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THE AFRICAN DICHAPETALACEAE VII

A taxonomical revision.
This fourth instalment of the revision of
Dichapetalum
contains the treatment of the species m–q

F. J. BRETELER

Laboratory of Plant Taxonomy and Plant Geography,
Agricultural University, Wageningen, The Netherlands

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H. VEENMAN & ZONEN B.V. WAGENINGEN – 1981

INTRODUCTION AND ACKNOWLEDGEMENTS

This seventh publication in the series The African *Dichapetalaceae* contains the revision of the *Dichapetalum* species m–q. It was preceded by three parts containing the revision of the species a–b, c–f, and g–l, published in 1973, 1978 and 1979 respectively. It is expected that the last part, dealing with the species r–z, will follow in 1982.

In the series m–q 13 names proved to represent distinct species. Two of these, namely *D. obanense* and *D. nyangense*, are only known from the type material and it is suggested that the latter one is of hybrid nature. Apart from these 13 species, 4 species have been described for the first time; they all originate from Western Central Africa. In the very widely distributed *D. madagascariense*, the type species of the genus, two varieties have been distinguished.

The author is grateful to the directors and curators of the herbaria cited, for their continued loan of material.

The illustrations have been made by Miss M. DE GEUS (fig. 18), Miss A. E. HOEK (fig. 6, 15 (partly)), Miss Y. F. TAN (fig. 7, 12, 14), Miss J. WILLIAMSON (fig. 1, 5, 8, 9, 11, 16, 17, 19, 20), Miss H. G. D. ZEWALD (fig. 2 (partly), 4, 10, 15 (partly)), Mr. A. GRUTER (fig. 3 (partly), 13), and Mr. G. J. LANGEDIJK (fig. 2 and 3 (partly)).

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TAXONOMIC TREATMENT SPECIES M–Q

D. macrocarpum Engl. ex Krause — **Fig. 1 Map 1**

D. macrocarpum Engler ex Krause, 1909: 134; Engler, 1911: 249; 1912-a: 565; 1915: 843; De Wildeman, 1919: B48; Moss, 1928: 121; Engler & Krause, 1931: 6; Mildbraed, 1935: 514; Brenan & Greenway, 1949: 130; Torre, 1963: 320; Verdcourt & Trump, 1970: 68; Breteler, 1973: 4, XVII; Punt, 1975: 34.

Type: Tanzania, Lindi District, *Busse 2879* (holotype: B†; lectotype: K; isotypes: BM, BR, E, EA, G, P, WAG, Z).

D. macrocarpum Engler ex Krause forma *angustifolia*, nomen on *Schlieben 5832*.

Diagnostic characters. Small shrub. Branchlets villous-sericeous. Stipules rather long persistent, triangular, (3)7–14(17) × 1–3 mm, often distinctly parallel-veined. Leaves obovate-elliptic, (4)7–11(16) × 2–7 cm, rounded to truncate-subcordate at base, rounded to acuminate at top, villous sericeous on

midrib and the (6)7–10(11) pairs of the main lateral nerves above, beneath entirely so. Inflorescence glomerate, 5-flowered; bracts and bracteoles distinct. Pedicel 3–5 mm long, the upper part short but distinct. Sepals spreading to reflexed, 4–8 × 1–2.5 mm. Petals more or less spreading-geniculate, 5.5–7.5 mm long, 1–2.5 mm split, woolly outside, inside with a few rather stiff hairs. Stamens suberect, 7–8 mm long, glabrous. Pistil 3-merous, 7.5–9 mm long; ovary densely woolly. Fruit 1–3-seeded, densely covered by acicular, deciduous hairs.

Description. Shrub. *Branches* glabrous or glabrescent. *Branchlets* villous-sericeous. *Stipules* rather long persistent, triangular, often narrowly so, falcate or not, (3)7–14(17) × 1–3 mm, often distinctly parallel-veined, top often filiform and curled, sericeous outside, sparsely so inside, glabrescent. *Leaves*: petiole subterete, 2–5 mm long, pale-brown villous-sericeous; blade broadly to narrowly obovate-elliptic, 1.5–3.5 times as long as wide, (4)7–11(16) × 2–7 cm, rounded to truncate-subcordate at base, rounded to acutely acuminate at top, the acumen often slender, up to 1 cm long, pale-brown villous-sericeous on midrib and the usually impressed (6)7–10(11) pairs of main lateral nerves above, beneath so on entire surface, although often more densely so on the prominent main nerves, glabrescent above; glands small, inconspicuous, beneath only, rather well dispersed. *Inflorescences* more or less glomerate, shortly stalked (up to 2 mm) to sessile, 5-flowered; bracts and bracteoles ovate, often narrowly so, 4–8 × 1–4 mm, rounded to cuneate at base, acutely acuminate at top, sericeous outside, glabrous or nearly so inside, usually concave, covering the flowerbuds when young. *Pedicel* 3–5 mm long, sericeous, the lower part up to ca 3.5 mm long, the upper part distinct, 1–1.5 mm long. *Sepals* spreading to reflexed, obovate-elliptic, 4–8 × 1–2.5 mm, acute to obtuse at top, woolly-tomentose outside, more or less distinctly parallel-veined and glabrous or nearly so inside. *Petals* more or less spreading-geniculate, narrowly obovate in outline, 5.5–7.5 mm long, 1–2.5 mm split, at base shortly united with filaments, woolly outside, inside with a few, rather stiff hairs mainly in the lower part on the ridge between the two more or less concave to flat sides. *Stamens* suberect, usually curved, 7–8 mm long, glabrous; anthers reniform, almost 1 mm long, with a strongly thickened connective. *Staminodes* subquadrate to broadly obovate, up to 0.5 × 0.5 mm, glabrous, top obtuse to emarginate. *Pistil* 3-merous, 7.5–9 mm long; ovary densely woolly; style erect to curved, woolly in lower part, glabrous in upper part, obscurely 3-lobed at top. *Fruit* 1–3-seeded, distinctly lobed when more than 1-seeded; 1-seeded fruit or lobe: subglobose to shortly ovoid-ellipsoid, 15–25 × 12–20 mm; exocarp densely covered by 2–3 mm long; golden, acicular, deciduous hairs; mesocarp juicy, fibrous; endocarp firmly coriaceous, ca 0.5 mm thick, smooth and glabrous inside. *Seed* shortly obovoid-ellipsoid, 10–15 mm long, 10–15 mm in diam.

Distribution: S.E. Tanzania, N.E. Moçambique.
Ecology: *Brachystegia* woodland.

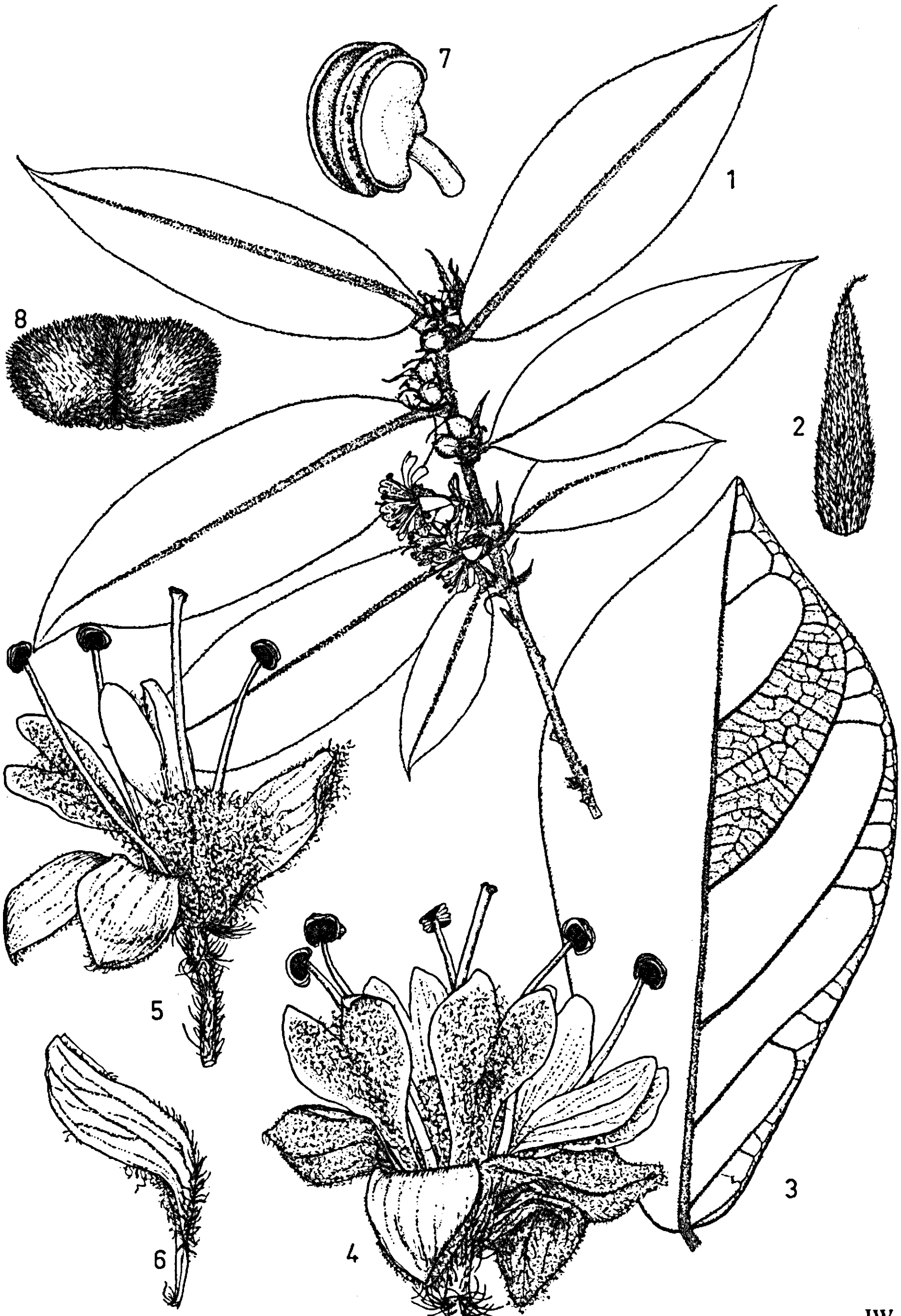

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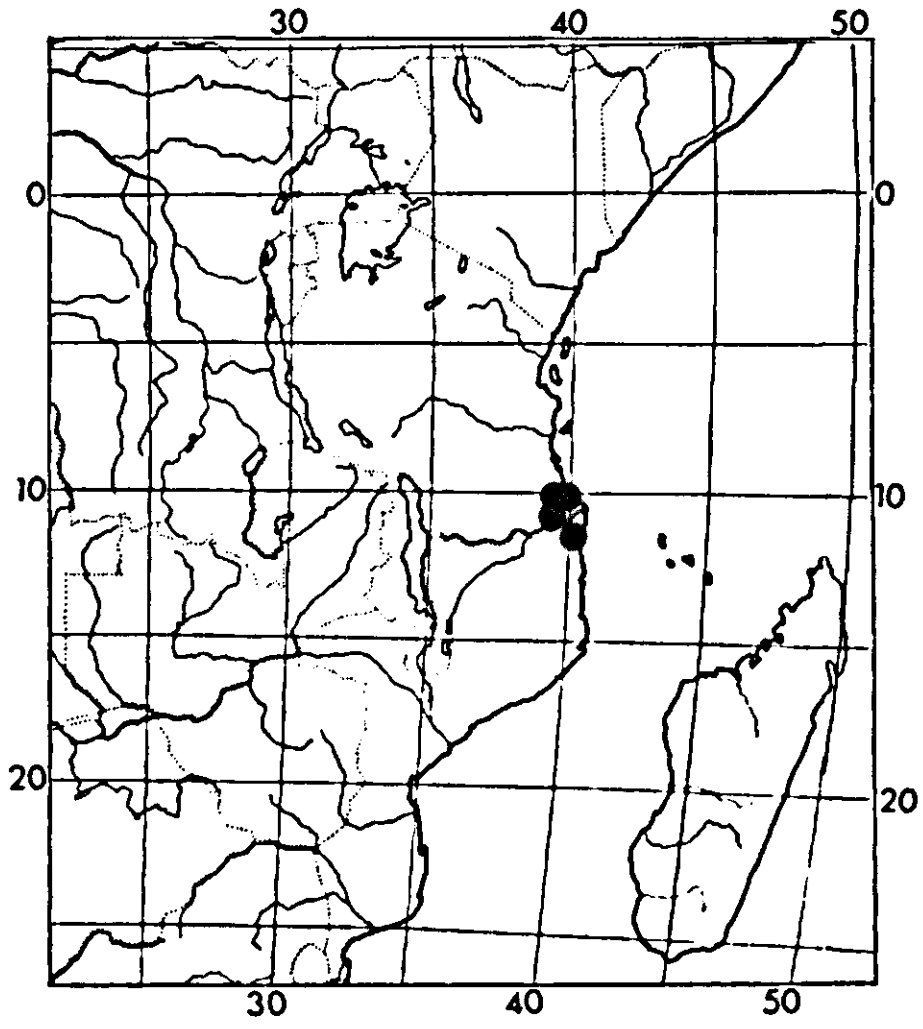
FIG. 1. *D. macrocarpum*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. stipule, $2\frac{1}{2}\times$; 3. leaf beneath, $\frac{5}{6}\times$; 4. flower, $5\times$; 5. flower partly, $5\times$; 6. petal, $5\times$; 7. anther, $20\times$; 8. 2-seeded fruit, $\frac{5}{6}\times$. (1–2,6. *Schlieben 5832*; 3, 8. *Busse 2879*; 4–5 *Gillman 1034*; 7. *Schlieben 5356*).



MAP 1. *D. macrocarpum*

Specimens examined:

Tanzania. Lindi District, *Busse 2879* (BM, BR, E, EA, G, K, P, WAG, Z, type); Makonde Plateau, *Gillman 1034* (EA, K); Newala, *Hay 14* (BR, K); *18* (BR, K); *74* (BR, K); Lindi District, Lutamba Lake, *Schlieben 5356* (B, BM, BR, G, HBG, LISC, M, P, PRE, SRGH, Z); 20 km S. of Lindi, *Schlieben 5832* (B, BM, BR, G, HBG, LISC, M, P, Z).

Moçambique. Nyassa, Msalu R., *Allen 148* (K); *149* (K).

Notes. Although *D. macrocarpum* was validly published by ENGLER in 1911, this species is usually cited as being proposed by ENGLER in 1912. However, the protologue should be attributed not to ENGLER but to KRAUSE. KRAUSE reported on the toxicity of the fruits of this species in 1909 and in the course of doing so provided a description of the fruits. The only available herbarium material of this species at that time was *Busse 2879*, of which duplicates had already been distributed under the name *D. macrocarpum* Engl. This is demonstrated by the duplicates in the Geneva herbarium which were incorporated there in 1908. Therefore the correct author citation of *D. macrocarpum* is Engler ex Krause.

In ENGLER's publication of 1912 *Busse 2878* is erroneously cited as the type. *Busse 2878* represents *D. mossambicense* and is cited as such in the same publication. In ENGLER's publication of 1911 correctly *Busse 2879* is cited. Although KRAUSE (1909) did not cite BUSSE's material by number, it is beyond any doubt that the only material he disposed of was the fruiting *Busse 2879*, of which the collector reported about the toxic fruits. They were investigated by KRAUSE (1909) who proved that at least the seeds are highly toxic.

HAY, who collected this species in southern Tanzania, observed that the flowers are sweetly scented.

D. macrophyllum (Oliv.)Engl. = **D. heudelotii** (Planch. ex Oliv.)Baill. var. **hispidum** (Oliv.)Bret.

For details see BRETELER, 1979: 33.

D. madagascariense Poir. **Fig. 2–4 Maps 2–3**

For literature, synonyms, and typification see under the varieties.

Diagnostic characters. Medium sized liana to shrub or small tree. Branchlets hollow or not, glabrous to tomentose-glabrescent. Stipules early caducous or not, triangular, (1)2–5(7) mm long. Leaves papery to coriaceous, brittle or not, obovate-elliptic to lanceolate, (3)5–17(32) × 2–10(15) cm, nearly glabrous to densely tomentellous or tomentose, usually soon glabrescent, often glandular both sides, glands often more numerous towards top, the acumen often somewhat deformated by them. Inflorescences from glomerate to widely branched, sessile to distinctly pedunculate, few to many flowered; bracts and bracteoles minute. Sepals suberect, (1)1.5–2.5(3) × 0.5–1(1.5) mm, tomentose outside. Petals suberect (1.7)2.5–4(5.5) mm long, (0.2)1–2(3) mm split, glabrous or nearly so. Stamens (1.5)2.5–6(7) mm long, glabrous. Pistil 2–3(4)-merous, (1)2.5–6(9) mm long, ovary and lower part of style villous to sericeous-velutinous. Fruits globose to ellipsoid, apiculate or not, 1–6 × 1–2.5 cm, puberulous-tomentellous to almost glabrous.

Description. Medium sized liana, lianescent shrub, shrub, or small tree up to ca 10 m tall and 30 cm trunk diameter. Wood of tree rather hard and heavy, pale brown. Woodcylinder of lianescent stems entire to shallowly lobed by intruding phloem, rarely deeply so, sometimes with a hole centrally. Bark of stems pale-grey to almost black, usually rather smooth, distinctly lenticellate or not. *Branches* and *branchlets* hollow or not, lenticellate or not, the branches glabrous or glabrescent, the branchlets from glabrous to tomentellous to tomentose, the indumentum silverish to ferruginous, usually glabrescent. *Stipules* early caducous or not, simple, usually entire, sometimes denticulate, triangular, usually narrowly so, (1)2–5(7) mm long, hairy as branchlet or more densely so. *Leaves*: petiole subterete to semiterete, grooved above or not, 2–11(15) mm long, usually hairy as branchlet; blade papery to coriaceous, brittle or not, obovate-elliptic, broadly to narrowly so to lanceolate, sometimes ovate or almost circular, (3)5–17(32) × 2–10(15) cm, 1–2.5(4) times as long as wide, cuneate to cordate at base, usually gradually short-acuminate, sometimes abruptly so or rounded to obtuse or even emarginate at top, the acumen obtuse to mucronate, up to 2 cm long; nearly glabrous to densely tomentellous to pubescent or tomentose both sides when young, usually soon glabrescent, but often longer persistent on the usually impressed midrib above, sometimes with hairy domatia in the axils of the 5–10 pairs of main lateral nerves beneath; glands usually small, rather nu-

merous, often on both sides, but usually more numerous beneath, well dispersed or more numerous towards base and top, the acumen often somewhat deformated by them. *Inflorescences* very variable, axillary or grouped on leafless axillary or subterminal shoots, from glomerate to distinctly 6 times widely and dichotomously branched, the ultimate branches often scorpioid, from sessile to distinctly pedunculate, few to many flowered, tomentellous, tomentose, or pubescent, the indumentum silverish to ferruginous; peduncle 0–1.5(2.5) cm long; bracts and bracteoles minute, ovate-triangular, up to ca 0.5 mm long. *Pedicel* 0–4(6) mm long, the upper part 0–0.5(1) mm long, tomentose. *Sepals* erect or nearly so, free or shortly united at base, ovate-triangular to oblong-elliptic, (1)1.5–2.5(3) × 0.5–1(1.5) mm, tomentose outside, more sparsely so and mainly on upper part inside. *Petals* suberect, at base usually very shortly adnate to filaments, oblanceolate in outline, (1.7)2.5–4(5.5) mm long, (0.2)1–2(3) mm split, glabrous or with a few hairs below split outside; lobes concave. *Stamens* erect, (1.5)2.5–6(7) mm long, glabrous, rarely with a few hairs on filaments; anthers ca 0.3 mm long. *Staminodes* subquadrate to oblong, up to 0.5 × 0.5 mm, glabrous to tomentose-pilose, top obtuse to emarginate-lobulate. *Pistil* 2–3(4)-merous, (1)2.5–6(9) mm long; ovary and lower part of style villous to sericeous-velutinous, upper part of style glabrous, with 2–3(4) up to 1.5 mm long lobes. *Fruits* globose to ellipsoid, apiculate or not, 1–2(3)-seeded, puberulous-tomentellous to almost glabrous, sometimes prominently veined; 1-seeded fruits: 1–6 cm long, 1–2.5 cm diam.; exocarp 1–2 mm thick; mesocarp juicy, 1–5 mm thick; endocarp thinly coriaceous-pergamentaceous, smooth, glabrous and glossy inside. *Seed* subellipsoid, laterally compressed or not, ca 10–30 mm long, 5–10 mm diam.; seedcoat thin, brown, glossy. Seedling: taproot firm; epicotyle 4–7 cm long; first two leaves opposite, relatively shorter than the subsequent ones, with a distinct mucro apically.

Distribution: West, Central, and East Africa, Archipel Des Comores, and Madagascar.

Note. *D. madagascariense* is the only species occurring on the African continent as well as on Madagascar and the Comores. On the continent it occupies an area larger than that of any other species of this genus. On Madagascar its area is large as well, only slightly exceeded by that of the endemic *D. leucosia* (Spreng.)Engl. Its ecology covers a wider range of habitats than usual in *Dichapetalum*, and in habit *D. madagascariense* is the most variable of all, ranging from small trees to medium sized lianas.

It is therefore not amazing that within this wide distribution with a variety of habitats a large number of forms occur of which many have been described as distinct species. They were based on vegetative characters, type of inflorescence, on floral aspects as the relative length of petals, stamens, and pistil, or hairiness of fruits. They are not retained on specific level.

As has been pointed out before (BRETELER, 1973: 7), some of these forms are rather constant within a certain area. Examples are the former *D. flaviflorum* in

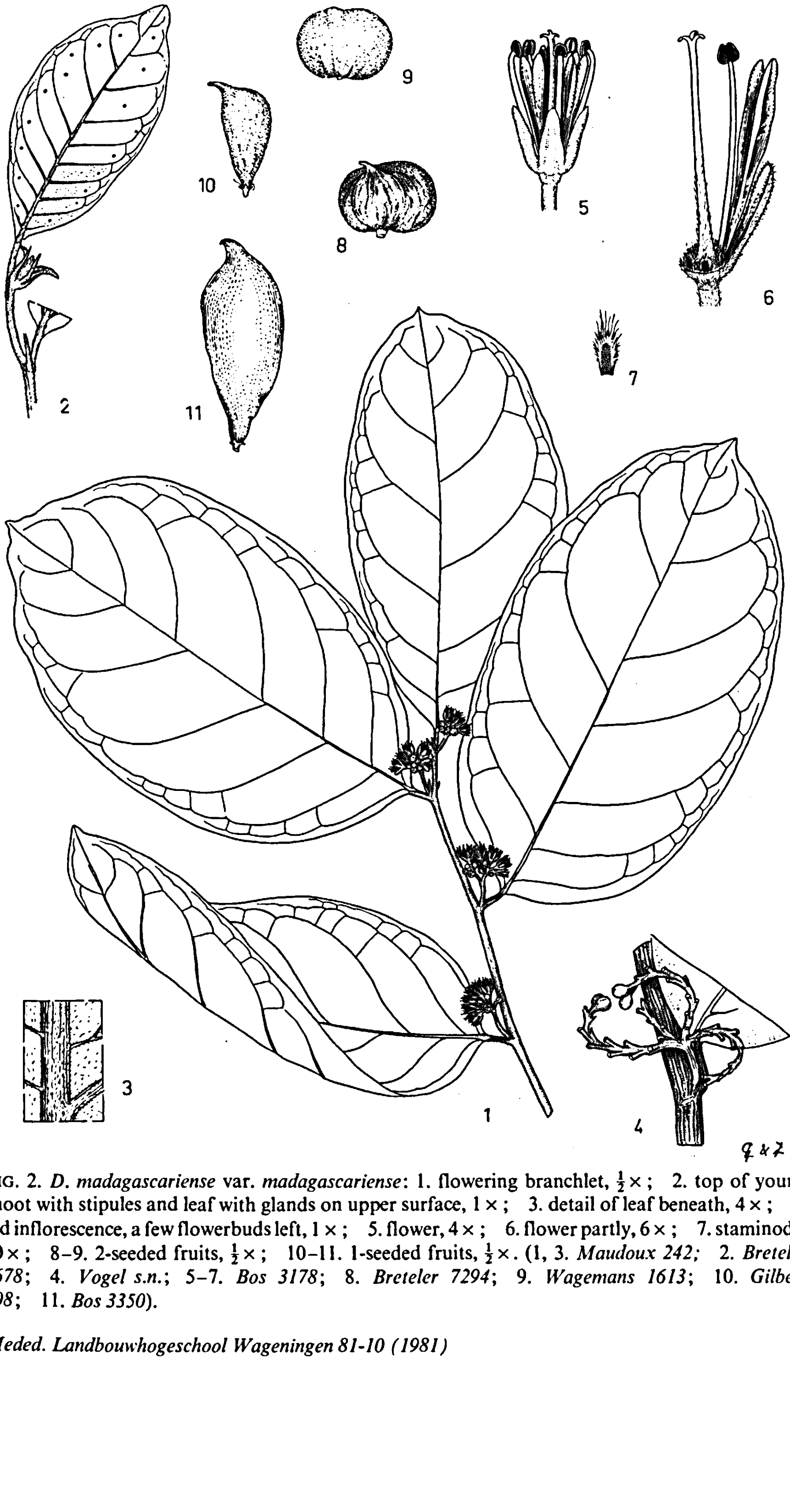


FIG. 2. *D. madagascariense* var. *madagascariense*: 1. flowering branchlet, $\frac{1}{2}\times$; 2. top of young shoot with stipules and leaf with glands on upper surface, $1\times$; 3. detail of leaf beneath, $4\times$; 4. old inflorescence, a few flowerbuds left, $1\times$; 5. flower, $4\times$; 6. flower partly, $6\times$; 7. staminode, $20\times$; 8–9. 2-seeded fruits, $\frac{1}{2}\times$; 10–11. 1-seeded fruits, $\frac{1}{2}\times$. (1, 3. *Maudoux 242;* 2. *Breteler 1678*; 4. *Vogel s.n.*; 5–7. *Bos 3178*; 8. *Breteler 7294*; 9. *Wagemans 1613*; 10. *Gilbert 108*; 11. *Bos 3350*).

Central Zaïre, a shrub or small tree always with hollow branchlets, or the former *D. beniense* from Eastern Zaïre with the same habit and usually with rather small flowers in glomerules and narrow, short-stalked leaves. For West Africa the former *D. guineense* may be mentioned. *D. flabellatiflorum* from Zaïre is an example of a name based mainly on characters of the inflorescence, and the type of *D. pynaertii*, also from Zaïre, represents an immature stage of the flowers. As was discussed and illustrated earlier (BRETELER, 1973: 21, fig. 3 and: 25, fig. 4) different inflorescences and flower stages have not been very well understood as such and were used to distinguish species.

In mature *D. madagascariense* flowers the petals, stamens, and pistil usually show, in this sequence, an increasing maximum in length. The opposite situation occurs in some montane specimens of Kenya and Tanzania. These specimens have, on this account, been placed in a separate variety: var. *brevistylum*. This phenomenon i.e. an increasing or decreasing maximum length of petals, stamens, and pistil also occurs in *D. dewevrei*, *D. heudelotii*, and *D. lujae* and has in these species been distinguished at a varietal level as well.

Besides var. *brevistylum*, based on floral differences, no infraspecific taxa have been distinguished within *D. madagascariense*. It has been attempted to bring structure somehow in the enormous and sometimes unbelievable variation of this species. In order to do this one could adopt the system used by BRUMMITT (1965: 163–172) when treating *Baphia capparidifolia* Bak., a variable species, which, like *D. madagascariense*, occurs on the continent as well as on Madagascar. He referred the continental representatives to three subspecies, and classified the Madagascan material in a fourth one. As regards the plants from Madagascar BRUMMITT observed that they are 'surprisingly scarcely distinct' from the continental ones, 'some closely resembling West African plants while others approach plants from the Congo and Uganda'. And he continues: 'These Madagascan plants are generally slightly smaller in most parts and have rather narrower, more coriaceous leaves'. Similar tendencies have been observed by me in *D. madagascariense*: for almost every form found on the continent, whether distinguished by leafshape, leaftexture, indumentum, or inflorescence, a Madagascan counterpart is available. Typical West African *D. guineense*, with relatively large rather hairy leaves is represented in Madagascar by *D. thouarsianum* var. *pubescens*. In both forms almost circular leaves occur. In humid forests on the continent this form has been described as either *D. batanganum*, *D. glandulosum*, or *D. subcordatum*, showing the largest leaves, while the smallest leaves occur on Madagascar. The Comoran plants classified by DESCOINGS as *D. thouarsianum* var. *macrophyllum* have their continental counterpart with larger leaves in the West African *D. thomsonii*. The former *D. beniense* from Eastern Zaïre and the former *D. humbertii* from Madagascar, before distinguished collectively by the present author as var. *beniense*, represent the same habit, narrow leaves, and inflorescence. As the variation on Madagascar repeats that on the continent this proves in my opinion that both populations belong to the same species and if infraspecific taxa can be distinguished these taxa usually will occur in both parts. BRUMMITT's solution to treat the Madagascan plants of *Baphia*

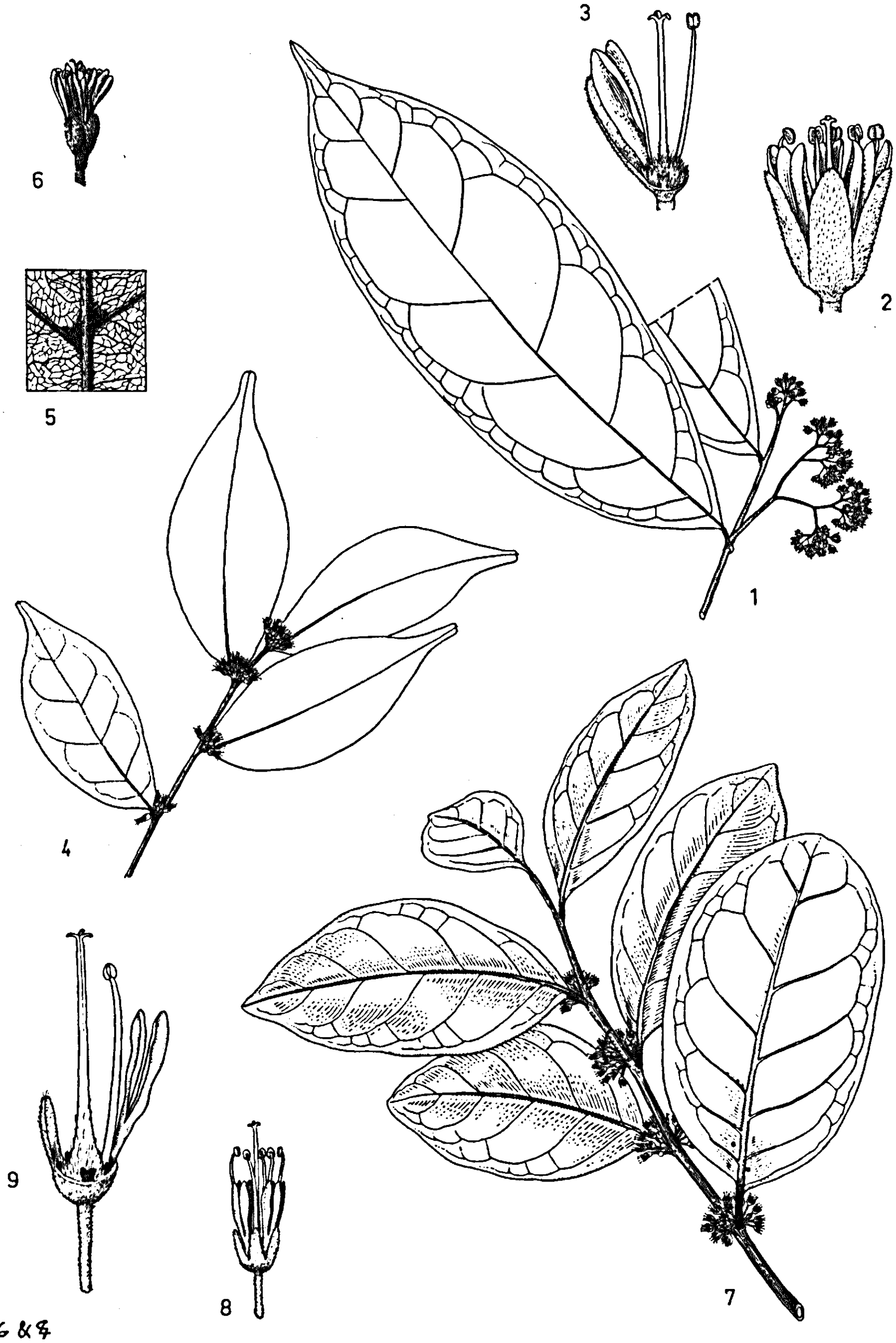
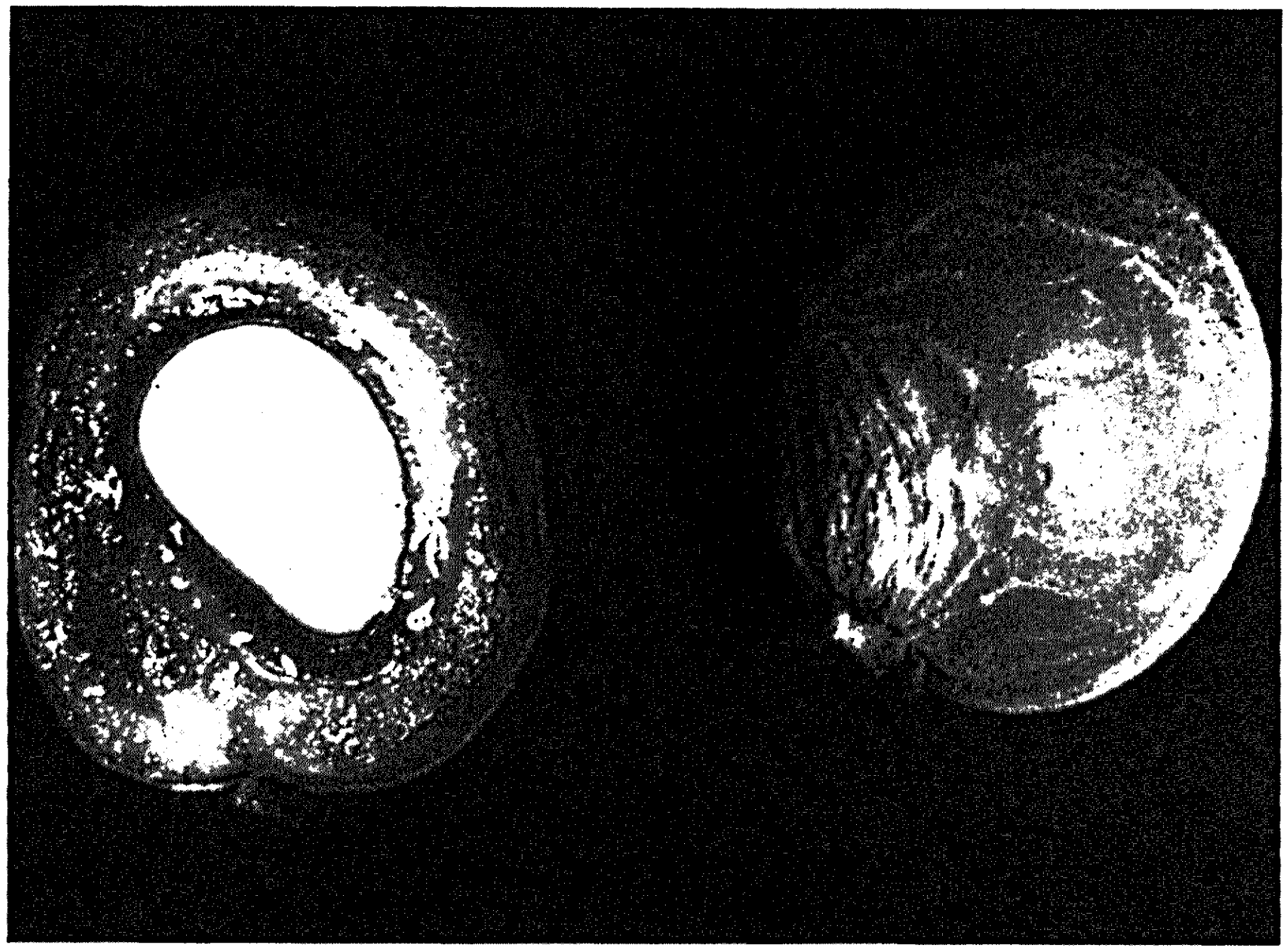


FIG. 3. *D. madagascariense* var. *madagascariense*: 1. flowering branchlet, $\frac{1}{2}\times$; 2. flower, 9×; 3. flower partly, 9× (1–3: former *D. brevitubulosum*); 4. flowering branchlet, $\frac{1}{2}\times$; 5. detail of leaf beneath with domatia, $1\frac{1}{2}\times$; 6. flower, 3× (4–6: former *D. beniense*); 7. flowering branchlet, $\frac{1}{2}\times$; 8. flower, 3×; 9. flower partly, 6× (7–9: former *D. multiflorum*). *(1–3. Zenker 3890; 4. Troupin 9326*; 5. Troupin 3699; 6. *Lebrun 2492*; 7. *Perrier de la Bâthie 6216*; 8–9. *Boivin s.n.*).



PHOT. 1. *D. madagascariense* var. *madagascariense*: fruits. (*Breteler 7666*; phot. H. C. D. DE WIT).

capparidifolia as a fourth subspecies is therefore not practicable in *D. madagascariense*. One does wonder if more material of *B. capparidifolia* would continue to support the distinction between the three continental subspecies proposed by BRUMMITT.

