.

C. congolana Gilg in op. cit. 23: 197. 1896. Type: Congo: Equateur, Bangala District, Hens 169 (Gilg errore 167) (holotype not seen, destroyed in B; isotypes: BR!, COI!, K!, L!, P, 2 sheets!, WU!, Z, 4 sheets!, BR and COI sheets labeled by Gilg as *C. congolana*).

Homotypic synonym: *M. congolana* (Gilg) Bak., l.c. p. 509.

C. angolana S. Moore var. *laurentii* De Wild., Miss. E. Laurent 1: 260. 1906. Lectotype: Congo: Equateur, near Lukolela, Em. & M. Laurent 13-XII-1903 (BR, lectotype).

M. periquetii Pellegrin, l.c. Type: Oubangui-Chari: Boudoli, Periquet 24 (P, holotype).

Twigs piloso-pubescent when young, glabrescent by shedding of the epidermis, dark brown. *Leaf* blade obliquely ovate, ovate-elliptic, or elliptic, variable in shape and size, 1.16–3 (usually about 2) × as long as wide, 9–80 × 5–44 mm, acuminate at the apex, obliquely rounded at the base, pilose on both sides, beneath especially on the costa and veins, more or less ciliate. *Inflorescence* terminal on short lateral branches, congested, 3–6-flowered. Peduncle very short, much shorter than the leaves, 1–7 (usually 2–4) mm long, at the apex

with 2 large bracts. These bracts green or purple, orbicular to broadly ovate, $0.75-1.5 \times$ as long as wide, $7-20 \times 7-17$ mm. Other bracts very small, sepal-like. *Sepals* ovate-lanceolate to lanceolate. *Corolla* $1-2 \times$ as long as the bracts. *Capsule* dark brown when dry, yellow (teste Hulstaert 1254), sparsely appressed-pubescent to piloso-pubescent.

Shrub or undershrub, sometimes slightly scandent, 0.30-2.00 m high. *Stems* erect or decumbent, branched. Bark sometimes becoming grey and scaly. Twigs terete. *Leaves* shortly petiolate; petiole piloso-pubescent, 0.3-2.5 mm long; blade entire or obscurely sinuate; secondary veins 3-5 pairs. Stipules diaphanous, triangular to ovate-elliptic, $1-3 \times$ as long as wide, $1-6.5 \times 1-2.5$ mm, acute or obtuse, outside hairy like the twigs. *Inflorescence*: bracts apiculate at the apex, rounded at the base, entire or obscurely sinuate-dentate, more or less pilose on both sides, especially outside. Pedicels very short, pubescent. *Sepals* connate at the base, subequal to very unequal; if unequal the longest up to $3 \times$ as long as the shortest and in 2-4 sizes in a single flower without any system of arrangement, $3-5.5 \times$ as long as wide, $1.2-5.5 \times 0.4-1$ mm, acuminate, entire or very obscurely sinuate-dentate, pilose to glabrous outside, glabrous inside. *Corolla* white, sometimes pale yellow or yellow-striped at the base, $3.5-7 \times$ as long as the calyx, 10-21 mm long, glabrous on both sides or minutely and sparingly pubescent outside above; tube 10-16 mm long, 1.5-2 mm wide at the base, 3-10 mm at the throat; lobes $3-5 \times 3-5$ mm. Stamens included; filaments slightly widened near the apex in short stamens, inserted at about one-third from the base of the corolla tube; anthers 0.8×1.0 mm. Ovary glabrous or minutely pubescent, usually with stiff erect hairs near the apex, about $2 \times$ as long as wide, $1.2-1.5 \times 0.6-0.7$ mm. *Capsule* broadly orbicular to broadly obcordate, about $1.25 \times$ as wide as long, $6-8 \times 8-12$ mm, obtuse at the base, truncate, retuse and mucronate, or 2-lobed at the apex. Seeds about $1.3 \times$ as long as wide, about $6-7 \times 4-5$ mm.

Distribution: Tropical Africa from Guinea to Angola and Sudan.

Ecology: in open places, in rain forests, light or secondary forests, gallery forests, or savannas; sometimes in moist places; resistant against bush-fire (feu de brousse). Alt. 0-1000 m.

Portuguese Guinea: Catió, between Cabuchanque and Quebu, Espírito Santo 2067 (K).

Guinea: Kankan, Herb. I.D.E.R.T. 228 MB (ABI); Sementa, Maclaud 280 (P); Farmoreah, Roberty 17336 (G, K); Dollaga, Roberty 17602 (G); sin. loc., Adam 12634 (K).

Guinea (?): "Senegambia", Karkaudy, Heudelot 880 (P).

Sierra Leone: Karene District, Scott Elliot 5637 (BM, GH, K); Kamakuia, Thomas 265 (K); Kamalu, Thomas 353 (K); Bumbuna, Thomas 3154 (P); Binkolo, Thomas 1750 (K), 1822 (BR), 1824 (K); Makump, Deighton 1359 (BM, K); Rowal, Thomas 1116 (K); Lunsar, Jordan 23 (K); Bagru R., Mann 811 (K, type); Waima, Kori Chiefdom, Deighton 5787 (K); near Yamandu, W. of Baoma, Deighton 5804 (K); Malumpo (?), Marmo 58 (K); sin. loc., Deighton 836 (K).

Ivory Coast: Aboisso, Herb. I.D.E.R.T. 3816 (ABI); S. of Aboisso, towards Krindjabo, Herb. I.D.E.R.T. 3838 (ABI, P).

Nigeria: Samban Kwoi, Southern Zaria, Wimbush (11) FHI 39620 (K); Sanga Forest Reserve, mouth of Dongon R., Kurmi, Jones FHI 42232 (K);

Brass District, Owerri Province, Mallan FHI 18302 (K); between Oron and Eket, Eket District, Calabar Province, Talbot annis 1912–1913 (BM).

Cameroons: Bamenda, Maitland 1692 (K); Banga, Kumba District, Brenan 9453 (K).

Rio Muni: Nkolentangan, Tessmann 223 (K); Bebody (?), Tessmann 790 (K).

Oubangui-Chari: Boudoli, Periquet 24 (P, type of *M. periquetii*); Ndélé, Chevalier 8129 (P); Yalinga, Le Testu 2544 (P); 25 km S. of Ippy, near Ouaka R., Tisserant 1901 (P); Mbokou R., Tisserant 447 (P, WAG); Upper Kémo R., Dybowski 721 (P); Boukoko, N. of Bangui, Tisserant 132 (P), 755 (P); sin. loc., Viancin, rec. 8 Jul. 1895 (P).

Cameroon: between Kongola and Mbussa, N. of Bétaré-Oya, Mildbraed 9122 (BM, K); Kongola, Mildbraed 9019 (BM, K); Lomo R., W. Kunde, N. of Bétaré-Oya, Mildbraed 9194 (K); Lomo R., N. of Dengdeng, Mildbraed 8912 (BM, K); near Dendeng, Mildbraed 8553 (K), 8575 (K); near Bertoua, Breteler 606 (WAG), 792 (WAG), 845 (WAG); near Doumé, Breteler 649 (WAG); Biteye, Yaoundé, Bates 1103 (BM, MO), 1172 (BM), 1536 (BM).

Gabon: near Libreville, Duparquet s.n. (P, type of *M. gabonica*); *ibid.*, Griffon du Bellay 297 (P); *ibid.*, Klaine 1689 (IFAN, P, WAG); *ibid.* (?), Klaine 1424 (P); Ndjobé, Ogooué R., Savorgnan de Brazza 219 (P); Fernan-Vaz, Walker anno 1945 (P).

Moyen Congo: Ngoko R., Pobéguin 133 (P); Baïki, between Boubangui and Boganga, Fidaou Dec. 1916 (P); Loango, Soyaux 156 (K, 2 sheets, M, type of *M. angolana*); *ibid.*, Thollon 1246 (P), 1320 (P).

Congo: Leopoldville: between Kole and Bekese, Lake Leopold II, Lebrun 6454 (BR, WAG); near Nioki, Kutu Territory, Flamigni 6032 (BR); Bokoro, E. of Kutu, Jans 638 (BR); Kizu, Wellens 242 (BR); Lukula, Verschueren 62 (BR); Gimbi, Lukula R., Toussaint 627 (BR); Pango Mungo, Mayombe, Gossweiler 6048 (BM, COI, LISU); Mayombe, Bittremieux 94 (BR); Kunga, N.W. of Kikwit, Donis 1351 (BR); Banza-Kifilu, Sapin 16 June 1906 (BR); Kasongo-Lunda, Vanderijst 16091 (BR); Kisanji, Renier 167 (BR); Kisanu-Kwango, near Panzi, Vanderijst 16771 (BR).

Equateur: Abumombozi, Mongala District, Thonner 210 (BR); Libenge, Ubangi District, Goosens 4049 (BR); Bombakabo, S. W. of Gemena, Gilbert 1534 (BR); Dongo, Ubangi R., Sapin anno 1912 (BR); Imese, Sapin anno 1913 (BR); Upoto, Robijns 964 (BR); *ibid.*, Thonner 5 (BR); Dundusana, Bumba Territory, Mortehan 225 (BR); *ibid.*, Reygaert 71 (BR); Yambata, De Giorgi 1732 (BR); Likimi, De Giorgi 1592 (BR); *ibid.*, Goosens 3203 (BR); *ibid.*, Malchair 134 (BR); Lusengo, Linder 1759 (A); Bangala District, Hens C 169 (BR, COI, K, L, P, 2 sheets, WU, Z, 4 sheets, isotypes of *M. congolana*); *ibid.*, Nouvelle Anvers, De Giorgi 133 (BR), 399 (BR), 405 (BR), 418 (BR), 456 (BR), 528 (BR), 1334 (BR); *ibid.*, Duvivier 3 (BR); *ibid.*, Laurent 20 Feb. 1896 (BR); Hanley Falls, Laurent s.n. (BR); near Mobeka, Bequaert 928 (BR); Ukatoraka, Laurent 5 Jan. 1904 (BR, paratype of *C. angolana* var. *laurentii*); Mondjo, Ikelemba R., J. Léonard 511 (BR); Dikila, Bolombo R., Bruneel Nov. 1906 (BR); Lombiolo, Befale Territory, Evrard 3006 (BM, WAG); between Busira R. and Boende, Goosens 2810 (BR); near Boende, Goosens 2826 (BR), 2834 (BR), 2836 (BR), 2879 (BR), 2926 (BR); *ibid.*, Hulstaert 1059 (BR); Eala, near Coquilhatville, Couteaux 223 (BR); *ibid.*, Goosens 4523 (BR), 4541 (BR); *ibid.*, Laurent 1995 (BR); *ibid.*, Robijns 362 (BR); *ibid.*, Pynaert 465 (BR), 651 (BR); *ibid.*, cult.,

Corbisier-Baland 1618 (BR); Lulonga, Pynaert 759 (BR); Bamanía, near Coquilhatville, Nannan 176 (BM, BR); between Wendji and Coquilhatville, Lebrun 627 (BR); Bokuma, E. of Coquilhatville, Hulstaert 77 (BR); Bokote, Ruki R., Hulstaert 1254 (BR); Bantos, Ruki R., Lebrun 517 (BR); Bokatola, S.E. of Coquilhatville, Goosens 6180 (BR); Coquilhatville-Bikoro Road, Evrard 2332 (BR); Ingende, Louis 112 (BR); Ingende Territory, L. Dubois 211 bis (BR, WAG); Boyera, Dwile R., L. Dubois 211 (BR); Gombé, Bequaert 7111 (BR); *ibid.*, Sapin anno 1912 (BR); *ibid.*, Vermoesen 2065 (BR, WAG), 2390 (BR, GH, WAG); Lukolela, Dewevre 745 (BR); *ibid.*, Laurent 13 Dec. 1903 (BR, lectotype of *C. angolana* var. *laurentii*); *ibid.*, Pynaert 188 (BR); near Bikoro, Lake Tumba, Goosens 1590 (BR); between Lukolela and Lake Leopold II, Kassner 3432 (BM).