A division of *D. madagascariense* into for instance 5–10 varieties could easily be framed and would accommodate 50–60% of the available material, but the remainder would not fit in. In order to classify these specimens in a more or less satisfactory manner, a considerable increase in number of varieties would be necessary. This will undermine the limits between these numerous varieties to such an extent that it is far more practical not to recognise them at all: i.e. one in itself variable species which is comparatively easy to distinguish from related species, an exception being allowed for the var. *brevistylum*, which is more definitely circumscribed.

Key to the varieties

Petals (1.7)2.5–4(5.5) mm long, (0.5)1–2(3) mm split, stamens and pistil at least as long as the petals, usually longer, (2)2.5–6(7) mm long and (1.7)2.5–6(9) mm long respectively . . . . . var. **madagascariense**

Petals 1.7–2 mm long, 0.2–0.5 mm split, the stamens at most as long as the petals, 1.5–1.7 mm long, the pistil distinctly shorter, 1–1.2 mm long. . . . . var. **brevistylum**

PHOT. 2. *D. madagascariense* var. *madagascariense*: detail of seedling with first two leaves opposite (*Breteler 7301*; phot. H. C. D. DE WIT).

D. madagascariense Poir. var. **madagascariense** **Fig. 2–3 Map 2**

D. madagascariense Poiret, 1812: 470; 1819: 178; Engler, 1896-a: 349, as *D. madagascariense* Dup. Thouars, 1912-a: 585, as *D. madagascariense* Pt. Thouars; Engler & Krause, 1931: 6, as *D. madagascariense* Thou.; Breteler, 1973: 3, 37–39, 68, 69, 86, 92, 93, 110, 112, XVII (main entries); Punt, 1975: 40; Breteler, 1978: 14–16, 62, 63, 70, 75–77, 80 (main entries); 1979: 17, 21, 22 (main entries).

Type: Madagascar, sin. loc., *Du Petit Thouars s.n.* (holotype: P; isotypes: BM, WAG).

D. madagascariense Poiret var. *beniense* (Engler)Breteler, 1973: 92; 1979: 43. For full details see Breteler, 1973: 92.

D. thouarsianum Roemer & Schultes, 1819: 34; Descoings, 1960: 102; 1961: 6; 1962: 48; Torre, 1963: 321; Descoings, 1973: 511, 514; Breteler, 1973: XVII, in synonymy of *D. madagascariense*. Type: the same as for *D. madagascariense* var. *madagascariense*.

D. thouarsianum Roemer & Schultes var. *macrophyllum* (Tulasne) Descoings, 1960: 107; 1961: 8; 1973: 514–515. Basionym: *Chailletia dichapetalum* De Candolle forma *macrophylla* Tulasne, 1857: 90. Type: Archipel des Comores, Mayotte, Chingoni, *Boivin 3367* (holotype: P; isotypes: K, WAG).

D. thouarsianum Roemer & Schultes var. *pubescens* Descoings, 1960: 108; 1961: 9; 1962: 51; 1973: 511, 518. Type: Madagascar, sin. loc., *Pervillé 700* (holotype: P; isotype: WAG).

D. guineense (De Candolle)Keay, 1955: 137. See Breteler, 1979: 22 for full details.

D. paniculatum (Thonning ex Schumacher)De Wildeman, 1919: B 57; Breteler, 1973: XVII, in synonymy of *D. madagascariense*. Basionym: *Rhamnus paniculatus* Thonning ex Schumacher, 1827: 151. Type: Ghana, sin. loc., *Thonning 289*, in Herbarium Schumacher (holotype: C).

D. floribundum (Planchon)Engler, 1896-a: 348. See Breteler, 1978: 77 for full details.

D. floribundum (Planchon)Engler var. *preussii* Engler, 1896-b: 137. See Breteler, 1978: 77 for full details.

D. subcordatum (Hooker f. ex Bentham)Engler, 1896-a: 349; 1912-a: 570; De Wildeman, 1919: B67; Hutchinson & Dalziel, 1928-a: 324; Keay, 1958: 436; Breteler, 1973: XVII, in synonymy of *D. madagascariense*. Basionym: *Chailletia subcordata* Hooker f. ex Bentham, 1849: 277; Oliver, 1868: 341. Type: Equatorial Guinea, Fernando Po, *Vogel 207* (holotype: K).

D. benthamii (F. Didrichsen)Engler, 1896-a: 349. See Breteler, 1973: 93 for full details.

D. flexuosum (Oliver) Engler, 1896-a: 349. See Breteler, 1978: 76 for full details.

D. thomsonii (Oliver)Engler, 1896-a: 349; 1912-a: 585; Pellegrin, 1913: 647; De Wildeman, 1919: B 68; Hutchinson & Dalziel, 1928-a: 324; Keay, 1958: 438; Breteler, 1973: XVII, in synonymy of *D. madagascariense*. Basionym: *Chailletia thomsonii* Oliver, 1868: 342. Type: Nigeria, Old Calabar, *Thomson 79* (holotype: K; isotypes: E, WAG).

D. brownii Baillon, 1892: pl. 205. See Breteler, 1973: 110 for full details.

D. batanganum Engler & Ruhland, 1902: 79. See Breteler, 1973: 86 for full details.

D. buvumense Baker f., 1905: 133. See Breteler, 1973: 112 for full details.

D. brevitubulosum Engler, 1912-a: 589. See Breteler, 1973: 110 for full details.

D. cicinnatum Engler, 1912-a: 590. See Breteler, 1978: 15 for full details.

D. dodoense Engler, 1912-a: 591. See Breteler, 1978: 62 for full details.

D. flavovirens Engler, 1912-a: 581. See Breteler, 1978: 76 for full details.

D. gossweileri Engler, 1912-a: 586. See Breteler, 1979: 21 for full details.

D. subcoriaceum Engler, 1912-a: 586; De Wildeman, 1919: B67; Breteler, 1973: XVIII, in synonymy of *D. madagascariense*. Type: Cameroun, near Nkolebunde, *Ledermann 778* (lectotype: BM).

D. ombrophilum Krause, 1912: 510; De Wildeman, 1919: B 56; Hauman 1958-a: 332; Breteler, 1973: XVIII, in synonymy of *D. madagascariense*. Type: Zaïre, Kimuenza, *Mildbraed 3690* (holotype B†; lectotype: HBG).

D. aruwimense Engler, 1912-b: 444. See Breteler, 1973: 68 for full details.

D. beniense Engler, 1912-b: 440. See Breteler, 1973: 92 for full details.

D. flaviflorum Engler, 1912-b: 439. See Breteler, 1978: 75 for full details.

D. abrupti-acuminatum De Wildeman, 1919: B14. See Breteler, 1973: 39 for

full details.

D. dundusanense De Wildeman, 1919: B28. See Breteler, 1978: 63 for full details.

D. fulvialabastrum De Wildeman, 1919: B31. See Breteler, 1978: 80 for full details.

D. glandulosum De Wildeman, 1919: B33. See Breteler, 1979: 17 for full details.

D. pynaertii De Wildeman, 1919: B 59, as *D. pynaerti;* Hauman, 1958-a: 321; Breteler, 1973: XVIII, in synonymy of *D. madagascariense*. Type: Zaïre, Eala, *Pynaert 1750* (lectotype: BR, designated by Hauman).

D. ubangiense De Wildeman, 1919: B70; Hauman, 1958-a: 307; Breteler, 1973: XVIII, in synonymy of *D. madagascariense*. Type: Zaïre, Dongo sur Ubangi, *Sapin s.n.* (holotype: BR).

D. bakerianum Exell, 1927: 68. See Breteler, 1973: 69 for full details.

D. chrysobalanoides Hutchinson & Dalziel, 1928-b: 380. See Breteler, 1978: 14 for full details.

D. rowlandii Hutchinson & Dalziel, 1928-b: 380; 1928-a: 324; Keay, 1955: 137 & 1958: 436, in synonymy of *D. guineense*; Breteler, 1973: XVIII, in synonymy of *D. madagascariense*. Type: Nigeria, Western Lagos, *Rowland s.n.* (holotype: K).

D. flabellatiflorum Hauman, 1955: 342. See Breteler, 1978: 75 for full details.

D. humbertii Descoings, 1960: 84. See Breteler, 1979: 43 for full details.

D. microphyllum Descoings, 1960: 107. See Breteler 1979: 43 for full details.

D. multiflorum (Tulasne) Descoings, 1962: 47; 1973: 514; Breteler, 1973: 111. Basionym: *Chailletia dichapetalum* De Candolle forma *multiflora* Tulasne, 1857: 90; Descoings, 1960: 109. Type: Madagascar, sin. loc., *Lastelle s.n.* (holotype: P; isotype: WAG).

Chailletia fasciculata Sprengel, 1825: 931. Type: the same as for *D. madagascariense* var. *madagascariense.*

Chailletia dichapetalum De Candolle, 1825: 57; Tulasne, 1857: 89, as *Ch. dichapetalum* R.Br. Type: the same as for *D. madagascariense* var. *madagascariense.*

Chailletia paniculata (Thonning ex Schumacher) Bentham, 1849: 279. Basionym: *Rhamnus paniculatus* Thonning ex Schumacher, 1827: 151. Type: see above under *D. paniculatum.*

Distribution: The same as mentioned for the species.

Ecology: From rain forest to gallery forest, also in savannahs.

Specimens examined:

Guinea Bissau. Bolala, between Cacine and Buba, *Espirito Santo 2150* (COI, LISC).

Guinea. Kinidougou, *Adam 2978* (P); Macenta, *Adam 3503* (P); *4018* (P, WAG); *4027* (WAG); Boda Mt. (Ntongon Mt.), *Chevalier 20922* (P); near Macenta. *Jaques-Félix 1547* (P); Tondo, *Roberty 17521* (G).

Sierra Leone. Cape Coast, *Afzelius 76* (UPS); *302* (UPS); sin. loc., *Afzelius s.n.* (UPS); across

Kitam R. from Solon, *Bakshi 524* (K); near Roruks, *Deighton 3258* (K, P); Kondombaia-Loma Mts, *Morton & Gledhill 1017* (K, WAG); Kafoga, *Scott Elliot 5601 b* (BM); sin. loc., *Scott Elliot 5935* (K); sin. loc., *Scott Elliot s.n.* (K, type of *D. chrysobalanoides*); Rowalla, *Thomas 1017* (K); Mayoso, *Thomas 1409* (K); Magbile, *Thomas 6016* (K); *6019* (K); *6110* (K); *6119* (K); *6125* (K); *6145* (K); *6273* (K); *6291* (K); *6328* (K).

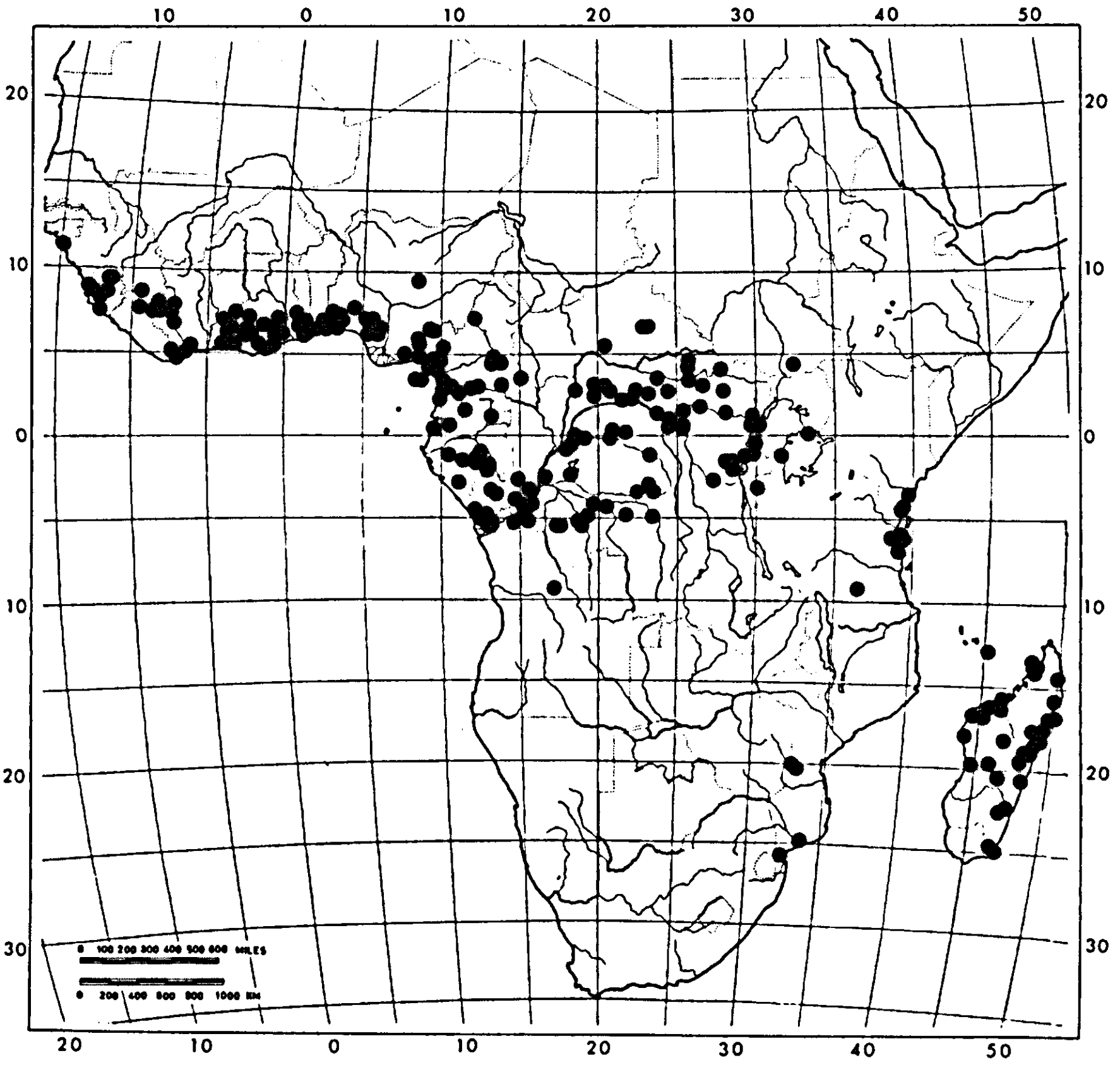
Liberia. Jekepa, *Adam 27646 bis* (WAG); *27746 bis* (BR, WAG); Zorzor, *Bos 2219* (BR, K, P, WAG).

Ivory Coast. Tonkui Mt. *Aké Assi 8026* (WAG); Adiopodoumé, *Aké Assi s.n.* (WAG); Rasso, *Aubréville 149* (B, BR, K); *149 bis* (P); Bouroukro, *Aubréville 699* (P); Man region, *Aubréville 1048* (BR, P); Braounė, *Aubréville 1124* (P); Danipleu, *Aubréville 1129* (K, P); Banco Forest, *Bégué 3075* (P); near Ayamé, *Breteler 5931* (WAG); near Sassandra, *Breteler 6054* (WAG); 29 km N. of Abidjan, *Breteler 6074* (WAG); 11 km Daoukro-Amanda-Kouassikro Rd, *Breteler 6186* (WAG); 60 km Sassandra-San Pedro, *Breteler 7333* (WAG); 17 km N. of Grabo, *Breteler7409* (WAG); Bouroukrou, *Chevalier 17016* (P, WAG); between Man and Zagonė, *Chevalier 21549* (BR, K, P, WAG); Morenou, *Chevalier 22504* (P, WAG); Tonkui Mt, *J. J. de Wilde 897* (WAG); 61 km N. of Sassandra, *Leeuwenberg 2764* (WAG); *2768* (BR, COI, K, L, LISU, U, UPS, WAG); 9 km Yakassé Mé-Kodiousou Rd, *Leeuwenberg 8050* (WAG); *8100* (WAG); sin. loc., *Portères s.n.* (P); Banco Forest, *Serrain s.n.* (P); Agnėby, *Service Forestier 1699* (B, P); Azaguié, *Versteegh & Den Outer 179* (WAG); Maproyo-Sassandra, *Versteegh & Den Outer 235* (BR, WAG); Agboville Rd, *Versteegh & Den Outer 383* (BR, WAG); N. E. of Abengourou, *Versteegh & Den Outer 626* (WAG).

Ghana. Legon Hill, *Adams 3461* (K); Achimota, *Akpalu 47* (K, WAG); Jimira Res., *J. E. Andoh 4418* (K, P); Cape Coast, *J. E. Andoh 5485* (P); Kommenda, *J. E. Andoh 5596* (BM, P); Cape Coast, *Brass s.n.* (BM); Accra Plains, *T. W. Brown 935* (K); sin. loc., *Cansdale 3976* (BM, BR); Accra, *Dalziel 124* (C, E, K, PRE); Aseseso Mt, *Darko 877* (K); Accra, *Deighton 606* (K); Aburi, *de Wit & Morton A 2861* (WAG); near Legon, *Enti 4* (K); Wiawso, *Enti 469* (*FH 6702*) (K, P); Bobiri F.R., *Enti 472* (*FH 6716*) (K, WAG); Asafo, *Enti FH 7550* (*BR, K,* LISC); Nungua, *Enti GC 3983* (WAG); Kitasi, *Enti R689* (BR, K); Yamoransa, *Enti sp 578* (WAG); sin. loc., *Farmar 468* (BM, K); Atewa Range F.R., *Hall & Lock GC 43678* (K, WAG); Kpoko Ase, *F. R. Irvine 188* (E); Accra, *F. R. Irvine 226* (K); Achimota, *F. R. Irvine 337* (K); Accra, *F. R. Irvine 426* (E); Achimota, *F. R. Irvine 1964* (K); Tafo, *F. R. Irvine 4975* (K); sin. loc., *Isert s.n.* (C); 4 km E. of Ochreku, *Leeuwenberg 11099* (WAG); 15 km E. of Cape Coast, *Leeuwenberg 11108* (WAG); Accra, *Moloney s.n.* (K); near Kumasi, *J. K. Morton A 253* (K); 20 mls E. of Sekondi, *J. K. Morton A 488* (K); Larteh, *J. K. Morton A 837* (K); Winneba, *J. K. Morton A 1859* (K, WAG); Elmina, *J. K. Morton A 1874* (K, WAG); Ayikuma, *J. K. Morton A 1917* (K, WAG); Achimota, *J. K. Morton GC 6016* (K); Accra, *J. K. Morton GC 8266* (K); Elmina, *J. K. Morton GC 8519* (K, WAG); Dodowah-Dawhwenya Rd, *J. K. Morton GC 8529* (K); Achimota, *J. K. Morton GC 8539* (K); Senya Beraku, *J. K. Morton GC 9210* (K, WAG); Achimota, *J. K. Morton GC 25407* (K); Pram Pram, *N. Robertson 27* (K); Cape Coast Castle, *Roberty 12811* (COI, SRGH, Z); Achimota, *Roberty 12863* (COI, SRGH, Z); Nungua, *Rose Innes GH 30101* (K, WAG); Hohoe, *St. Clair-Thompson 3636* (E); Kpong, *A. S. Thomas M5* (K); sin. loc., *Thonning 289*, herb. Schumacher (C, type of *D. paniculatum*); sin. loc., *Thonning s.n.* (herb. Hornemann: C, herb. Vahl; C, G, type of *D. guineense*); Anwhiaso F.R., *Vigne 265* (BM, WAG); Kwahu Praso, *Vigne 1754* (WAG); Atroni, *Vigne 2466* (BM); Aboso, *Vigne 3033* (FHO); Atewa Range, *Vigne 4332* (BM, COI, LISC).

Togo. Lomé, *Aké Assi 9610* (WAG); 5 km S. of Tététou, *Breteler 7014* (WAG); 13 km Lomé-Anecho, *Breteler 7033* (WAG); 14 km Nuatja-Tététou, *Breteler 7045* (WAG); 17 km Lomé-Palimé, *Breteler 7120* (WAG); 5 km N. of Lomé, *Breteler 7294* (WAG); Lomé, *Bruneel 728 bis* (B); Avetonou, *Ern 2738* (WAG); Adétikopé, *Ern 2933* (WAG); *3296* (WAG); Lomé, *Ern c.s. 1173* (B); Lomé-Cacaveli, *Hakki c.s. 12* (WAG); Lomé, *Hakki c.s. 50* (WAG); near Ikavi Kopé, *Hakki c.s. 587* (WAG); 20 km Lomé-Anecho, *Hiepko & Schultze-Motel 194* (B); Lomé, *Mahoux 504* (P); *Mildbraed 7482* (K); *Warnecke 88* (BM, GOET, M, P).

Benin. Dogba, *Aké Assi 9564* (WAG); near Abomey, *Chevalier 23161* (P); *23266* (P); *23267* (P); (K, near Zagnanado, *Chevalier 23298* (BR, K, P); Porto Novo, *Chevalier 23332* (K, P); near Quidah, *Chevalier 23428* (P); Tori-Kada, *Estève in herb. Le Testu 163* (BM, P); sin. loc., *Estève in herb. Le Testu 177* (BM, WAG); Banigbé, *Froment 1178* (BR, WAG); 2 km N. of Sakété, *Leeuwenberg 11929* (WAG); Logdo, 11 km N.E. of Athiémé, *J. & A. Raynal 13518* (K, P); Bugbo, *Spire 159* (P, WAG);



MAP 2. *D. madagascariense* var. *madagascariense*

Afdodjedu, Ouémé Delta, *van Eijnatten 2299* (WAG).

Nigeria. Lagos, *Barter 2142* (K, LE, P, U, W); Abeokuta, *Barter 3355* (K); *3372* (K); Gambari F.R., *Bernardi 8736* (G, K); Oke-Eleyele, *Bolude FHI 3283* (BR, FHO, K, P); Idanre, *Brenan 8706* (BM, FHO, K, P); Okomu F.R., *Brenan 9083* (BM, FHO, K, P); *9173* (BM, K); Otta, *Brown & Opayemi 972* (BR, WAG); Mamu F.R., *B. L. Burtt 15* (K); Lagos, *Chevalier 13986* (P); *14028* (P); *14121* (P); *s.n.* (P); Ibadan, *Chizea FHI 24479* (BR, K, P); Gambari F.R., *de Wit & Onochie 8249* (WAG); Ozalla F.R., *Eimunjeze & Oguntayo FHI 72708* (K, P); Ilaro F.R., *Emwiogbon FHI 18245* (FHO, K); Lagos, *Foster 13* (K); Ibadan, *Foster 212* (K); *Gledhill 806* (K, WAG); Olokemeji F.R., *Hepper 2293* (K, P); Abeokuta, *Irving 92* (K); *114* (K, type of *D. flexuosum*); Owo F.R., *A. P. D. Jones FHI 3474* (FHO); Olokemeji F.R., *Jones c.s. FHI 14176* (FHO); Afi River F.R., *Jones & Onochie FHI 17347* (B, P); Ibadan, *Keay FHI 16038* (K); *FHI 16039* (K); *FHI 16040* (K, P); *FHI 25681* (FHI, K, P); near Agala, *Keay FHI 25696* (K, P); Olokemeji F.R., *Kolo FHI 14273* (K); Shakwa, *Latilo FHI 30932* (FHI, K); Nimbia F.R., *Latilo FHI 47140* (FHI, K); Bendeghe-Ayuk, *Latilo & Oguntayo FHI 67732* (K, WAG); 7 km N. of Ehor, *Leeuwenberg 11250* (WAG); Egba, *Legbo FHI 14431* (K); Ibadan, *Lowe 1223* (WAG); *1244* (K, WAG); *1730* (K, P, WAG); *2008* (K); Gambari, *W. D. MacGregor 576* (K); near Ibadan, *Meikle 1115* (BR, K, P); *1142* (BR, K, P); *1242* (K, P); *1259* (BR, K, P); *1397* (K, P); *1463* (K, P); *1464* (BR, K, P); Oyo, *Meikle & Keay FHI 25679* (K, P); 10 km Ibadan-Ife Rd, *Meikle & Keay FHI 25711* (K, P); near Ikot Ekpene, *Okafor & Latilo FHI 56003* (FHI); Olokemeji F.R., *Olorunfemi (Jonathan) FHI 19146* (K); Ibadan, *Onochie FHI 3689* (FHO); *FHI 18665* (FHI, K, P); Gambari F.R., *Onochie FHI 35347* (K); Olokemeji F.R.,

Onyeachusim FHI 46987 (K); Ibadan, *Richards 5006* (K); Idanre, *Richards 5113* (K); Ekusan, *A. F. Ross 108* (K); near Lagos, *Rowland 26* (K); *s.n.* (K, type of *D. rowlandii*); Abeokuta, *Rowland s.n.* (P); between Ibadan and Abeokuta, *Schlechter 13027* (K, Z); Ubuluku, *N. W. Thomas 2098* (K); *2255* (K); Old Calabar, *W. C. Thomson 79* (E, K, WAG, type of *D. thomsonii*); Ibadan, *Ujor FHI 30498* (K); Gambari, *van Eijnatten 1204* (WAG); *1247* (WAG); *1285* (WAG); Boshi Extension F.R., *van Meer 1763* (FHI, WAG); Obudu, *van Meer 1781* (FHI, WAG); sin loc., *Verger 805* (P); Ibadan, *Wit 2264* (K, WAG); *2276* (K, WAG).

Cameroun. Bitye, *Bates 1424* (BM, WAG); sin. loc., *Bates s.n.* (BM); 15 km Kribi-Ebolowa, *Bos & Breteler 3045* (WAG); 5 km S. of Kribi, *Bos & Breteler 3103* (WAG); Kribi, *Bos 3178* (WAG); 5 km Kribi-Ebolowa, *Bos, 3350* (WAG); 20 km Kribi-Lolodorf, *Bos 4770* (WAG); 6 km Kribi-Ebolowa, *Bos 4861* (WAG); Kribi, *Bos 5431* (WAG); 20 km Kribi-Lolodorf, *Bos 6759* (WAG); 5 km N.E. of Kribi, *Bos 7082* (WAG); 60 km N. of Kribi, *Bos & Breteler 7185* (WAG); near Kribi, *Bos & Breteler 7240* (WAG); 44 km S. of Kribi, Campo Rd, *Bos & Breteler 7288* (WAG); 40 km W. of Bertoua, *Breteler 1338* (K, P, WAG); near Bertoua, *Breteler 1678* (WAG); 27 km Sangmélima-Yaoundé, *Breteler 2656* (BR, FI, K, LISC, M, P, WAG); 14 km Ebolowa-Ambam, *J. J. de Wilde 7445* (WAG); 20 km Kribi-Ebolowa, *J. J. de Wilde 8093 a* (WAG); 14 km Ebolowa-Ambam, *J. J. de Wilde 8218 a* (WAG); *8220* (WAG); 16 km Ebolowa-Minkok, *J. J. de Wilde 8286* (WAG); 16 km Kribi-Ebolowa, *J. J. de Wilde 8349 a* (WAG); 10 km Ebolowa-Minkok, *J. J. de Wilde 8406* (WAG); Grand Batanga, *Dinklage 1094* (BM, HBG, P, WAG, type of *D. batanganum*); *1410* (HBG); Buea, *Dunlap 155* (K); Moliko, Cameroun Mt., *Hutchinson & Metcalfe 85* (K); Buea, *Jeme s.n.* (FHO); Nkolebunde, *Ledermann 778* (BM, type of *D. subcoriaceum*); Dodo, *Ledermann 2859* (BM, type of *D. dodoense*); *2996* (BM, type of *D. cicinnatum*); Bakaka Forest, *Leeuwenberg 8760* (WAG); 17 km Dschang-Melong, *Leeuwenberg & Breteler 8780* (WAG); Manengoubo Mts, *Leeuwenberg & Breteler 8792* (WAG); near Mbule, W. side Koupé Mt., *Leeuwenberg 8803* (WAG); Buea, *Lehmbach 126* (BREM); near Ebaka, *Letouzey 2916* (P, WAG); 22 km Yokadouma-Batouri, *Letouzey 5274* (P, YA); near Mbandjo I, *Letouzey 14806* (P,WAG); Buea, *Maitland 466* (BR, K, P); between Assombam and Lomié, *Mildbraed 5105* (HBG); between Ebolowa and Nkomakak, *Mildbraed 5771* (HBG); Buea, *Preuss 904* (K, type of *D. floribundum* var. *preussii*); Campo area, *Tessmann 860* (BM, type of *D. flavovirens*); sin. loc., *Winkler & Hanke 58* (Z); *Winkler 132* (Z); Bipindi, *Zenker 3890* (BM, BR, E, GOET, K, L, LE, M, MO, P, PRE, W, WAG, WU, Z, type of *D. brevitubulosum*); *4770* (B, BM, BP, BR, COI, GOET, K, L, LE, M, SRGH, W, Z).

Equatorial Guinea. Fernando Po, *Barter s.n.* (K); Fernando Po, *Mann 16* (GOET, K, LE, P, U, W); *432* (K, P); Fernando Po, S.W. Coast, Bokoko, *Mildbraed 6922* (HBG); Fernando Po, *Vogel 105* (K); *132* (K, UPS); *175* (K, type of *D. floribundum*); *207* (K, type of *D. subcordatum*); *s.n.* (UPS).

Gabon. 50 km S.E. of Lambaréné, *Breteler 5788* (WAG); 20 km Moanda-Bakoumba, *Breteler 6500* (WAG); 33 km Moanda-Bakoumba, *Breteler 6736* (WAG); *6751* (WAG); 70 km S.S.W. of Moanda, *Breteler 6888* (WAG); 60 km S.S.W. of Moanda, *Breteler 6945* (WAG); *6958* (WAG); 13 km N.E. of Assok, *Breteler & J. J. de Wilde 116* (WAG); Bélinga, *Breteler & J. J. de Wilde 535* (WAG); *561* (WAG); *598* (WAG); *Caballé 241* (WAG); *N. Hallé 4139* (P, WAG); *4144* (P, WAG); near Libreville, *Klaine 2991* (K, P, WAG); Wabilila, *Le Testu 1447* (BM, P); Mogoumou, *Le Testu 6319* (BM, P, WAG); Ivigou, *Le Testu 8310* (BR, P, WAG); Malendé, *Le Testu 8470* (BM, BR, P, WAG); Koulamoutou, *Le Testu 8752* (BM, P, WAG); Haut Ntem, *Le Testu 9229* (BM, P, WAG); Oyem, *Le Testu 9309* (BM, BR, P, WAG); *9500* (BM, BR, P, WAG).

Congo. Moabi R., *Bouquet 745* (BR, P, WAG); Moukassi, *Bouquet 1216* (P); Komono, *Bouquet & Sita 2339* (WAG); 42 km Brazzaville-Kinkala, *de Néré 190* (MPU, P); Bokké, *Estève 32 bis* (P); Plateau Batéké, *F. Hallé 1651* (P, WAG); Inoni, *Koechlin 712* (IEC); Tonkama, *Koechlin 4355* (IEC); 32 km N. of Brazzaville, *Makany 993* (BR, P, WAG); Brazzaville-Mouloukou Rd, *Sita 1218* (BR, P, WAG); Moutampa, *Sita 1885* (WAG); 46 km Brazzaville-Maloukou, *Sita 2719* (WAG); M'Bamou I., *Sita 2844* (WAG); Djambala, *Trochain 8508* (IEC, P).

Zaïre. Kalagwa, *Bequaert 1609* (BR, WAG); Penge, *Bequaert 2174* (BR, WAG); *2239* (BR, EA, WAG); Irumu, *Bequaert 2719* (BR, WAG); *2924* (BR, WAG); Lesse, *Bequaert 3201* (BR, WAG); *4136* (BR, WAG); *4138* (BR, WAG); Walikale, *Bequaert 6455* (BR, WAG); Masisi-Walikale, *Bequaert 6484* (BR); Kisangani, *Bequaert 7068* (BR); 23–31 km Kisangani-Bengamisa, *Bokdam 4078* (WAG); *4127* (WAG); Yangambi, *Bolema 149* (BR); *201* (BR); *310* (BR, K); *475* (BR); Bambesa, *Bredo 1034* (BR); *1193* (BR); Maluku, *Breyne 710* (BR); *737* (BR); *804* (BR); Mompono,

Bruneel 54 (BR, P, Z); Koloko, *Claessens 347* (BR); Lengi, *Claessens 452* (BR); Ngazi, *Claessens 740* (BR); Kinsuka, *Compère 823* (BR); Kimbuanga, *Compère 1308* (BR, K, WAG); *1312* (BR, K); Bolombo-Eala, *Corbisier-Baland 1296* (BR); Mobwasa, *De Giorgi 676* (BR); *715* (BR); Dundusana, *De Giorgi 1050* (BR); Likimi, *De Giorgi 1559* (BR, P, Z); Yambata, *De Giorgi 1769* (BR, Z); Bangadi R., *De Graer 807* (BR); *s.n.* (BR); Kiyaka, *Devred 2726* (BR); Yangambi, *Devred 4019* (BR, WAG); *4169* (BR, K); Kifuku, *de Witte 9577* (BR); Mute Mute R., *de Witte 11981* (BR); Makayobra R., *de Witte 12458* (BR); near Bondo, *Dewulf 430* (BR); *529* (BR); Kiobo, *Donis 373 bis* (BR, PRE); Luki, *Donis 1489* (BR); *1579* (BR); *1641* (BR); *1966* (BR, WAG); *1975* (BR); *2048* (BR); *2217* (BR); *2283* (BR); *2400* (BR); Ekota, *Dubois 630* (BR); Befale, *Dubois 777* (BR, LISU); Ikela, *Dubois 1021* (BR, type of *D. flabellatiflorum*); Bongabo, *Evrard 1139* (BR, EA); Gemena, *Evrard 1350* (BR, LISC); Aruwimi R., between Yambuya and Mongandjo, *Evrard 2134* (BR, K); Lac Tumba, *Evrard 3799* (BR, WAG); Loolo, *Evrard 6028* (BR); Ilandria-Makako, *Evrard 6048* (BR, LISC, WAG); Ingende, *Evrard 6124* (BR); *6141* (BR, K, WAG); Bambesa, *Gérard 514* (BR); Tukpwo, *Gérard 931* (BR); Bambesa, *Gérard 2851* (BR); *3269* (BR); Tukpwo, *Gérard 3773* (BR, K); Bambesa, *Gérard 3826* (BR, K); Batite, *Gérard 4193* (BR, K); Bambesa, *Gérard 4696* (BR); *4816* (BR, WAG); *5145* (BR); *5538* (BR); Digba, *Gérard 5634* (BR); *5662* (BR); Bambesa, *Gérard 5722* (BR); Yangambi, *Germain 919* (BM, BR); near Bikoro, *Germain 1967* (BR, P); Mpese, *Germain 2111* (BR, COI, LISU); Yalokombe, *Germain 7323* (BR, K, PRE); Tohanga, *Germain 7562* (BR); Mongo, *Germain 8413* (BR); Yangambi, *Germain 8498* (BR, K, LISC, PRE); *8517* (BR); *8565* (BR); *8567* (BR); *8580* (BR); *8587* (BR); *8589* (BR); *8590* (BR, K); *8594* (BR, LISC, LISU); Rutschuru, *Ghesquière 4297* (BR, LISC, M, P, SRGH, WAG); sin. loc., *Gilbert 108* (BR); Ubangi R., *Gilbert 1673* (BR, K, W); Banalia, *Gilbert 2170* (BR, LISC); *2179* (BR, Z); *2322* (BR, FI); Yangambi, *Gilbert 10161* (BR); *10206* (BR, SRGH); Bankaie, *Gilbert 14774* (BR); *14783* (BR, K); Kakenge, *Gillardin 320* (BM, BR, M, SRGH); Lusambo, *Gillardin 509* (BR); Mukumari, *Gillardin 569* (BR); Kimuenza, *Gillet 2060* (BR); Likimi, *Goossens 3207* (BR); Budjala, *Goossens 4114* (BR, K); Likimi, *Goossens 4165* (BR); Budjala, *Goossens 4350* (BR, PRE); Lisala, *Goossens 4679* (BR); *4682* (BR); Likimi, *Goossens 4711* (BR); *4712* (BR); Gemena, *Goossens 4773* (BR, U); Kanewu, *Goossens 4815* (BR); Gemene, *Goossens 4895* (BR); Bunyakiri, *Gutzwiller 2082* (BR); *2137* (BR); *2195* (BR, WAG); Boende, *Hulstaert 390* (BR); Kingedi, *Kuasa 24* (BR); Eala, *Laurent 1501* (BR); Bantoie, *Lebrun 528* (BR, EA, LISU); Wangata, *Lebrun 918* (U); Buta, *Lebrun 2492* (BR, LISU, WAG); Angodia, *Lebrun 2906* (BR, K, WAG); between Nangare and Wamba, *Lebrun 3273* (BR, COI, LISU); Masisi, *Lebrun 5178* (BR, L, LD); Katakokombe, *Lebrun 6143* (BR, P); between Mushie and Bolobo, *Lebrun 6725* (BR, WAG); Mobwasa, *Lemaire 77* (BR); Likimi, *Lemaire 135* (BR, Z); Yangambi, *A. Léonard 821* (BR); Kampala, *A. Léonard 1661* (BR); Kabunga, *A. Léonard 1823* (BR, G, P, PRE, WAG); Kitshanga, *A. Léonard 2841* (BR, K); Kiaselela, *A. Léonard 3904* (BR, WAG); 15–23 km N. of Kisangani, *Lisowski 17205* (BR); *17433* (BR); *17476* (BR); *40065* (BR); *43065* (BR); *46291* (K); Yangambi, *Louis 256* (BR, LISC, WAG); *294* (BR); *304* (BR, U); *511* (BR, U); *703* (BR, M, SRGH); *822* (BM, BR, EA, K, P); *1014* (BM, BR, EA, FI, K, P); *1451* (BR, UPS); *1528* (BR); *1567* (BR); *1618* (BR); *2474* (BR, COI, EA, FI, Z); *2764* (BR, K); *3017* (BR, FI); *3317* (BM, BR, K); *3431* (BM, BR, COI, EA, FI, K, P); *3470* (BR, L, LISC); *3961* (BR); *5670* (BR); *6221* (BR); *6321* (BM, BR, EA, K, P); *6448* (BM, BR, EA, K, P); *6510* (BR, EA); *6626* (BM, BR, EA, K, P); *6690* (BR, U); *6849* (BR, K); *7619* (BR, M, PRE, W); *7830* (BR, P, SRGH); *7921* (BR, K, LD, P, WAG); *8011* (B, BR, K); *8225* (BR); *8418* (BR, EA); *8604* (BR, COI, FI); *8657* (BR, W); *8777* (BR, UPS); *8885* (BR, U); *9050* (BR, U); *9300* (BR, M, SRGH, W); *9305* (BR, EA, FI, Z); *9339* (BR, UPS); *9418* (BR, EA, P, SRGH); *9886* (BR, Z); *10203* (BR); *10483* (BR); *10484* (BR, LD, LISC, P); *11499* (BR); Yangale, *Louis 12114* (BR); Yangambi, *Louis 12617* (BR); *12619* (BR); *12679* (BR, P, WAG); *13144* (BR); *14649* (BR, L. LD); *14921* (BR, K); *15465* (BM, BR, M, SRGH); *15922* (BR, K, WAG); near Likimi, *Malchair 185* (BR, type of *D. abrupti-acuminatum*); *188* (BR); *238* (BR, type of *D. glandulosum*); *411* (BR); Luki, *Maudoux 242* (BR, K); Yangambi, *Maudoux 699* (BR); *1268* (BR); *Menavanza 26* (BR); *140* (BR, K); N.W. Beni, *Mildbraed 2200* (BM, type of *D. beniense*); Aruwimi, *Mildbraed 3266* or *3299* (BM, type of *D. flaviflorum*); Aruwimi R., *Mildbraed 3301* (B, BM, type of *D. aruwimense*); Kimuenza, *Mildbraed 3690* (BM, HBG, type of *D. ombrophilum*); Dundusana, *Mortehan 55* (BR, type of *D. dundusanense*); *623* (BR); Bikoro, *Moureau-Cheuvard 108* (BR); Manenga, *Pauwels 5833* (BR); Bunyakiri, *Pierlot 2888* (BR, WAG); Kahusi Mt, *Pierlot 3137* (BR, WAG); *3153* (BR, WAG); sin loc., *Pynaert 238* (BR); Eala, *Pynaert 1294* (BR); *1750* (BR, type of *D. pynaertii*); Dundusana,

Reygaert 96 (BR); *246* (BR); near Mobwasa, *Reygaert 820* (BR, type of *D. fulvialabastrum*); *1293* (BR); *1411* (BR); S. of Booke, *Robin 72* (BR); Illongonga, *Sapin 48* (BR); Dongo sur Ubangi, *Sapin s.n.* (BR, type of *D. ubangiense*); near Yambuya, *Solheid 98* (BR); Bikoro, *Thonet 108* (BR, LISC, W, WAG); *211* (BR); Luki, *Toussaint 208* (BR, K, LISC); Gimbi, *Toussaint 544* (BR); Kalehe, 100–110 km Kavumu-Walikale, *Troupin 3686* (BR, K, SRGH); *3699* (BR, K, M); *4336* (BR, K, P); *7761* (BR); *9326* (BR, K, WAG); *9412* (BR, FI); *10135* (BR); *10194* (BR); *10279* (BR); *10632* (BR); *10791* (BR); *10885* (BR); *12091* (BR); *12174* (BR, K); Kikwit, *Vanderyst 8320* (BR); Ipamu, *Vanderyst 10743* (BR); Kimbau, *Vanderyst 15229* (BR); *15230* (BR); between Kingundji and Popokabaka, *Vanderyst 15243* (BR); Port Francqui, *Vanderyst 24305* (BR); *24310* (BR); Mobwasa, *Vermoesen 277* (BR, LISC); Luki, *Wagemans 1613* (BR); Yangambi, *Yafunga 35* (BR); *165* (BR).

Burundi. Karuzzi-Ruvuvu river junction, *van der Ben 2389* (BR, WAG).

Angola. Cazengo Distr., *Gossweiler 585* (BM, K, P, type of *D. gossweileri*); Panga Mungo-Subluali, *Gossweiler 6279* (BM, COI, K, LISJC, LISU, type of *D. bakerianum*); sin. loc., *Gossweiler 6693* (LISJC); Buco Zau, *Gossweiler 6813* (COI, K, LISJC, LISU); *6907* (COI, K, LISJC, LISU); Quela, *Nolde 328* (BM); Malange, *Nolde 557* (BM).

Central African Republic. 35 km W. of Yalinga, *Le Testu 3903* (BM, P); Yalinga, *Le Testu s.n.* (BM, BR, WAG); Inloba, 35 km S.W. of Bambari, *Tisserant 254* (BM, P).

Sudan. Torit Distr., *Andrews 1773* (K); Zandeland, *Wyld 619* (BM).

Uganda. Buvuma I., *Bagshawe 595* (BM, WAG, type of *D. buvumense*); Kalinzu Forest, West Ankole, *Eggeling 3218* (ENT, K); eastern slopes of Ishasha Gorge, *Katende 1258* (K); Toro Distr., *Osmaston 1369* (EA, ENT); Kiggi, Ishasha Gorge, *Purseglove 2465* (BR, EA, K).

Kenya. Kilifi Distr., *Adams 113* (BR, K); *128* (BR, K); Diani, *Coe & Isaac 16* (WAG); W. of Shimoni, *Greenway 9652* (EA, FI, K, PRE); Diani Forest, *Kibuwa 1208* (BR, K, MO, P); *1214* (BR, K, MO, P, WAG); Kilifi Distr., *Langridge 132* (EA); Shimba Hills, Pengo Hill area, *Magogo & Glover 250* (BR, FI, K, WAG); Mrima Hill Forest, *Verdcourt 1899* (BR, EA, K, P); *3936 c* (EA, K); ca 30 km S. of Mombassa, *Vickery 151* (WAG); *153* (WAG); *154* (WAG); *156* (WAG); *157* (WAG).

Tanzania. Zanzibar, *Faulkner 3310* (BR, K); Gegosa Forest, *Faulkner 3859* (K, WAG); Kantare, *Gillman 298* (EA, K); Kiserawe, *Greenway 4990* (EA, K); Zanzibar, *Sacleux 1175* (P, WAG); Pugu F.R., *Semsei* (BR, EA, K); Magombera F.R., *Semsei 3373* (EA, K, PRE); Zanzibar, Kombeni, *Vaughan 1444* (EA, K); Zanzibar, Chwaka, *Vaughan 1739* (EA, K); Zanzibar, Mbweni, *Vaughan 1963* (BM, EA); Zanzibar, Haitajwa Hill, *Vaughan 1999* (BM, EA).

Zimbabwe. Melsetter, *F. Müller 2370* (WAG).

Moçambique. Régulo Chiconela, *Barbosa & Lemos 8047* (BR, COI, K, LISC, SRGH); between Mainguelana and Lagoa Pave, *Correia & Marques 2203* (LMU, WAG); Marracuene, Ricatla, *Junod 108* (LISC, PRE); 35 km Masia-Jeffe Bole, *Marques 2862* (LMU, WAG); Haroni, Makurupini Forest, *Wild c.s. 6650* (K, LISC, SRGH).

Archipel des Comores. Mayotte, *Boivin 3367* (K, P, WAG, type of *D. thouarsianum* var. *macrophyllum*).

Madagascar. N.W. Madagascar, *Baron 5566* (BM, K, P); Nossi Bé, *Bernardi 11917* (K); St. Marie, *Boivin 1878* (G, P); Nossi Bé, *Boivin 2024* (G); *2172* (G, P); *s.n.* (W); Côte orientale, *Boivin s.n.* (G); sin. loc., *Boivin s.n.* (G, P); near Belo, *Bosser 18211* (P); 10 km N. of Ft. Dauphin, *Capuron 8507 SF* (P, WAG); *8570* (WAG); ca 100 km Tananarive-Moramanga, *Capuron 22065 SF* (BR, P, WAG); *22733 SF* (P, WAG); *22915 SF* (P); *24343 SF* (P); south side of Maningotry Hill, *Capuron 28358 SF* (K, P, WAG); 102 km Tananarive-Moramanga, *Capuron 44343 SF* (P); sin. loc., *Chapelier s.n.* (P); Nossi Bé, *Cons. Rés. Nat. 2697* (P); Tamatave, *Cons. Rés. Nat. 3245* (P, WAG); *3444* (P); Ambolukalana, *Cons. Rés. Nat. 4441* (P); Marovato, *Cons. Rés. Nat. 4749* (P); Antsiny, *Cons. Rés Nat. 7366* (P, WAG); Tamatave, *Cons. Rés. Nat. 7409* (P); *8317* (P); Sambava Distr., *Cons. Rés. Nat. 9072* (P); Marosato, *Cons. Rés. Nat. s.n.* (P); Didy-Brickaville, *Cours 4676* (P); *4737* (P,WAG); Analamazaotra, *d'Alleizette 1201* (L); near Majunga, *d'Alleizette 1481* (P); Maromandia, *Decary 1406* (P); Bekodoka, *Decary 2249* (P); Maintirano, *Decary 8271* (P); Ramartina, *Decary 15487* (P); Besalampy, *Decary 15665* (P); Ivohibe, *Decary 5538* (P, WAG, type of *D. humbertii*); sin. loc., *Decary 8271* (WAG); *15487* (WAG); *15665* (P, WAG); Marosika, *Deans Cowan s.n.* (BM); sin. loc., *Du Petit Thouars s.n.* (BM, P, WAG, type); Sambirano, *Hildebrandt 3266* (BM, BREM, COI, G, GOET, K, L, LE, M, P, W, WU); Alaotra Lake, Maningary Falls, *Homolle 533* (P); *539* (P); sin. loc., *Homolle s.n.* (P); Tsiribihina Valley, *Humbert 11479* (P, WAG); Ambanja, *Humbert 18772* (P, WAG); Lamandra

(or Ambatalava), *Humblot 46* (P, W); *47* (K); Soanierana-Ambahoabé, *Lam & Meeuse 5634* (K, P, PRE); sin. loc., *Lance 7* (P); sin. loc., *Lastelle s.n.* (P, WAG, type of *D. multiflorum*); sin. loc., *Lavanchie s.n.* (P); 60 km N.W. of Ft. Dauphin, *McWhirter 221* (K, P); Maroa, Antongil Bay, *Mocquerys 98* (G, Z); Sambirano, *Morat 1148* (P); Ankarahara, *J. & M. Peltier 5083* (P); Ambodiroka, *Perrier de la Bâthie 153* (P); Tsarasaotra, *Perrier de la Bâthie 408* (P); sin. loc., *Perrier de la Bâthie 700 bis* (P); Mangoro Valley, *Perrier de la Bâthie 2110* (P); sin. loc., *Perrier de la Bâthie 4575* (P); East Coast, Loanierona, *Perrier de la Bâthie 6214* (P); *6215* (P); Fenerive, *Perrier de la Bâthie 6216* (P); Mazovola, *Perrier de la Bâthie 6221* (P); Manongarivo Mts, *Perrier de la Bâthie 6241* (P); Nossi Bé, *Perrier de la Bâthie 6242* (P); sin. loc., *Pervillé 408* (P); Nossi Bé, *Pervillé 520* (K, P); sin. loc., *Pervillé 700* (P, WAG, type of *D. thouarsianum* var. *pubescens*); 10 km E. of Mbanja, *Rakotozapy 282* (P); sin. loc., *Richard 673* (P); Ampijoroa, *Richard (Alison) 452* (K); *551* (K); Ivohibe, *Service Forestier 1467* (P); Soanierana Ivongo, *Service Forestier 2375* (P); *2445* (P); Ft. Dauphin, *Service Forestier 8197* (P, WAG); sin loc., *Thompson s.n.* (BM).

Cult. Netherlands. Wageningen, *Breteler 7301* (WAG); *7516* (WAG); *7532* (WAG); *7666* (WAG); *de Bruijn 2171* (WAG); *van Setten 89* (WAG); *107* (WAG).

Notes. ENGLER based *D. subcoriaceum* on two collections made by LEDERMANN in Cameroun, i.e. no. *741* & *788*. Of these two syntypes which were lost at Berlin, only a fragment of no. *778* now remains at BM. ENGLER's description of *D. subcoriaceum* covers this material very well except for one detail namely the leaf apex. In the protologue the leaves are described as having an obtuse acumen, but the fragment in BM shows leaves with acutish acumen. As both conditions may be observed in a single specimen of *D. madagascariense* var. *madagascariense*, no doubt remains that *Ledermann 778* belongs in this taxon.

Chailletia dichapetalum forma *multiflora* was raised to specific rank by DESCOINGS naming it *D. multiflorum*. DESCOINGS stated that his new species differs essentially from the closely related *D. thouarsianum* (= *D. madagascariense*) by the not thickened connective and the almost glabrous fruits. As regards the connective, it is true that in the material DESCOINGS classified in his *D. multiflorum* the swelling is not always as obvious as in the material he assigned to *D. thouarsianum*, but a thickened connective is always present. On the continent the same variation pattern occurs. The almost glabrous fruits of *D. multiflorum* are linked by several intermediates to fully hairy fruits of *D. thouarsianum*. Moreover rather sparsely hairy fruits occur in the latter as well (e.g. *Cons. Rés. Nat. 9072*) and can also be observed in specimens formerly classified in the Madagascan *D. humbertii* (e.g. *Capuron 24343 SF, J.&M. Peltier 5083*) or in the continental material of the former *D. beniense* (e.g. *Bequaert 3201*, *De Wulf 529*). For these reasons *D. multiflorum* has not been maintained as a distinct taxon.

A specimen of the former *D. guineense* grown from seeds obtained from Togo, yearly flowers abundantly in the Wageningen conservatory and it also produces some fruits with viable seeds. It is not known by which means pollination is effected, but it could be observed that the flowers did contain nectar, probably produced by the staminodes.

D. madagascariense Poir. var. **brevistylum** Bret., *var. nov.* **Fig. 4 Map 3**

Haec varietas a *D. madagascariense* var. *madagascariense* differt floribus parvis staminibus petalisque maximaliter aequilongis et pistillo distincte breviore.

Type: Tanzania, Arusha Distr., Meru Rift, Ngalali'ko Gorge, *Sarasululu 26914* (holotype: WAG; isotype: K).

This variety differs from *D. madagascariense* var. *madagascariense* by floral characters only. Its flowers are described below, its fruits are unknown.

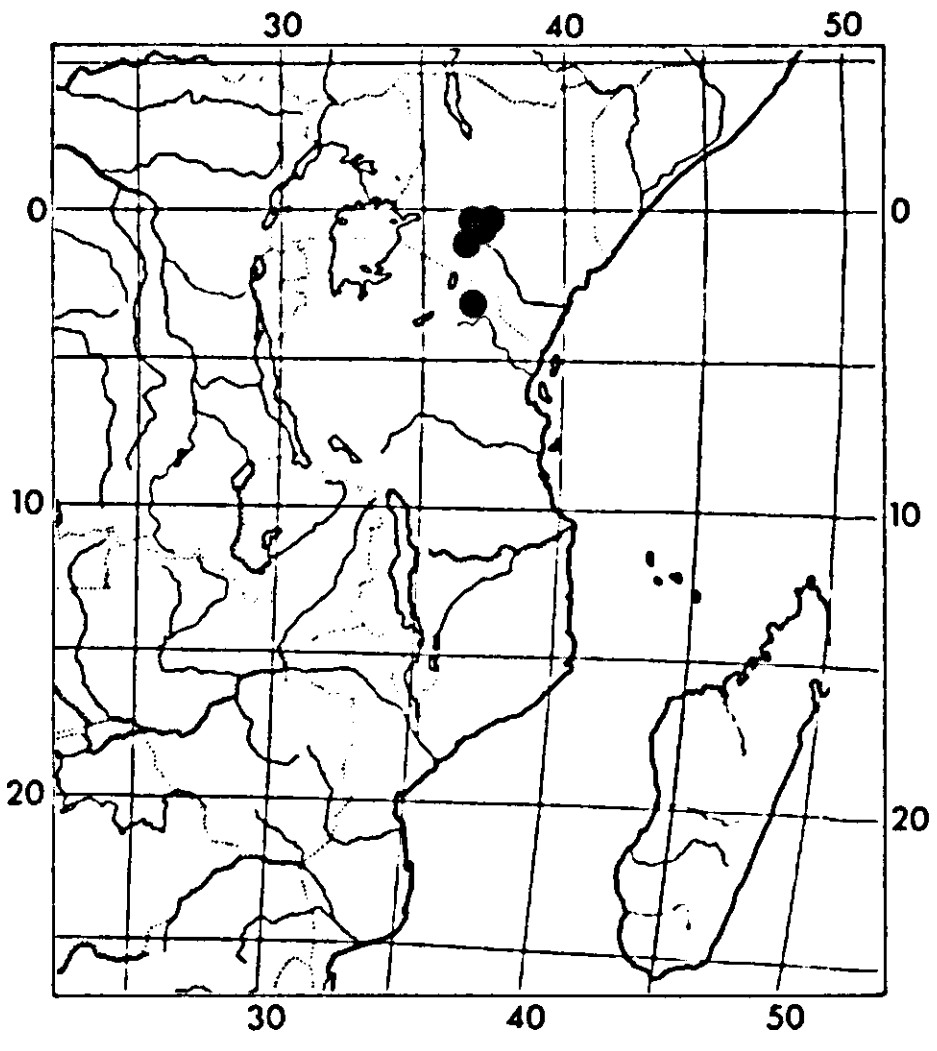
Pedicel up to ca 2 mm long, the upper part at most 0.5 mm long. *Sepals* erect or nearly so, oblong-elliptic to ovate, 1.5–2 × ca 1 mm, tomentose outside, glabrous or sparsely tomentose on apical part inside. *Petals* erect, free from stamens or nearly so, narrowly obovate-spathulate in outline, 1.7–2 mm long, 0.2–0.5 mm split, glabrous or with a few hairs below split outside; lobes concave. *Stamens* erect, 1.5–1.7 mm long, glabrous; anthers ca 0.3 mm long. *Staminodes* subquadrate to slightly oblong, up to 0.5 × 0.5 mm, glabrous or with a few hairs. *Pistil* 2–3(–4)-merous, 1–1.2 mm long; ovary velutinous, style glabrous, shortly 2–3(–4)-lobed.

Distribution: Kenya and Tanzania.
Ecology: Evergreen mountain forest, ca 1500–2000 m alt.

Specimens examined:

Kenya. Mount Aberdare, *R.E. & E.C. Fries 1783* (UPS, WAG); Southern Aberdares, Fort Hall, *Hansen 865* (EA, K, WAG); Mount Kenya Forest, near Castle Forest Station, *Perdue & Kibuwa 8391* (EA, K); Limuru, *Snowden 647* (BM, K).

Tanzania. Arusha Distr., Meru Rift, Ngalali'ko Gorge, *Sarasululu 26914* (K, WAG, type).



MAP 3. *D. madagascariense* var. *brevistylum*

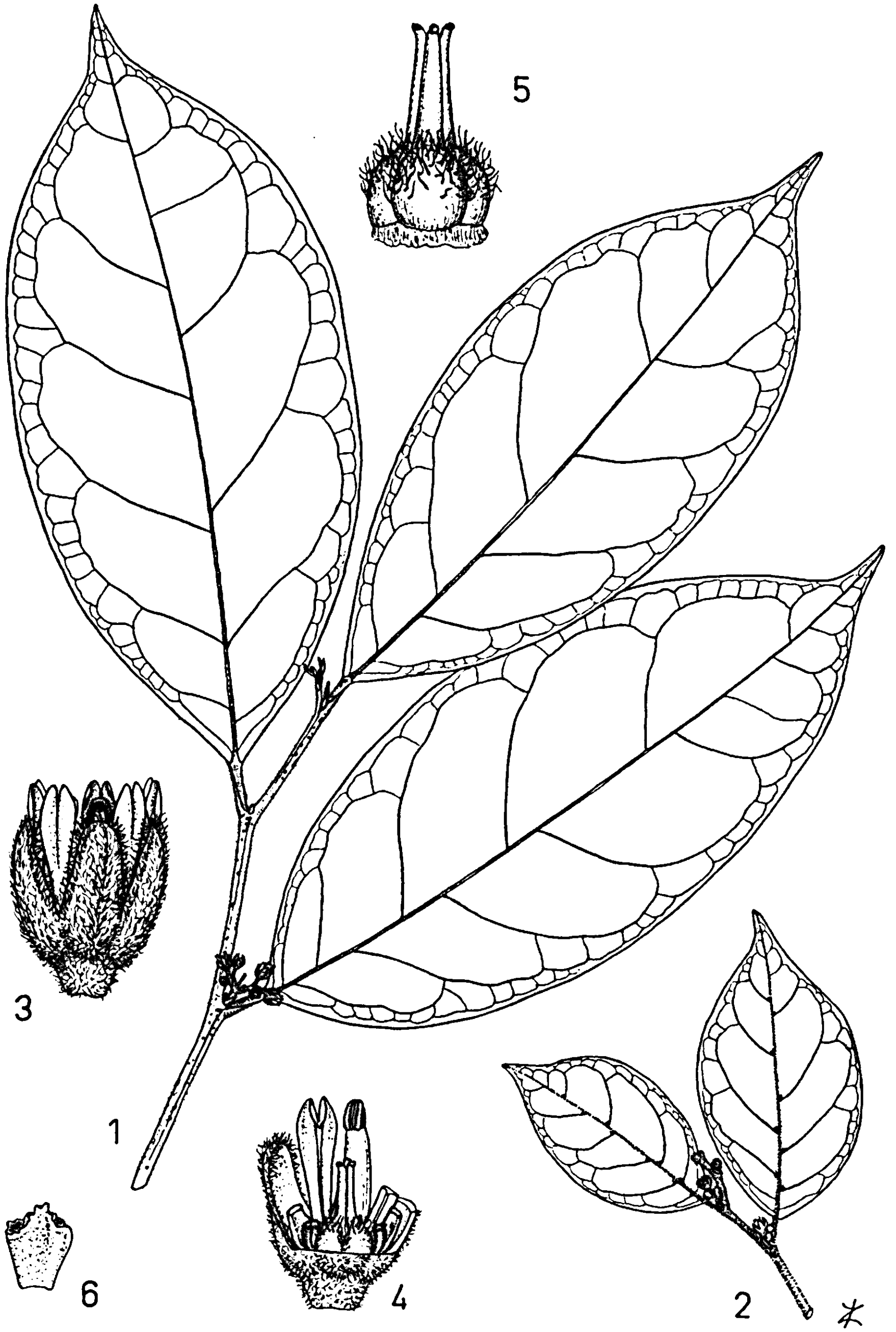


FIG. 4. *D. madagascariense* var. *brevistylum*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. small-leaved branchlet, $\frac{5}{6}\times$; 3. flower, 10×; 4. flower partly, 10×; 5. pistil, 20×; 6. staminode, 20×. (1, 3–6. *Sarasululu 26914*; 2. *Hansen 865*).

D. malchairii De Wild. = **D. glomeratum** Engl.

For details see BRETELER, 1979: 18.

D. malembense Pellegr. = **D. crassifolium** Chod. var. **crassifolium**

For details see BRETELER, 1978: 29.

D. martineaui Aubrév. & Pellegr. = **D. heudelotii** (Planch. ex Oliv.)Baill. var. **ndongense** (Engl.)Bret.

For details see BRETELER, 1979: 38.

D. mayumbense Exell = **D. angolense** Chod.

For details see BRETELER, 1973: 55.

D. mekametane Engl. = **D. congoense** Engl. & Ruhl.

For details see BRETELER, 1978: 16.

D. melanocladum Bret., *sp.nov.* **Fig. 5 Map 4**

Liana vel frutex. Cortex trunci ramorumque atrogriseus usque niger. Folia obovato-elliptica, (6)10–17(26) × (3)4–8(11) cm, margine costa nervis lateralibus principalibus utrinque tomentosa, glabrescentia, glandulis utrinque satis distinctis praedita. Inflorescentia juvenilis glomerata, postea ramosa cum 2–4 ramis scorpioideis usque ad 5 mm longis, tomentosa, sessilis vel subsessilis; bracteae bracteolae minutae. Flores sessiles, minuti, ca 2.5 mm longi. Sepala erecta, 1.5–2.5 mm longa. Petala filamentis adnata, in tubum 1 mm longum coalita, 1.5–2.5 mm longa, 0.2 mm fissa. Stamina 1.2–2 mm longa. Pistillum (2–)3-merum, 1–2 mm longum; ovarium velutinum. Fructus 1–2(–3?)-spermus, breviter velutinus.

Type: Gabon, km 28 Moanda-Bakoumba Rd, *Breteler 6998* (holotype: WAG).

Diagnostic characters. Liana or shrub. Bark of stem and branches dark grey to black. Branchlets tomentose. Leaves obovate-elliptic, (6)10–17(26) × (3)4–8(11) cm, tomentose on margin and midrib and main lateral nerves both

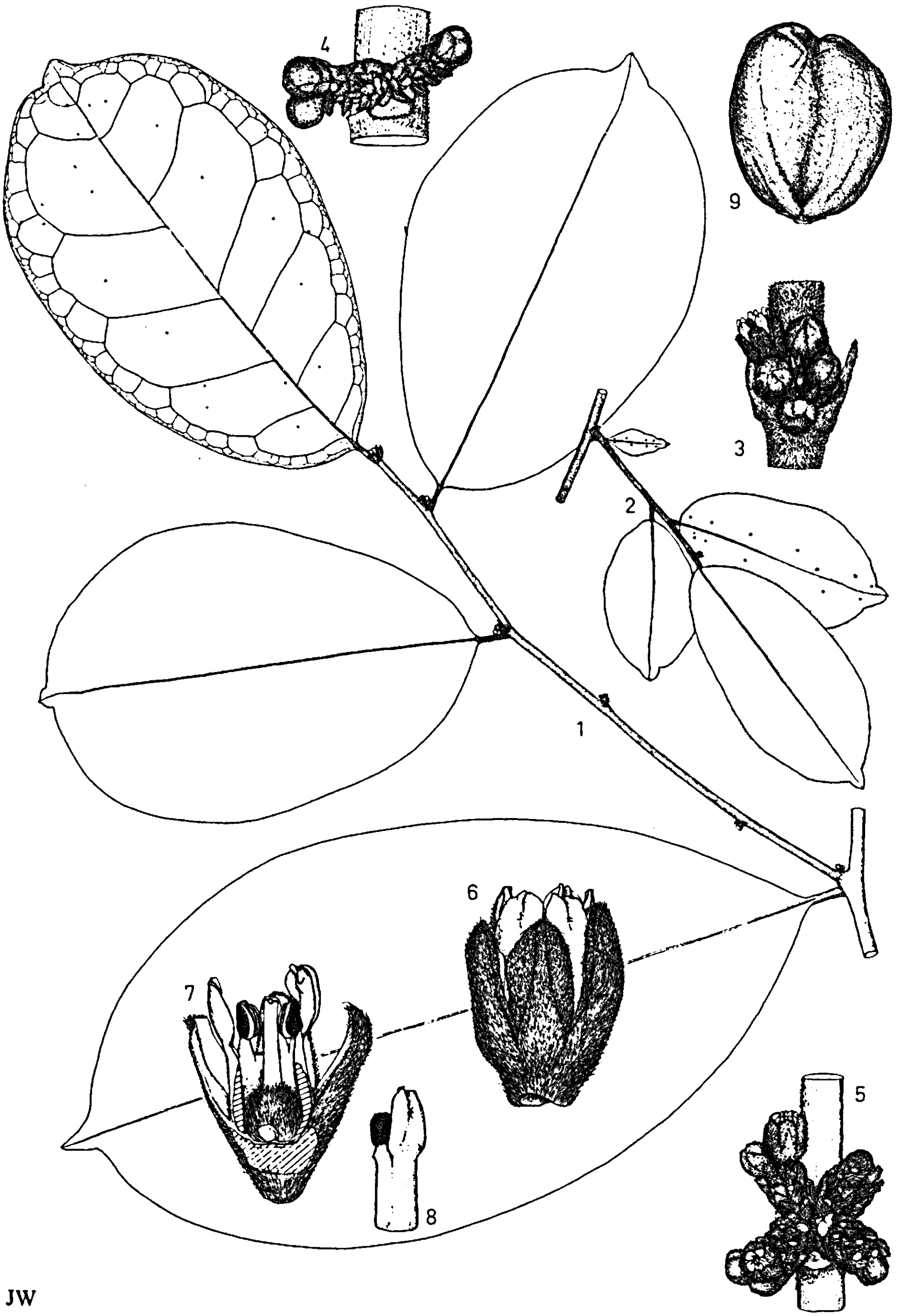


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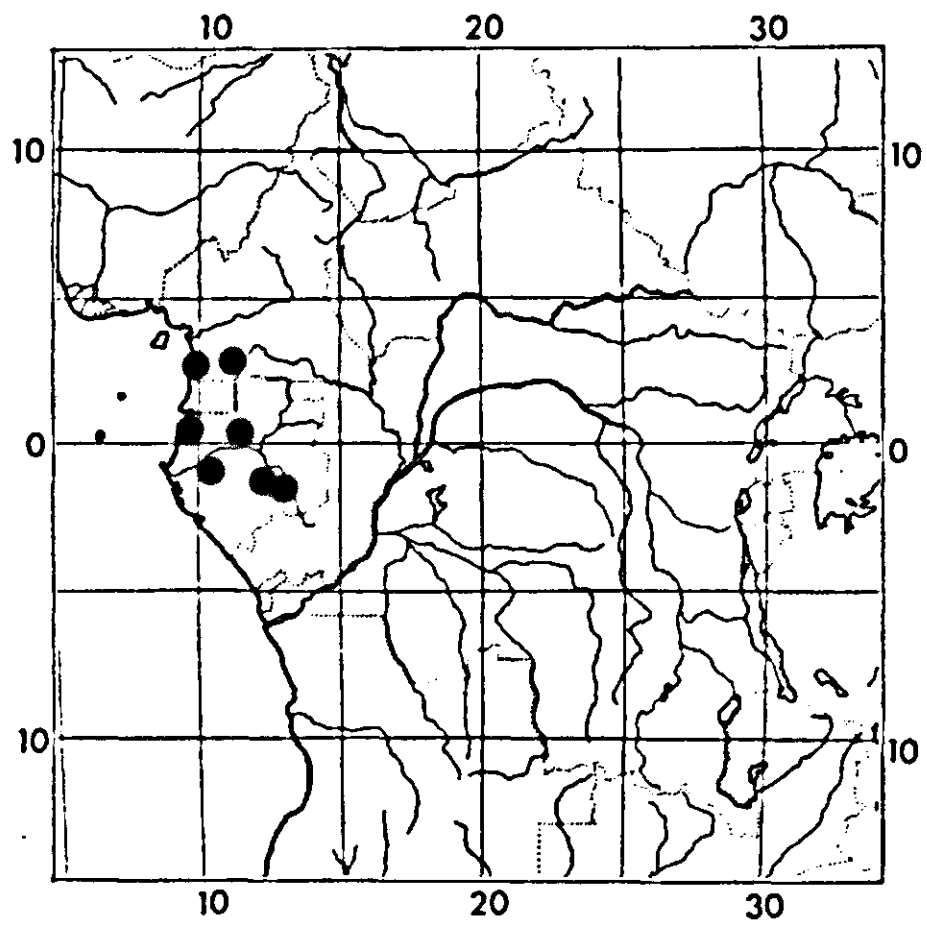
FIG. 5. *D. melanocladum*: 1. branchlet with flowerbuds, $\frac{1}{2}\times$; 2. small-leaved lateral branch of orthotropic shoot, $\frac{1}{2}\times$; 3. leaf axil with stipules and young inflorescence, $3\times$; 4. bifurcate inflorescence, $3\times$; 5. 4-armed inflorescence, $3\times$; 6. flower, $9\times$; 7. flower partly, $9\times$; 8. petal and stamen from outside, $9\times$; 9. fruit, $1\times$. (1. *Breteler 5792*; 2. *Bos & Breteler 7234*; 3–5. *Breteler 6998*; 6–9. *J. J. de Wilde 8136*).

sides, glabrescent, glands both sides, rather distinct. Inflorescence glomerate when young, with 2–4 scorpioid, up to 5 mm long branches when older, tomentose, sessile or nearly so; bracts and bracteoles minute. Flowers sessile, small, ca 2.5 mm long. Sepals erect, 1.5–2.5 mm long. Petals adnate to filaments in 1 mm long tube, 1.5–2.5 mm long, ca 0.2 mm split. Stamens 1.2–2 mm long. Pistil (2–)3-merous, 1–2 mm long; ovary velutinous. Fruit 1–2(–3?)-seeded shortly velutinous.

Description. Small to medium sized liana, lianescent shrub or shrub. Wood-cylinder of stem and orthotropic shoots 5-lobed. Bark of stem, *branches* and *branchlets* dark grey to black, sparsely lenticellate or not. Branchlets tomentose. *Stipules* usually early deciduous, narrowly triangular, 2–4(5) mm long, tomentose. *Leaves:* petiole semiterete to subterete, (2)3–10(14) mm long, grooved above or not, tomentose; blade papery to thinly coriaceous, obovate-elliptic, (6)10–17(26) × (3)4–8(11) cm, rounded to obtuse sometimes subcordate or cuneate at base, usually shortly and abruptly acuminate or acute at top, the acumen up to 0.5(1.5) cm long often with irregular margin caused by glands on upper and/or lower surface, tomentose on margin and midrib and main lateral nerves both sides, especially so beneath, glabrescent, usually more rapidly so above, very young leaves may be also short-hairy between the main nerves; midrib and usually also the 5–7(9) pairs of main lateral nerves impressed above, prominent beneath; glands present both sides, rather distinct. *Inflorescence* sessile or nearly so, glomerate when young, with 2–4, up to ca 5 mm long branches when older, tomentose; bracts and bracteoles minute, triangular, at most 1 mm long. Flowers sessile, small, ca 2.5 mm long. *Sepals* erect, free or nearly so at base, concave, ovate-oblong, 1.5–2.2 × 0.6–1.2 mm, ca rounded at top, tomentose outside, inside sparsely so on apical part. *Petals* erect, adnate to filaments in a ca 1 mm long tube, ca obovate in outline, 1.5–2.5 mm long, ca 0.2 mm split, with a few hairs just below split outside, glabrous inside; lobes concave with rounded top. *Stamens* erect, 1.2–2 mm long, glabrous, the free part of the



MAP 4. *D. melanocladum*

filaments less than 0.2 mm long; anthers ca 0.5 mm long. *Staminodes* subquadrate to oblong, up to 0.5 × 0.5 mm, usually with a few hairs apically and inside, top obtuse to bilobed. *Pistil* (2–)3-merous, 1–2 mm long; ovary velutinous, style glabrous, lobes very short. *Fruit* 1–2(–3?)-seeded; 1-seeded fruits: obovoid-ellipsoid, 2.5–3 cm long, 1–1.5 cm diam., tapering at base, obtuse to shortly apiculate at top, shortly velutinous; fruitwall ca 1 mm thick, without clear distinction between exocarp and mesocarp, the endocarp pergamentaceous to submembranous, glabrous and glossy inside. *Seed* subovoid-ellipsoid, 18–23 × ca 10 mm, with a brown, glossy seedcoat.

Distribution: Cameroun, Gabon.
Ecology: Rain forest.

Specimens examined:

Cameroun. 30 km S. of Kribi, Campo Rd., *Bos & Breteler 7234* (WAG); 40 km S. of Kribi, Campo Rd., *Bos & Breteler 7278* (WAG); near Ebolowa, 3 km Nkoemvone-Akoakas, *J. J. de Wilde 8136* (WAG).

Gabon. 42 km S.E. of Lambaréné, *Breteler 5688* (WAG); 50 km S.E. of Lambaréné, *Breteler 5792* (WAG); km 28 Moanda-Bakoumba, *Breteler 6998* (WAG, type); 10 km La Lara-Makokou, 42 km N. along Okano R., *Breteler & J. J. de Wilde 458* (WAG); Libreville, *Klaine 2402* (P, WAG); Lastoursville region, Iméno, *Le Testu 8330* (BM, P, WAG); between Libreville and Cap Estérias, Mondah Forest, *Villiers 390* (P).

Note. By its vegetative characters *D. melanocladum* can rather easily be confused with specimens of *D. madagascariense* var. *madagascariense* formerly known as *D. batanganum*, as *D. subcordatum*, or as *D. thomsonii*. Its inflorescences differ however, although scorpioid inflorescence branches may occur in *D. madagascariense* var. *madagascariense* (see fig. 2: 4) as well, but are in that case much longer. The flowers of *D. melanocladum* differ completely from those of *D. madagascariense* var. *madagascariense*, they are of a type as seen in *D. insigne* Engl. and in *D. montanum*, which species share the same type of inflorescence as well.

D. mendoncae Torre = **D. deflexum** (Kl.)Engl.

For details see BRETELER, 1978: 48.