Oriente: Nangiliwi R., Doruma, De Graer 825 (BR); Tukpwo, Gérard 1007 (BR), 3717 (BR); *ibid.*, Lecomte 48 (BR, P); Bambesa Region, Bredo 1171 (BR); Bambesa, Gérard 1049 (BR); *ibid.*, Pittery 543 (BR); *ibid.*, Steyaert 28 (BR); *ibid.*, Vrydagh 240 (BR); Gangala na Bodio, Dungu and Makulunga Rs., De Bergeyck 2 (BR); Madabu, Zobia, Gérard 2826 (BR), 3499 (BR); Mobwasa, Lemaire 315 (BR); *ibid.*, Reygaert 999 (BR); Lower Uele R., De Wulf 333 (BR); Bili R., Monga, Boutique 17 bis (BR, WAG); Epulu, Putman 12 (A, BR); Kambimbote, between Penge and Irumu, Bequaert 2669 (BR); Basoko, Magis anno 1911 (BR); Barumbu, Congo R., opposite Basoko, Bequaert 1078 (BR); *ibid.*, Claessens D 45 (BM, BR, K); Yalamba, E. of Basoko, Collart 33 (BR); near Yambuya, Gilbert 2142 (BR); Yangambi, Erkem (?) 8 Aug. 1913 (BR); *ibid.*, Gutzwiller 466 (BR), 537 (BR); *ibid.*, Louis 332 (BR), 1060 (BR, K); *ibid.*, Liben 4017 (BR); *ibid.*, Monod 11660 (IFAN); Yaleko-Opala, Vos 137 (BR).
Kivu: R. Ndarikwa, Michelson 238 (BR).

Kasai: Maio R., Kazumba Territory, Liben 3412 (BR).

Cabinda: Roca Lucola, Dawe 290 (K); Mayombe, Dawe 203 (K).

Angola: near Luachimo R., Marques 247 (COI, LISU); Amboin, Capir, Gossweiler 9852 (BM, COI, K); Púngo Andongo, Welwitsch 4760 (BM, C, COI, G, K, LISU, MO, P); Condo, near Cuanza R., Gossweiler 11849 (COI).

Sudan: Niamniam, Nabambisso R., Schweinfurth 3030 (K, paratype of *M. schweinfurthii*); Linduku R., Schweinfurth 3181 (K, lectotype of *M. schweinfurthii*); between Yei and Meridi, Equatorial Province, Meyers 6476 (K).

A comparison of the types of *M. hirsuta*, *M. angolana*, *M. gabonica*, *M. schweinfurthii*, and *M. congolana*, and the other specimens examined, shows that all belong to a single species. Among those specimens are some identified by GILG as *Coinochlamys poggeana*, e.g. Sapin 16 June 1906 (BR). Moreover as it is evident from GILG's description that Pogge's specimen belongs to *M. hirsuta*, the latter species also is reduced to synonymy.

The species is variable in the following characters: indumentum, shape and size of leaves, and shape of sepals.

3. *M. batesii* Bak., Fl. Trop. Afr. 4 (1): 506. 1903. **Fig. 2 (10–20); map 2.**

Type: Cameroun: Efoulen, Bates 429 (Baker errore 352) (K, holotype; isotype: BM).

Heterotypic synonyms: *M. taymansiana* De Wild., Ann. Mus. Congo, Sér. 5. 1:174. 1904; Baker, l.c. p. 623. 1904. Type: Congo: Kasai, Bena-Dibele, Luja 252 (BR, holotype).



Fig. 2. 1-9. *M. microphylla*: 1-2. Branches, $\frac{1}{2} \times$; 3-8. Leaves, $\frac{1}{2} \times$; 9. Calyx with pistil, $6 \times$. (1, 3-5 (Adamson 318); 2, 9 (Peter 45423); 6 (Senni 104); 7-8 (Schlieben 5747)). 10-20. *M. batesii*: 10-12. Branches, $\frac{1}{2} \times$; 13-19. Leaves, $\frac{1}{2} \times$; 20. Fruit, $1 \times$. (10, 18-19 (Bequaert 1222); 11 (Luja 252); 12-13, 15-17 (Pittery 542); 14 (Bequaert 6605); 20 (Vanderijst 8825)).

M. stimulans A. Chev., *Comptes Rendus Acad. Sci. Paris* 223: 768. 1946; Rev. Int. Bot. Appl. 27:106, pl. VI (II). 1947. Type: Gabon: Fernan-Vaz, Walker anno 1946 (P, holotype).

Twigs hirsute when young, glabrescent. *Leaf* blade elliptic, oblong-elliptic, oblong-ovate, or oblong-obovate, variable in shape and size, $1.5-2.7 \times$ as long as wide, $6-65 \times 4-27$ mm, sometimes smaller, acute, obtuse, or rounded at the apex, often apiculate at the very apex, sometimes obliquely cuneate or rounded at the base, hirsute-pilose on both sides, especially beneath, ciliate. *Inflorescence* terminal on lateral branches, very short, 1-3-flowered. *Sepals* equal or subequal, connate at the base, ovate-lanceolate to -linear, about $4-6 \times$ as long as wide, $2.5-6 \times 0.75-1$ mm, subulate, hirsute outside. *Corolla* white, yellow at the base, $2.5-3 \times$ as long as the calyx, 8-14 mm long. *Capsule* medium brown, bilobed, hirsute with hairs of different length.

Shrub or undershrub, 0.30-1.50 m high. *Stems* erect. *Leaves* usually shortly petiolate; petiole hirsute, 0.5-8 mm long; blade entire or obscurely sinuate-dentate; secondary veins 3-4 pairs, ascending and apically curved along the margin. Stipules hirsute outside, usually hidden by the hairs. *Inflorescence*: peduncle obsolete. Bracts small, sepal-like, often hidden by the hairs. Pedicels very short, hirsute. *Sepals* glabrous inside or nearly so. *Corolla* outside pilose above, glabrous beneath, inside glabrous except near the insertion of the stamens; tube 7-11 mm long, 1.5-2 mm wide at the base, 2.5-8 mm at the throat; lobes 1.5-3 mm in diam. Stamens included; filaments of short stamens widened towards the apex and abruptly narrowed below the anthers; anthers 0.7×0.6 mm. Ovary about $1.5 \times$ as long as wide, $0.6-0.8 \times 0.4-0.5$ mm, only at the apex with some hairs. *Capsule* $1.6-2 \times$ as wide as long, $5.5-8 \times 11-13$ mm, composed of 2 oblique laterally compressed-globose or -ovoid cells, truncate to emarginate at the base, bilobed at the apex. Seeds about $1.3 \times$ as long as wide, $5-7 \times 4-6$ mm.

Distribution: Cameroons, Cameroun, Gabon, Congo.

Ecology: In secondary or rain forests (teste Gérard 2391). Alt. up to 750 m.

Cameroons: Nyasoso, Schlechter 12936 (BM, Z).

Cameroun: near Dengdeng, Mildbraed 8579 (K), 8784 (K), 8871 (K); Efulen, Bates 290 (K), 429 (BM, K, type).

Gabon: Fernan-Vaz, Walker anno 1946 (P, type of *M. stimulans*).

Congo: Leopoldville: Ipamu Region, Vanderijst 8825 (BR).

Equateur: Bongabo, near Gemena, Evrard 1140 (BR), Yoseki-Bongila Road, Djolu Territory, Evrard 5737 (BR, WAG); Iwamo, Monkoto Territory, Evrard 2801 (BM, BR, WAG).

Orientale: Yambuya, Bequaert 1222 (BR); Yangambi, Liben 4018 (BR); ibid., Louis 3442 (BR, K); Bambesa, Gérard 2391 (BR); ibid., Pittery 542 (BR); ibid., Vrydagh 324 (BR); Nyakaindo R., Ndessa Region, Epulu Territory, Christiaensen 1771 (BR); Penge, banks of Ituri R., Bequaert 2503 (BR).

Kivu: between Walikale and Lubutu, Bequaert 6605 (BR); Kindu-Port Empain, Claessens 614 (BR).

Kasai: Bena-Dibele, Luja 252 (BR, type of *M. taymansiana*).

A comparison of the types of *M. batesii*, *M. taymansiana*, and *M. stimulans*, and the other specimens examined shows that all belong to a single species.

4. *M. microphylla* Gilg in Engler, Pflanzenw. Ost-Afr. C: 310. 1895; Baker in Fl. Trop. Afr. 4 (1): 505. 1903; Bruce, Kew Bull. 1956: 160. Fig. 2 (1-9); map 5.

Type: Tanganyika: Uzaramo District, Pugu Hills, Kiserawe, Stuhlmann 6172 (holotype not seen, destroyed in B; no isotype seen). Neotype: Tanganyika: 20 km S.W. of Lindi, Mlingura, Schlieben 5747 (Z, neotype; iso-neotypes: B, BM, BR, G, M, P, S, 2 sheets).

Heterotypic synonyms: *M. syringaeflora* S. Moore, Journ. Bot. 44: 24. 1906. Type: Kenya: Mombassa District, Rabai Hills, Rev. W. E. Taylor 10 Nov. 1885 (BM, holotype).

M. amabilis Turrill, Kew Bull. 1920: 25. Type: Moçambique: near the mouth of the Msalu R., C.E.F. Allen 90 (K, 2 sheets, holo- and isotype).