D. michelsonii Haum. = **D. stuhlmannii** Engl.

D. michelsonii Hauman, 1958-b: 73; 1958-a: 314, French description only; Breteler, 1973: 7, XX; 1979: 53. Type: Zaïre, slopes of Kahusi Mt., 38 km Kavumu-Bunyakiri Rd., *Michelson 961* (holotype: BR).

Note. As pointed out when treating *D. lebrunii* Haum. (BRETELER 1979: 53),

the differences between *D. michelsonii* and *D. stuhlmannii* are restricted to differences in leaf indumentum. The type material of *D. michelsonii* is rather glabrous instead of more or less densely hairy as in *D. stuhlmannii*. This, however, is a condition which, at least in *Dichapetalum*, does not form a sound basis for specific segregation.

D. micranthum Haum. = **D. dewevrei** De Wild. & Th.Dur. var. **dewevrei**

For details see BRETELER, 1978: 54.

D. micropetalum Engl. = **D. gabonense** Engl.

For details see BRETELER, 1979: 4.

D. microphyllum Desc. = **D. madagascariense** Poir. var. **madagascariense**

For details see p. 15.

D. mildbraedianum Exell = **D. heudelotii** (Planch. ex Oliv.) Baill. var. **ndongense** (Engl.)Bret.

For details see BRETELER, 1979: 38.

D. minutiflorum Engl. & Ruhl. **Fig. 6 Map 5**

D. minutiflorum Engler & Ruhland, 1902: 88; Engler, 1912-a: 584; De Wildeman, 1919: B51; Breteler, 1973: 23, XVIII; Punt, 1975: 29.

Type: Cameroun, Grand Batanga, *Dinklage 1166* (holotype: B†; lectotype: HBG; isotypes: P, WAG).

Diagnostic characters. Liana. Stem distinctly and usually densely lenticellate. Woodcylinder 5-lobed. Branches usually distinctly lenticellate. Branchlets glabrous to sparsely puberulous, very soon glabrescent. Stipules soon deciduous, 2–6 mm long. Leaves obovate-elliptic, often narrowly so, (5)8–16(21) × (2)3–6(10) cm, usually cuneate at base, acuminate at top, sparsely subappressed-hairy in young leaves on midrib and the 6–8(9) pairs of main lateral nerves. Inflorescence an up to 7-flowered dichasium, sessile to shortly peduncled, single or grouped on knoblike axillary shoots, puberulous. Pedicel up to 3 mm long, the upper part 0. Flowers 2–3 mm long. Sepals erect or nearly so. Petals, stamens, and pistil subequal in length, the latter 2-merous. Fruits glabrous.

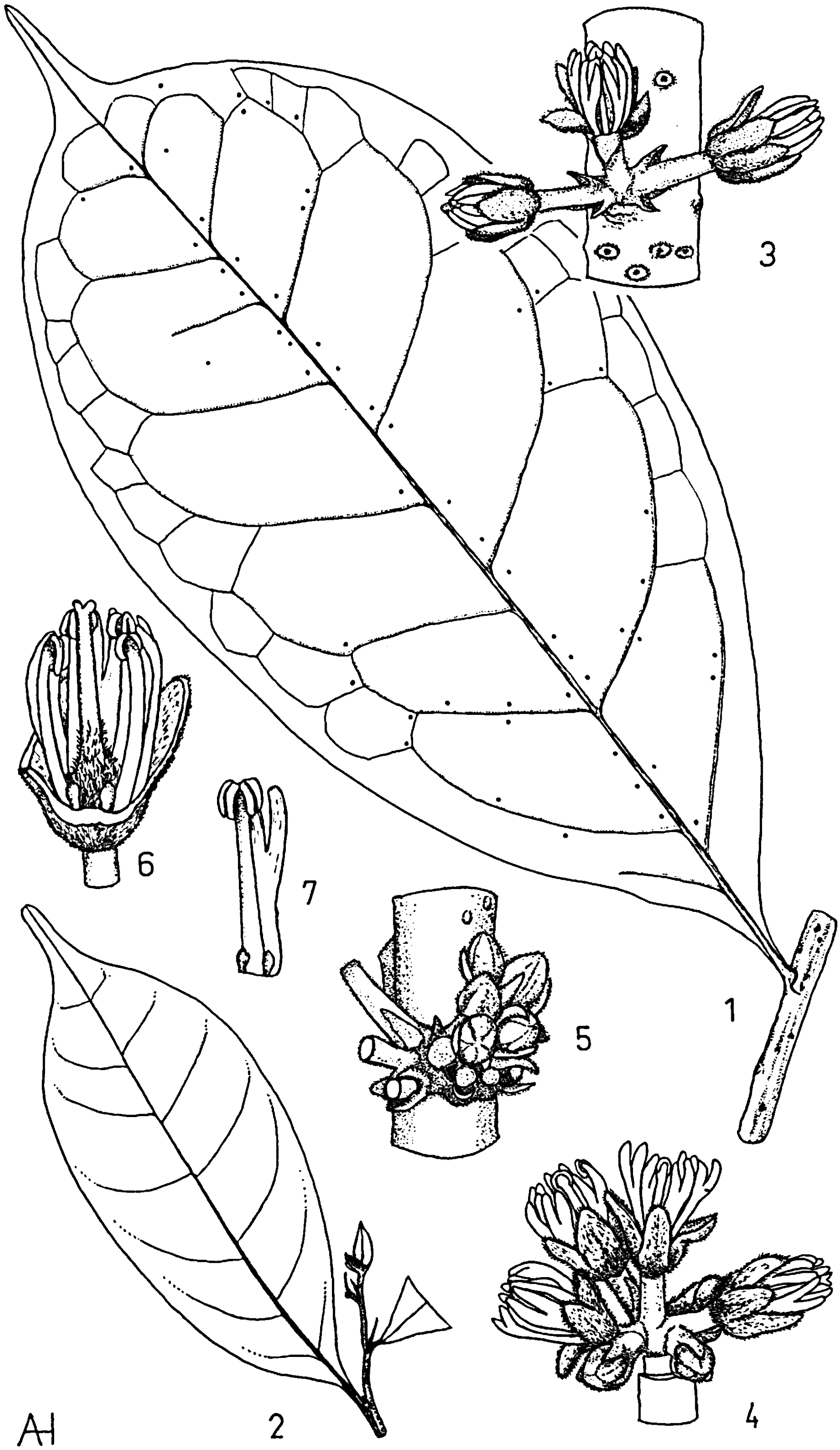


FIG. 6. *D. minutiflorum*: 1. large leaf beneath, $\frac{5}{6}\times$; 2. top of branchlet, $\frac{5}{6}\times$; 3. 3-flowered dichasium on lenticellate branch, 5×; 4. 7-flowered dichasium (flowers partly in bud), 5×; 5. part of branch with a short, knoblike, leafless lateral shoot bearing an old 7-flowered dichasium and a young (flowers in bud) 5-flowered dichasium, 5×; 6. flower partly, 10×; 7. petal with stamen and 2 staminodes, 10×. (1. *Bos 4514*; 2. *Bos 4810*; 3–4, 6–7. *Bos & Breteler 3113*; 5. *Bos 3377*).

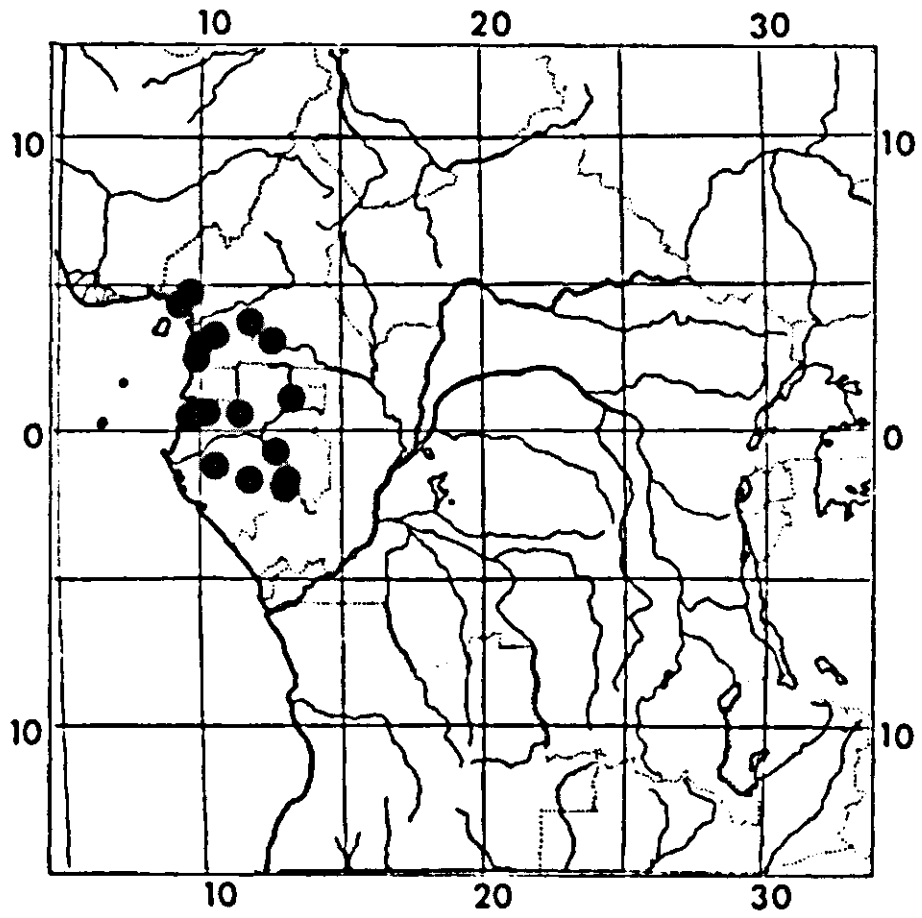
Description. Liana. Stem up to ca 3 cm diam., distinctly and usually densely lenticellate. Woodcylinder 5-lobed. *Branches* usually brown, glabrous, distinctly lenticellate; lenticels circular, whitish. *Branchlets* brown, glabrous to sparsely puberulous, very soon glabrescent. *Stipules* narrowly oblong-triangular, 2–6 mm long, sparsely appressed-hairy, curved or not, very soon deciduous. *Leaves*: petiole semiterete, usually canaliculate above, 2–6(10) mm long, sparsely appressed-hairy, glabrescent; blade obovate-elliptic, often narrowly so, 2–3(4) times as long as wide, (5)8–16(21) × (2)3–6(10) cm, usually cuneate, sometimes rounded at base, acuminate at top, caudately so or not, the acumen usually obtuse, sometimes mucronate or acute, (0.5)1–2(2.5) cm long; midrib and the 6–8(9) pairs of main lateral nerves sparsely subappressed-hairy in young leaves, glabrescent, more rapidly so above, the midrib usually more or less impressed above, prominent beneath, the main laterals obscure above, slightly prominent beneath; glands small, beneath only, mainly alongside the midrib. *Inflorescence* an up to 7-flowered dichasium, single in the leaf axil and then often shortly (up to 3mm) peduncled, more often sessile and grouped on knoblike, axillary shoots, which are also seen on the older wood and apparently flower more than one season, basally often starting with a 7-flowered dichasium, but subsequently with fewer-flowered dichasia of 1–5 flowers, puberulous; bracts and bracteoles triangular to oblong, often narrowly so, 1–2.5(4) mm long, puberulous. *Pedicel* up to 3 mm long, the upper part 0, i.e. jointed just below calyx, puberulous. *Sepals* erect or nearly so, sometimes spreading, oblong, sometimes ovate-elliptic or narrowly triangular, 1–2 × 0.5–1 mm, puberulous outside and on apical part inside. *Petals* suberect, free or nearly so at base, narrowly obovate-spathulate in outline, 2–3 mm long, 1–1.5 mm split, glabrous; lobes flat or slightly concave, usually slightly curved inwards. *Stamens* suberect, 2–3 mm long, glabrous; anthers up to 0.3 mm long. *Staminodes* subquadrate to oblong or obovate, rather flat, up to 0.5 × 0.2 mm, glabrous. *Pistil* 2-merous, 2–3 mm long; ovary finely velutinous; style glabrous or sparsely velutinous in lower part, shortly 2-lobed at top, lobes up to 0.7 mm long. *Fruits* (only a few immature fruits seen) subglobose, smooth, glabrous or with a few hairs on top.

Distribution: Cameroun, Gabon.
Ecology: Rain forest.

Specimens examined:

Cameroun. Bitye, *Bates 1264* (BM, BR (numbered *1246*)); ca 6 km Kribi-Ebolowa, *Bos & Breteler 3113* (WAG); *Bos 3377* (WAG); *4509* (WAG); *4514* (WAG); 8 km S. of Kribi, *Bos 4810* (WAG); 6 km Kribi-Ebolowa, *Bos 5321* (WAG); 44 km Kribi-Campo, *Bos & Breteler 7289* (WAG); 25 km Yaoundé-Ayos, *Breteler c.s. 2465* (BR, K, P, WAG); Grand Batanga, *Dinklage 1166* (HBG, P, WAG, type); 11 km Nkongsamba-Loum, Bakaka Forest, *Leeuwenberg 8730* (WAG); 58 km Douala-Loum, *Leeuwenberg 8747* (WAG); 11 km Nkongsamba-Loum, Bakaka Forest, *Leeuwenberg 8940* (WAG); 64 km Douala-Loum, *Leeuwenberg 10302* (WAG); Bipindi, *Zenker 4887* (BM, BP, BR, COI, G, GOET, K, L, LE, M, P, W, Z).

Gabon. 50 km S.E. of Lambaréné, *Breteler 5694* (WAG); 23 km Moanda-Bakoumba, *Breteler 6510* (WAG); near Lastoursville, *Breteler 6580* (WAG); 60 km S.S.W. of Moanda, *Breteler 6914*



MAP 5. *D. minutiflorum*

(WAG); 3 km Asok-Tchimbélé R., *Breteler & J. J. de Wilde 298* (WAG); 10 km La Lara-Makokou, 42 km N. along Okano R., *Breteler & J. J. de Wilde 460* (WAG); Bélinga, *Caballé 247* (WAG); near Libreville, *Klaine 1736* (P); Iméno, *Le Testu 6451* (BM, P, WAG).

Note. *D. minutiflorum* resembles many specimens of *D. staudtii* Engl. by its flowershape, but especially by its vegetative characters. However, *D. staudtii* has shortly split petals with concave lobes, a 3(–4)-merous pistil, and a hairy fruit.

For differences between *D. minutiflorum* and *D. montanum*, see under the latter.

D. molundense Krause = **D. zenkeri** Engl.

D. molundense Krause, 1912: 507; Pellegrin, 1913: 647, quoad nomen (the specimen cited is *D. arachnoideum* Bret.); De Wildeman, 1919: B51; Breteler, 1973: XX (in synonymy of *D. zenkeri*). Type: Cameroun, Moloundou region (Bezirk Molundu), Dja R., *Mildbraed 3913* (holotype: B†; lectotype: HBG; isotype: BM).

Note: KRAUSE mentioned the smaller leaves with denser primary nervation and the smaller inflorescences as differences between his species and *D. zenkeri*. These differences fall completely within the variation of *D. zenkeri*.

D. mombongense De Wild. = **D. staudtii** Engl.

D. mombongense De Wildeman, 1911-a: 223, t. 7; Engler, 1912-a: 581; De Wildeman, 1919: B51; Hauman, 1958-a: 317; Breteler, 1973: XX. Type: Zaïre, Mombongo (Mongala), *Thonner 161* (holotype: BR; isotypes: K, P, W).

D. mombongense De Wildeman var. *breviflorum* Hauman, 1955: 350; 1958-a: 318. Type: Zaïre, Panzi, *Vanderyst 16441* (holotype: BR).

D. mombongense De Wildeman var. *orientale* Hauman, 1955: 350; 1958-a: 318. Type: Zaïre, Lesse, *Bequaert 3182* (holotype: BR).

D. mombongense De Wildeman var. *luteiflorum* (De Wildeman) Hauman, 1958-a: 318. See Breteler, 1979: 74 for full details.

Note. *D. staudtii* is a polymorphic species, varying considerably in leaf size, in leaf shape, and also in leaf texture. The type specimens of *D. mombongense* var. *mombongense* and of the varieties proposed by HAUMAN fit well within this variation pattern. Small flower differences mentioned by him as long or short style branches, more or less deeply split petals, or shorter pedicels are not reliable for infraspecific distinction.

D. mombuttense Engl. **Fig. 7 Map 6**

D. mombuttense Engler, 1896-b: 135; 1896-a: 348, nomen; De Wildeman, 1906: 273; 1907: 41, as *D. mumbuttense*; Th. & H. Durand, 1909: 94; De Wildeman, 1909: 109, as *D. monbuttense*; 1911-a: 224; Engler, 1912-a 582, as *D. mombuttuense*; 1912-b: 441, as *D. mombuttuense*; A. Chevalier, 1913: 53, as *D. mobuttense*; De Wildeman, 1919: B51, as *D. mombuttuense*; Exell, 1927: 69, as *D. mombuttuense*; Moss, 1928: 123; Engler & Krause, 1931: 6; Exell & Mendonça, 1951-b: 329, as *D. mombuttuense*; Hauman, 1958-a: 326, p.p. (see notes); Breteler, 1973: 4, 23, 30, 33, 36, 44, XVIII; Punt, 1975: 36.

Type: Zaïre, Munsa, 'im Lande der Monbuttu', *Schweinfurth 3454* (holotype: B†; lectotype: K; isotype: WU).

D. adnatiflorum Engler, 1896-b: 142. See Breteler, 1973: 44 for full details.

Chailletia monbuttense (Engler) A. Chevalier, 1911: 116.

Diagnostic characters. Usually small, rather thin liana with lobed woodcylinder and yellowish wood. Branchlets soon glabrescent. Stipules small, inconspicuous. Leaves papery to coriaceous, often rather stiff and brittle when old, obovate-elliptic, (5)8–18(23) × 3–7(10) cm, glabrous or glabrescent, with (4)5–6(7) pairs of main lateral nerves and often with 1–2(4) distinct glands near base on upper side. Inflorescences subumbellate, the peduncle completely adnate to the petiole. Sepals erect, usually thick. Petals erect (4)5–6(7) mm long, 0.5–1.5 mm split, tomentellous both sides mainly in the middle part. Pistil 3-merous; ovary densely short-villous. Fruit glabrous or nearly so, lenticellate, beaked.

Description. Usually small, rather thin liana, lianescent shrub, or shrub. Woodcylinder lobed by intruding phloem, wood yellowish. Bark greyish-brown, finely and shallowly fissured. *Branches* dark-brown, glabrous, often densely lenticellate giving them a pustular aspect. *Branchlets* appressed-hairy when young, soon glabrescent. *Stipules* inconspicuous, soon deciduous or not, triangular, 1–2(3) mm long, appressed-short-hairy. *Leaves*: petiole subterete to semiterete, grooved above or not, (2)3–8(11) mm long, 5–13(18) mm long when

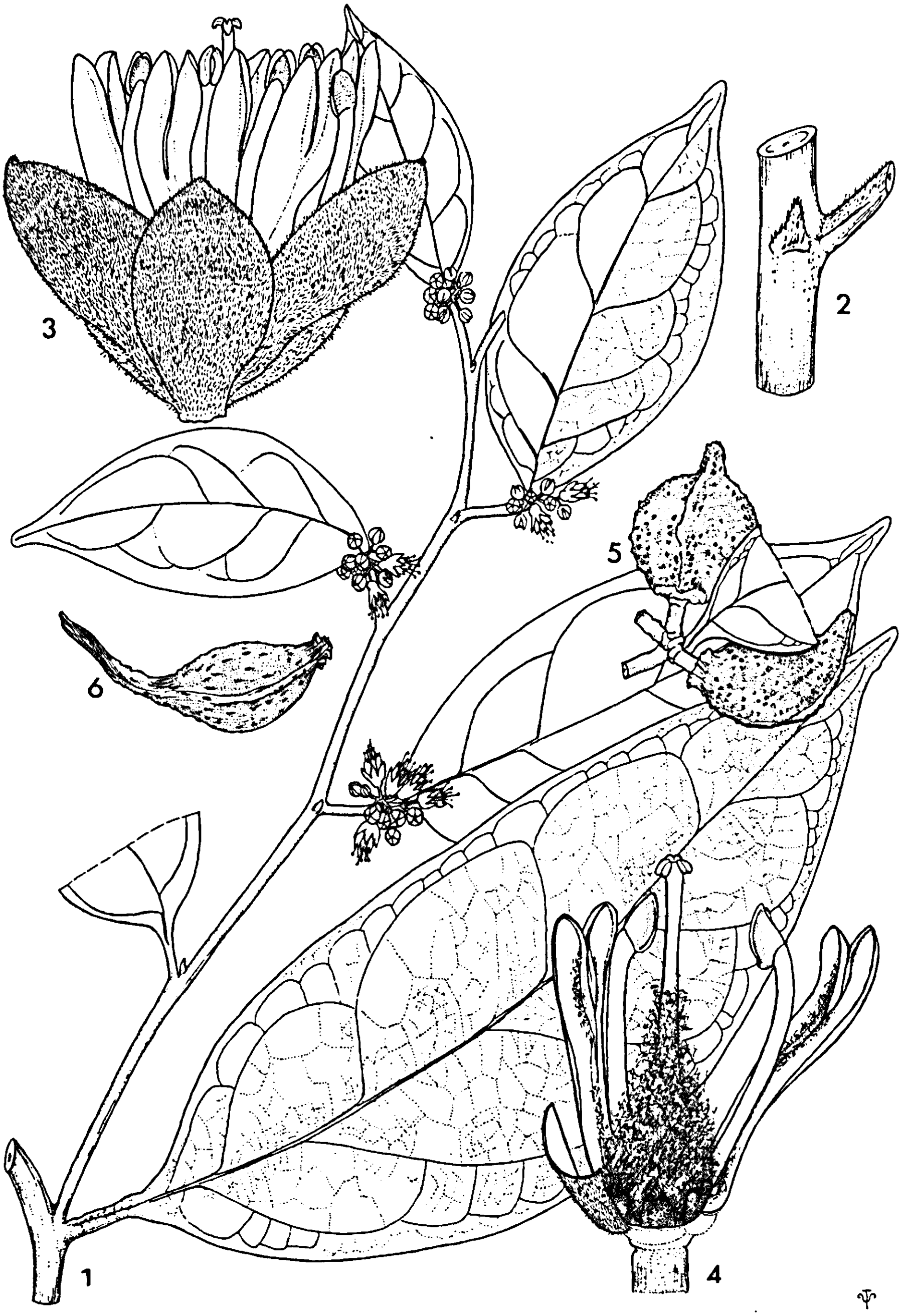
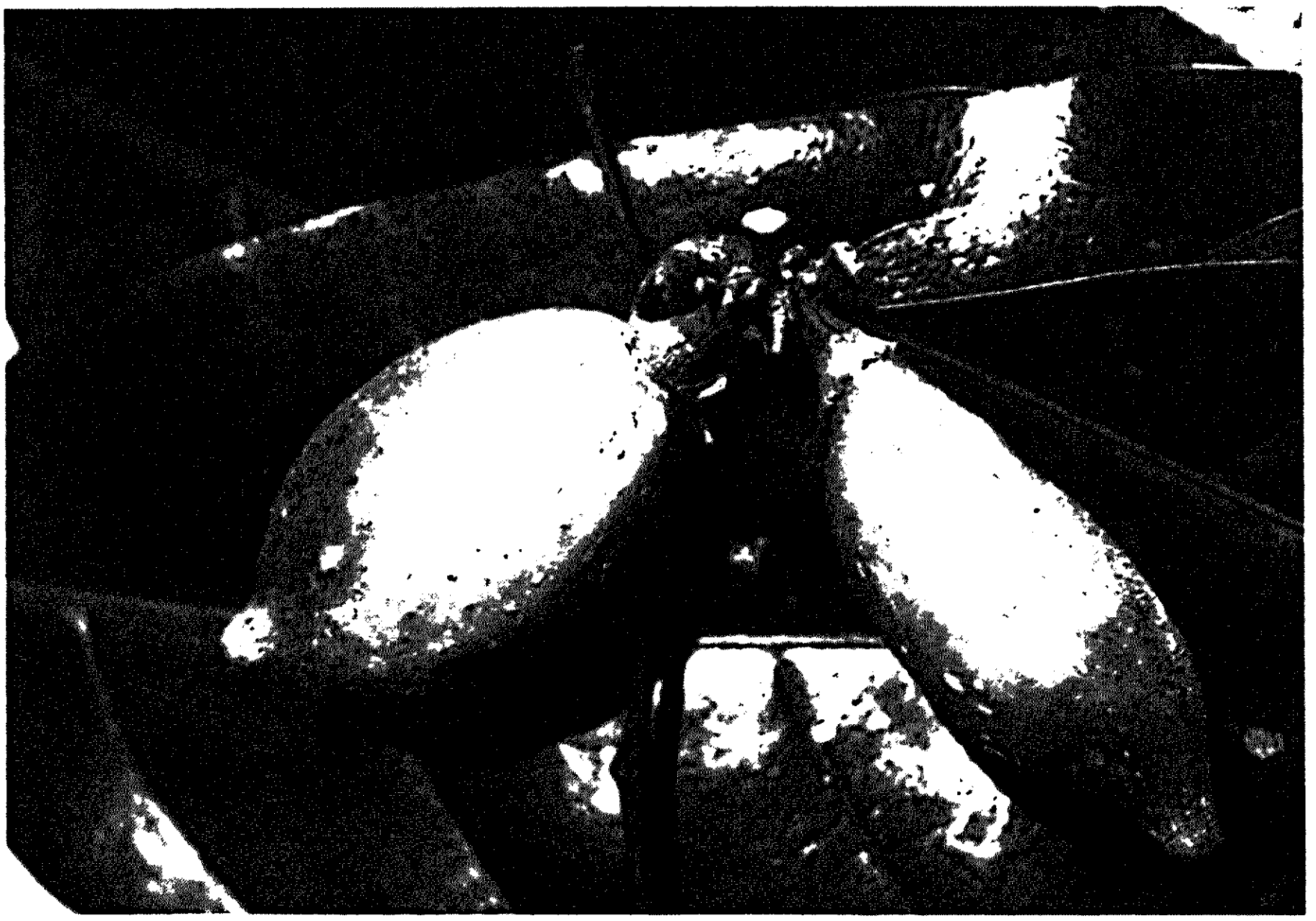


FIG. 7. *D. mombuttense*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. stipule, $2\frac{1}{2}\times$; 3. flower, $5\times$; 4. flower partly, $5\times$; 5. fruits, $\frac{5}{6}\times$; 6. fruit, $\frac{5}{6}\times$. (1–4. *Bos 6218*; 5. *Breteler 2113*; 6. *Bequaert 1038*).

supporting an inflorescence, sparsely appressed-short-hairy; blade papery to coriaceous, often rather stiff and brittle when older, glossy, obovate-elliptic, (5)8–18(23) × 3–7(10) cm, (1.5)2–3(3.5) times as long as wide, rounded to cuneate at base, shortly and usually gradually acuminate, the acumen 0.5–1.5(2) cm long with rounded to acute top; subappressed-hairy mainly on the midrib both sides when young, soon glabrescent, sometimes with hairy domatia in the axils of the main lateral nerves beneath, the midrib and the (4)5–6(7) pairs of main lateral nerves plane to prominent above, usually more prominent beneath, the margin usually paler coloured, shiny, and often thickened; above often with 1–2(4) distinct glands near base, beneath with some small, rather indistinct glands. *Inflorescences* subumbellate, indistinctly branched, densely puberulous-tomentellous, up to ca 40-flowered; peduncle completely adnate to petiole and slightly shorter, rarely partly free and longer than petiole; bracts and bracteoles minute, deltate, up to 0.5 mm long, glabrous inside. *Pedicel* up to ca 4 mm long, the upper part up to 1 mm long. *Sepals* erect to slightly spreading, usually shortly united at base, usually thick, especially so at base, concave, ovate-elliptic to oblong, (3.5)4–5(6.5) × (1)1.5–2.5 mm, the outer ones usually distinctly smaller than the inner ones, puberulous-tomentellous to sericeous-tomentose both sides, obtuse to acutish at top. *Petals* erect, at base ca 1 mm united with filaments, and this united part usually adnate to calyx, narrowly obovate-oblong in outline, (4)5–6(7) mm long, 0.5–1.5 mm split, both sides tomentellous, mainly in the middle part. *Stamens* erect, (4.5)5–6(6.5) mm long, glabrous; anthers 0.7–1 mm



PHOT. 3. *D. mombuttense*: infructescense with 1- and 2-seeded fruit; note the lenticels (*Breteler 2179*; phot. F. J. BRETELER).

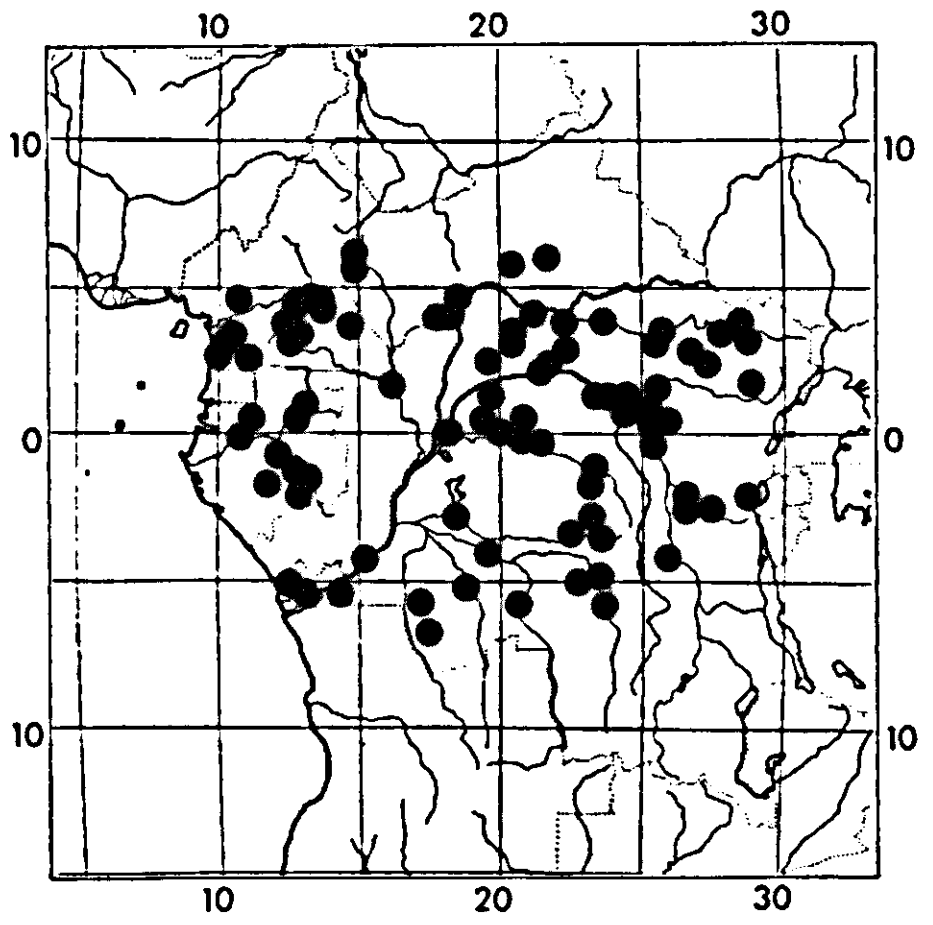
long, with very prominent connective, rarely with a few hairs. *Staminodes* subquadrate, flat, ca 0.5 × 0.5 mm, usually glabrous, top obtuse to shallowly bilobed. *Pistil* 3-merous, (4)5.5–7(8.5) mm long; ovary and lower part of style shortly but densely villous, upper part of style glabrous, shortly 3-lobed at top. *Fruits* 1–2(–3)-seeded, usually 1-seeded, with a distinct, up to 2 cm long, erect, gently curved or recurved beak, orange at maturity, glabrous or nearly so (remnants of ovary hairs may be present on beak), lenticellate, rather dull, the aborted cells present as a distinct ridge; 1-seeded fruits: subellipsoid, 2.5–4.5 cm long (beak inclusive) and 1–1.5 cm in diam.; exocarp firm ca 1 mm thick; mesocarp juicy, up to 1.5 mm thick; endocarp bony, glabrous and glossy inside. *Seed* ellipsoid, up to 18 × 10 mm with a brown seedcoat. *Seedling* (see BRETELER, 1973: 30, fig. 5): taproot firm; epicotyle 6–11 cm long, brownish, appressed-short-hairy; first pair of leaves opposite, elliptic, slightly shorter than the following leaves.

Distribution: Central Africa.
Ecology: Rain forest, semi-decidous forest.

Specimens examined:

Cameroun. Bitye, *Bates 1770* (K); *1770 A* (K); 28 km Kribi-Lolodorf, *Bos 6078* (WAG); *6218* (WAG); near Kribi, Elephant Mt., *Bos 6515* (WAG); 28 km Kribi-Lolodorf, *Bos 6953* (WAG); 30 km Kribi-Campo, *Bos & Breteler 7230* (WAG); 2 km N.E. of Nguélémendouka, *Breteler 2113* (BR, FI, K, LISC, M, P, WAG); 9 km Bertoua-Doumé, *Breteler 2179* (BR, K, P, WAG); 40 km W. of Bertoua, *Breteler 2943* (BR, K, LISC, P, WAG); Nkolandon-Nkoemvone, near Ebolowa, *J. J. de Wilde 8010* (WAG); 50 km S.W. of Eséka, *W. de Wilde 1560* (BR, P, WAG); near Ayos, *de Wit 8020* (WAG); 10 km N. of Ndemba II, N.W. of Bertoua, *Leeuwenberg 5912* (BR, WAG); Dja R., Solmalomo Lake, *Letouzey 4301* (BR, K, P, WAG); 45 km S.E. of Mesaména, *Letouzey 4324* (BR, K, P, WAG); 25 km W.N.W. of Mopwo, village at 22 km Yokadouma-Batouri, *Letouzey 5252* (P, WAG); 3 km N.W. of Ndikiniméki, *Letouzey 10914* (P, WAG); Bipindi, *Zenker 4359* (BM, BR, E, GOET, K, L, LE, M, MO, W, WU).

Gabon. 6 km Moanda-Franceville, *Breteler 6366* (WAG); 48 km Lastoursville-Moanda, *Breteler*



MAP 6. *D. mombuttense*

6444 (WAG); 70 km S.S.W. of Moanda, *Breteler 6873* (WAG); Bélinga, *Breteler 7630* (WAG); 50 km N.N.W. of La Lara, *Breteler & J. J. de Wilde 486* (WAG); 108 km Lastoursville-Ndjolé, *Breteler & J. J. de Wilde 813* (WAG); 10 km S. W. of Ndjolé, *N. Hallé 1937* (P); *1961* P); 7 km S.W. of Makokou, *Hladik 1559* (P); *2356* (P); *2447* (P); Mfoubou, *Le Testu 6459* (BM, P, WAG).

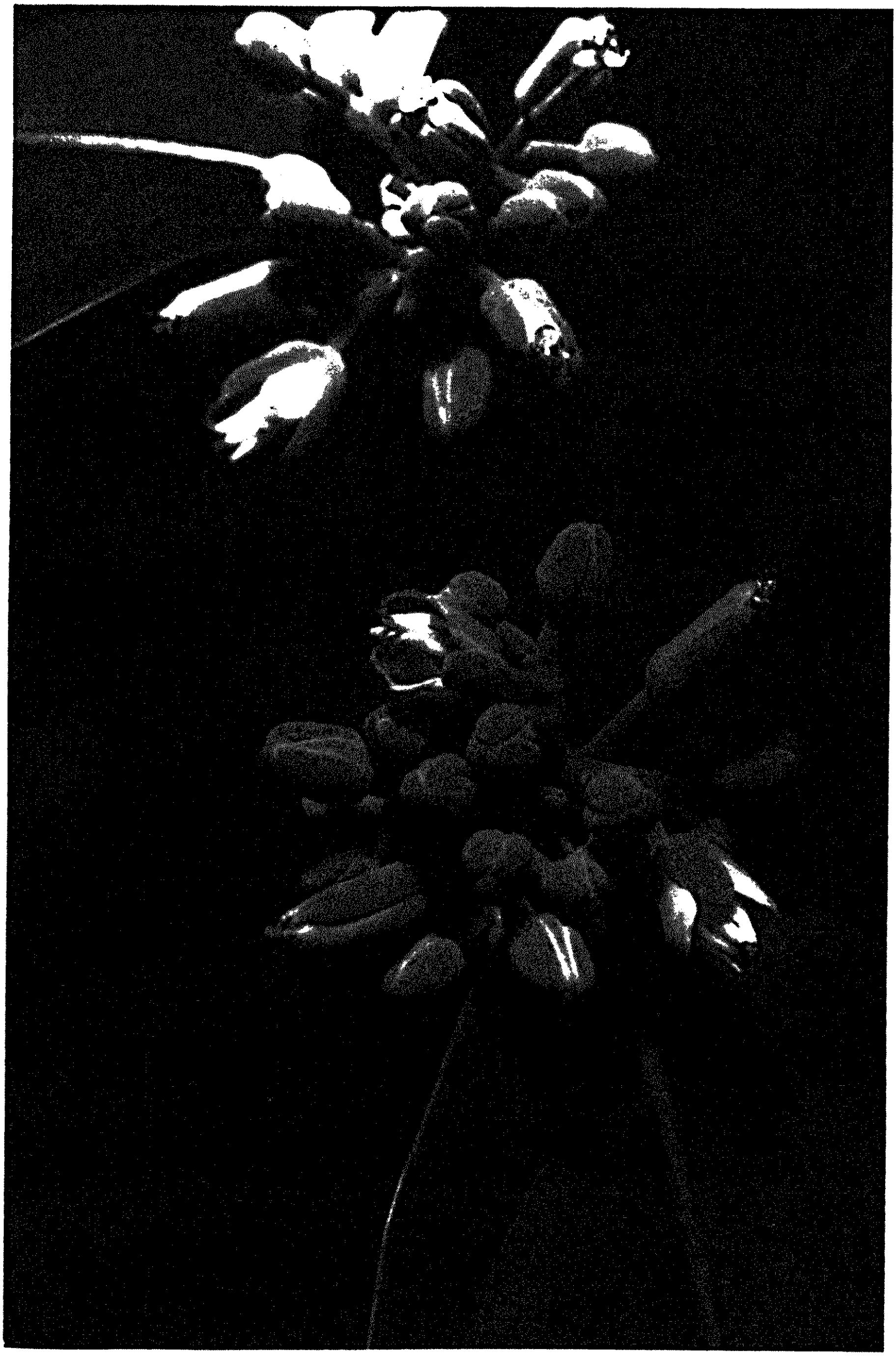
Congo. Djoumouna Res., 22 km Brazzaville-Linzolo, *Charvet 74* (MPU); *Farron 5120* (P); Brazzaville, *Koechlin 1337* (IEC, P); Ouesso, *Sita 736* (IEC, P).

Zaïre. Lusambila, *Ayobangira Samvura 82* (P); Ulindi R., *Bamps 428* (BR); Malela, 50–60 km S. of Pania Mutombo, *Becquaert 20* (BR, K); Barumbu, *Bequaert 1038* (BR); Djali, *Bequaert 1368* (BR); Bandia, *Bequaert 1437* (BR); Kisangani, *Bequaert 6911* (BR); Limbutu, *Body 23* (BR); 5 km N. of Kisangani, *Bokdam 3069* (WAG); 4 km W. of Kisangani, *Bokdam 3080* (WAG); Kisangani, *Bokdam 3097* (WAG); 14 km E. of Kisangani, *Bokdam 3432* (WAG); 22 km Kisangani-Bengamisa, *Bokdam 3683* (WAG); Yangambi, *Boutique 21* (BR, U); Buka, *Breyne 272* (WAG); Ikelemba, *Brouns s.n.* (BR); Kidima, *Callens 3476* (BR, K); Imbela, *Callens 4096* (BR); *4109* (BR); Borumbu; *Claessens 20* (new series) (BR); Dedekomba, *Claessens 571* (BR); Wema, *Claessens 704* (BR); Mbandaka, *Dewèvre 762* (BR); Wabundu, *Dewèvre 1143 b* (BR); Kisangani, *Dewèvre 1156 a* (BR); Bas Uele, *Dewulf 442* (BR); *475* (BR); Luki, *Donis 2455* (BR); Yangambi, *Donis 3697* (BR); Tshuapa Distr., *Dubois 497* (BR); *743* (BR); Ikela, *Dubois 830* (BR); Bokwendelo, *Evrard 430* (BR); Bongabo, *Evrard 1855* (BR); Lombiolo, *Evrard 3014* (BR); Bomandja, *Evrard 4232* (BR); Mondjo, *Evrard 4881* (BR, EA); Bokote, *Evrard 6021* (BR); Kole, *Flamigni 449* (BR); Mawa Geitu, *Gérard 342* (BR); Bambesa, *Gérard 2301* (BR, P, WAG); *2947* (BR); Titule, *Gérard 3339* (BR); Bondo, *Gérard 3479* (BR); Bambesa, *Gérard 3850* (BR); Batite, *Gérard 4005* (BR); Bambesa, *Gérard 4112* (BR); *5039* (BR); *5319* (BR); Yangambi, *Germain 4897* (BR); *8521* (BR); *8583* (BR); *9276* (BR); *Gilbert 9349* (BR); *10636* (BR, K); Makumbi, *Gillardin 229* (BR); Lodja, *Gillardin 550* (BR, PRE); Mukumari, *Gillardin 608* (BR); Sangaie, *Gillardin 618* (BR, LISU); sin. loc., *Goossens 2880* (BR); *2982* (BR); Budjala, *Goossens 4692* (BR); sin. loc., *Goossens 4694* (BR); Gwele, *Goossens 6296* (BR); Bokote, *Hulstaert 1239* (BR); Bokoro, *Jans 677* (BR); Belo, *Jespersen s.n.* (BR); Basoko, *Em. & M. Laurent s.n.* (BR); Banzyville, *Lebrun 2081* (BR, K, LISU, SRGH); Bondo, *Lebrun 2557* (BR); Kitule, *Lebrun 2733* (BR); Angodia, *Lebrun 2938* (BR, W); Urega, *Lebrun 5747* (BR); Urega-Maniéma, *Lebrun 5748* (BM, P); Lodja, *Lebrun 6231* (K); Lusheni, *A. Léonard 4723* (K); Kamisuka, *A. Léonard 5984* (BR); Yangambi, *Lisowski 15118* (K); 80 km E. of Kisangani, *Lisowski 16756* (BR, K); Kisangani, *Lisowski 17425* (BR, K); 8.5 km N. of Kisangani, *Lisowski 40498* (BR, K); near Nduye, *Lisowski 42864* (BR); Bongbete, 130 km N.W. of Likati, *Lisowski 47594* (BR); 5 km W. of Likati, *Lisowski 47720* (K); Yangambi, *Lisowski 52282* (BR); *Louis 567* (BR); *667* (BR); Yaosuka, *Louis 873* (BR); Yangambi, *Louis 983* (BM, BR); 24 km Yangambi-Ngazi, *Louis 1342* (BR); Yangambi, *Louis 1535* (BR, EA, UPS); *1625* (BR); *2242* (BR, Z); *2717* (K); *3020* (BR); *3614* (BR, COI, FI); *4103* (BR, M); *5824* (BR); *6246* (BR); *6622* (BR); *7362* (BR); *8932* (BR, LISC); near Opala, *Louis 14156* (BR); 51 km Yangambi-Bengamisa, *Louis 16306* (BR); Yangambi, *Michiels 26* (BR, Z); Dundusana, *Mortehan 211* (BR); near Bambesa, *Pittery 322* (BR); *323* (BR); Jambe, *Pogge 691* (BM, type of *D. adnatiflorum*); near Yambuya, *Pynaert 59* (BR); Bombimba, *Pynaert 338* (BR); Kikwit, *Renier 29 A* (BR); Dundusana, *Reygaert 46* (BR); *148* (BR); *266* (BR); Lisala, *W. Robijns 950* (BR, COI, LISU); Boyange St. Paul, *W. Robijns 1050* (BR); Kisangani, *W. Robijns 1408* (BR, M, SRGH); Thiliangu, *Sapin s.n.* (BR); Munsa, *Schweinfurth 3454* (K, WU, type); Gugo, *Thonner 232* (BR); Ipamu, *Vanderyst 7862* (BR); *8580* (BR); *8683* (BR); *8845* (BR); *8952* (BR); *9274* (BR); *9324* (BR); *9426* (BR); *9461* (BR); sin. loc., *Vanderyst 9385 bis* (BR); between Pangu and Ipamu, *Vanderyst 9683* (BR); Ipamu, *Vanderyst 10214* (BR); *10241* (BR); *10269* (BR); *10277* (BR); *10278* (BR); *10463* (BR); *10752* (BR); *10937* (BR); *11017* (BR); *12054* (BR); *12351 A* (BR).

Angola. Panga Mungo, *Gossweiler 6282* (BM, COI, K, LISJC, LISU); sin. loc., *Gossweiler s.n.* (LISU).

Central African Republic. Lésè Valley, 20 km from La Maboké, *Badré 140* (P); Baboua, *Breyne 1630* (BR); 33 km Bangui-Damara, *Descoings 10287* (MPU); Besson, *Tisserant 37* (BM, P); 12 km N.W. of Bambari, *Tisserant 1112* (BM, P, WAG); Digbana near Koto, *Tisserant 2433* (BM, BR, P, WAG); Boukoko, *Equipe Tisserant 1570* (BM, P); *1674* (P, WAG); *1726* (BM, P, WAG); *1816* (BM, P, WAG).

Cult. Zaïre. Kisangani, *Bokdam 3172* (WAG). Netherlands. Wageningen, *Breteler 7012* (WAG); *7550* (WAG); *de Bruijn s.n.* (WAG); *van Veldhuizen 221* (WAG).



PHOT. 4. *D. mombuttense:* inflorescences with flowers in bud, flowers at anthesis, and flowers after anthesis of which some with a drop of nectar (*Breteler 7550*; phot. H. C. D. DE WIT).

PHOT. 5. *D. mombuttense*: flower with nectar drop (*Breteler 7550*; phot. H. C. D. DE WIT).

Notes. *D. mombuttense* has been confused with *D. thollonii* Pellegrin, notably so by HAUMAN, who identified the few specimens of *D. thollonii* from Zaïre as belonging to *D. mombuttense*. As a consequence, *D. thollonii* has not been treated as a species of that country. Both species have the peduncle adnate to the petiole and leaves which are rather similar in many aspects. *D. thollonii*, however, has hollow branchlets, usually large glands on the lower surface of its leaves, and a hairy fruit without lenticels.

D. mombuttense flowers produce nectar. This has been observed by LOUIS in material from Zaïre (*Louis 1535*) noting: 'présence de nectar abondant'. A flowering specimen in the Wageningen conservatory, grown from seeds of *Bokdam 3097* from Zaïre, confirmed this. Open flowers were partly filled with nectar. After flowering, when the sepals lock together, part of the nectar is often forced out and could be observed as a drop on the flowertop (see photographs 4, 5).

Fieldnotes from different countries reveal that the fruits of *D. mombuttense* are eaten by chimpanzees and antilopes.

D. montanum Bret., *sp.nov.* **Fig. 8 Map 7**

D. montanum Breteler ex Punt, 1975: 29, nomen.

Liana tenuis vel frutex lianescens ramulis sparse pubescentibus mox glabrescentibus. Stipulae anguste oblongo-triangulares, cito deciduae. Folia elliptica usque obovato-oblonga, (5)8–12(15) × (2)3–5 cm, basi rotundata usque cuneata, apice acuminata, juvenilia margine costa nervis lateralibus principalibus 5–7 jugis omnibus sparse puberula, mox glabrescentia. Inflorescentia sessilis vel subsessilis, glomerata vel ramosa cum 2–4 ramis brevibus scorpioideis; bracteae bracteolaeque minutae. Flores minuti, subsessilis, 1.5–2.5 mm longi; petala breviter biloba, cum filamentis in tubum distinctum unita; pistillum dimerum. Fructus obovoideo-ellipsoideus, 2.5–3 cm longus, rostratus, glaber vel fere glaber.

Type: Gabon, Moucouma (Idemba), *Le Testu 8121* (holotype: WAG; isotypes: BM, BR, P).

Diagnostic characters. Thin liana or lianescent shrub with sparsely hairy soon glabrescent branchlets. Stipules narrowly oblong-triangular, early deciduous. Leaves elliptic to obovate-oblong, (5)8–12(15) × (2)3–5 cm, rounded to cuneate at base, acuminate at top, when young sparsely puberulous on margin and on midrib and the 5–7 pairs of main lateral nerves both sides, soon glabrescent. Inflorescences sessile or nearly so, glomerate or with 2–4 short, scorpioid branches; bracts and bracteoles minute. Flowers minute, subsessile, 1.5–2.5 mm long; petals shortly bilobed, united with filaments into a distinct tube; pistil 2-merous. Fruits obovoid-ellipsoid, 2.5–3 cm long, beaked, glabrous or nearly so.

Description. Thin liana, lianescent shrub, or shrub. *Branches* glabrous or nearly so, distinctly lenticellate or not. *Branchlets* sparsely puberulous when young, soon glabrescent. *Stipules* early caducous, narrowly oblong-triangular, 1–4 mm long, puberulous. *Leaves*: petiole subterete to semiterete, often grooved above, (1)2–6(10) mm long, puberulous, glabrescent; blade elliptic to obovate-oblong, sometimes narrowly so, (5)8–12(15) × (2)3–5 cm, usually rounded to cuneate at base, usually obtusely acuminate at top, the acumen 0.5–1.5 cm long, slightly mucronate or not; when young sparsely puberulous on margin and on midrib and the 5–7 pairs of main lateral nerves both sides, soon glabrescent; glands beneath only, small, inconspicuous, mainly alongside the midrib, most numerous near base. *Inflorescences* sessile or nearly so, glomerate or with 2–4 scorpioid branches of up to 5 mm long with the flowers in 2 rows, puberulous; bracts and bracteoles minute, broadly ovate to deltoid, ca 0.5 mm long, puberulous. Lower and upper part of *pedicel* up to 0.3 mm long. *Sepals* suberect, ovate-elliptic to oblong, 1–2 × 0.5–1 mm, puberulous outside and on apical part inside. *Petals* erect, lobes usually slightly curved outwards, at base united with filaments into a distinct ca 1 mm long tube, 1.5–2 mm long, up to 0.3 mm split,

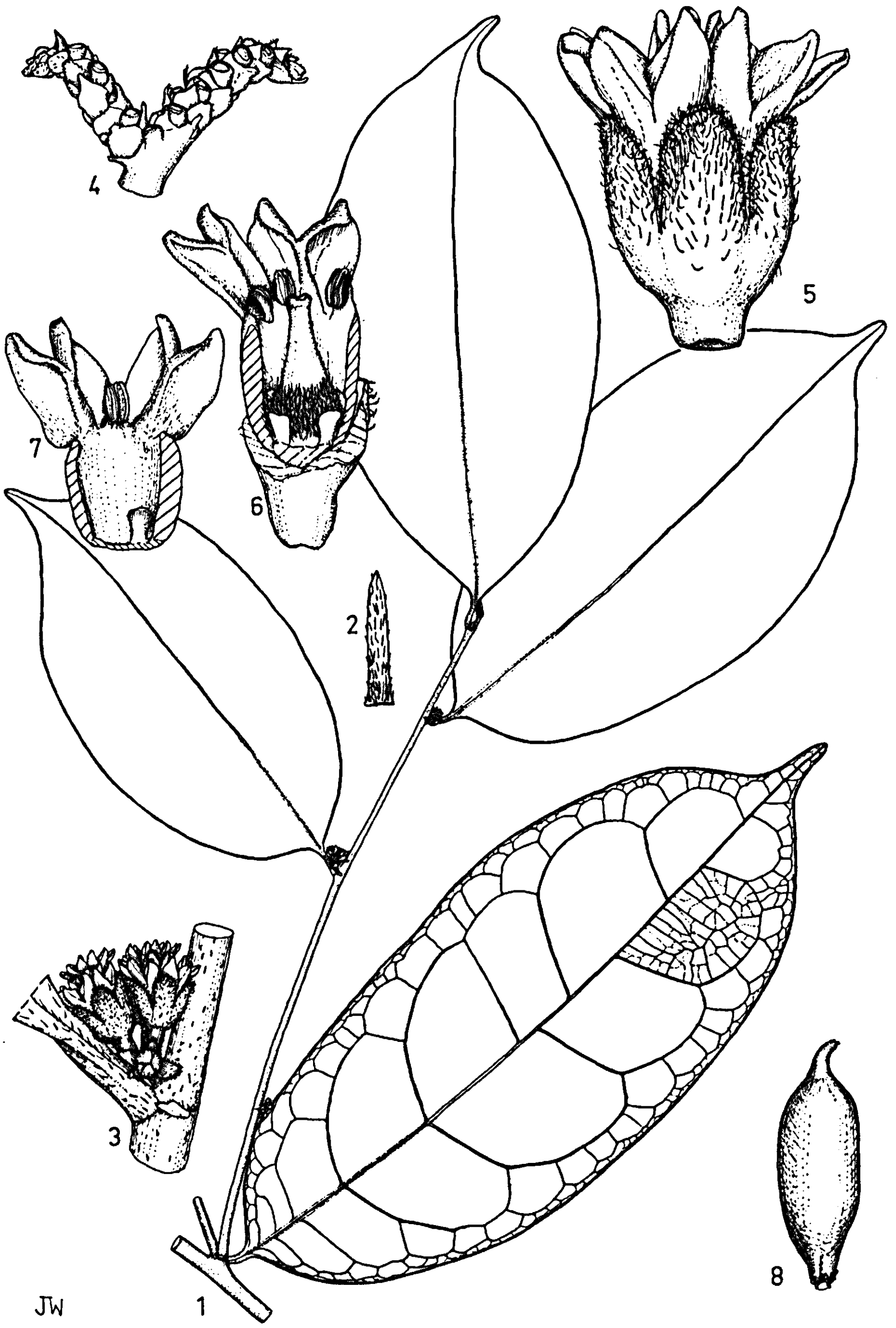


FIG. 8. *D. montanum*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. stipule, 5×; 3. leaf axil with glomerule, 5×; 4. bifurcate inflorescence, 5×; 5. flower, 15×; 6. flower partly, 15×; * 7. flower partly showing tube and staminode, 15×; 8. fruit, $\frac{5}{6}\times$. (1–3. *Le Testu 8121*; 4, 8. *A. Léonard 2453*; 5–7. *Gutzwiller 1222*).

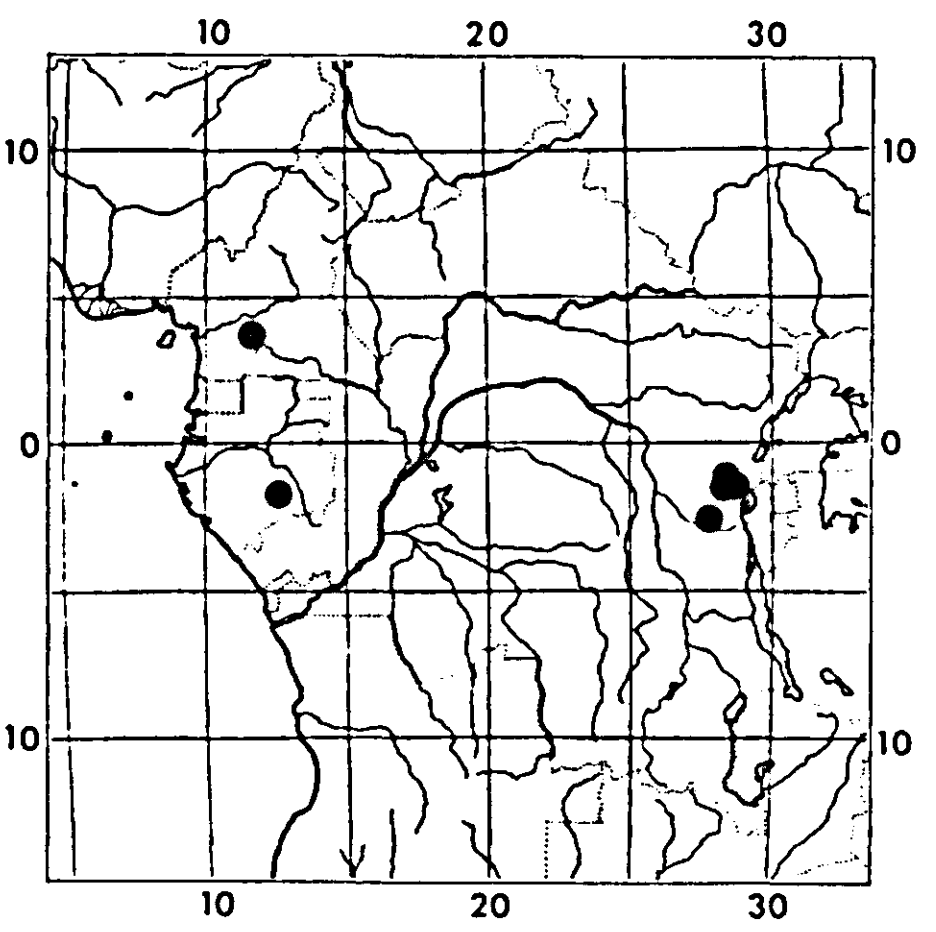
glabrous, lobes concave. *Stamens* erect, 1.2–1.5 mm long, distinctly shorter than petals, glabrous, anthers ca 0.3 mm long. *Staminodes* subquadrate, entire or bilobed, up to 0.3 × 0.3 mm, glabrous. *Pistil* 2-merous, conical, 1–1.5 mm long; ovary finely velutinous, style glabrous with 2 sessile, indistinct stigmas. *Fruits* 1–2-seeded, beaked, smooth, orange at maturity, glabrous or with a few hairs on the beak; 1-seeded fruits: obovoid-ellipsoid, 2.5–3 cm long, 1–1.5 cm diam.; mesocarp juicy; endocarp pergamentaceous, smooth, glossy and glabrous inside. *Seed* ellipsoid, 1.5–2 cm long; testa dark-brown, with distinct paler brown veins.

Distribution: Cameroun, Gabon, Zaïre.
Ecology: Rain forest above ca 800 m altitude.

Specimens examined:

Cameroun. N'Kolbisson, 8 km W. of Yaoundé, *W. de Wilde c.s. 1375* (WAG).
Gabon. Moucouma (Idemba), *Le Testu 8121* (BM, BR, P, WAG, type).
Zaïre. Kishanga, *Gutzwiller 1222* (BR, WAG); between Masisi and Walikale, *Lebrun 5111* (BR); Kishanga, *A. Léonard 2378* (BR, WAG); Karambi, *A. Léonard 2453* (BR, WAG); Nyangoma, *A. Léonard 3862* (BR, WAG).

Note. *D. montanum*, so named for being confined to altitudes between ca 800 m in Western Central Africa and 1500 m in Eastern Zaïre, has many characters in common with *D. minutiflorum*. By its vegetative appearance, its 2-merous pistil, and its glabrous fruits it can easily be confused with it. However, it differs quite distinctly from *D. minutiflorum* by its type of inflorescence bearing smaller flowers. Moreover, *D. minutiflorum* lacks the distinct tube formed by the petals and stamens and has much longer stamens and pistil, equal in length with the petals.



MAP 7. *D. montanum*

D. mortehanii De Wild. = **D. choristilum** Engl.

For details see BRETELER, 1978: 11.

D. mossambicense (Kl.)Engl. **Fig. 9 Map 8**

D. mossambicense (Klotzsch)Engler, 1895: 235; 1896-a: 349; Braun, 1908: 245; Engler, 1911: 247; 1912-a: 572; 1915: 844; De Wildeman, 1919: B 53; Lima, 1924: 138, as *Dichopetalum moçambicensis* (Kl.)Lima; Moss, 1928: 120; Engler & Krause, 1931: 6; Brenan & Greenway, 1949: 130; Torre, 1963: 322; Verdcourt & Trump, 1970: 66; Breteler, 1973: 4, 69, 106, XVIII; Punt, 1975: 16.

Basionym: *Chailletia mossambicensis* Klotzsch, 1861: 108, t. 19; Oliver, 1868: 342.

Type: Moçambique sin.loc., *Peters s.n.* (lectotype: P; isotype: K), see note.

D. mossambicense (Klotzsch)Engler var. *busseanum* Engler, Krause, 1909: 134, nomen (see note).

D. aureonitens Engler, 1911: 248. See Breteler, 1973: 69 for full details.

Diagnostic characters. Liana or shrub. Branchlets tomentose to hispid. Stipules palmately to pinnately lobed, usually with curved segments, rather long persistent. Leaves subsessile to shortly stalked, obovate-elliptic, 5–15(18) × (2)3–7(10) cm, cordate to subcordate at base, acute to shortly acuminate at top, hairy both sides when young, glabrescent above, with (6)7–10(14) pairs of main lateral nerves. Inflorescences cymose, distinctly stalked and branched; peduncle (1)1.5–2.5(4) cm long, often shortly adnate to petiole. Sepals reflexed. Petals white, turning black, erect-reflexed, (2.5)3–4 mm long, 1–2 mm split. Stamens suberect, apical part curved inwards. Pistil 3-merous, densely lanate. Fruits 1–3-seeded, densely tomentose. Seeds sericeous.

Description. Liana, lianescent shrub, or shrub up to 3 m tall. *Branches* brown to black, with small often indistinct lenticels. *Branchlets* tomentose to hispid, or with a mixture of short and long hairs, glabrescent with age; orthotropic shoots in lianescent specimens usually hollow. *Stipules* palmately to pinnately divided into filiform, usually curved segments, 4–10 mm long, hispid-strigose to pubescent-tomentose, rather long persistent. *Leaves*: petiole subterete, 1–3(10) mm long, hairy as branchlets; blade obovate-elliptic, sometimes oblong, 5–15(18) × (2)3–7(10) cm, (1.5)2–2.5(3) times as long as wide, cordate to subcordate at base, acute to shortly acuminate at top, the acumen at most 0.5 cm long; subappressed-pubescent to puberulous or strigose mixed with shorter hairs above especially so on midrib and main lateral nerves, glabrescent, beneath subappressed-pubescent to densely tomentose or even densely white-villous, often with a more sparse strigose indumentum as well, especially so on midrib and main lateral nerves, the midrib and the (6)7–10(14) pairs of main lateral nerves usually more or less impressed above, prominent beneath, the margin

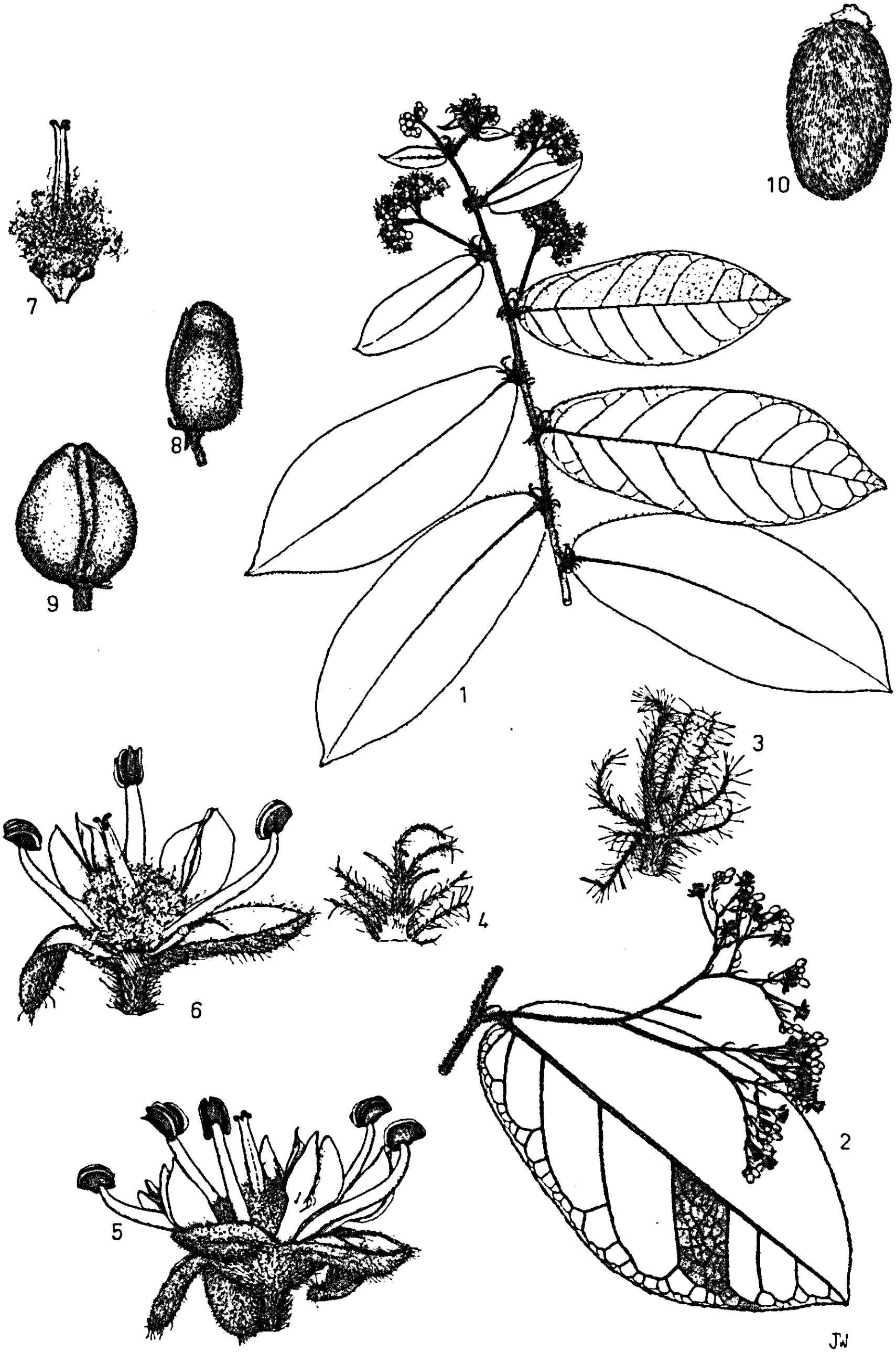


FIG. 9. *D. mossambicense*: 1–2. flowering branchlets, $\frac{1}{2}\times$; 3–4. stipules, 2×; 5. flower, 6×; 6. flower partly, 6×; 7. pistil with staminodes on receptacle, 6×; 8–9. 1- and 2-seeded fruit, 1×; 10. seed, 2×. (1. *Faulkner 858*; 2. *Schlieben 5189*; 3. *Greenway 6041*; 4. *Raymond 44*; 5–7. *Faulkner 1777*; 8. *Torre & Paiva 11903*; 9. *Busse 2534*; 10. *Torre & Paiva 11903*).

revolute or not; glands few, when present beneath only, indistinct, hidden by the indumentum. *Inflorescence* cymose, up to ca 5 times distinctly dichotomously branched, ultimate branching more compact and indistinct or branches becoming scorpioid, up to at least 100-flowered, pubescent-tomentose to hispid or with a mixture of long and short hairs; peduncle (1)1.5–2.5(4) cm long, often shortly adnate to petiole of supporting leaf; bracts and bracteoles linear, usually curved, up to 8 mm long, recaulescent with branch up to next bifurcation, rarely somewhat foliaceous and up to 12 mm long. *Pedicel* up to ca 10 mm long, pubescent to hispid, the upper part always distinct, up to 2 mm long. *Sepals* reflexed in fully developed flowers, free or shortly united at base, ovate elliptic to oblong-obovate, 2.5–4 × 1–1.5 mm, top rounded to acute, tomentose outside, glabrous or with a few hairs inside. *Petals* white, turning black, erect to slightly spreading or even reflexed, free or nearly so at base, narrowly obovate-spathulate in outline with a narrow base, (2.5)3–4 mm long, 1–2 mm split, with a few hairs outside below split, rarely so on the lobes, glabrous inside, lobes concave with rounded top. *Stamens* suberect, apical part curved inwards, (3)3.5–4.5 mm long, glabrous; anthers subellipsoid to subreniform, 0.5–0.7 mm long. *Staminodes* subquadrate to oblong, flat, up to 0.5 × 0.5 mm, top truncate to shortly bilobed, glabrous or with a few hairs inside. *Pistil* 3-merous, (2)3–3.5(4) mm long; ovary and lower part of style densely lanate, apical part of style glabrous with 3 usually short lobes. *Fruits* 1–3-seeded, densely tomentose, aborted cells present as a ridge; 1-seeded fruits: ovoid-ellipsoid, 1.5–2.5 cm long, ca 1 cm diam., tapering or not at top but usually not beaked (sometimes with a beak up to 6 mm); exocarp and mesocarp rather thin; endocarp bony, glossy and glabrous inside. *Seed* ellipsoid, up to ca 10 × 6 mm, sericeous.

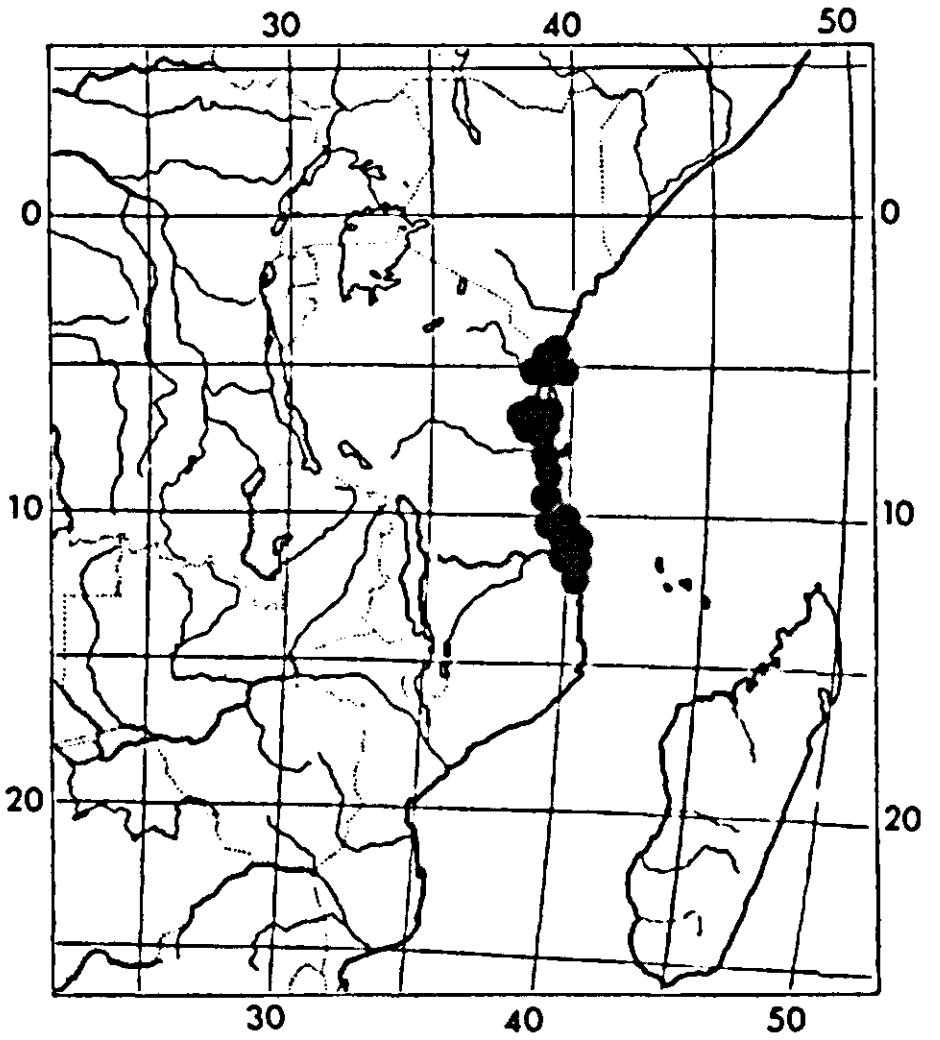
Distribution: Coastal area of S.E. Kenya, Tanzania and N.E. Moçambique.

Ecology: Shrub and tree savannah, in dry forest, forest edges or secondary bush.

Specimens examined:

Kenya. Buda Mafisini F., 8 mls W.S.W. of Gazi, *Drummond & Hemsley 3828* (B, BR, EA, FI, K); Shimba Mt., *Kassner 180* (BM, K, Z).

Tanzania. Mikindani, *Aukland s.n.* (EA); Pugu Hills, Mimaki, *Batty 511* (K); between Mimaki and Kiserawe, *Batty 1109* (K, WAG); near Maweni, W. of Tanga, *Botany Students DSM 1382* (BR, WAG); Kilwa-Singino, *Braun 1283* (EA); Pungutini-Kipati, *Braun 3681* (EA); Mayanga, *Busse 2534* (EA, BR); Nashimjimba, *Busse 2840* (EA, BR); N. Mucra Plateau, near Nkalatscha, *Busse 2878* (BM, BR, EA, G, WAG); 4 mls S.E. of Ngomeni, *Drummond & Hemsley 3603* (B, EA, K, LISC, SRGH); Pongwe, Kange Estate, *Faulkner 858* (B, BR, FI, K, LISC, P, PRE); Pongwe, Kange Forest, *Faulkner 1777* (B, BR, K); Pongwe, Kange, *Faulkner 3562* (K); *3714* (K); Pugu F.R., *Fundi 29* (EA, K); Amboni, *Geilinger 95* (K); Ragwe, *Geilinger 274* (K); Pugu Hills, *Greenway 4987* (EA, K); E. Usambaras, Mtindiro, *Greenway 6041* (EA, K, M, PRE); Kilulu Hill, *Greenway 6605* (EA, K); Ngomenie, *Greenway EAH 11826* (EA, K); near Dar es Salaam, *Hansen 375* (WAG); Kerege, 25 mls N.W. of Dar es Salaam, *B. J. Harris 1347* (K); near Dar es Salaam, *B. J. & S. Harris 3189* (BR, K(; 6 mls W. of Tanga, *B. J. & S. Harris 3480* (K, WAG); Pande F.R., *B. J. Harris 3611* (K); near Kibaha, *B. J. Harris & Flock 4470* (WAG); near Soga, 50 km W. of Dar es Salaam, *B. J. & S. Harris*



MAP 8. *D. mossambicense*

5034 (WAG); Mizozue, *Holst 2218* (COI, G, K, M, type of *D. aureonitens*); Amboni, *Holst 2541* (LE, P, W, Z); Rovuma R., 28 mls from coast, *Kirk s.n.* (K, LE); Zanzibar, Kilwa, *Kirk s.n.* (K); Rovuma R. 30 mls from coast, *Meller s.n.* (K); Mahiwa Exp. Stat., *Milne Redhead & Taylor 7491* (BR, EA, K, LISC, WAG); Usambara, near Maramba, *Peter 52222* (B); Mohoro F.R., *Proctor 22* (EA, K); between Kazimzumbwi and Kola, *Proctor 2523* (EA, G, K, WAG); Pugu F.R., *Proctor 2980* (EA); Dar es Salaam, *Rauh 75* (EA); *Raymond 44* (EA) (same number used for a *D. arenarium* specimen); Mikindani-Lindi Rd, *Richards 17830* (BR, K); Chambezi Agr. Stat., *Robertson 510* (EA, K); Rondo F.R., *Ruffo 9* (BR, FI, K, UPS); Banda F.R., *Ruffo 129* (K); *325* (BR, K); Mwera, *Ruffo 366* (BR, K); Mlingano near Ngomeni, *Sandford 49* (EA, K); Lutamba Lake, *Schlieben 5189* (B, BM, BR, G, LISC, M, P, PRE, Z); Mchingiri, *Semsei 673* (EA, K); Vikindu F.R., *Semsei 1317* (BR, EA, K); Kisarawe Distr., *Semsei 3654* (EA, K); Rondo F.R., *Shabani 45* (K); Banda F.R., *Shabani 479* (BR, K); Uzaramo, *Stuhlmann 7053* (G); Dar es Salaam, *Stuhlmann 7468* (BM, G, K, LE, M, P, W, WU, Z); *7806* (E); Pugu Hills, *Vaughan 2339* (EA, BM).