M. sennii Chiov., Fl. Somalia 2:304, f. 177. 1932. Type: Somalia: Ola Uager, Senni 104 (FI, holotype).

Twigs pubescent and usually with a bare stripe above the leaves when young, glabrescent. Leaf blade ovate, oblong-ovate, elliptic, or oblong-elliptic, variable in shape and size, 1.25–2.5 × as long as wide, 6–35 × 5–23 mm, sometimes smaller, obtuse, rounded, or occasionally acute at the apex, cuneate, rounded, or subcordate at the base, above sparsely pubescent on the costa, beneath less so on the costa and veins to glabrous. Inflorescence terminal on short lateral branches or axillary, usually much longer than the leaves, 1–5.5 cm long, obliquely and often incompletely dichasial, 0–5 × branched, 1– many-flowered. Flowers small. Sepals equal, connate at the base, oblong-ovate, about 2 × as long as wide, 1–1.2 × 0.5–0.6 mm, obtuse, often minutely ciliate, glabrous on both sides; after the shedding of the corolla seemingly topped by the brush-like apical hairs of the ovary which is slightly longer. Corolla white or orange (teste Peter 45423), 4–7 × as long as the calyx, 4–8 mm long. Capsule medium brown, sparsely appressed-pubescent or -pilose.

Shrub or small liana (teste Lebrun 6199), about 1.00–1.50 m high. Leaves often very shortly petiolate; petiole pubescent, up to 1.5 mm long; blade entire, sometimes with scattered hairs near the margin, beneath with domatia in the angles of some secondary veins; secondary veins 2–4 pairs, rather inconspicuous, arcuate and gradually grading into a reticulate venation. Stipules acute, pubescent outside. Inflorescence: peduncle slender, often with 2 lines of hairs near the base, up to 2 cm long. Branches opposite or subopposite. Bracts very small, triangular, sepal-like. Pedicels slender, about as long as the flowers or longer. Sepals entire. Corolla glabrous on both sides; tube 3–6 mm long, 0.7–1 mm wide at the base, 1.5–3 mm at the throat; lobes 1–2 mm in diam., entire. Stamens only in long-staminate flowers exerted and glabrous, inserted at about one-third from the base of the corolla tube; anthers 0.6–0.7 × 0.6–0.7 mm. Ovary with conspicuous stiff erect hairs at the apex, about 2 × as long as wide, 1.2–1.4 × 0.6–0.7 mm. Capsule obcordate, 5–7 × 9–9.5 mm, rounded at the base, bilobed at the apex.

Distribution: Congo, Somalia, Kenya, Tanganyika.

Ecology: Coastal evergreen bushland, gallery, or rain forests. Alt. up to 350 m.

Congo: Kivu: between Katakokombe and Lodja, Lebrun 6199 (BR).

Somalia: Ola Uager, Senni 104 (FI, type of *M. sennii*).

Kenya: Kitangani, Lamu District, Adamson 318 (Bally 5824) (EA, G, K); Rabai Hills, Mombassa District, Rev. W. E. Taylor 10 Nov. 1885 (BM, type of *M. syringaeflora*).

Tanganyika: Pugu, Uzaromo District, Holtz 870 (EA); *ibid.*, Peter 45423 (B); *ibid.*, Vaughan 2545 (BM, EA); between Luga (?) and Baha, Uzaromo District, Peter 14916 (B); Lindi Creek, Lindi District, Gillman 1167 (EA, K); 20 km S.W. of Lindi, Lindi District, Schlieben 5747 (B, BM, BR, G, M, P, S, 2 sheets, Z, neotype).

Moçambique: near mouth of Msalu R., C.E.F. Allen 90 (BM, K, type of *M. amabilis*).

5. *M. brunonis* Didr., Vidensk. Meddel. Nat. Foren. Kjoeb. 1853: 87. 1854; Hiern, Cat. Welw. Afr. Pl. 1: 699. 1898; Baker in Fl. Trop. Afr. 4 (1): 505. 1903.

Type: Lower Congo: *sin. loc.*, Chr. Smith s.n. (C, holotype; isotypes: BM, C).

Heterotypic synonyms: *Leptocladus thomsonii* Oliv., Journ. Linn. Soc. 8: 160, t. 12. 3rd. fig. 1865; Hiern, l.c. Type: S. Nigeria: Old Calabar, Thompson 44 (K, holotype; isotype: E).

Homotypic synonym: *M. thomsonii* (Oliv.) Benth. in W. J. Hooker, Icon. 12: 83. 1876; Gilg in Engl. Bot. Jahrb. 17: 561. 1893; Baker, l.c.; Hutchinson & Dalziel, Fl. W. Trop. Afr. 2: 20. 1931.

M. madagascarica Baill., Bull. Mens. Soc. Linn. Paris 1: 245. 1880. Lectotype: Madagascar: Diego-Suarez, Bernier 106 (P, lectotype).

M. pervilleana Baill., l.c. p. 246. Type: Madagascar: Ambongo, Pervillé 621 (P, holotype).

M. buchholzii Engl. in Engl. Bot. Jahrb. 7: 339. 1886; Baker, l.c. p. 505. Lectotype: Rio Muni: Mount John, Kougué R., Mann 1777 (K, lectotype; isotypes: GH, P).

M. rubrinervis Engl. in op. cit. 7: 340. 1886; Pflanzenw. Ost-Afr. C: 310. 1895; Baker, l.c. p. 508. 1903. Type: Kenya: Mombassa, Wakefield s.n. (K, holotype).

Homotypic synonym: *M. orientalis* Bak., Kew Bull. 1895: 96; Gilg in Engl. Bot. Jahrb. 23: 197. 1896.

M. schumanniana Gilg in op. cit. 17: 560. 1893; Baker, l.c. p. 508. Type: Moyen Congo: Loango, Soyaux 136 (holotype not seen, destroyed in B; isotypes: K!, W!).

M. walleri Bak., Kew Bull. 1895: 96 (Apr.–May 1895); l.c. p. 507. 1903; Bruce, Kew Bull. 1956: 159; Bruce & Lewis in Fl. Trop. E. Afr., Loganiaceae 4, f. 1. 1960. Type: Moçambique: Zambézia, Morrumbala Mt., Waller s.n. (K, holotype).

M. fuchsiaefolia Bak., Kew Bull. 1895: 96; l.c. p. 507; Hiern, l.c. Lectotype: Angola: Púngo Andongo, near Mata di Cabondo, Welwitsch 4759 (K, holotype; isotypes: BM, 2 sheets, C, COI, G, LISU, 4 sheets, MO, P).

M. zenkeri Gilg, Notizbl. Bot. Gart. Berlin 1: 73. 1895 (5 June 1895); Baker, l.c. p. 507. Type: Cameroun: Yaoundé, Zenker 211 (holotype not seen, destroyed in B; isotypes: BM!, K!).

M. grandiflora Gilg ex Engl., Abh. Preuss. Akad. Wiss. 51, 69. 1894, nomen; Gilg in Engler, Pflanzenw. Ost-Afr. C: 310. 1895 (2 Aug. 1895); in Engl. Bot. Jahrb. 23: 198. 1896; in op. cit. 28: 117. 1899; Baker, l.c. p. 507. Lectotype: Tanganyika: Lushoto District, Usambara Mts., Lutindi, Holst 3430 (M, lectotype; isotypes: HBG, K, W, Z).

? *M. penduliflora* Gilg in op. cit. 23: 198. 1896; Baker, l.c. p. 505. Syntypes: Congo: Kasai, Lulua R., Pogge 886 and 1129, not seen, destroyed in B.

M. densiflora Gilg in Engl. Bot. Jahrb. 23: 198. 1896; Baker, l.c. p. 508; Cava-

co, Bull. Mus. Hist. Nat. Paris Sér. 2. 29: 513. 1957. Type: Congo: Leopoldville, Mayombe, Herb. Bruxelles (leg. Laurent), Sept. 1893 (BR, holotype).

M. ulugurensis Gilg in op. cit. 23: 198. 1896; in op. cit. 28: 117. 1899; Baker, c. p. 506. Type: Tanganyika: Morogoro District, Uluguru Mts., Nglewenu, Stuhlmann 8865 (holotype not seen, destroyed in B; isotype: K, fragm.!).

? *M. dinklagei* Gilg in op. cit. 28: 116. 1899; Baker, l.c. p. 508. Type: Cameroun: Ebea Falls, Dinklage 180 (holotype not seen, destroyed in B; no isotype seen).

? *M. erythrophylla* Gilg in op. cit. 28: 117. 1899; Baker, l.c. p. 506; Bruce & Lewis, l.c. p. 7. Type: Tanganyika (?): East shore of Lake Tanganyika, v. Trotha 10 (holotype not seen, destroyed in B; no isotype seen).

M. camporum Gilg in op. cit. 28: 117. 1899; Baker, l.c. p. 509; Bruce & Lewis, l.c. p. 5. Type: Tanganyika: Kilosa District, Khutu Plain, near Mgunda, Goetze 379 (holotype not seen, destroyed in B; isotypes: BM!, BR!, K!).

M. lujaei De Wild. et Th. Dur., Compt. Rend. Soc. Bot. Belg. 39: 67. 1900; Baker, l.c. p. 506. Type: Congo: Leopoldville, Stanley-Pool, Sabuka, Luja 27 (BR, holotype; isotype: P).

M. duchesnei De Wild., Ann. Mus. Congo Sér. 5. 1: 173. 1904; Baker, l.c. p. 623. 1904. Type: Congo: Orientale, Stanleyville, Duchesne 16 (BR, holotype).

M. gillettii De Wild., l.c. p. 174; Baker, l.c. p. 623. 1904. Lectotype: Congo: Leopoldville, Djuma R., Gillet 2829 (BR, lectotype).

M. angustifolia Wernham in Cat. Talbot's Nigerian Pl. 66. 1913; Hutchinson & Dalziel, Fl. W. Trop. Afr. 2: 20. 1931. Type: Nigeria: Calabar, Oban, Talbot 1035 (BM, holotype).

? *M. longipetiolata* Gilg in Mildbraed, Wiss. Ergebn. Deutsch. Zentr.-Afr. Exped. 1907-'08. 2: 530. 1914. Type: Congo: Orientale, between Irumu and Mawambi, near Wambutti, Mildbraed 2899 (holotype not seen, destroyed in B; no isotype seen).

M. vankerckhoveni De Wild., Bull. Jard. Bot. Brux. 5: 15. 1915. Type: Congo: Kasai, South of Lusambo, St. Trudon, Van Kerckhoven, 15 Aug. 1913 (BR, holotype).