Moçambique. N. of Msalu R., *Allen 52* (K); Msalu R., *Allen 146* (K); Mucojo-Quiterajo Rd, *Andrada 1339* (BR, COI, K, LISC); Macomia, *Barbosa 2079* (COI, LISC, PRE, SRGH); between Quiterajo and Mocimboa da Praia, *Barbosa 2100* (COI, LISC); between Mucojo and Macomia, *Barbosa 2264* (BR, COI, LISC); near Macomia, *Barbosa & Lemos 2295* (G, K, LISC); 30 km Mocimboa da Praia-Diaca, *Gomes e Sousa 4684* (COI, K, LISC, M, PRE, SRGH); Quionga, *Mendonça 1027* (LISC); sin. loc., *Peters s.n.* (K, P, type); sin. loc., *Stocks 64* (K); Mtamba, *Stocks s.n.* (K); 53 km Diaca-Mocimboa da Praia, *Torre & Paiva 11903* (LISC).

Notes. KLOTZSCH cited in his protologue two specimens without number collected by PETERS, one from 'Rios de Sena', the other from 'Festland von Querimba'. To cite one of these as holotype, as was done by MOSS (l.c.) and by TORRE (l.c.), is not correct. Of the original syntypes lost at Berlin, duplicate material is available in the form of two single sheets, one in K and one in P. Both sheets, however, lack the collecting locality, so it cannot be established to which syntype they belong, but most probably to the same one. As MOSS, followed by TORRE, selected in fact the Sena-specimen as lectotype, they must be followed. As it is not possible to establish for both remaining sheets which one comes from Sena, I have elected the P duplicate as lectotype. As all other material of this species from Moçambique was collected in the northern coastal part of Cabo

Delgado province (i.e. 'Festland von Querimba') the origin of 'Rios de Sena', situated on the Zambezi R. at considerable distance, is questionable.

The name *D. mossambicense* (Kl.)Engl. var. *busseanum* Engl. appears on three specimens collected by BUSSE, of which duplicates are present in several herbaria. KRAUSE (l.c.) used this name when reporting about the toxic properties of *D. mossambicense*, stating that the seeds were highly toxic containing a glucoside which he named Dichapetalin. Giving some rather vague chemical characteristics of the seeds does, in my opinion, not constitute a description or diagnosis needed for validation of this varity. I have treated it as a 'nomen nudum'. Moreover, the material in question collected by BUSSE is quite similar to the other material of *D. mossambicense* which I examined.

ENGLER (1911, 1912-a) reported (under *D. aureonitens*) that the leaves and fruits are toxic. GREENWAY, however, in his fieldnotes of no *4987*, states that the fruits are edible and the leaves not poisonous. As KRAUSE (l.c.) proved the seeds to be toxic, it could be that the fruit pulp is edible, as is often reported of other *Dichapetalum* species.

D. mucronulatum Engl. = **D. parvifolium** Engl.

For details see p. *75*.

D. multiflorum (Tul.)Desc. = **D. madagascariense** Poir. var. **madagascariense**

For details see p. 15.

D. mundense Engl. **Fig. 10 Map 9**

D. mundense Engler, 1896-b: 134; 1896-a: 348; Th. & H. Durand, 1909: 95; De Wildeman, 1909: 110, as *D. mundensis*; Engler, 1912-a: 569;Pellegrin, 1913: 647; De Wildeman, 1919: B 54; Exell & Mendonça, 1951-b: 325; Hauman, 1958-a: 310; Breteler, 1973: 28, 92, XVIII; Punt, 1975: 36; Breteler, 1978: 55.

Type: Gabon, near Libreville, Munda, Sibange Farm, *Soyaux 387* (B†; lectotype: Z; isotypes: BP, BREM, K, LE, P).

D. mundense Engler var. *seretii* (De Wildeman) Hauman, 1958-a: 311. Basionym: *D. seretii* De Wildeman, 1912: 421; 1919: B66. Type: Zaïre, 'bords de la Busira', *Seret 1020* (holotype: BR; isotype: WAG).

Diagnostic characters. Small to large liana or lianescent shrub. Woodcylinder lobed. Young branches often pustular-rugose by numerous small lenticels. Branchlets glabrous or nearly so. Leaves obovate-elliptic (5)6–12(16) × (2)3–6(7) cm, obtusely acuminate, glabrous or nearly so, the (5)6–8(10) pairs of main lateral nerves only slightly firmer than the minor ones. Inflorescence

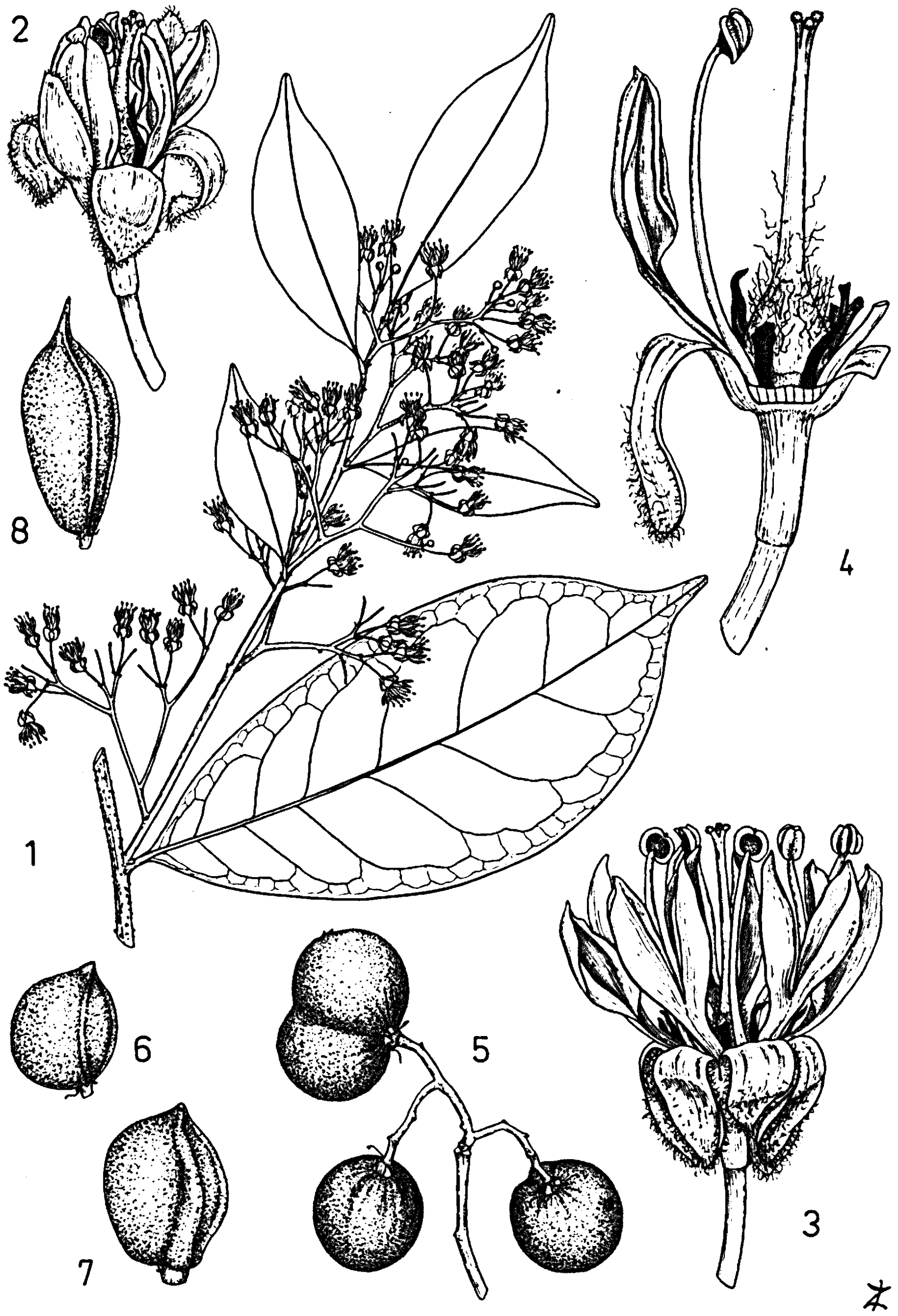
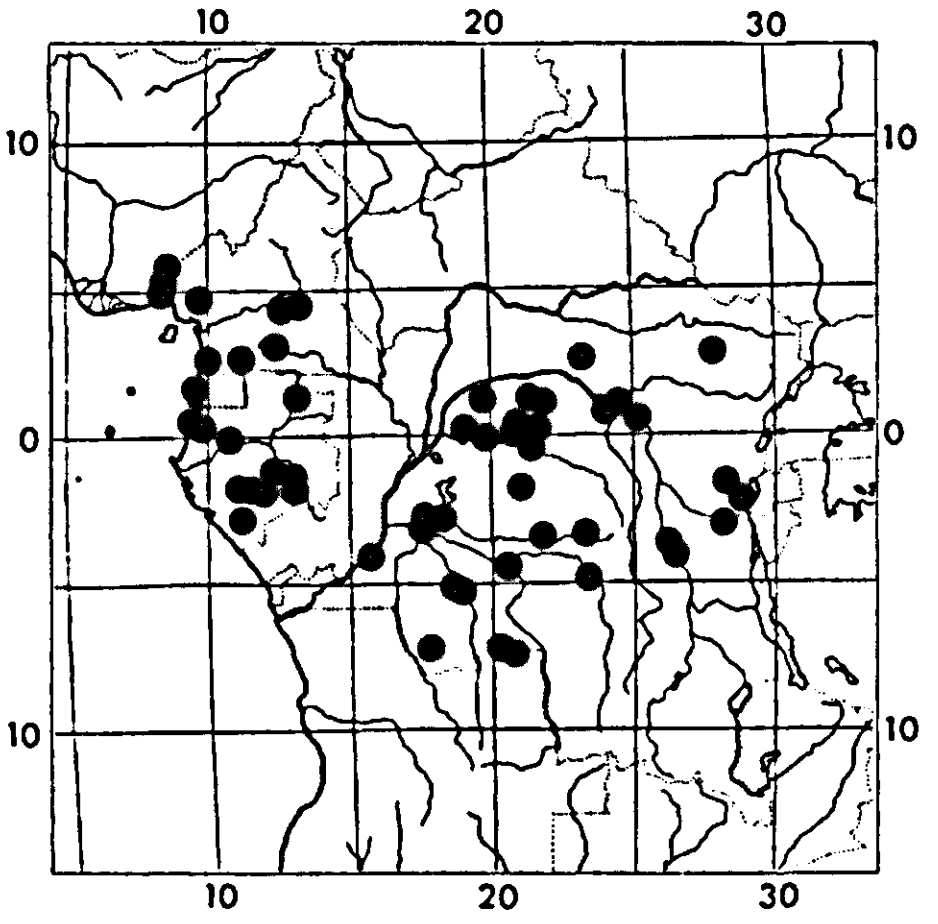


FIG. 10. *D. mundense*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. just opened flower bud, 10×; 3. mature flower, 10×; 4. flower partly, 13×; 5. fruiting branchlet, $\frac{5}{6}\times$; 6–8. fruits, $\frac{5}{6}\times$. (1. *Breteler 2105*; 2–5. *Breteler 2745;* 6. *Breteler 6833*; 7. *Leeuwenberg 8222*; 8. *Louis 12937*).

distinctly branched, many flowered, glabrous or nearly so, the peduncle free or shortly adnate to petiole. Pedicel thin, stiff, 3.5–8.5 mm long, the upper part distinct. Sepals reflexed, puberulous-tomentellous on margin. Petals suberect to more or less reflexed, glabrous. Stamens suberect, glabrous. Pistil (2–)3-merous, villous on apical part of ovary and usually on lower part of style. Fruits globose to ellipsoid, beaked or not, glabrous, sometimes except for a few hairs on the beak.

Description. Small to large liana, up to 10 cm diam., or lianescent shrub. Woodcylinder of lianescent stem becoming distinctly lobed by intruding phloem. Bark of stem and older *branches* greyish-brown, with short transverse fissures; younger branches often silverish-grey, lenticellate, the lenticels small, numerous, with transverse split, giving the bark a pustular-rugose aspect. *Branchlets* sparsely puberulous when young, soon glabrous. *Stipules* early caducous, narrowly triangular, 1–3 mm long, sparsely puberulous. *Leaves*: petiole semiterete, grooved above or not, (1)2–5(7) mm long, glabrous or nearly so; blade obovate-elliptic, (1.5)2–2.5(4) times as long as wide, (5)6–12(16) × (2)3–6(7) cm, rounded to cuneate at base, obtusely acuminate, often caudately so, the acumen 0.5–1.5(2) cm long; glabrous or sparsely puberulous on margin and midrib both sides when young, usually soon glabrous, the midrib plane or prominent above, the (5)6–8(10) pairs of main lateral nerves only slightly firmer than minor ones, more distinct beneath; glands usually present, beneath only, rarely some above, small, indistinct. *Inflorescences* up to ca 50-flowered, loosely 4–5 times distinctly branched, glabrous, sparsely puberulous when young, single or several together on leafless axillary shoots; peduncle free or shortly adnate to petiole, up to 2 cm long; bracts and bracteoles ovate-triangular, up to 0.5(1) mm long, sparsely puberulous, often with 1–2 pimples laterally. *Pedicel* thin but stiff, 3.5–8.5 mm long, the upper part distinct, (0.7)1–2(3) mm long, usually thicker than the lower part, glabrous or nearly so, the articulation sometimes provided with a bracteole. *Sepals* thin, reflexed, free or very shortly united at base, ovate-elliptic to oblong-obovate, (1.5)2–2.5(3) × (0.5)0.7–1 mm, usually slightly concave, puberulous-tomentellous on margin and on apical part inside and/or outside. *Petals* suberect, spreading or even subreflexed, shortly adnate to filaments at base, obovate-spathulate in outline, 2–3.5 mm long, 0.7–1.5 mm split, glabrous; lobes concave with rounded top. *Stamens* erect to slightly spreading, 2–4 mm long, glabrous; anthers up to ca 0.5 mm long, connective prominent. *Staminodes* obtriangular to oblong, obtuse to emarginate to irregular 1–2-horned at top or entirely filiform, (0.3)0.5–1.5 mm long, glabrous. *Pistil* (2–)3-merous, 2–4 mm long; upper part of ovary and usually lower part of style villous, the latter shortly (2–)3-lobed. *Fruits* 1–3-seeded, globose to ovoid to obovoid-ellipsoid, beaked or not, the beak curved or erect, up to 8 mm long, the aborted cells present as a distinct ridge, glabrous (sometimes except for a few hairs on the beak), smooth, orange at maturity; 1-seeded fruits: 1.5–4 cm long (beak inclusive), 10–20 mm diam.; exocarp and mesocarp together 2–4 mm thick; endocarp more or less bony, glabrous and smooth inside. *Seeds* subglobose to ovoid-ellipsoid, so-



MAP 9. *D. mundense*

metimes narrowly so, 10–28 mm long, 8–10 mm diam., testa thin, brown-black, glabrous; hilum large, circular to elliptic, up to ca 8 × 5 mm.

Distribution: Nigeria, Cameroun, Equatorial Guinea, Gabon, Zaïre, Angola.

Ecology: Rain forest, semi-deciduous forest.

Specimens examined:

Nigeria. 31 mls Calabar-Mamfe, *Baldwin 13773 A* (K); Calabar Distr., near Atimbe Water, *Daramola FHI 55241* (K); 17 mls Calabar-Awi, *Daramola FHI 55552* (FHI, K, P); Calabar, Oban Group F.R., *Daramola FHI 56388* (FHI); *FHI 57420* (FHI); Ikom-Mamfe, Cross R. North F.R., *Latilo FHI 31833* (K); *Latilo & Oguntayo FHI 67663* (K, WAG); Oban Group F.R., *van Meer 1313* (WAG); *1385* (WAG).

Cameroun. Bitye, *Bates 1088* (BM, Z); *1346* (BM); *1465* (BM, Z); *1504* (BM); *1575* (BM, Z); 45 km Kribi-Campo, *Bos & Breteler 7312* (WAG); near Nguélémendouka, *Breteler 2054* (BR, FI, K, LISC, M, P, WAG); *2105* (BR, FI, K, LISC, M, P, WAG); *2120* (WAG); *2745* (BR, FI, K, LISC, M, MO, P, WAG); 35 km W. of Bertoua, *Breteler 2979* (BR, K, P, WAG); 14 km Ebolowa-Ambam, *J. J. de Wilde 8110* (WAG); Bakaka F., 4 km Eboné-Ekomtolo, *Leeuwenberg 8222* (WAG); *8305* (WAG).

Equatorial Guinea. Alen, 15 km S. of mouth of Benito R., *Bates 597* (L, P); sin. loc., *Tessmann 944* (K); *983* (K); *989* (K).

Gabon. 6 km Moanda-Franceville, *Breteler 6243* (WAG); 33 km Moanda-Bakoumba, *Breteler 6756* (WAG); 15 km Moanda-Bakoumba, *Breteler 6833* (WAG); 10 km S.W. of Ndjolé, *N. Hallé 1941* (BR, P, WAG); *2004* (P, WAG); Bélinga, *N. Hallé 3798* (P); near Libreville, *Klaine 1567* (P); Lela, *Le Testu 2040* (BM, P, WAG); Mouila, *Le Testu 5048* (P); Ghenzambwe, *Le Testu 6432* (BM, BR, P, WAG); Koulamoutou, *Le Testu 7988* (BM, BR, P, WAG); Mbigou, *Le Testu 8034* (BM, BR, P, WAG); Munda, Sibange Farm, near Libreville, *Soyaux 267* (COI, K, LE, P, Z); *387* (BR, BREM, K, LE, P, Z, type); between Libreville and Cap Estérias, Mondah Forest, *Villiers 235* (P).

Zaïre. Yangambi, *Bolema 37* (BR); *73* (BR, WAG); *641* (BR, K); *802* (BR); Maluku Terr., *Breyne 2131* (BR); Dikila, *Bruneel s.n.* (BR); Basankusu, *Bruneel s.n.* (BR); Wema, *Claessens 690* (BR); Yumoandja de Likote, *Collart 76* (BR); Panzi, *Devred 1947* (BR); Kigako-Kwango, *Devred 2876* (BR, PRE, WAG); Lonengi, *Evrard 2717* (BR); Emengeye, *Evrard 2780* (BR); Befale, *Evrard 3536* (BR, M, SRGH); *4326* (BR); Djoa, *Evrard 5060* (BR); Mompono, *Evrard 5818* (BR); Nioki, *Flamigni 6023* (BR); Yalibwa, *Germain 122* (BR, L); Pene Yumbi, *Germain 8007* (BR); Yangambi,

Germain 8568 (BR, P); *Gilbert 1258* (BR); Sangaie, *Gillardin 623* (BR); Bokoro, *Jans 616* (BR); between Niangara and Wamba, *Lebrun 3206* (BR); between Walikale and Kalehe, *Lebrun 5309* (BR, LISC, LISU); between Kama and Lumuna, *Lebrun 5860* (BR, LISU); Lodja, *Lebrun 6231* (BR, K); *6234* (BR, WAG); between Kole and Dekese, *Lebrun 6413* (BR, LISU); Yangambi, *A. Léonard 90* (BR); *858* (BR); *1154* (BR, EA); *1179* (BR, PRE, SRGH); Kabare, *A. Léonard 3730* (BR); Lusheni, *A. Léonard 4723* (BR); Mwenga, *A. Léonard 4953* (BR); Yangambi, *Lisowski 15443* (BR, K); *40039* (BR, K); Kisangani, *Lisowski 41616* (BR, K); Yangambi, *Lisowski 52275* (BR, K); *52384* (BR, K); *Louis 251* (BR); *1116* (BM, BR, C, LISC); *1408* (BR, SRGH); *1577* (BR, M); *2717* (BM, BR, C, LISC, LISU, M, P, SRGH, W); *2758* (BR, LD, LISC); *2907* (BR); *3749* (BR); *5591* (BR, LISC, LISU, P); *6549* (BM, BR, C, W); *6635* (BR, C, LISU, M); *6746* (BR, M, SRGH, WAG); *7255* (BR, L, M, P, SRGH, U, W); *7571* (BR, COI, EA, FI); *8292* (BR, C, EA, K); *8334* (BR); *8362* (BR, Z); *9136* (BR, UPS); 25 km W. of Yangambi, *Louis 9425* (BR); Yangambi, *Louis 10170* (BR); *10589* (BR, P); *10932* (BR, COI, EA, LISC, Z); *11363* (BR, UPS); *11654* (BR, FI, U); 20 km E. of Yangambi, *Louis 12108* (BR, U); Yangambi, *Louis 12937* (BR, COI); *12942* (BR, M, SRGH); *13700* (BR); Yangole, *Louis 15721* (BR, K); Yangambi, *Menavanza 103* (BR); Kikwit, *Renier 17 A* (BR); near Mobwasa, *Reygaert 890* (BR); between Lubue and Bena Makima, *Sapin s.n.* (BR, Z); Busira, *Seret 1020* (BR, WAG, type of *D. seretii*); Dima, *Vanderyst 5113* (BR); Kikwit, *Vanderyst 8371* (BR); *9103* (BR); Yangambi, *Yafunga 83* (BR).

Angola. Lunda, *Cavaco 1224* (P); Dundo, *Gossweiler 13757* (B, COI, K, LISC, LISJC, P); *13861* (B, BM, COI, K, P); *13959* (BM); *14088* (B, BM, BR, COI, K, LISC); Lovo R., *Marques 270 A* (COI, LISU, paratype).

Notes. ENGLER based *D. mundense* on 3 syntypes: *Soyaux 387* from Gabon, *Marques 270 A* from Angola, and *Pogge 693* from Zaïre. This original material has been lost at Berlin. Duplicates of *Soyaux 387* are present in several herbaria and this syntype has therefore been selected as lectotype. *Marques 270 A* is represented in 2 Portuguese herbaria, but of *Pogge 693* not a single duplicate could be traced.

D. seretii is the only synonym of this species. HAUMAN already reduced it to a variety of *D. mundense*, distinguishing it from var. *mundense* by longer stamens and leaves with more lateral nerves. These characters vary in *D. mundense* and I could not divide the material satisfactorily into two varieties as there are numerous intermediates.

D. mundense has not been collected in Congo nor in Cabinda and adjacent Zaïre (see map 9). This might be due to insufficient exploration in these areas, but as there are some differences between the Western and the Eastern populations of this species this may indicate a natural separation. In the Eastern population the fruits are ellipsoid and distinctly beaked (Fig. 10: 8) except for the fruiting GOSSWEILER specimens of N.E. Angola which have subglobose fruits. In the Western population the fruits are predominantly globose (Fig. 10: 5), but more or less ellipsoid, shortly beaked fruits (Fig. 10: 6–7) do occur, in Nigeria as well as in Gabon. No other characters have been found to strengthen the insufficient fruit differences in order to divide this species into two infraspecific, geographically separated taxa.

D. mundense is closely related to *D. bellum* Bret. For distinction between these species see the treatment of the latter species (BRETELER, 1973: 92).

D. murinum Bret. ex Den Outer = **D. pallidum** (Oliv.)Engl.

For details see p. 65.

D. ndongense Engl. = **D. heudelotii** (Planch. ex Oliv.)Baill. var. **ndongense** (Engl.)Bret.

For details see BRETELER, 1979: 38.

D. nigrescens (Tul.)Baill. = **D. leucosia** (Spreng.)Engl.

For details see BRETELER, 1979: 54.

D. nitidulo nomen = **D. unguiculatum** Engl.

Note. This name, which was never published, has only been found on *Zenker 2084* from Bipindi, Cameroun. It is identified as *D. unguiculatum*.

D. nitidulum Engl. & Ruhl. = **D. gabonense** Engl.

For details see BRETELER, 1979: 4.

D. nyangense Pellegr. **Fig. 11 Map 10**

D. nyangense Pellegrin, 1922: 90; 1924: 58; Breteler, 1973: XIX; Punt, 1975: 19.

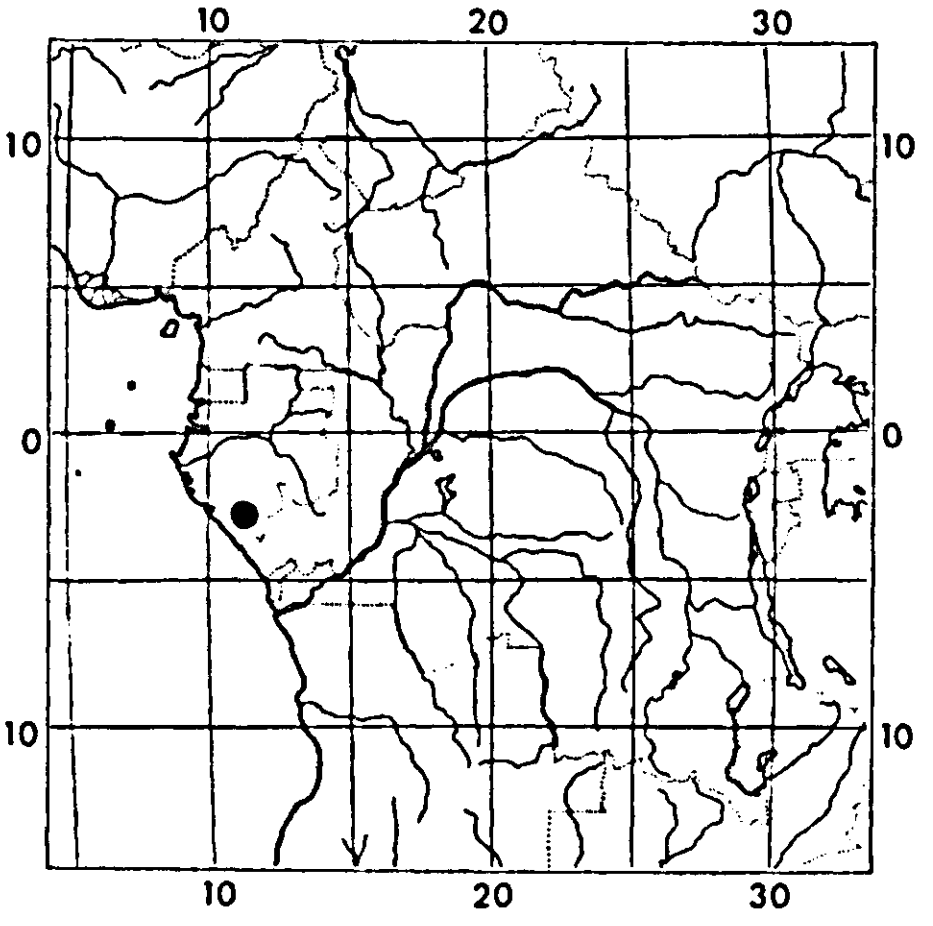
Type: Gabon, Tchibanga, *Le Testu 2121* (holotype: P; isotypes: BM, K, WAG).

Diagnostic characters. Liana. Branches and branchlets rusty-hairy. Stipules palmately divided into 2–4(5) narrow segments. Leaves shortly stalked, ovate-elliptic, 3–5 × 1.5–2.5 cm, cordate to subcordate at base, top acute, arachnoid-hairy both sides. Inflorescences pedunculate, widely branched, many flowered. Sepals reflexed. Petals suberect, slender, 3.5 mm long, 1.5–2 mm split. Stamens erect, 5 mm long. Pistil (2–)3-merous, ovary lanate.

Description. Liana. Orthotropic shoots grooved, more or less 5-lobed on transverse section. *Branches* and *branchlets* densely rusty short-brown-hairy, often mixed with some longer hispid hairs. *Stipules* short-brown-hairy, palmately divided into 2–4(5) narrow, up to 8 mm long, usually somewhat curved

FIG. 11. *D. nyangense*: 1. part of orthotropic shoot with flowering branchlet, $\frac{5}{6}\times$; 2. leaf axil with stipule, $2\frac{1}{2}\times$; 3. flower, $2\frac{1}{2}\times$. (1–3. *Le Testu 2121*).

segments. *Leaves*: petiole subterete, 1–2 mm long, brown-short-hairy; blade ovate-elliptic, 3–5 × 1.5–2.5 cm, cordate to subcordate at base, acute at top, with 4–6 pairs of main lateral nerves and with an arachnoid indumentum both sides, more densely so above; glands beneath only, not very distinct, rather well dispersed. *Inflorescence* a loose, stalked, widely branched, many flowered cyme, brown-short-hairy; peduncle 0.5–2 cm long; bracts and bracteoles narrowly triangular, 1–2 mm long. *Pedicel* up to ca 6 mm long, the upper part very short, the pedicel of two adjacent flowers often more or less completely fused. *Sepals* reflexed, oblong-elliptic, 2.5–3 × 1 mm, acute to obtuse at top, woolly-tomentose outside with some short, stiff, appressed hairs as well on uncovered parts, sparsely appressed-puberulous inside. *Petals* suberect, apical part slightly curved inwards, shortly adnate to filaments at base, narrowly obovate-spathulate in outline, 3.5 mm long, 1.5–2 mm split, glabrous, lobes concave with a rounded top. *Stamens* erect, 5 mm long, glabrous; anthers ca 0.5 mm long, connective prominent. *Staminodes* oblong-obovate to subquadrate, up to 0.5 × 0.5 mm, glabrous. *Pistil* (2–)3-merous, 4.5 mm long; ovary lanate; style glabrous, (2–)3-lobed at top. *Fruits* unknown.



MAP 10. *D. nyangense*

Distribution: Onlyknown from the type locality.
Ecology: Semi-decidous forest.

Specimens examined:

Gabon. Tchibanga, *Le Testu 2121* (BM, K, P, WAG, type).

Notes. Analysis of the single specimen of *D. nyangense* points to a hybrid origin, although the pollen, investigated by Dr. PUNT, and inspection of the pistil did not show anything to support this. The palmately divided stipules and the leaves with an arachnoid indumentum on both surfaces are characters found in *D. lujae* De Wild. & Th. Dur. The type of inflorescence, large and widely branched, and the flower type with reflexed sepals and the stamens and pistil distinctly longer than the petals, are such as seen in *D. arachnoideum* Bret. Both species occur in the area where *D. nyangense* is found. More, especially fruiting, material will be needed, however, to see whether its nature is indeed a hybrid one or that it represents a true, insufficiently collected, species.

D. obanense (Bak.f.) Bak.f. ex Hutch. & Dalz. **Fig. 12 Map 11**

D. obanense (E. G. Baker)E. G. Baker ex Hutchinson & Dalziel, 1928-a: 324; Keay, 1958: 438; Breteler, 1973: XIX; Punt, 1975: 29, 40 (see note).
Basionym: *D. thomsonii* (Oliver)Engler var. *obanense* E. G. Baker, 1913: 19.
Type: Nigeria, Oban, *Talbot 1627* (holotype: BM; isotypes: K, WAG, Z).

Diagnostic characters. Shrub or small tree (?). Leaves obovate-elliptic (6.5)12–16 × (3)7–8 cm, smooth, coriaceous, glabrous or nearly so, margin revolute beneath. Flowers glomerate, pedicellate. Sepals reflexed. Petals slightly spreading, distinctly lobed. Stamens longer than the petals, anthers small.

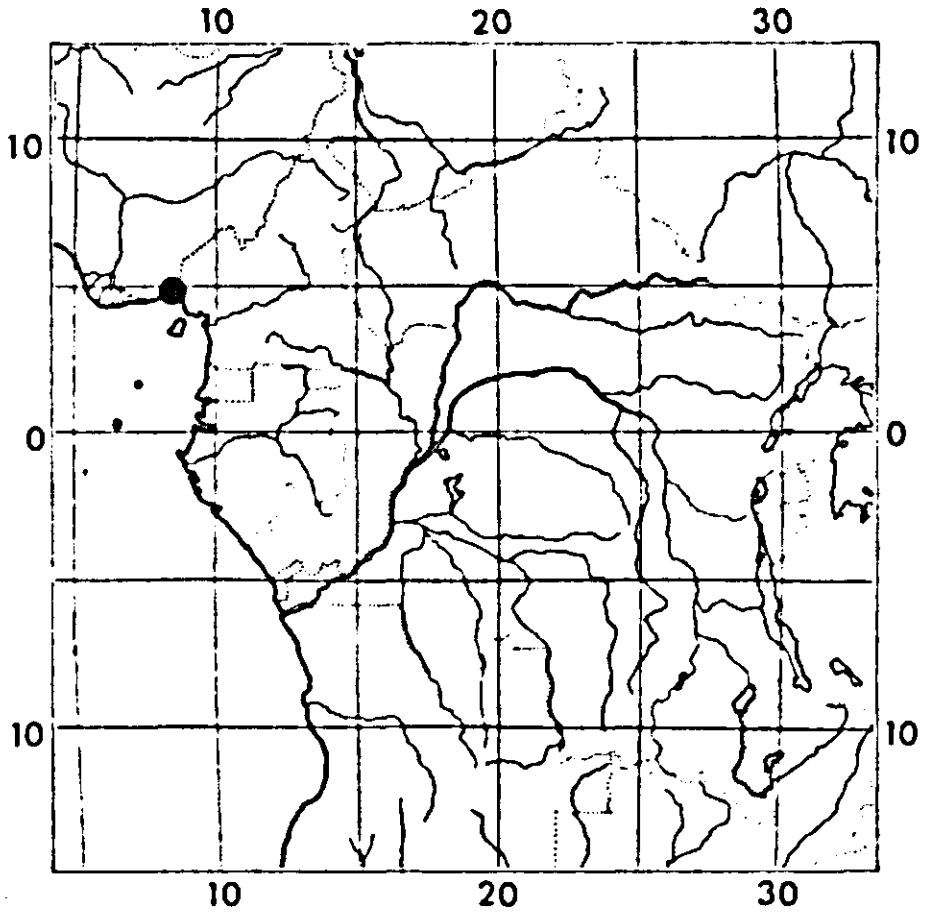
Pistil shorter than stamens, 2–3-merous, ovary and lower part of style more or less villous.

Description. Shrub or small tree (?). *Branches* glabrous, with a greyish bark. *Branchlets* appressed-puberulous. *Leaves*: petiole subterete to semiterete, 6–11(14) mm long, glabrous or nearly so; blade coriaceous, smooth, obovate-elliptic, (6.5)12–16 × (3)7–8 cm, cuneate to obtuse at base, acuminate at top, the acumen ca 1 cm long; main lateral nerves 5–7 pairs, plane or slightly impressed above, the midrib impressed above, midrib and lateral nerves prominent beneath; glabrous to sparsely appressed-puberulous, the margin revolute beneath; glands few, rather small, both sides. *Inflorescences* sessile, glomerate, many flowered, appressed-puberulous; bracts and bracteoles narrowly triangular, up to ca 1 mm long. *Pedicel* slender 2–3 mm long, appressed-puberulous, the upper part less than 0.5 mm long. *Sepals* usually reflexed in fully developed flowers, free or shortly united at base, narrowly ovate-oblong, 2–2.5 × 0.5–1 mm, appressed-puberulous outside, puberulous on apical part inside. *Petals* slightly spreading, at base very shortly adnate to filaments, narrowly obovate in outline, 4–4.5 mm long, 2–2.5 mm split, glabrous or with a very few hairs just below split outside; lobes slender, concave. *Stamens* slightly spreading, 5–6 mm long, glabrous; anthers ca 0.3 mm long. *Staminodes* subquadrate, ca 0.2 × 0.2 mm, top emarginate, with a few long hairs. *Pistil* 2–3-merous, 4–5 mm long; ovary and lower part of style more or less white-villous. *Fruits* unknown.

Distribution: Only known from the type locality in S.E. Nigeria.
Ecology: Rain forest.

Specimens examined:

Nigeria. Oban, *Talbot 1627* (BM, K, WAG, Z, type).



MAP 11. *D. obanense*

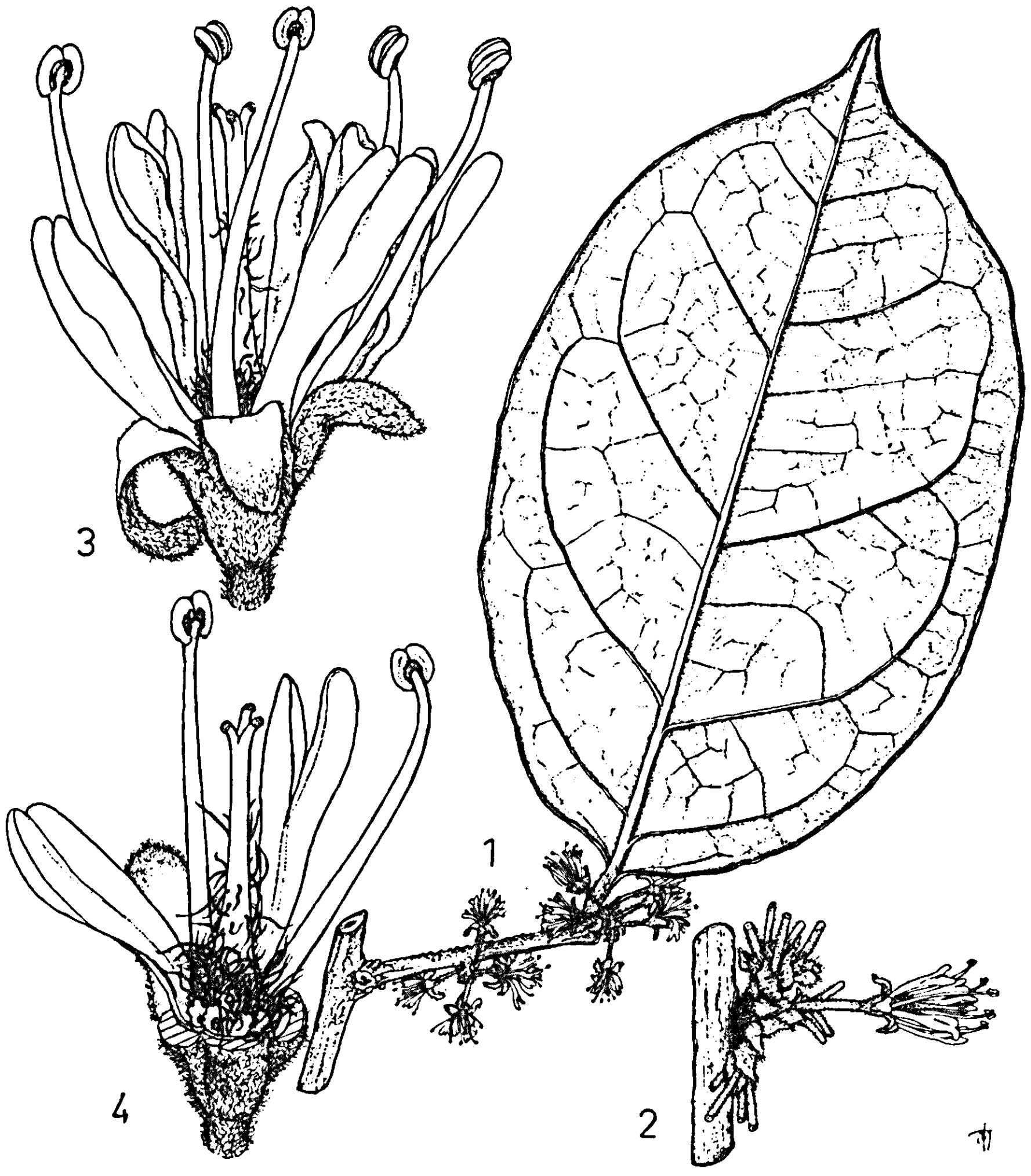


FIG. 12. *D. obanense*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. inflorescence, $2\frac{1}{2}\times$; 3. flower, $8\times$; 4. flower partly, $8\times$. (1–4.*Talbot 1627*).

Notes. *D. obanense* is probably closely related to *D. madagascariense* and I have been inclined to place it into synonymy of the latter. PUNT (l.c.p. 40) classified the pollen of *D. obanense* in the *madagascariense* type but mentioned it also as belonging to the *heudelotii* type (p. 29). Upon my request Dr. PUNT studied the pollen again and concluded that the *D. obanense* pollen belongs in the *madagascariense* type. He placed the pollen of this species in two different types initially, because, as usual, he had received two unnamed samples at separate well-spaced occasions. The first sample, placed by him in the *heudelotii* type, proved to be inadequate for correct typification.

The characters by which *D. obanense* can be distinguished from the very polymorphic *D. madagascariense* are not very striking, but I feel, that the only specimen by which it is represented, does not fit in the well known *D. madagascariense*. Reflexed sepals, as in *D. obanense*, have never been observed in the abundant material of *D. madagascariense*. In the var. *madagascariense* of the latter the pistil is at least as long as the stamens, often longer, whereas in *D. obanense* it is distinctly shorter. Coriaceous leaves occur in both species, but the texture of the leaves as seen in *Talbot 1627* has never been observed in any specimen of *D. madagascariense*. More material of S.E. Nigeria and adjacent Cameroun might reveal that intermediates between the two species occur, but I expect that it is more likely that it will strengthen the position of *D. obanense* as a distinct species.

E. G. BAKER described the habit of *D. obanense* as 'arbuscula', a detail which does not occur on the label of the TALBOT specimens.

D. obliquifolium Engl. = **D. dewevrei** De Wild. & Th. Dur.

For details see BRETELER, 1978: 51.

D. oblongum (Hook.f. ex Bth.)Engl. **Fig. 13, 14: 2 Map 12**

D. oblongum (J. D. Hooker ex Bentham)Engler, 1896-a: 349; 1912-a: 568; Pellegrin, 1913: 584; De Wildeman, 1919: B 55; Chevalier, 1920: 121; Pellegrin, 1924: 59; Hutchinson & Dalziel, 1928-a: 324; Keay, 1958: 437; Breteler, 1973: 12, 13, 27, 33, 37, XIX; Punt, 1975: 29; Breteler, 1979: 51.

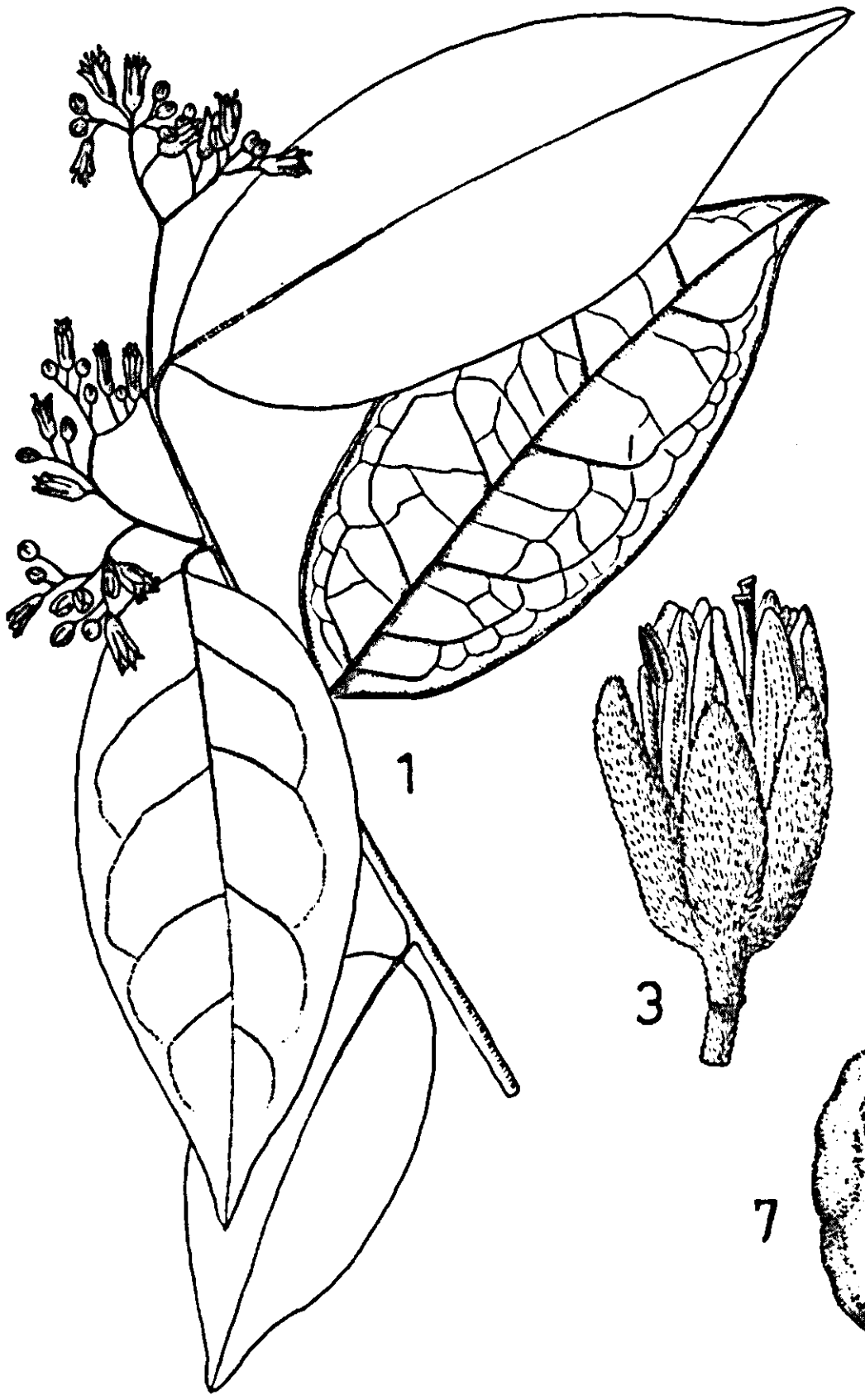
Basionym: *Chailletia oblonga* J. D. Hooker ex Bentham, 1849: 277; Oliver, 1868: 342.

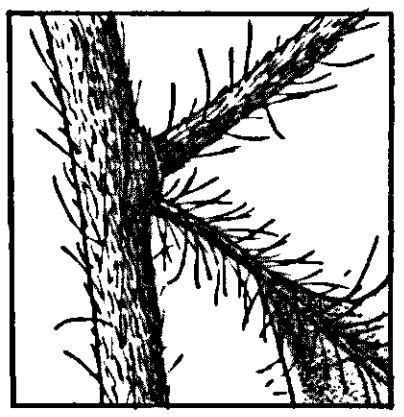
Type: Equatorial Guinea, Fernando Po, *Vogel 36 b in Herbarium Hookerianum* (lectotype: K).

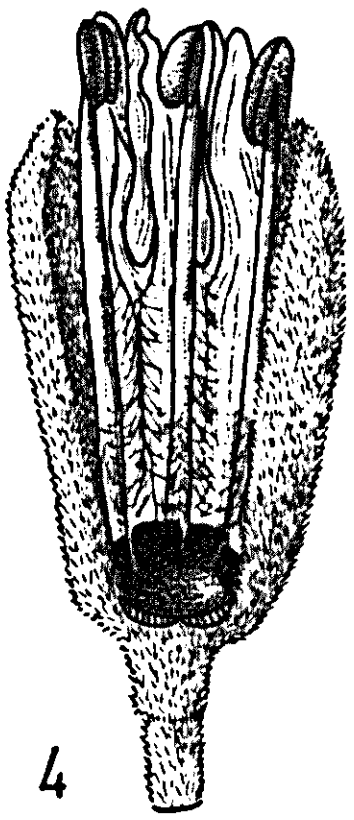
D. oblongum (J. D. Hooker ex Bentham)Engler var. *angustifolium* A. Chevalier, 1920: 121, p.p. Type: Ivory Coast, between Grabo and Taté, *Chevalier 19794* (lectotype: P), see note.

D. kamerunense Engler, 1896-b: 142. See Breteler, 1979: 51 for full details.

Diagnostic characters. Liana, shrub, or treelet. Bark usually distinctly lenticellate, in 5 rows on orthotropic shoots. Stipules small, early caducous. Leaves usually glossy above, always dull beneath, elliptic to oblong-obovate, (5)6–11(18) × (2)3–5(8) cm, sparsely hairy on main nerves, glands rather indistinct. Inflorescence a pedunculate, distinctly branched cyme. Sepals erect. Petals erect, at base distinctly adnate to filaments, 4–6 mm long, 1–2 mm split, pubescent below split inside. Stamens subequal in length to the petals, with 0.5–0.7 mm long anthers. Pistil usually 2-merous, ovary lanate. Fruits obovoid-ellipsoid, 2.5–4.5 cm long, stipitate or not, finely scabrid.







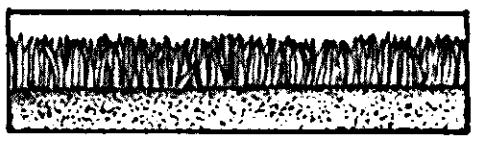
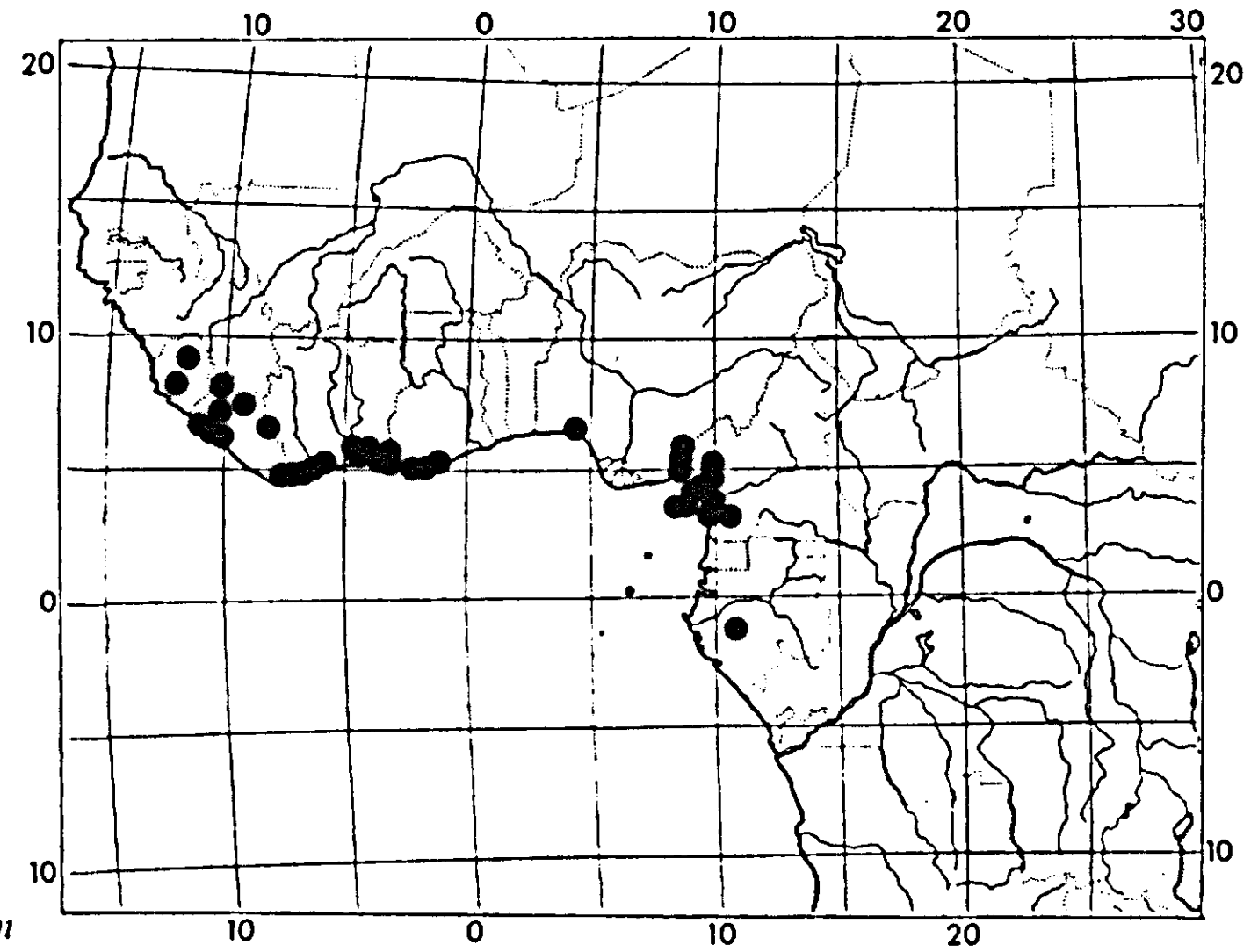


FIG. 13. *D. oblongum*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. leaf axil with stipule and part of peduncle, $2\frac{1}{2}\times$; 3. flower, $5\times$; 4. flower partly, $7\frac{1}{2}\times$; 5. petal and stamen, $7\frac{1}{2}\times$; 6. pistil, $7\frac{1}{2}\times$; 7. fruiting branchlet, $\frac{5}{6}\times$; 8. detail of fruit indumentum, $15\times$; 9. endocarp, $\frac{5}{6}\times$. (1, 3–6. *Breteler 5928*; 2. *Bos 2529*; 7–9. *Breteler 5330*).

Description. Liana, lianescent shrub, shrub, or treelet up to 5 m high and 4 cm trunk diam. Bark of main stem and *branches* greyish pale-brown, usually distinctly lenticellate, the lenticels on the orthotropic shoots usually in 5 rows; wood dense, pale yellow. *Branchlets* puberulous-tomentellous, in some specimens of the western part of its area mixed with long hispid hairs, soon glabrescent or not, the same indumentum present on stipules, petioles, and inflorescences. *Stipules* early caducous, narrowly triangular, 1–2(3) mm long. *Leaves*: petiole subterete to semi-terete, 2–7 mm long; blade usually glossy above, always dull beneath, elliptic to oblong-obovate, (1.5)2–3(3.5) times as long as wide, (5)6–11(18) × (2)3–5(8) cm, rounded-cuneate at base, acuminate at top, the acumen obtuse to acutish, 0.5–2 cm long; both sides sparsely subappressed-short-hairy (sometimes long, hispid-hairy) on midrib and the 5–7(8) pairs of main lateral nerves, glabrescent, midrib and main lateral nerves plane or slightly prominent above, usually more prominent beneath; glands usually present, beneath only, small, rather indistinct, usually more numerous near base. *Inflorescence* a pedunculate, few to many flowered, up to 4 times distinctly branched cyme, single or grouped on leafless axillary shoots or on leafless terminal part of shoots; peduncle 2–10(13) mm long; bracts and bracteoles minute, ovate-triangular, up to 1 mm long. *Pedicel* up to 4.5 mm long, puberulous-tomentellous, the upper part usually distinct, 0.3–1 mm long. *Sepals* erect, equal in length or the 2 outer distinctly shorter, ovate-elliptic to oblong, 2.5–4.5 × 1–2 mm, puberulous-tomentellous outside, glabrous to sparsely puberulous on apical part inside. *Petals* erect, at base distinctly adnate to filaments into a 0.5–2 mm long tube, oblong to narrowly obovate in outline, 4–6 mm long, 1–2 mm split, pubescent below split inside, glabrous or with a few hairs below split outside, lobes concave, rounded at top. *Stamens* more or less equaling the petals in length, 4–6 mm long, pubescent inside sometimes on outside as well or entirely glabrous; anthers oblong, 0.5–0.7 mm long, the connective not prominent. *Staminodes* subquadrate, sometimes oblong or transversely oblong, up to ca 0.5 × 0.5 mm, often forming a lobulate ring, usually glabrous. *Pistil* usually 2-merous, rarely 3-merous, usually distinctly longer than petals and stamens, 5–7.5 mm long; ovary and lower part of style lanate, upper part of style glabrous, usually very shortly 2(–3)-lobed. *Fruits* obovoid-ellipsoid, 1–2-seeded, yellow to orange at maturity, the aborted cell(s) present by a distinct bulgy ridge, stipitate or not, the stipe up to 1 cm long, obtuse at top, very shortly and densely velutinous, finely scabrid to the touch, strongly wrinkled when dry; 1-seeded fruits: 2.5–4.5 cm long, 1.5–2 cm diam.; exocarp firm, up to ca 2 mm thick; mesocarp fibrous, mealy, adhering to endocarp, 1–3 mm thick; endocarp bony, glossy and glabrous inside. *Seeds* comparatively small, ellipsoid, up to 22 × 8 mm, with a glossy, glabrous, dark-brown to black seedcoat. *Seedling*: taproot firm, the epicotyle up to 7 cm long, puberulous-tomentellous, the first leaves alternate, distinctly smaller than the subsequent ones, but usually of the same shape as in adult plants.



MAP 12. *D. oblongum*

Distribution: West Africa and Western Central Africa.
Ecology: Rain forest, semi-deciduous forest.

Specimens examined:

Sierra Leone. Njala, *Deighton 4701* (K); *4714* (K); *5349* (K); Bumbuna, *Thomas 3457* (K).

Liberia. Karmadhun, *Baldwin 10162* (K); Tawata, *Baldwin 10331* (K); Barclayville, *Baldwin 11117* (K); Loffa County, road between Zorzor and St. Paul R., *Bos 2549* (WAG); Bendu, *Breteler c.s. 5445* (WAG); Crozierville, *Dinklage 2448* (B); Harbel, *J. Jansen 1556* (WAG).

Ivory Coast. Near Bacanda, *Aké Assi 8480* (WAG); 18 km N.E. of Ayamé, *Beentje 423* (WAG); Aboisso, *Breteler 5317* (WAG); *5330* (WAG); near Agboville, *Breteler 5341* (WAG); Toulepleu, *Breteler 5488* (WAG); 12 km E. of Komoë R., Grand Bassam-Aboisso Rd., *Breteler 5908* (WAG); near Aboisso, *Breteler 5928* (WAG); *5945* (WAG); *5946* (WAG); 23 km N. of Abidjan, *Breteler 6072* (WAG); near Sassandra, *Breteler 6100* (WAG); 58 km San Pedro-Tabou, *Breteler 7335* (WAG); 57 km Tabou-Grabo, *Breteler 7340* (WAG); 59 km Grabo-Tabou, *Breteler 7358* (WAG); 33 km N.E. of Sassandra, *Breteler 7479* (WAG); Aboisso, *Chevalier 17908* (K, P, WAG); Sassandra, *Chevalier 17951* (P); between Grabo and Taté, *Chevalier 19794* (P, type of *D. oblongum* var. *angustifolium*); between San Pedro and Grand Béréby, *de Koning 268* (WAG); 12 km N.W. of Attinguié, new Abidjan-Sikensi Rd, *Leeuwenberg 12090* (WAG); Aboisso-Bonoua Rd, *Thijssen 288* (WAG); near Aboisso, *Versteegh & Den Outer 711* (WAG); *713* (WAG).

Ghana. Mankessim, *Hall 2169* (K); near Axim, *Irvine 2227* (E, K); 5 mls inland from Dixcove, *Morton A 452* (K, WAG); sin. loc., *Vigne 4051* (P).

Nigeria. Hunita Forest, *Ariwaodo 1187* (K); Ikom Distr., Afi F.R., *Latilo FHI 30994* (K); Ikpai Distr., Mfamyan, *Latilo & Onyeachusim FHI 54260* (BR, FHI, K); Ijebu Distr., Akilla, *Onochie FHI 20671* (K); Owon, 73 mls Calabar-Mamfe Rd, *Onochie FHI 36448* (K).

Cameroun. Little Batanga, *Dinklage 368* (HBG, P); sin. loc., *Dusen 46* (BR, type of *D. kamerunense*); 14 km Melong-Dschang, *Leeuwenberg 8712* (WAG); Bakaka Forest, 3 km E. of Ebonè, *Leeuwenberg 10582* (WAG); Victoria, *Maitland 708* (K); Pongo-Songo, *Mezili 237* (WAG); 15–35 km N.E. of Victoria, *Mildbraed 10686* (K); *10744* (K); Bipindi, *Zenker 2061* (BM, E, G, GOET, K, LE, P, W, WU, Z); *4069* (BM, BR, E, GOET, K, L, LE, M, MO, P, PRE, W, WU); *4994* (BM, BR, G, GOET, K, L, LE, M, P, W, Z).

Equatorial Guinea. Fernando Po, sin. loc., *Ansell s.n.* (K); *Barter 2056* (K, P); *Mann 46* (K,

LE, P); Fernando Po, San Carlos (West coast), *Mildbraed 6793* (HBG); Fernando Po, sin. loc., *Vogel 36* (K); *36 b* (K, type); Fernando Po, Clarence, *Vogel 113* (K); Fernando Po, sin. loc., *Vogel (or Ansell) 171* (UPS).

Gabon. Sindara, *Le Testu 2243* (BM, BR, K, P, WAG, Z); Ngounié R., *Pobéguin 125* (P).

Cult. Netherlands. Wageningen, *Breteler 6220* (WAG); *6221* (WAG); *de Bruijn 1900* (WAG); *van Setten 169* (WAG); *van Veldhuizen 222* (WAG).

Notes. CHEVALIER gave an extremely short, one-word description of his *D. oblongum* var. *angustifolium*: 'arbuste'. The two specimens cited by him have indeed narrower leaves than usually observed in *D. oblongum* and they differ in this character from material of the type variety collected by CHEVALIER as well. However, this character is not sufficiently distinct to maintain var. *angustifolium* as an infraspecific taxon. Moreover, one of the two specimens, *Chevalier 17488*, is sterile and not a *Dichapetalum*, but belongs to *Drypetes ivorensis* Hutch. & Dalz. The other specimen, *Chevalier 19794*, bears flowerbuds and fruits and is selected as lectotype.

The flowers of *D. oblongum* produce nectar at least as judged from a plant in cultivation in the conservatory at Wageningen. A distinct fragrance of the flowers has not been observed.

D. oddonii De Wild. = **D. fructuosum** Hiern

For details see BRETELER, 1978: 77.

D. oleifolium (Bak.)Desc. = **D. leucosia** (Spreng.)Engl.

For details see BRETELER, 1979: 54.

D. oliganthum Bret., *sp.nov.* **Fig. 14: 1, 15 Map 13**

D. oliganthum Breteler ex Punt, 1975: 29, nomen.

Liana tenuis vel frutex lianescens. Rami distincte prominenter lenticellati; rami orthotropicales ± 5-sulcati. Ramuli plerumque appresse-pubescentes. Stipulae anguste triangulares (1)2–5(7) mm longae. Folia breviter petiolata, elliptica, (3)7–12(14) × (1)2–4(5) cm, basi rotundata usque cuneata, apice acuminata, nervis lateralibus principalibus utrinque 5–7(8), juvenilia appresse-pubescentia usque puberula, glabrescentia. Inflorescentia cymosa, sessilis vel subsessilis, (2)3(4)-flora. Pedicellis usque 1.5 mm longus. Sepala reflexa. Petala 1.5–2 mm longa, 0.5–1 mm fissa, glabra. Stamina quam petala distincte breviora. Pistillum 2-merum. Fructus 1–2-spermus, puberulo-tomentellus, 2–3 cm longus.

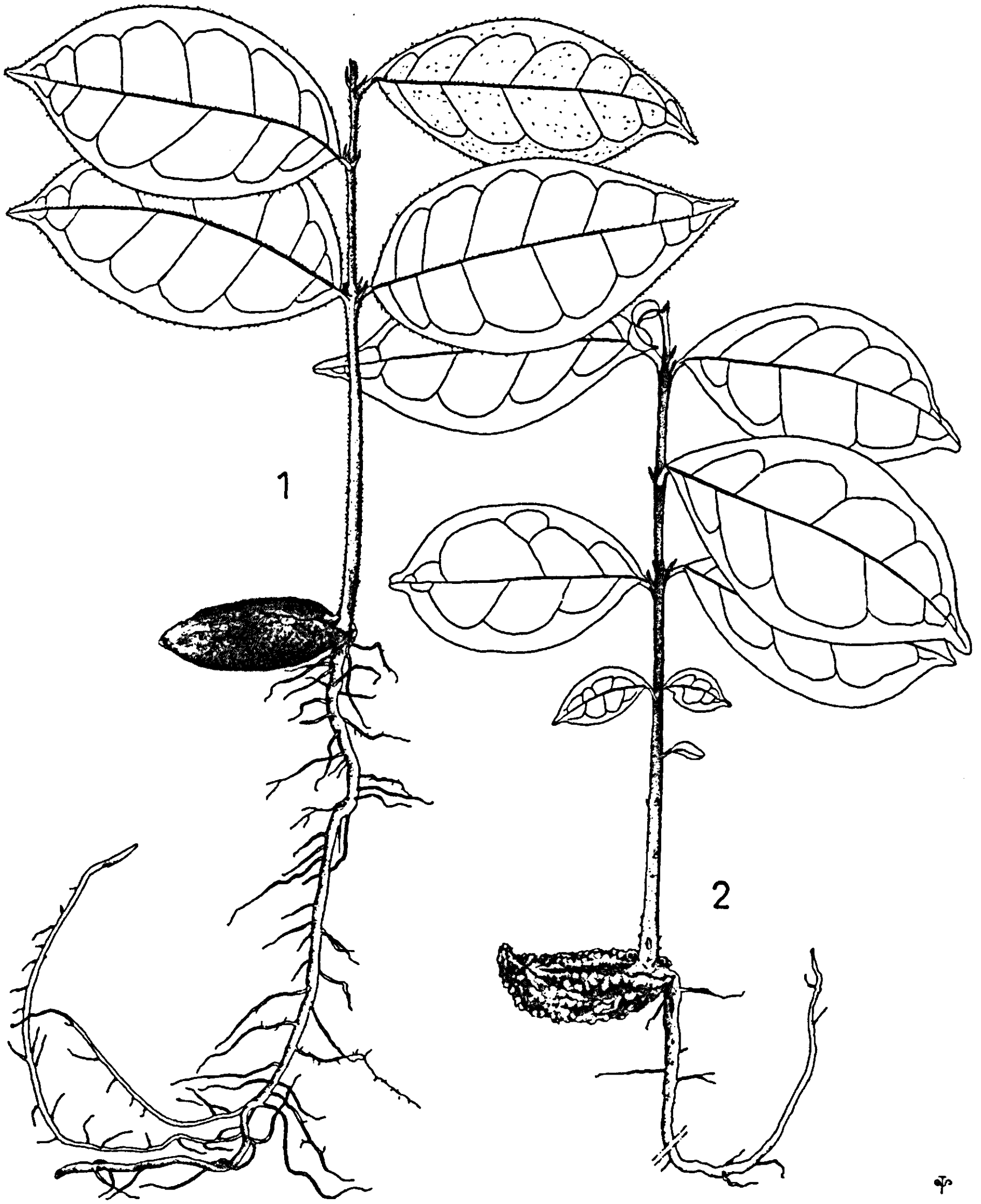


FIG. 14. *D. oliganthum*: 1. seedling, $\frac{5}{6}\times$. *D. oblongum*: 2. seedling, $\frac{5}{6}\times$. (1. *Breteler 6227*; 2. *Breteler 6220*).

Type: Cameroun, 2 km S. of Kribi, *Bos & Breteler 3050* (holotype: WAG).

Diagnostic characters. Thin liana or lianescent shrub. Branches distinctly prominently lenticellate, the orthotropic ones more or less 5-grooved. Branchlets usually appressed-hairy. Stipules narrowly triangular, (1)2–5(7) mm long. Leaves shortly stalked, elliptic, (3)7–12(14) × (1)2–4(5) cm, rounded to

cuneate at base, acuminate at top, with 5–7(8) pairs of main lateral nerves, appressed-pubescent to puberulous when young, glabrescent. Inflorescence a (2–)3(–4)-flowered, sessile or subsessile cyme. Pedicel up to 1.5 mm long. Sepals reflexed. Petals 1.5–2 mm long, 0.5–1 mm split, glabrous. Stamens distinctly shorter than petals. Pistil 2-merous. Fruits 1–2-seeded, puberulous-tomentellous, 2–3 cm long.

Description. Thin liana or lianescent shrub. *Branches* glabrous or glabrescent, distinctly prominently lenticellate, giving the branches a coarse aspect, the orthotropic ones usually more or less 5-grooved. *Branchlets* densely, usually appressedly puberulous-pubescent, glabrescent or not, usually soon lenticellate, the same indumentum present on stipules and petioles. *Stipules* usually rather long persistent, narrowly triangular, often curved, (1)2–5(7) mm long. *Leaves*: petiole semiterete to subterete, 1–3(5) mm long; blade elliptic, often narrowly so, sometimes ovate or obovate, (3)7–12(14) × (1)2–4(5) cm, rounded to cuneate at base, acuminate at top, the acumen obtuse to rounded, rarely mucronate, 0.5–1.5(2) cm long; appressed-pubescent to puberulous when young, usually on entire surface above, but more densely so on prominent midrib, beneath mainly so on midrib and the 5–7(8) pairs of main lateral nerves, glabrescent both sides; glands beneath only, small, rather well dispersed. *Inflorescence* a (2–)3(–4)-flowered cyme, silverish puberulous; peduncle at most 1 mm long; bracts and bracteoles narrowly ovate-triangular, 0.75–2 mm long. *Pedicel* up to 1.5 mm long, the upper part 0 or nearly so. *Sepals* reflexed, ovate-elliptic to oblong-obovate, 1.5–2.5 × 0.5–1 mm, appressedly silverish puberulous outside, sparsely puberulous on apical part inside. *Petals* curved inwards, free or very shortly adnate to filaments at base, obovate in outline, 1.5–2 mm long, 0.5–1 mm split, glabrous; lobes concave, top rounded to acutish. *Stamens* erect, distinctly shorter than petals, 1–1.5 mm long, glabrous; anthers ca 0.3 mm long, with a very distinct connective. *Staminodes* subquadrate, up to 0.2 × 0.2 mm, glabrous. *Pistil* 2-merous, 1–1.5 mm long; ovary velutinous, style glabrous, shortly 2-lobed apically. *Fruits* obovoid-ellipsoid, 1–2-seeded, acute at top to shortly beaked, yellow to orange at maturity, puberulous-tomentellous; 1-seeded fruits: 2–3 cm long, 1–1.5 cm diam.; exocarp and mesocarp together 1–2 mm thick; endocarp pergamentaceous, glossy and glabrous inside. *Seeds* ovoid-ellipsoid, up to 20 mm long and 10 mm diam.; testa brown, glossy. *Seedling* with a firm taproot, the epicotyle 4.5–5 cm long, pubescent; first 2 leaves opposite, hairy as leaves of the adult stage, subsequent leaves alternate.

Distribution: S.W. Cameroun.

Ecology: Rain forest area, often found in coastal, anthropogenous savannah.