M. buchholzii Engl. var. *angustifolia* Pellegr., Mém. Soc. Linn. Normandie, Nouv. Sér. 1 (3): 36. 1928. Type: Gabon: bank of Mouvanga R., near Dédi, Le Testu 1327 (P, holotype).

M. megaphylla Good, Journ. Bot. 67: 100. 1929. Type: Angola: Cabinda: banks of N'Zanza R., near Lufo R., Belize, Gossweiler 7749 (BM, holotype; isotypes: LISU, 2 sheets).

M. gracilipes Mildbr., Notizbl. Bot. Gart. Berlin 11: 675. 1932. Type: Tanganyika: Ulanga District, near Massagati, north of Ruhudje R., Schlieben 1115 (holotype not seen, destroyed in B; isotypes: BR!, G!, Z!).

M. gossweileri Cavaco, Bull. Mus. Hist. Nat. Paris Sér. 2. 29: 513. 1957. Type: Angola: northeast of Lunda, Dundo, near Luachimo R., Gossweiler 13569 (holotype: herb. Diamang, not seen; isotypes: B!, COI!, K!).

M. lundensis Cavaco, l.c. Type: Angola: Dundo, near Luachimo R., Gossweiler 13569 C (holotype: herb. Diamang, not seen; isotype: BM!).

Twigs near the apex variously hairy or glabrous.¹ Leaf blade dull when dry, extremely variable in shape and size, 1.2–6 × as long as wide, variously hairy or

¹ Some Madagascarian specimens densely hirsute or hirto-pilose (see notes, p. 26).

glabrous.¹⁾ *Inflorescence* axillary or terminal, usually on short lateral branches, 1-many-flowered, lax to subcapitate, shorter or longer than the leaves. *Sepals* connate at the base up to half their length, equal or unequal, ovate, ovate-lanceolate, or ovate-linear (the first two forms and the last two usually together in a single flower!), 1.5-6 × as long as wide, 1-4 (5) × 0.3-1 mm, acute to subulate at the apex, hairy or glabrous outside, usually longer than the ovary. *Capsule* mostly medium to dark brown when dry, usually bilobed, glabrous or hairy, dull.

Shrub, undershrub, or occasionally liana, 0.30-7.00 m high, usually much branched. *Stems* erect or overhanging, with spreading branches. *Leaf* blade beneath often with domatia in the angles of some secondary veins. *Inflorescence*: peduncle, branches, and pedicels short or long, densely appressed-pubescent to glabrous, sometimes slightly strigillose, all more or less independently variable. Bracts very small, triangular, approximately sepal-like. *Sepals* if unequal the longest up to about twice as long as the shortest and in three or four sizes in a single flower, entire, sometimes ciliolate, glabrous inside. Stamens included or in long-staminate flowers slightly exerted; filaments usually pubescent, those of short stamens often widened near the anther when young, inserted at about one-third from the base of the corolla tube; anthers 0.7-1.2 × 0.6-1 mm. Ovary about 1.2-2 × as long as wide, 1-1.5 × 0.6-1.2 mm, glabrous or appressed-pubescent near the apex (varying independently from the indumentum and the shape of the sepals).

Distribution: Tropical Africa, from Ghana to Madagascar.

Ecology: Various habitats. Alt. 0-2000 m.

Key to the varieties:

1. Fruits ellipsoid or fusiform; leaves beneath usually strigillose. Eastern Congo and East Africa a. **M. b. var. fusiformis**
Fruits bilobed or obcordate, one lobe sometimes by abortion undeveloped; leaves and sepals variously hairy or glabrous 2
2. Fruits grey, densely piloso-pubescent with a double indumentum, distinctly cuneate at the base; leaves very small, orbicular or ovate. Kenya and Tanganyika b. **M. b. var. obcordata**
Fruits usually dark brown, never grey, appressed-piloso-pubescent to glabrous, if conspicuously hairy never distinctly cuneate at the base; leaves variously shaped and sized c. **M. b. var. brunonis**

a. **M. brunonis** var. **fusiformis** Leeuwenberg, var. nov. **Fig. 3 (2-3); map 7.**
Type: Congo: Orientale, Djugu, Kibala-Ituri, Lebrun 3940 (BR, holotype).

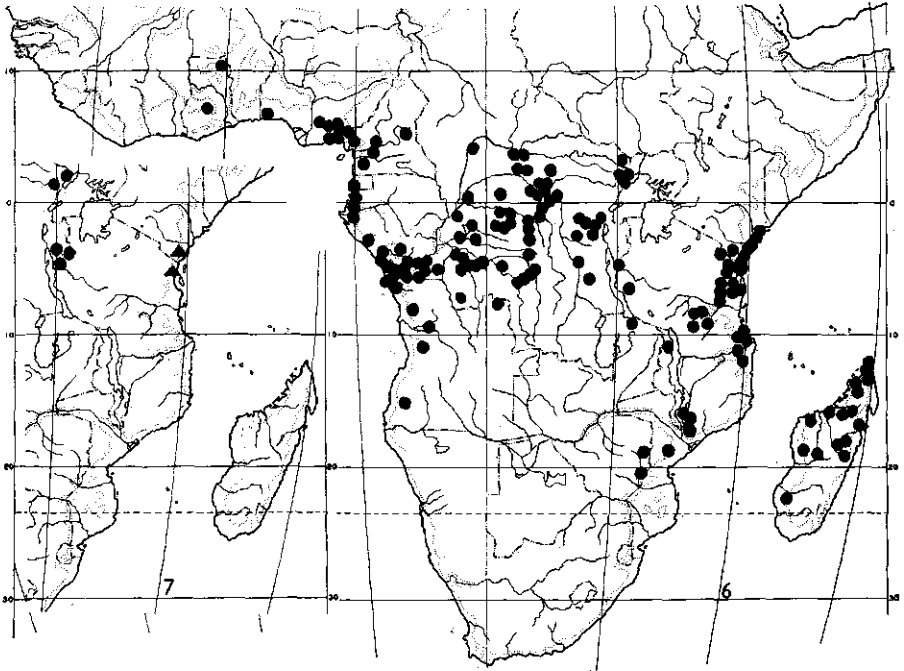
Frutex foliis parvis. Inflorescentia subumbellata pedunculata. Fructus fusiformis vel ellipticus.

Shrub 0.90-5.00 m high. Twigs, leaves, and corolla see "*M. walleri*", p. 25. Peduncle about as long as the leaves or somewhat shorter, sparsely appressed-pubescent. Pedicels short, shorter than the peduncle. *Sepals* connate at the base, equal or unequal, ovate-elliptic to ovate-lanceolate, 2-4 × as long as wide, 1.5-2 × 0.5-0.7 mm, sparsely pubescent to glabrous outside. Seeds 1-4, filling the fruit-cavity, if solitary recurved plano-convex.

Distribution: Eastern Congo, Urundi, Tanganyika.



Fig. 3. *M. brunonis*: 1. var. *obcordata* (holotype), 1 ×. 2-3. var. *fusiformis* (holotype): 2. Branch, 1 ×; 3. Seed, 2 ×. 4-16. var. *brunonis*: 4-5. "*M. walleri*" (Torre 5235): 4. Branch, 1 ×; 5. Leaf beneath, 1 ×; 6-8. "*M. brunonis*": 6. Branch (holotype), 1 ×; 7. Branch, 1 ×; 8. Leaves, $\frac{1}{2}$ ×; (7-8 (Welwitsch 4759)); 9. "*M. densiflora*" (holotype): Branch, 1 ×; 10. "*M. pervilleana*" (holotype): Branch, 1 ×; 11. "*M. angustifolia*" (Brenan 9247): Branch, 1 ×; 12-14. "*M. madagascariensis*" (Drummond & Hemsley 3805): 12. Branch, 1 ×; 13. Leaves, $\frac{1}{2}$ ×; 14. Fruit, 1 ×; 15. "*Hairy form of Madagascar*" (Humbert 19001): 15. Branch, 1 ×; 16. Leaves, $\frac{1}{2}$ ×.



Map 6. *M. brunonis* var. *brunonis*; Map 7. Round dots: *M. brunonis* var. *fusiformis*; triangular dots: *M. brunonis* var. *obcordata*.

Ecology: Gallery, secondary, or rain forests, in the mountains. Alt. up to 1800 m.

Congo: Orientale: Djugu, Lebrun 3940 (BR, type); *ibid.*, Bamps 133 (BR); Mt. Homas, Irumu, Germain 5183 (BR).

Urundi: Kiaro Mosso, Michel & Reed 1340 (BR); Kikikya Mosso, Yaline, Michel 2888 (BR).

Tanganyika: Western Province: Uha Region, between Tare and Bugenze (?), Peter 46388 (B); Mkuti R., Kasulu District, Procter 364 (EA, K).

This variety differs from the other varieties of this species and also from the other species of *Mostuea* in its fusiform or ellipsoid fruits. In all other characters it agrees very well with *M. brunonis* var. *brunonis* ("*M. walleri*", see p. 25) and so only fruiting specimens can be identified as belonging to var. *fusiformis*. Among flowering specimens identified as *M. brunonis* var. *brunonis* ("*M. walleri*", see p. 25) may be some which actually belong to this variety. For this reason the cited specimens are listed as "fl." (flowering) and "fr." (fruiting).

The same applies to var. *obcordata*.

b. ***M. brunonis* var. *obcordata*** Leeuwenberg, var. nov. **Fig. 3 (1); map 7.**

Type: Tanganyika: Tanga Province, Pangani, Madanga, Mkuzikatani, Kibubu, Tanner 3626 (K, holotype; isotype: BR).

Frutex parvus ramosissimus. Folia parva sparse strigillosa. Flores solitariae. Fructus obcordatus griseus dense piloso-pubescentis.

Leaf blade orbicular, oblong-ovate or oblong-elliptic, 1–2.2 × as long as wide, 4–20 × 3–9 mm, obtuse with an apiculate tip, sparsely strigillose on both sides, especially beneath. *Flowers* solitary at the apices of short lateral branches. *Sepals* connate at the base, unequal, ovate-lanceolate, 2–4 × as long as wide, 1–2.5 × 0.5 mm, long-acuminate, sparsely strigosopubescent outside. *Corolla* white, 7–8 mm long, glabrous outside. *Capsule* obcordate, about 1.5 × as wide as long, 6–7 × 9–10 mm, cuneate instead of truncate at the base with a double indumentum of pubescent and pilose hairs.

Leaves cuneate or rounded at the base, entire. Peduncle short, 1–2 mm long, sparsely strigillose. Other characters see "*M. walleri*", p. 25.

Distribution: Kenya, Tanganyika.

Ecology: In shrub layer of coastal or secondary forests, in dry places, on sandy loam. Alt. 0–100 m.

Kenya: between Umba and Mwena Rs. on Lungabunga-Msambweni Road, Kwale District, Drummond & Hemsley 3788 (fr.: BM, BR, EA, FI, K, P, S).

Tanganyika: Tanga Province, Pangani, Madanga: Bandasharia, Tanner 3522 (fr.: K); Kibubu, Mkusikatani, Tanner 3626 (fl., fr.: BR, K, type).

See note to *M. b.* var. *fusiformis*.

This variety was cited by BRUCE & LEWIS as *M. sp. C*.

c. *M. brunonis* var. *brunonis*

Figs. 3–4; map 6.

Capsule often pink or red, mostly medium to dark brown when dry, bilobed, sparsely appressed-pubescent to glabrous or appressed-piloso-pubescent, mostly truncate to subcordate at the base.

Leaf blade 0.6–15 (28) × 0.3–8 (12.5) cm. *Corolla* white, lilac, or pink, mostly with a yellow or orange base and throat (sometimes entirely yellow, orange, or red, or red with yellow), 6–18 mm long; sometimes amply infundibuliform, usually glabrous outside; tube 5–13 mm long, 1–1.5 mm wide at the base, 2–9 mm at the throat; lobes 1–5 mm in diam. *Capsule* mostly 1.6–2.4 × as wide as long, 4–7 (13) × 8–14 mm, composed of two oblique laterally compressed-globose or -ovoid cells, with an impressed line in the middle, apically emarginate to bilobed, often with an apiculate tip. Other characters see species diagnose.

Distribution: Tropical Africa, from Ghana to Madagascar.

Ecology: In moist or dry places, in secondary, gallery, or rain forests. Alt. 0–2000 m.

372 specimens examined from the following countries: Ghana, Nigeria, Cameroons, Rio Muni, Cameroun, Gabon, Moyen Congo, Congo, Angola, S. Rhodesia, Tanganyika, Kenya, and Madagascar, represented in the following herbaria: B, BM, BOL, BR, BRSL, C, COI, E, EA, FI, G, GH, GOET, HBG, K, L, LISC, LISU, M, MO, P, PR, S, U, UC, W, WAG, WU, and Z.

This extremely variable taxon could be subdivided in several forms, see p. 23–26.

Notes. *Mostuea* contains 8 species of which 7 are clear-cut and one consisting of a number of various forms. This species is represented in the herbaria by about 400 specimens of excellent material. It occurs nearly throughout the African part of the area of the genus in different habitats: moist or dry places, in gallery, secondary, or rain forests, from the coast to the mountains. The following characters vary:

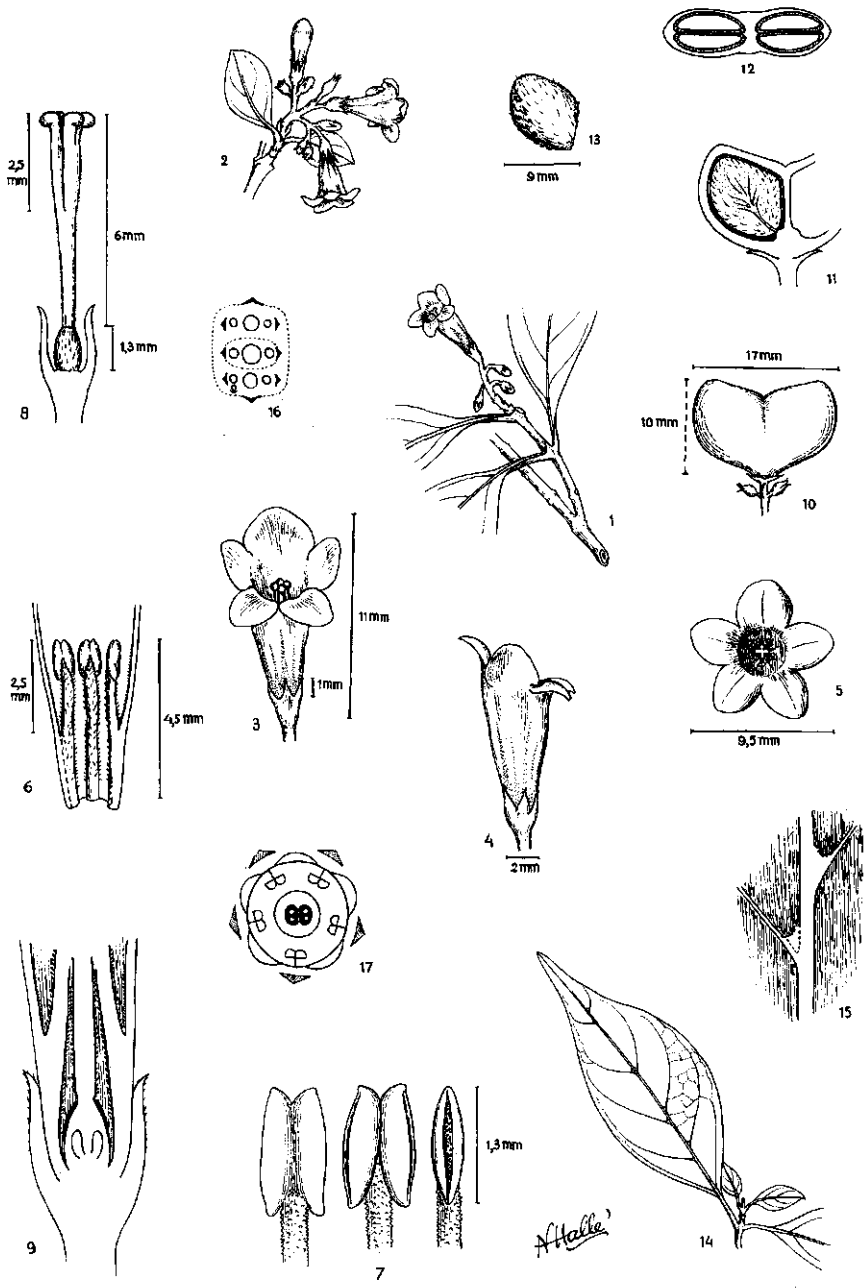


Fig. 4. *M. brunonis* var. *brunonis* form "*M. buchholzii*" (Hallé 793 (P)): 1-2. Flowering branches; 3-5. Flowers; 6. Stamens; 7. Anthers; 8. Pistil; 9. Longitudinal section of flower; 10. Fruit; 11. Longitudinal and 12. Transverse sections of fruit; 13. Seed; 14. Vegetative twig; 15. Costa beneath, with domatia; 16. Diagram of inflorescence; 17. Diagram of flower.

Twigs apically uniformly appressed-pubescent, glabrous or nearly so, or with 2 lines of pubescence below the stipules. Leaves very variable in shape and size, orbicular to lanceolate, obtuse to acuminate, hairy to nearly glabrous. Inflorescence lax to subcapitate, 1- many-flowered. Peduncle, branches, and pedicels glabrous to hairy. Sepals triangular to linear-lanceolate, 1.5-6 × as long as wide, equal to very unequal, glabrous to hairy. Fruits usually bilobed, occasionally fusiform or ellipsoid, glabrous to hairy.

Specimens with lanceolate leaves were collected on river banks, the large-leaved usually in the shade, and the small-leaved often in open places. Although few ecological data are available, it is possible that these forms are ecotypes. It is not probable that *Mostuea* is apomictic because cross-pollination seems likely, its flowers being dimorphic.

Nothing is known about cytology or genetics and my conclusions are all based upon morphological characters. The large majority of characteristics vary independently and therefore it is not possible to subdivide the species into well-marked varieties. Nevertheless, as the extreme forms seem widely different, after a discussion of the types of supposed species and intermediate specimens, a tentative segregation of forms is suggested though not proposed as taxonomically tenable on a morphological basis.

The type of *M. brunonis* has small elliptic leaves with an obtuse or rounded apex, few-flowered inflorescences with rather long glabrous peduncles, and nearly glabrous sepals which are 1.5 × as long as wide.

The type of *M. thomsonii* has larger oblong-elliptic and oblong-ovate leaves with a slightly acuminate obtuse apex, few-flowered inflorescences with rather long or short peduncles, sparsely appressed-pubescent sepals which are 1.5 × as long as wide.

The type of *M. schumanniana* has oblong-elliptic and oblong-ovate leaves with an obtuse or obtuse-tipped acuminate apex, many-flowered lax inflorescences with long more or less sparsely appressed-pubescent peduncles, and more or less sparsely appressed-pubescent sepals which are 1.5-3 × as long as wide.

The type of *M. fuchsiaeifolia* has the leaf shapes of *M. brunonis*, of *M. thomsonii*, and of *M. schumanniana*, few- and many-flowered inflorescences like those of *M. brunonis* and *M. schumanniana* with more or less appressed-pubescent peduncles, and sepals like those of *M. thomsonii* and of *M. schumanniana*.

The types of *M. vankerckhoveni* and *M. gossweileri* have leaves like *M. brunonis*, few-flowered inflorescences with rather short peduncles, and nearly glabrous sepals which are 1.5 × as long as wide.

The type of *M. lundensis* has leaves like *M. schumanniana*, inflorescences like *M. thomsonii* (with a glabrous peduncle), and sepals like *M. schumanniana*, hairy like those of *M. brunonis*.

M. penduliflora differs from *M. brunonis* only by its elongate 2-3 cm long peduncles with solitary flowers, according to its description. All other described characters agree very well with *M. brunonis*.

A study of the specimens cited by BRUCE & LEWIS (1960) and of considerably more material confirmed their conclusions about the synonymy of *M. walleri*. Also *M. gracilipes* could be reduced to synonymy with certainty as there are several specimens intermediate between the types of *M. walleri* and *M. gracilipes*.

According to the description *M. erythrophylla* is conspecific with *M. walleri* (sensu BRUCE & LEWIS).

The type of *M. gillettii* agrees exactly with that of *M. walleri* in all its characters.

The type of *M. camporum* is slightly less hairy, but is connected with the type of *M. walleri* by many intermediates. On the other hand it resembles the type of *M. brunonis* by the leaves and sepals. From the latter type specimen it differs only by its sessile instead of distinctly pedunculate inflorescences.

The type of *M. zenkeri* has distinct peduncles and ovate sepals like the type of *M. brunonis* and an indumentum like the type of *M. walleri*.

The type of *M. duchesnei* has an indumentum and leaf shapes like the types of *M. gracilipes*, *M. walleri*, and *M. zenkeri* and a conspicuously pedunculate nearly subcapitate inflorescence by which it resembles the type of *M. densiflora*.

The type of *M. densiflora* has rather large oblong-elliptic rather distinctly veined leaves with an obtuse-tipped acuminate apex, subcapitate inflorescences with densely appressed-pubescent peduncles and conspicuously appressed-pubescent sepals in various lengths which are about 5 × as long as wide.

The description of *M. longipetiolata* shows that this species belongs to the complex *M. brunonis*, and that it is intermediate between *M. densiflora* and *M. walleri*.

The type of *M. buchholzii* has oblong-elliptic rather distinctly veined leaves with an acuminate apex, very short pedunculate inflorescences, and sepals like the type of *M. brunonis*. In all these characters it agrees exactly with the types of *M. lujaei* and *M. megaphylla*. The latter type specimen differs only from the two others in its large leaves. As it was collected in a shady place (cf. Le Testu 1335 (P), also with very large leaves) and the leaf-size is widely variable throughout the genus, it is not acceptable as a distinct taxon.

The type of *M. angustifolia* has an inflorescence like *M. brunonis*, sepals like *M. schumanniana*, lanceolate leaves with an acuminate apex, and two lines of pubescence below the stipules.

The type of *M. buchholzii* var. *angustifolia* differs from that of the preceding by its slightly narrower sepals, somewhat more distinctly veined leaves, and uniformly appressed-pubescent twigs.

According to its description *M. dinklagei* is identical with *M. angustifolia*.

The type of *M. madagascariensis* agrees in all characters exactly with the type of *M. angustifolia*.

The type of *M. rubrinervis* has nearly glabrous twigs, oblong-ovate and oblong-elliptic leaves with an obtuse-tipped acuminate apex like those of the type of *M. schumanniana*, sepals approximately like those of the type of *M. brunonis*.

The type of *M. pervilleana* has uniformly appressed-pubescent twigs, small elliptic acute leaves which are intermediate between those of the types of *M. brunonis* and *M. madagascariensis*, few-flowered long-pedunculate inflorescences and sepals like those of the type of *M. schumanniana*.

In the East African part of its area *M. madagascariensis* (certainly conspecific with *M. rubrinervis*) can be distinguished, to some extent, from *M. brunonis*, although some intermediate specimens occur there. Especially if *M. brunonis* is represented by somewhat setose specimens (which were originally described as *M. walleri*) a specific difference might be supposed. In the remainder of its area, however, this difference entirely disappears. The same is true for the segregation of *M. angustifolia* and *M. brunonis* (inclusive of *M. thomsonii*) in Nigeria and Cameroun.

Therefore only some of the taxa (so-called species) in the complex *M. brunonis* may be distinguished in some areas near the boundary of the area of the whole complex and merge with the remainder of the complex in its geographical centre.

Several specimens appear to be perfect intermediates between e.g.: *M. angustifolia* and *M. buchholzii*: Devred 2849 (BR), Gillardin 434 (BR); *M. angustifolia* and *M. buchholzii* var. *angustifolia*: Latilo FHI 40338 (K), de Wit 386 (WAG), Evrard 2804 (BR, WAG); *M. angustifolia* and *M. densiflora*: Evrard 5305 (BR, WAG), Louis 12367 (BR), Troupin 3703 (BR, K), 3744 (BR, K), 3815 (BR, K); *M. angustifolia* and *M. schumanniana*: Evrard 4652 (BR), Laurent 22 Nov. 1903 (BR), Toussaint 916 (BR); *M. brunonis* and *M. buchholzii*: Trilles 116 (P); *M. brunonis* and *M. camporum*: Proctor 589 (EA, K), Van Kerckhoven 15 Aug. 1913 (BR, type of *M. vankerckhoveni*); *M. brunonis* and *M. densiflora*: Louis 13089 (BR); *M. brunonis* and *M. schumanniana*: Welwitsch 4759 (BM, C, COI, G, K, LISU, MO, P, type of *M. fuchsiaefolia*), A. Léonard 3808 (BM, BR), Thompson 44 (E, K, type of *M. thomsonii*); *M. brunonis* and *M. zenkeri*: Vigne 1972 (BR, K, P), Gocker 43 (GH, MO); *M. buchholzii* and *M. densiflora*: Vanderijst 8420 (BR), Vermoesen 1689 (BR, K, P, S); *M. buchholzii* and *M. schumanniana*: Bequaert 6608 (BR), Leroy annis 1894-'95 (P); *M. camporum* and *M. walleri*: Greenway 2898 (EA, K), Wild 2177 (BR, COI, K, S); *M. densiflora* and *M. schumanniana*: Donis 2036 (BR), Evrard 2151 (BR), Mortehan 1007 (BR); *M. densiflora* and *M. walleri*: Louis 13346 (BR), Callens 2520 (BR), Smeyers 210 (BR); *M. gracilipes* and *M. walleri*: Schlieben 2722 (B, BM, BR, G, K, M, P, PR, S, Z), Torre 5235 (LISC); *M. madagascariensis* and *M. pervilleana*: Viguier & Humbert 818 (P), Perrier de la Bâthie 17000 (P), Service des Eaux et Forêts de Madagascar 2338 (P); *M. madagascariensis* and *M. rubrinervis*: Semsei 1145 (BR, EA, FI, K, LISC, S), Drummond & Hemsley 3805 (BR, EA, FI, K, S, leaves of EA sheet obtuse, those of S sheet acuminate), Perrier de la Bâthie 3751 (P); *M. madagascariensis* and *M. walleri*: Carmichael 129 (EA, K, cited by BRUCE & LEWIS as *M. camporum*), Haerdi 194/0 (EA, K), Evans 27 (EA, cited by BRUCE & LEWIS as *M. camporum*); *M. penduliflora* and *M. walleri*: Eggeling 6418 (K, cited by BRUCE & LEWIS as *M. sp. B*); *M. schumanniana* and *M. walleri*: Vanderijst 27926 (BR), 27929 (BR), Louis 7108 (BR).

Although it is evident that *M. brunonis* sensu lato cannot be segregated in smaller taxa on morphological grounds, some forms can be recognized. For these forms no new combinations are coined because separating these as distinct taxa would be mere herbarium taxonomy and not a delimitation based on constant and different characters. Some of these forms are again a complex of changing characters, so e.g. *M. brunonis* and *M. walleri*.

A tentative segregation of some forms results in the following enumeration:

“*M. angustifolia*” (inclusive of *M. dinklagei* and *M. buchholzii* var. *angustifolia*).

Twigs uniformly appressed-pubescent or sometimes with two lines of pubescence below the stipules. Leaf blade lanceolate or sometimes linear- or ovate-lanceolate, 3–6 × as long as wide, 21–75 × 6–24 mm, acuminate at the apex, glabrous or sparsely appressed-pubescent on the costa and veins beneath. Inflorescence usually about half as long as the leaves. Peduncle, branches, and pedicels sparsely appressed-pubescent to glabrous. Sepals connate at the base up to about half their length, equal or unequal, ovate to ovate-lanceolate,

1.5–4 × as long as wide, acuminate to subulate, sparsely appressed-pubescent or glabrous.

Distribution: Nigeria, Cameroun, Gabon, Congo, Angola.

Ecology: on river banks or on rocks in river beds, in rain forests. Alt. 0–750 m.

Representative specimens:

Nigeria: Calabar, Kwa Falls, Brenan 9247 (K).

Cameroun: near Loum, de Wit 386 (WAG).

Congo: Equateur: Monkoto Territory, Iwama, Evrard 2804 (BR, WAG).

“*M. brunonis*” (inclusive of *M. thomsonii*, *M. schumanniana*, *M. fuchsiaefolia*, *M. vankerckhoveni*, *M. gossweileri*, and *M. lundensis*).

Twigs uniformly appressed-pubescent. *Leaf* blade rather small, suborbicular, ovate, oblong-ovate, elliptic, oblong-elliptic, obovate, oblong-obovate, or rhomboid-elliptic, very variable in shape and size, 1.25–3 × as long as wide, 5–65 (100) × 4–35 (53) mm, rounded, obtuse, or acute at the apex, sparsely strigillose to glabrous on both sides. *Inflorescence* few- to many-flowered, usually lax. *Sepals* equal or unequal, ovate or ovate-lanceolate, 1.5–3 × as long as wide, sparsely appressed-pubescent to glabrous outside, more or less ciliolate.

Distribution: Tropical Africa, from Ghana to Tanganyika.

Ecology: Secondary, gallery, or rain forests. Alt. up to 1100 m.

Representative specimens are the types of the synonyms enumerated with this form and the following:

Nigeria: Old Calabar, Robb s.n. (BM).

Congo: Kasai: between Ipamu and Pangu, Vanderijst 9510 (BR).

Kivu: Shabunda Territory, A. Léonard 3808 (BM, BR).

“*M. buchholzii*” (inclusive of *M. lujaei* and *M. megaphylla*).

Twigs glabrous, with some hairs below the stipules or sparingly and minutely puberulous at the very apex. *Leaf* blade oblong-elliptic or oblong-lanceolate, 1.5–3.5 × as long as wide, 2.5–15 (28) × 1–8 (12.5) cm, acuminate or sometimes acute at the apex, glabrous on both sides. *Inflorescence* very short, usually slightly longer than the petioles, about 3–20-flowered. *Sepals* connate at the base, equal, triangular-ovate, 1.25–1.5 (2) × as long as wide, acute or sometimes slightly acuminate, minutely puberulous to glabrous outside.

Distribution: Rio Muni, Cameroun, Gabon, Moyen Congo, Congo, Angola.

Ecology: Rain forests, sometimes on moist places, at low elevations.

Representative specimens:

Cameroun: Bipindi, Zenker 48 (B, BOL, BR, C, FI, G, GH, P, U, UC, WAG), 3178 (BM, BR, BRSL, COI, E, G, GOET, HBG, K, L, M, MO, P, PR, S, W, WU, Z).

Gabon: Gabon R., Man 970 (GH, K, P, paratype of *M. buchholzii*).

“*M. densiflora*”.

Twigs uniformly appressed-pubescent. *Leaves* usually larger than those of “*M. brunonis*”, sometimes with more conspicuous veins beneath. *Inflorescence* many-flowered, subcapitate. Peduncle densely appressed-pubescent. *Sepals* equal or unequal, 3–6 × as long as wide, appressed-pubescent.

Distribution: Congo.

Ecology: Secondary or rain forests, at low elevations.

Representative specimens:

Congo: Leopoldville: Upper Shiloango R., Michel anno 1904 (BR); Luki R., Donis 1574 (BR).

“*M. madagascariensis*” (inclusive of *M. rubrinervis*).

Twigs with 2 lines of pubescence or with some hairs below the stipules near the apex or entirely glabrous. *Leaf* blade elliptic to lanceolate, 2–3.5 (6) × as long as wide, 32–88 × 10–33 mm, acuminate or sometimes more or less obtuse, but always apiculate at the apex, glabrous or sparsely strigillose on both sides, especially on the costa. *Inflorescence* usually about as long as the leaves, up to 55 mm long, 1–9-flowered. *Sepals* equal, ovate or ovate-lanceolate, 1.5–2.5 × as long as wide, acuminate, more or less ciliate, glabrous, sometimes pubescent outside, especially above.

Distribution: Kenya, Tanganyika, Madagascar.

Ecology: In open places in undergrowth of coastal or riparian forests. Alt. 0–1200 m.

Representative specimens:

Kenya: Sokoki, Kilifi, Graham 1949 (EA, FI, K, PR).

Tanganyika: Morogoro District, Turiani, Milne-Redhead & Taylor 7347 (BR, K, LISC).

Madagascar: Diego Suarez, Homolle 214 (P); sin. loc., Boivin 2453 bis (P, paratype of *M. madagascariensis*).

“*M. pervilleana*”.

Twigs uniformly appressed-pubescent. *Leaf* blade 1.5–3 × as long as wide, 10–62 × 5–30 mm, usually acuminate and apiculate at the apex, sparsely strigillose to glabrous on both sides, often ciliate. *Inflorescence* 1–5-flowered, about 1–2 × as long as the leaves. *Sepals* connate at the base, equal or unequal, ovate-lanceolate to -linear, 3–6 × as long as wide, acuminate, sparsely pubescent to glabrous outside, more or less ciliate.

Distribution: Madagascar.

Ecology: In dry places in light forests, sometimes reported to grow on limestone. Alt. 0–1000 m.

Representative specimens:

Madagascar: basin of Bemarivo R., Perrier de la Bâthie 2295 (P); Tsingy du Bemaraha, Léandri 668 (P), 1066 (P).

“*M. walleri*” (inclusive of *M. zenkeri*, *M. grandiflora*, *M. ulugurensis*, *M. gillettii*, and *M. gracilipes*).

Twigs uniformly appressed-pubescent. *Leaves* usually small; blade ovate, oblong-ovate, elliptic, oblong-elliptic, or oblong-obovate, 1.5–3 × as long as wide, 6–48 × 3–24 mm, obtuse, rounded, or sometimes acute, never acuminate, usually with an apiculate tip, sparingly strigillose to glabrous above, strigillose or setose on the costa and veins to nearly glabrous beneath (varying in a single branch, a.o. Schlieben 2722), sometimes ciliate. *Inflorescence* usually slightly longer than the leaves, up to 4 cm long, and 1–6-flowered. *Sepals* connate at the base, equal or unequal, ovate-lanceolate to -linear, sometimes ovate, 1.5–6 × as long as wide, long-acuminate, strigillose or setose to almost glabrous out-

side. *Capsule* appressed-piloso-pubescent (sparsely appressed-pubescent to glabrous in the above forms).

Distribution: Cameroun, Congo, Kenya, Tanganyika, S. Rhodesia, Moçambique, Nyasaland.

Ecology: Gallery or rain forests, also in the mountains. Alt. 0–2000 m.

Representative specimens are the types of *M. walleri*, *M. gilletii*, and *M. gracilipes*, and the following:

Tanganyika: Morogoro District, Uluguru Mts., Schlieben 2722 (fl.: B, BM, BR, G, K, M, P, PR, S, Z); Usambara Mts., Drummond & Hemsley 2563 (fl., fr.: EA, K).

S. Rhodesia: Umtali District, Chase 6745 (fl.: COI, K).

Moçambique: Milange, Zambézia, Mendonça 1394 (fl., LISC).

Hairy form found in Madagascar.

Twigs uniformly hirtio-pubescent to hirsute. Leaf blade ovate to lanceolate, 1.6–4 × as long as wide, 22–66 × 8–38 mm, acuminate at the apex, often abruptly narrowed to the cuneate base, uniformly hirtio-pubescent to hirsute on both sides.

Distribution: Madagascar.

Ecology: Rain forests. Alt. 250 m (teste Humbert).

Madagascar: Ankarana Mts., Diego Suarez Province, Humbert 19001 (P); Boïna, Perrier de la Bâthie 130 bis (P); Sambirano, Perrier de la Bâthie 3829 (P).

There are five additional specimens with an uniform indumentum on the leaves though they are less hairy:

Tanganyika: Lindi District, Mchinjiri, Eggeling 6419 (K, cited by BRUCE & LEWIS as *M. sp. A*).

Madagascar: Boïna, Perrier de la Bâthie 130 ter (P), 3610 ter (P); sin. loc., Baron 6831 (K), 6919 (K).

The latter five specimens are connected with "*M. madagascariensis*" and "*M. pervilleana*" by three other intermediates:

Madagascar: Ankarafantsika Mts., Decary 12851 (P); sin. loc.: Baron 6841 (P); Léandri 164 (P).

The following numbers of specimens were referred to the above enumerated forms:

M. angustifolia, 15; *M. brunonis*, 59; *M. buchholzii*, 37; *M. densiflora*, 13; *M. madagascariensis*, 36; *M. pervilleana*, 20; *M. walleri*, 68.

Intermediate between these forms are:

Between *M. angustifolia* and *M. brunonis*, 8; *M. angustifolia* and *M. buchholzii*, 2; *M. angustifolia* and *M. densiflora*, 28; *M. brunonis* and *M. buchholzii*, 6; *M. brunonis* and *M. densiflora*, 15; *M. brunonis* and *M. walleri*, 16; *M. buchholzii* and *M. densiflora*, 18; *M. densiflora* and *M. walleri*, 8; *M. madagascariensis* and *M. pervilleana*, 8; *M. madagascariensis* and *M. walleri*, 4.

In this enumeration it was disregarded that the types of *M. angustifolia* and *M. madagascariensis* are entirely alike and that *M. brunonis* and *M. walleri* contain series of various forms.

6. *M. hymenocardioides* Hutch. et Dalz., Fl. W. Trop. Afr. 2: 20. 1931 (in clavi); Kew Bull. 1937: 61; A. Chevalier, Rev. Int. Bot. Appl. 27: 106. 1947.

Fig. 5 (1-5); map 4.

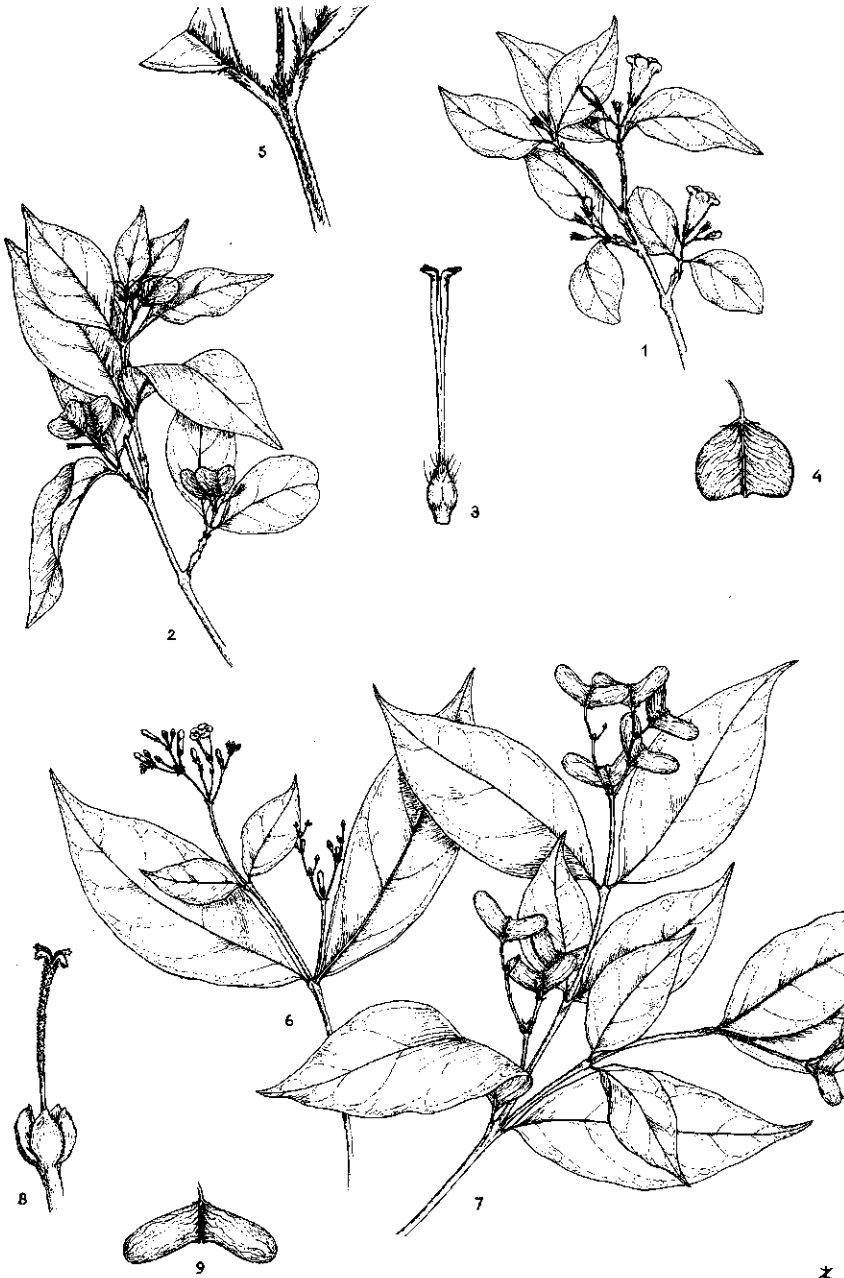


Fig. 5. 1-5. *M. hymenocardioides*: 1-2. Branches, $\frac{1}{2} \times$; 3. Pistil, $5 \times$; 4. Fruit, $1 \times$; 5. Twig, $3 \times$. (1, 5 (Roberty 17231); 2, 4 (Pobéguin 668); (Chevalier 13318)). 6-9. *M. surinamensis*: 6-7. Branches, $\frac{1}{2} \times$; 8. Calyx with pistil, $5 \times$; 9. Fruit, $1 \times$. (6-7, 9 (Versteeg 878); 8 (Versteeg 222)).

Type: Guinea: near Dantilia R., Scott Elliot 5268 (K, holotype; isotype: K).
Misapplied name: *Vangueria concolor* A. Chev., Expl. Bot. 330. 1920, not (Hiern) Robijns.

Twigs glabrous except for two lines of pubescence below the stipules near the apex. *Leaf* blade ovate, oblong-ovate, elliptic, or oblong-elliptic, variable in shape and size, 1.5–2.5 × as long as wide, 15–55 × 8–24 mm or smaller, acutely acuminate at the apex, more or less abruptly narrowed and cuneate at the base, glabrous or sparsely pubescent on the costa on both sides and the veins beneath. *Inflorescence* terminal on lateral branches, shorter than the leaves, up to 2 cm long, usually incompletely and obliquely dichasial, 1–5-flowered. *Sepals* subequal or unequal, connate at the base, ovate-lanceolate, 2.5–4 × as long as wide, 1.5–4 × 0.5–1 mm, acute or acuminate, sparsely pubescent outside. *Corolla* white, often partially reddish, 2.5–5 × as long as the calyx, 6–11 mm long. *Capsule* medium brown, shining, obcordate, veined.

Shrub, 0.30–1.50 m high. Stems erect. *Leaves* subsessile or shortly petiolate; petiole often sparsely pubescent, up to 1 mm long; blade entire, often with domatia in the angles of the secondary veins beneath; secondary veins 3–5 pairs, ascending; veins inconspicuously reticulate beneath. Stipules small, densely pilose outside. *Inflorescence*: peduncle usually rather short, with two lines of pubescence, up to 7 mm long; branches subopposite. Bracts sepal-like, small, lanceolate or linear. Pedicels short, up to about twice as long as the calyx. *Sepals* entire. *Corolla* glabrous on both sides; tube 5–9 mm long, 0.7–1.5 mm wide at the base, 1.5–4 mm at the throat; lobes 1–2.5 mm in diam., entire. Stamens included; filaments not widened, inserted at about one-quarter from the base of the corolla tube; anthers 1 × 0.8 mm. Ovary about 2 × as long as wide, 1.2–1.5 × 0.6–0.7 mm, with some hairs near the apex. *Capsule* 12 × 14 mm, cuneate at the base, retuse to bilobed at the apex.

Distribution: Guinea, Sierra Leone.

Ecology: In moist places, in savannas or in gallery forests (teste Pobéguin 887).

Guinea: between Timbo and Faranah, Chevalier 13318 (P); Faranah, Roberty 17231 (G); *ibid.*, Scott Elliot 5308 (GH, K, P); Doubato, Roberty 17167 (G, K); Kouroussa, Chevalier 15691 (P); *ibid.*, Pobéguin 668 (P); between Kouroussa and Kankan, Chevalier 15705 (P); Kankan, Chevalier 596 (K, P); *ibid.*, Herb. I.D.E.R.T. 226 MB (ABI); near Dantilia R., Scott Elliot 5268 (BM, K, type); *sin. loc.*, Pobéguin 887 (P).

Sierra Leone: near Tassin, Scarcies R., Scott Elliot 4515 (K); Njala, Deighton 3524 (K), 3735 (K); Arandai, Laminaina (?), Thomas 123 (K); *sin. loc.*, Thomas 10013 (K), 10248 (K).

7. *M. neurocarpa* Gilg in Engl. Bot. Jahrb. 28: 116. 1899; Baker in Fl. Trop. Afr. 4 (1): 508. 1903. Fig. 6 (6-10).

Type: Cameroun: Batanga, Dinklage 1462, fr. (holotype not seen, destroyed in B; no isotype seen).

Twigs appressed-pubescent, glabrescent. *Leaf* blade variable in shape and size, 1–3 × as long as wide, oblique at the base, rounded or subcordate at one end and smaller and cuneate at the other side, glabrous on both sides or with some small hairs on the base of the costa beneath. *Inflorescence* axillary or terminal on short lateral branches, dichasial, 1–3-flowered, usually much shorter than

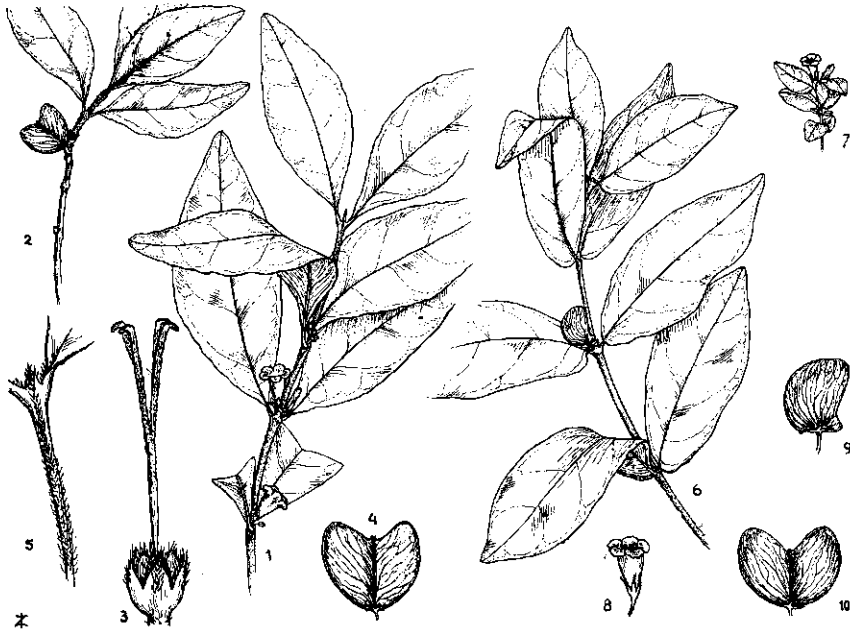


Fig. 6. 1-5. *M. adamii*: 1-2. Branches, $\frac{1}{2} \times$; 3. Calyx with pistil, $5 \times$; 4. Fruit, $1 \times$; 5. Twig, $3 \times$. (1, 3, 5 (Lane-Poole 331); 2, 4 (Linder 978)). 6-10. *M. neurocarpa*: 6-7. Branches, $\frac{1}{2} \times$; 8. Flower, $1 \times$; 9. Fruit, partially developed, $1 \times$; 10. Fruit, reconstructed, as the only specimen available has fruits as in no. 9. (6, 9-10 (Zenker 4252); 7-8 (Klaine 1875)).

the leaves. *Sepals* lanceolate-linear, subulate. *Corolla* about $2 \times$ as long as the calyx, 7 mm long. *Capsule* very pale brown, glabrous, with conspicuous longitudinal partially anastomosing veins.

Shrub. *Leaves* shortly petiolate; petiole 0.5-3 (0.5-1 seen; 2-3 ex Gilg) mm long, appressed-pubescent; blade orbicular, ovate, oblong-ovate, oblong-ovate, oblong, or oblong-lanceolate, $10-62 \times 6-31$ (up to 100×38 ex Gilg) mm or smaller, acuminate, obtuse, acuminate with obtuse tip, or acute at the apex, without domatia, not ciliate; 2-4 secondary veins on the smaller side, one more on the other. Stipules outside hairy like the twigs. *Inflorescence*: peduncle and pedicels very short, about 1 mm long, appressed-pubescent. Bracts lanceolate, sepal-like, appressed-pubescent outside. *Sepals* connate at the base, subequal or unequal, about $5-8 \times$ as long as wide, $1.5-4 \times 0.3-0.5$ mm, entire, glabrous. *Corolla* white (?), glabrous outside; tube 6 mm long, about 0.7 mm wide at the base, 2.5 mm at the throat; lobes about 1 mm in diam. Stamens exserted in long-staminate flowers; anthers about 0.6×0.6 mm. *Capsule* 6-10 \times 12-14 mm, composed of 2 oblique ovoid cells (by partial abortion sometimes only one lobe developed), bilobed at the apex.

Ecology: no data extant.

Distribution: Cameroun, Gabon.

Cameroun: Bipindi, Zenker 4252 (fr.: K, P, WU).

Gabon: near Libreville, Klaine 1875 (fl., P).

8. *M. adamii* Sillans, Rev. Int. Bot. Appl. 33: 546, pl. 5. 1953.

Type: Guinea: Macenta District, south of Bala, Adam 4190 (P, holotype).

Fig. 6 (1-5).

Twigs apically appressed-pubescent, only immediately below the stipules the hairs in two lines. *Leaf* blade shining, subcoriaceous when dry, elliptic, oblong-elliptic, or oblong-ovate, 1.5–2.5 × as long as wide, 25–75 × 11–35 mm, apically obtuse or acute, often with an apiculate tip, cuneate or rounded at the base, equal-sided, entirely glabrous on both sides. *Inflorescence* axillary, very short, 1–3-flowered, about 1 cm long. *Sepals* connate for about half their length, equal, ovate-elliptic, about 1.6–2 × as long as wide, 1.2–1.5 × 0.6–0.7 mm, obtuse or acute, not acuminate, sparingly pubescent to glabrous outside, ciliate. *Corolla* white, 6–9 mm long. *Capsule* pale brown, obcordate, glabrous, with longitudinal anastomosing veins.

Low shrub, 0.30–1.00 m high. *Leaves* shortly petiolate; petiole glabrous, up to 2 mm long; blade entire, often undulate when dry; secondary veins 3–4 pairs, anastomosing. *Inflorescence*: peduncle very short or obsolete. Bracts sepal-like, small. Pedicels very short, sparsely pubescent to glabrous. *Corolla* glabrous on both sides; tube 5–7 mm long, 1–1.5 mm wide at the base, 2–2.5 mm at the throat; lobes 1–2 mm in diam., ciliate. Stamens included (only short-staminate flowers seen); filaments not widened, inserted at about one-quarter from the base of the corolla tube; anthers 0.7 × 0.6 mm. Ovary 1.5 × 0.7 mm, longer than the sepals (always?), with some hairs near the apex. *Capsule* 10 × 11.5 mm, rounded at the base, retuse and apiculate at the apex.

Distribution: Guinea, Sierra Leone, Liberia.

Ecology: Rain forests. Alt. 1200 m (teste Adam).

Guinea: Macenta District, south of Bala, Adam 4190 (P, fl., immature fr., type).

Sierra Leone: bank of Namuyei R., Lane-Poole 331 (K, fl.).

Liberia: Peátah, Linder 978 (A, 2 sheets, fl., fr., K, 2 sheets).

Nomen nudum

M. schlechteri Gilg ex Schlechter, West. Afr. Kautschuk-Exp. 304. 1904. = *M. batesii*.

Excluded species

Mostuea amygdalina Bak. ex Jackson, Ind. Kew. Suppl. 1: 282. 1906. = *Massonia amygdalina* Bak., Gard. Chron. Ser. 3. 6: 715. 1889 (*Liliaceae*).

ACKNOWLEDGEMENTS

The author expresses his gratitude to the directors and curators of the herbaria enumerated in the preceding paper and of Berkeley (UC) and Kirstenbosch (NBG) who generously put material at his disposal. Especially in this difficult group it was important to see many specimens. He is also much indebted to Dr. N. HALLÉ for the excellent drawing he made after a living plant during his sojourn in Gabon and to Miss I. ZEWARD for all other drawings she made in a both artistic and accurate way after herbarium material.

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