Specimens examined:

Cameroun. 2 km S of Kribi, *Bos & Breteler 3050* (WAG, type); *Bos 3306* (WAG); *3585* (WAG); 2 km S. of Longi, *Bos 4103* (WAG); Kribi, *Bos 4484* (WAG); *4485* (WAG); 6 km Kribi-Ebolowa, *Bos*

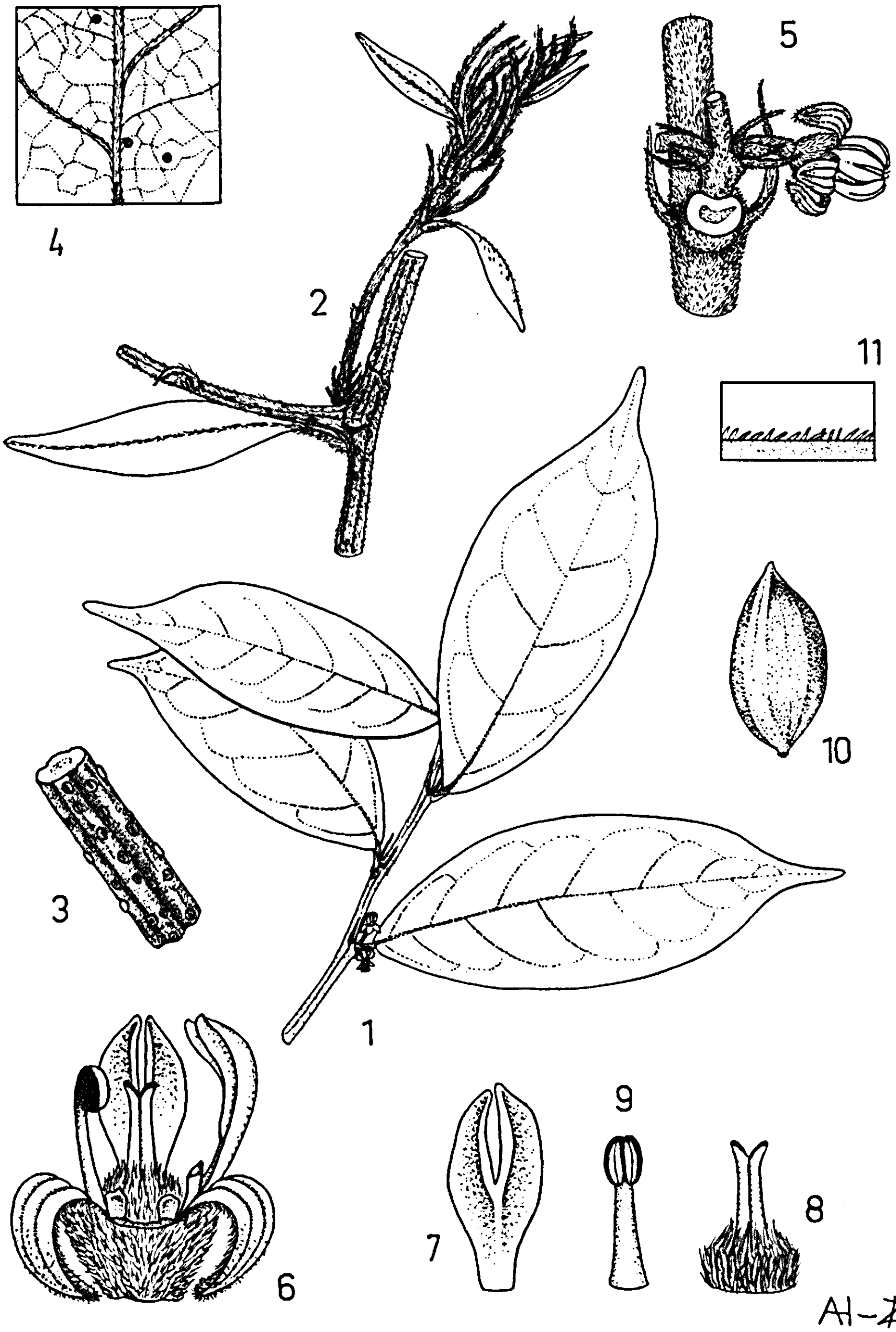
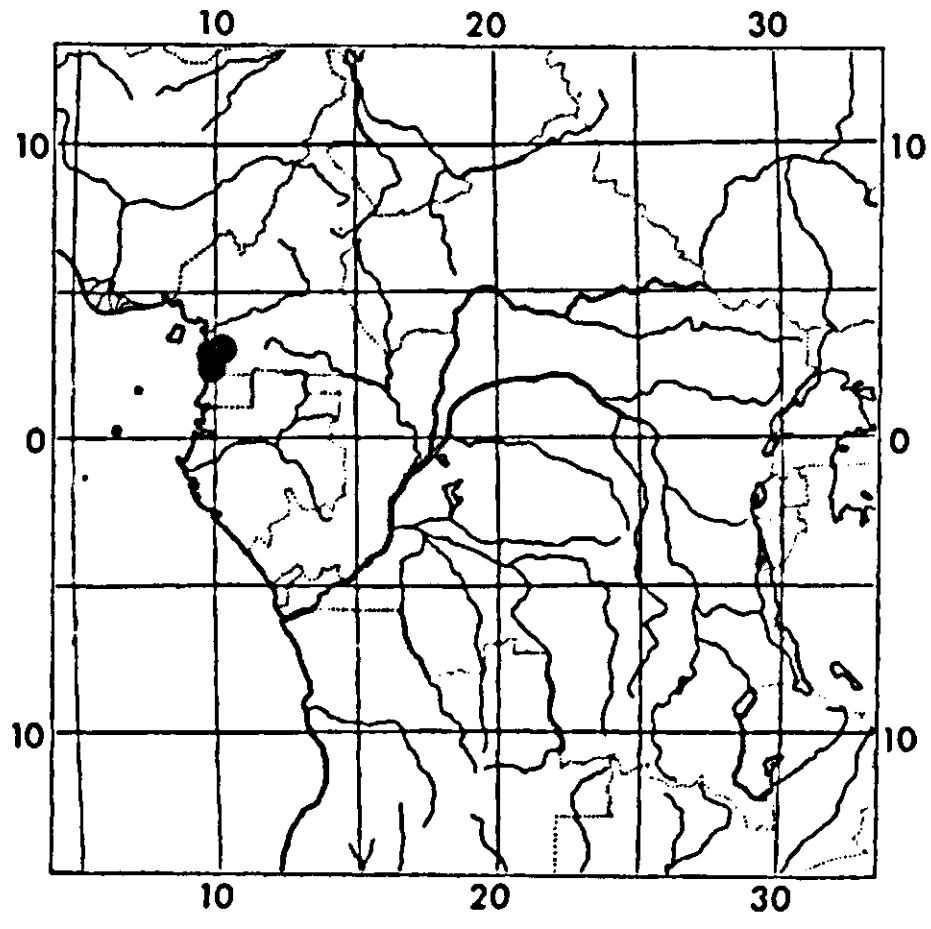


FIG. 15. *D. oliganthum*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. part of orthotropic shoot with young sprout, $2\frac{1}{2}\times$; 3. part of branch showing lenticels, $2\frac{1}{2}\times$; 4. detail of leaf beneath, $2\frac{1}{2}\times$; 5. inflorescence, $5\times$; 6. flower partly, $15\times$; 7. petal inside, $15\times$; 8. pistil, $15\times$; 9. stamen, $15\times$; 10. fruit, $\frac{5}{6}\times$; 11. detail of fruit indumentum, $10\times$. (1, 4–9. *Bos & Breteler 3050*; 2, 10–11. *Bos 3306*; 3. *Bos 4485*).



MAP 13. *D. oliganthum*

4508 (WAG); 2 km S. of Kribi, *Bos 5028* (WAG); 6 km N. of Kribi, *Bos 5603* (WAG); S.E. of Kribi, Elephant Mt, *Bos 5775* (WAG); 40 km Kribi-Lolodorf, *Bos 6211* (WAG); 18 km Kribi-Lolodorf, *Bos 6666* (WAG); Kribi, *Bos & Breteler 7188* (WAG); 2 km S. of Kribi, *Bos & Breteler 7197* (WAG); 20 km Kribi-Campo, *Bos & Breteler 7202* (WAG); 30 km Kribi-Campo, *Bos & Breteler 7232* (WAG); 3 km S. of Kribi, *Farron 7159* (P).

Cult. Netherlands. Wageningen, *Breteler 6227* (WAG).

Notes. By its few flowered inflorescences with small flowers, *D. oliganthum* is easy to distinguish from related species as *D. heudelotii* (Planch. ex Oliv.) Baill. and *D. staudtii* Engl. Vegetatively it may be confused with specimens of these species, especially with those of *D. staudtii*, which species also has non-mucronate leaves, whereas in *D. heudelotii* the leaves are either mucronate or show large glands beneath (see BRETELER, 1979: 26).

D. ombrophilum Krause = **D. madagascariense** Poir. var. **madagascariense**

For details see p. 14.

D. pachypus (Tul.)Engl. = **D. leucosia** (Spreng.)Engl.

For details see BRETELER, 1979: 54.

D. pallidinervum De Wild. = **D. zenkeri** Engl.

D. pallidinervum De Wildeman nomen in Herb. BR; Punt, 1975: 29.

Note: This DE WILDEMAN name, which has never been validly published, was

found on a specimen in the Brussels herbarium collected by A. SAPIN in Zaïre, Sankuru, Sept. 1906. This specimen and some others from Zaïre present in BR, i.e.: another one of SAPIN without number, *Claessens 191*, and *Vanderyst 10899* were identified by HAUMAN as *D. flaviflorum* Engl. These specimens are somewhat aberrant in *D. zenkeri* as regards their more compact inflorescences with shorter stalked flowers, and usually erect instead of reflexed sepals, but otherwise fit well in this species.

D. pallidum (Oliv.)Engl. **Fig. 16 Map 14**

D. pallidum (Oliver)Engler, 1896-a: 349, quoad nomen (see notes); 1912-a: 570, quoad nomen; Pellegrin, 1913: 648, quoad nomen; De Wildeman, 1919: B 57; Chevalier, 1920: 121, quoad nomen; Hutchinson & Dalziel, 1928-a: 324; Hauman, 1958-a: 307; Keay, 1958: 436; Breteler, 1973: 15, 17, 33, XIX; Punt, 1975: 16; Breteler, 1978: 15, 16; 1979: 22, 43, 59.

Basionym: *Chailletia pallida* Oliver, 1868: 343.

Type: Nigeria, Epe (Eppah), *Barter 3299* (holotype: K; isotype: P).

D. hypoleucum Hiern, 1896: 138. See Breteler, 1979: 43 for full details.

D. cinereum Engler, 1902: 85. See Breteler, 1978: 15 for full details.

D. griseo-viride Ruhland, 1902: 84. See Breteler, 1979: 22 for full details.

D. liberiae Engler & Dinklage, 1902: 84. See Breteler, 1979: 59 for full details; see also notes.

D. warneckei Engler, 1902: 83; 1911: 251; 1912-a: 574; De Wildeman, 1919: B 71; Hutchinson & Dalziel, 1928-a: 324, in synonymy of *D. pallidum;* Keay, 1958: 436, in synonymy of *D. pallidum*; Breteler, 1973: XIX, in synonymy of *D. pallidum*. Type: Togo, near Lome, *Warnecke 13* (holotype: B†; lectotype: WAG; isotypes: BM, BR, E, EA, G, GOET, K, L, LE, M, P, Z).

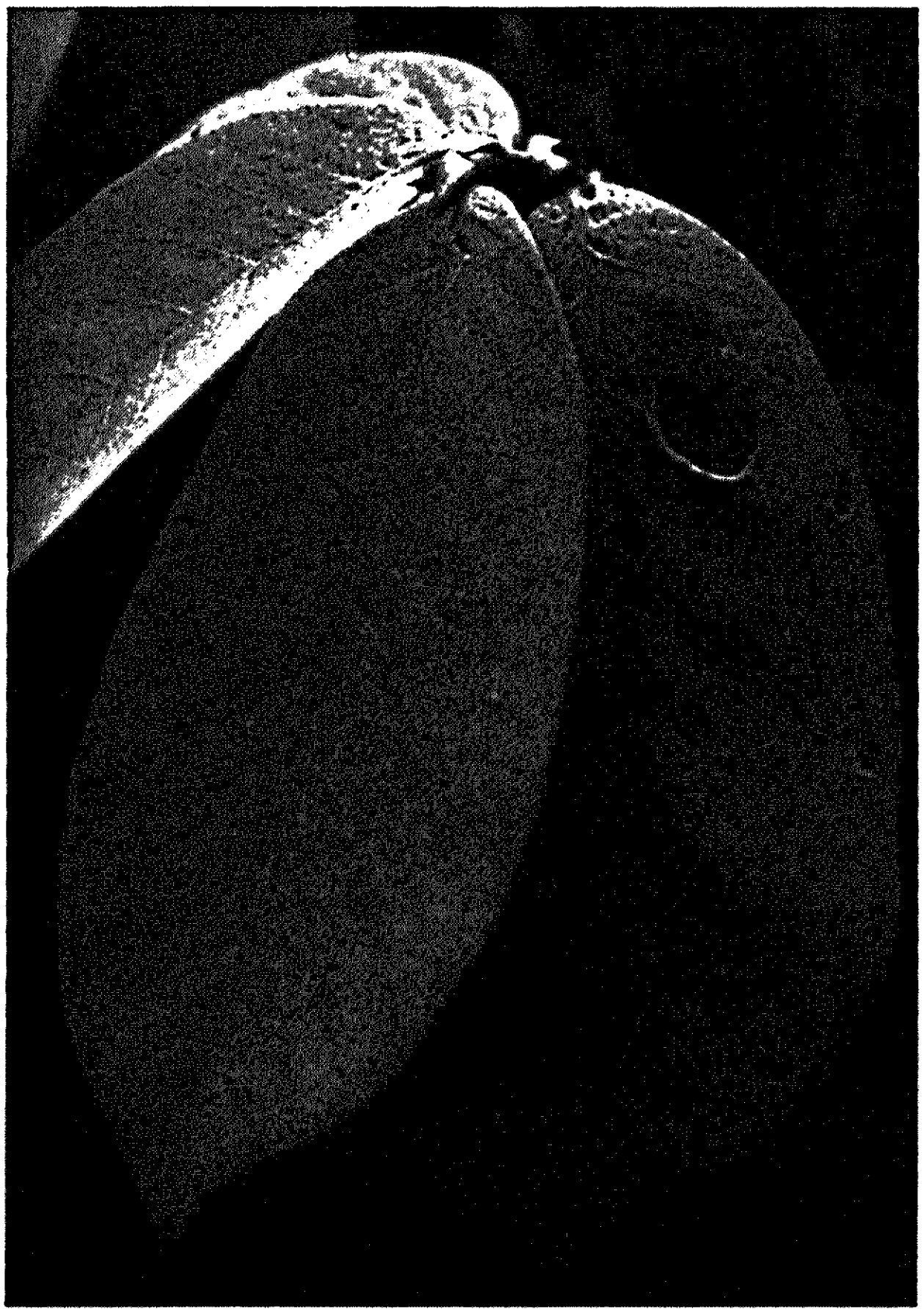
D. bussei Engler, 1911: 250. See Breteler, 1973: 112 for full details.

D. silvicola Ruhland, nomen, *herbarium Zenker 2451.*

D. murinum Breteler ex Den Outer, 1972: 18; see notes.

Chailletia whytei Stapf, 1906: 586; Hutchinson & Dalziel, 1928-a: 324, in synonymy of *D. liberiae*; Keay, 1958: 436, as *D. whytei* in synonymy of *D. pallidum*; Breteler, 1973: XIX, in synonymy of *D. pallidum*. Type: see under *D. liberiae*; see also notes.

Diagnostic characters. Liana or shrub. Woodcylinder deeply lobed. Branchlets with a close-felted, whitish to pale-brown indumentum. Leaves obovate-elliptic, (4)7–13(32) × (2)3–7(12) cm, with (5)6–13(16) pairs of impressed main lateral nerves, beneath with a close-felted, white to pale-brown, usually persistent indumentum. Inflorescences pedunculate, cymose, with a close-felted indumentum. Sepals reflexed. Petals erect to spreading, 2.5–4 mm long, 1–2.5 mm split. Stamens usually slightly longer than petals. Pistil usually 3-merous, 2.5–5 mm long, ovary lanate. Fruits 1–3-seeded, exocarp dehiscent or not, with stinging hairs or shortly velutinous to tomentellous, tuberculate or not.



PHOT. 6. *D. pallidum*: young leaves with arachnoid indumentum (*Breteler c.s. 5430*; phot. H. C. D. DE WIT).

Description. Small to large liana, lianescent shrub, or shrub. Main stem up to 12 cm diam. Woodcylinder deeply divided by intruding phloem (see BRETELER 1973: phot. 7). *Branches* dark-brown to black, with pale lenticels, those on the orthotropic shoots 5-rowed lengthwise (see BRETELER, 1973: phot. 10), glabrous or glabrescent. *Branchlets* covered with a close-felted, whitish to pale-brown indumentum, glabrescent with age. *Stipules* often rather long persistent, ovate-triangular to oblong or almost linear, falcate or not, (3)4–8(16) mm long, up to 3(6) mm wide, usually appressed, close-felted or sometimes sericeous outside, glabrous or nearly so (hairy at base) inside, glabrescent or not; on leafless, orthotropic shoots the stipules sometimes completely united, bractlike. *Leaves*: petiole subterete to laterally compressed, grooved above or not, (2)3–5(10) mm long, hairy as branchlet; blade entire, very rarely undulate-dentate, folded along the midrib or not when young, obovate-elliptic, rarely oblong, (1.5)2–3(4) times as long as wide, (4)7–13(32) × (2)3–7(12) cm, rounded to obtuse-subcordate, or

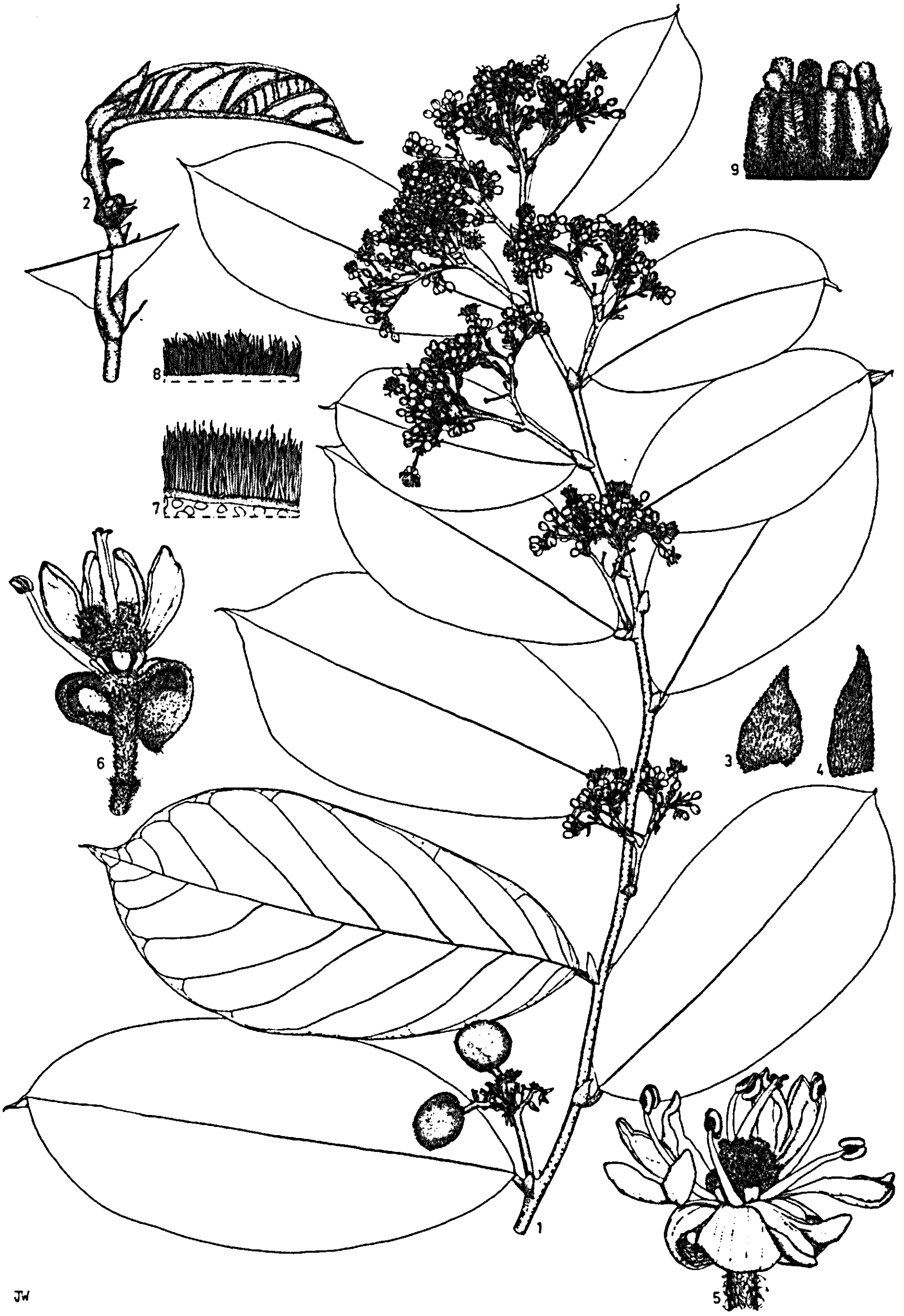


FIG. 16. *D. pallidum*: 1. branchlet with flowers and immature fruits, $\frac{1}{2}\times$; 2. apex of young branchlet with folded leaf, 1×; 3–4. stipules, 2×; 5. flower, 5×; 6. flower partly, 5×; 7–8. detail of fruit indumentum, 15×; 9. part of tuberculate fruit wall, 3×. (1, 3–4 *Breteler 5864*; 2. *Breteler 6022*; 5–6. *Leeuwenberg 3771*; 7. *Breteler 6032*; 8. *Breteler 5326*; 9. *Baldwin 10206*).

PHOT. 7. *D. pallidum*: flowering branchlet (phot. H. C. D. DE WIT).

cuneate at base, usually acuminate, sometimes acute to obtuse at top, the acumen 0.5–2(3) cm long, usually acute to acutish apically; glabrous or with a more or less loose, soon deciduous, white to brown web above, beneath with a close-felted, weblike, white to pale brown, usually persistent indumentum, sometimes with sericeous hairs on the main nerves as well; midrib and the 5(6)–13(16) pairs of main lateral nerves impressed above, prominent beneath; glands, when present, beneath only, hidden by the usually persistent web, most probably not functioning. *Inflorescences* pedunculate, cymose, few to many flowered, single or 2(–3) together axillary, or sometimes grouped on leafless shoots, usually at least once distinctly branched, with a close-felted indumentum; peduncle 0.5–2.5 cm long; bracts and bracteoles ovate-triangular, up to 5 mm long, the lowermost bracts often situated well below the first branching. *Pedicel* up to ca 10 mm long, lanate-tomentose to villous, the upper part distinct, 0.5–2.5 mm long. *Sepals* reflexed, obovate-oblong-elliptic, 2–4 × 1–2 mm, villous-tomentose to lanate-tomentose outside, usually entirely glabrous inside, acute to emarginate at top. *Petals* erect to spreading, at base shortly united with filaments, narrowly obovate to spathulate in outline, 2.5–4 mm long, 1–2.5 mm split, usually with a few hairs just below split outside, glabrous inside, lobes concave with rounded top. *Sta-*

PHOT. 8–9. *D. pallidum*: fruits (*Breteler 6032*; phot. F. J. BRETELER).

mens erect to spreading, 2.5–4.5 mm long, usually slightly longer than petals, glabrous; anthers ca 0.5 mm long, connective prominent. *Staminodes* thin, subquadrate to oblong, up to 0.8 mm long and 0.5 mm wide, glabrous or nearly so, obtuse to lobulate at top. *Pistil* 3(–4)-merous, 2.5–5 mm long; ovary lanate; style glabrous, with 3(–4) up to 0.7 mm long lobes, exceptionally with 3 completely free styles. *Fruits* 1–3-seeded, subglobose-ovoid-ellipsoid, slightly lobed when more than 1-seeded, rarely shortly apiculate, yellowish to orange at maturity; exocarp dehiscent or not, 1–3 mm thick (without tubercles), with a more or less smooth surface to strongly tuberculate or prominently veined, covered with erect, acicular, easily caducous, stinging hairs, or shortly velutinous to tomentellous (see notes); mesocarp up to 5 mm thick, rather mealy, somewhat fibrous, orange, mainly adhering to endocarp; endocarp woody, 1–2 mm thick, strongly nerved to tuberculate outside, the innermost layer consisting of easily caducous, erect, needle-like, up to ca 2 mm long, apically barbed, stinging hairs, in mature fruits often apically fixed into the seedcoat, the seed looking hairy (see photograph 11). *Seed* ovoid-ellipsoid, up to ca 2 × 1.5 cm, with a brown to black glabrous seedcoat. *Seedling* with a firm taproot; epicotyle 4–8 cm long, with some bracts or stipules, tomentose, the first pair of leaves alternate, the first leaf often considerably smaller than the following ones.

Distribution: West Africa, Western Central Africa.
Ecology: Rain forest, semi-deciduous forest.

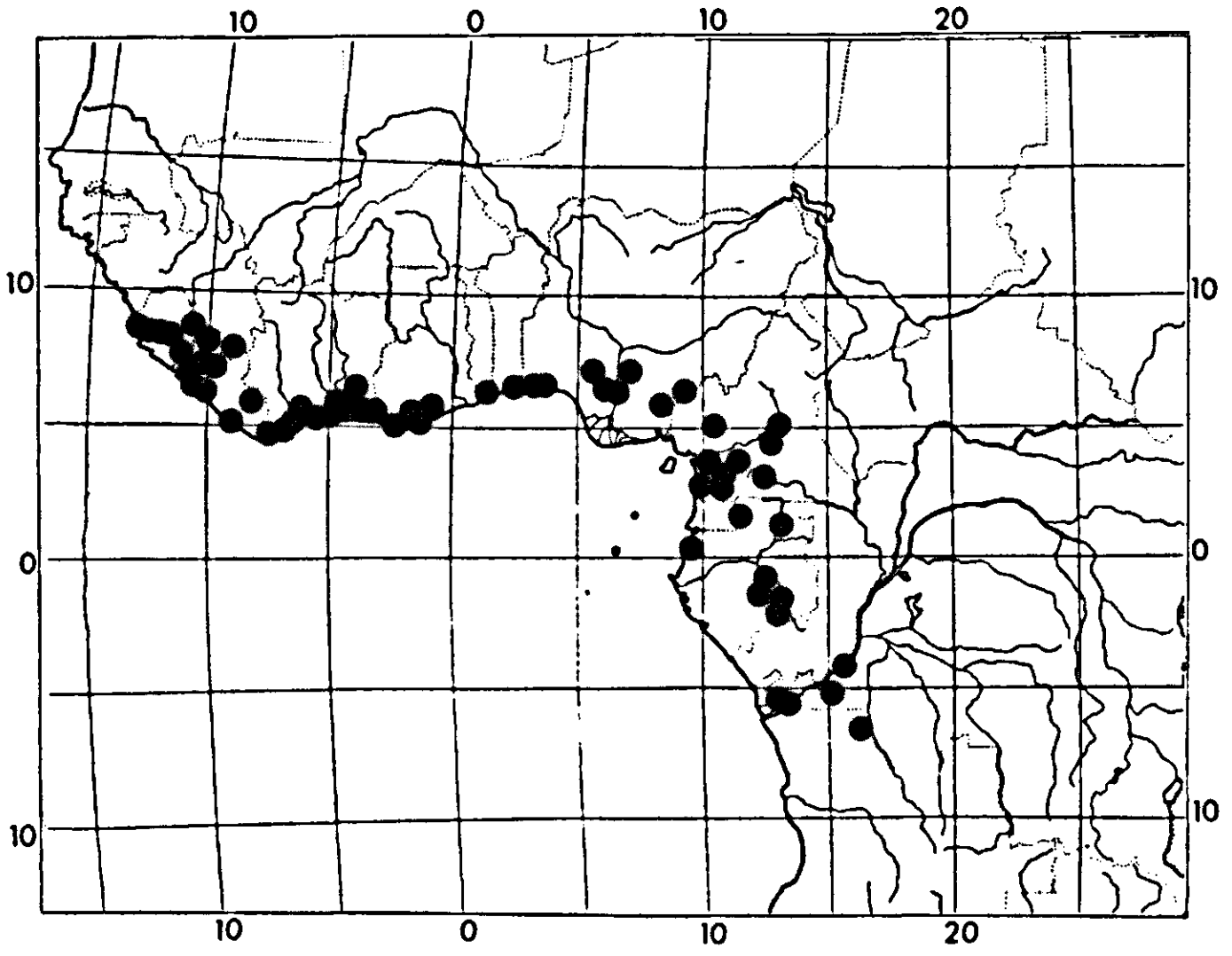
Specimens examined:

Guinea. Near Nzérékoré, *Jacques-Félix 1138* (P, WAG).

Sierra Leone. Gola Forest between Zimi and Girahun, *Deighton 3639* (K, P); Gbesebu near Njala, *Deighton 3792* (K); Taiama (Kori), *Deighton 4504* (K, P); Petema (Bumpe), *Deighton 6114* (K, P); Loma Mts, lower slopes of Kerekonko, *Morton SL 3615* (K, WAG); Botany Garden, Fourah Bay College, *Morton & Cole SL 2059* (K, WAG); Leicester, Freetown, *Morton & Sesay, SL 906* (FHI, K. WAG); sin. loc., *Pyne 131* (K, P); Yoni, *Thomas 5190* (K); sin. loc., *Thomas 7898* (K); *9544* (K); Njala, *Vickery 38* (K, WAG).

Liberia. Kolahun Distr., Karmadhun, *Baldwin 10163* (K); Kolahun Distr., Vahun, *Baldwin 10206* (K, WAG); Boporo Distr., Mecca, *Baldwin 10420* (K); Brewerville, *Baldwin 13080* (K); N.E. of Bomi Hills, *Bos 1933* (K, WAG); N. of Bomi Hills, *Breteler c.s. 5430* (WAG); 70 km S.E. of Chien, *J. J. de Wilde & Voorhoeve 3712* (BR, EA, K, P, WAG); 12 km N.E. of Bomi Hills, *J. J. de Wilde & Voorhoeve 3801* (BR, K, P, WAG); 7 km N.E. of Bomi Hills, *J. J. de Wilde & Voorhoeve 3829* (BR, K, WAG); Grand Bassa, Fishtown, *Dinklage 1832* (B, K, type of *D. liberiae*); Brewerville, *Dinklage 2722* (B); Monrovia, *Dinklage 2851* (Z); sin. loc., *Harley 1193* (K, WAG); 18 mls N. of Sinoe, *J. Jansen 1204* (WAG); Bomi Hills, *J. Jansen 1473* (WAG); Mount Coffee, *J. Jansen 1666* (WAG); 10 mls S. of Monrovia, *J. Jansen 2322* (WAG); 20 km N.E. of Bomi Hills, *Leeuwenberg 4884* (K, P, WAG); Gbanga, *Linder 674* (K); Piatah, *Linder 897* (K); Kakatown, *Whyte s.n.* (K).

Ivory Coast. Nzida, *Aké Assi 1307* (WAG); Adiopodoumé, *Aké Assi s.n.* (WAG); 7 km S.W. of Ndouci, *Beentje 255* (WAG); 5 km N. of Assini, *Beentje 485* (WAG); Adiopodoumé, *Breteler 5207* (WAG); *5282* (WAG); Banco Forest, *Breteler 5285* (WAG); Aboisso, *Breteler 5326* (WAG); *5327* (WAG); S.E. of Agboville, *Breteler 5346* (WAG); W. of Fresco, *Breteler 5364* (WAG); Banco Forest, *Breteler 5505* (WAG); 15 km N.W. of Sassandra, *Breteler 5822* (WAG); 23 km N.W. of Sassandra, *Breteler 5834* (WAG); near Sassandra, *Breteler 5864* (WAG); 83 km Sassandra-Gagnoa, *Breteler 5894* (WAG); N. of Aboisso, *Breteler 5929* (WAG); Sassandra, *Breteler 6022* (WAG); *6025*



MAP 14. *D. pallidum*

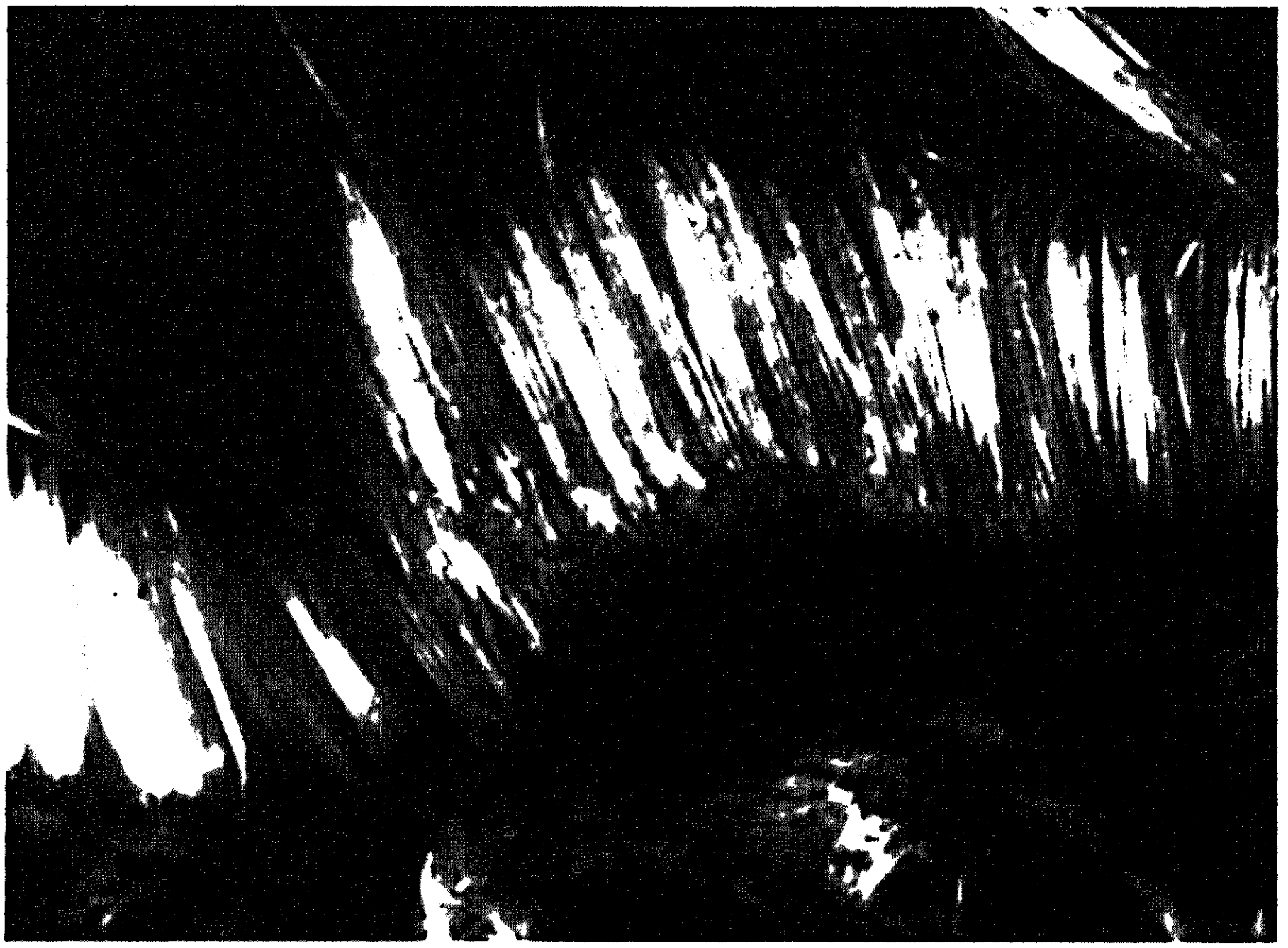
(WAG); *6032* (WAG); *6094* (WAG); *6130* (WAG); 40 km Adzopé-Abengourou, *Breteler 6144* (WAG); near Arrah, *Breteler 6165* (WAG); Iongan (Indenié), *Chevalier 17690* (P); Banco Forest, *de Koning 90* (WAG); between San Pedro and Grand Béréby, *de Koning 300* (WAG); Adiopodoumé, *J. J. de Wilde 28* (WAG); Sassandra, *J. J. de Wilde 340* (WAG); Ndouci-Oroumba-Boka, Kassa Forest, *J. J. de Wilde 677* (WAG); 16 km N.W. of Sassandra, *W. de Wilde 198* (BR, K, P, WAG); 6 km N.W. of Sassandra, *W. de Wilde 225* (K, WAG); Banco Forest, *W. de Wilde 309* (BR, K, P, WAG); Adiopodoumé, *Geerling & Bokdam 2242* (WAG); *2244* (BR, K, WAG); Dakpadou-Sago, *Geerling & Bokdam 2351* (BR, K, WAG); Monogaga, *Geerling & Bokdam 2413* (BR, K, WAG); *2414* (BR, WAG); *2418* (BR, K, WAG); *2422* (BR, WAG); *2448* (BR, K, WAG); *2452* (BR, WAG); *2453* (BR, K, WAG); Ono, *Hedin 2612* (P, WAG); 18 km N.W. of Sassandra, *Leeuwenberg 2889* (BR, K, L, LD, P, PRE, WAG); 81 km N.N.E. of Sassandra, *Leeuwenberg 3089* (BR, COI, WAG); 25 km S.W. of Gueyo, *Leeuwenberg 3771* (BR, EA, G, K, P, SRGH, WAG); Adiopodoumé, *Leeuwenberg 3837* (BR, K, P, WAG); 9 km of Monogaga, *Leeuwenberg 4056* (BR, K, P, WAG); 15 km N. of Aboisso, *Leeuwenberg 4502* (K, WAG); 56 km N. of Sassandra, *Leeuwenberg 4549* (BR, EA, G, K, P, SRGH, WAG); Anguédédou Forest, *Leeuwenberg 7293* (WAG); *7931* (WAG); 9 km Yakassé Mé-Kodiousou, *Leeuwenberg 8096* (WAG); near Monogaga, *Leeuwenberg 12115* (WAG); 4 km E. of Sassandra, *Leeuwenberg 12149* (WAG); Adiopodoumé, *Nozeran s.n.* (MPU); 15 km E. of Grand Béréby, *Oldeman 601* (K, WAG); Morokro, *Oldeman 980* (BR, K, WAG); Azaguié, *Roberty 14259* (G, Z); Adiopodoumé, *Thijssen 101* (WAG); *103* (WAG); N. of Abidjan, Abobo, *Thijssen 104* (WAG); *105* (WAG); *106* (WAG); N. of Abidjan, Alepe Rd, *Thijssen 107* (WAG); near Sassandra, *Thijssen 108* (WAG); *109* (WAG); *110* (WAG); *111* (WAG); near Aboisso, *Thijssen 275* (WAG); Anguédédou Forest, *Thijssen 307* (WAG); Ndouci, *Thijssen 381* (WAG); Adiopodoumé, *van Doorn 75* (WAG); Tabou, *van Doorn 221* (WAG); N. of Abidjan, Abobo, *Versteegh & Den Outer 120* (WAG); 5 km N. of Aboisso, *Versteegh & Den Outer 727* (BR, WAG); 30 km Sassandra-San Pedro, *Zwetsloot 17* (WAG).

Ghana. Esen Epam F.R., *Enti sp 416* (BR, K); Nkanfoa, *J. B. Hall 479* (K); Axim, *Irvine 2229* (E, K); Assuansi, *Scholes 282* (K); Kumasi, *Vigne 3290* (K).

Togo. 13 km Lomé-Anecho, *Breteler 7027* (WAG); Kpeme, *Busse 3639* (BM, type of *D. bussei*); near Porto Séguro, *Ern c.s. 34* (WAG); near Lomé, *Mahoux s.n.* (L); *Mildbraed 7520* (K); *Warnecke 13* (BM, BR, E, EA, G, GOET, K, L, LE, M, P, WAG, Z, type of *D. warneckei*).

Benin. Near Porto Novo, *Chevalier 22821* (P); sin. loc., *Ménager s.n.* (P).

Nigeria. Epe (Eppah), *Barter 3299* (K, P, type); Iyamoyong, *Binuyo FHI 41257* (BR, FHI, K, WAG); Apapa near Lagos, *Dalziel 1336* (C, E, K, PRE); Ubiaja N.A. F.R., *Daramola FHI 31257* (K, P, WAG); Uhi F.R., *Eimunjeze c.s. FHI 69940* (K); Owo F.R., *Jones 3585* (FHO); Epe, *Jones &*



PHOT. 10. *D. pallidum*: detail of endocarp inside with layer of needle-like stinging hairs (*Breteler 6032*; phot. H. C. D. DE WIT).

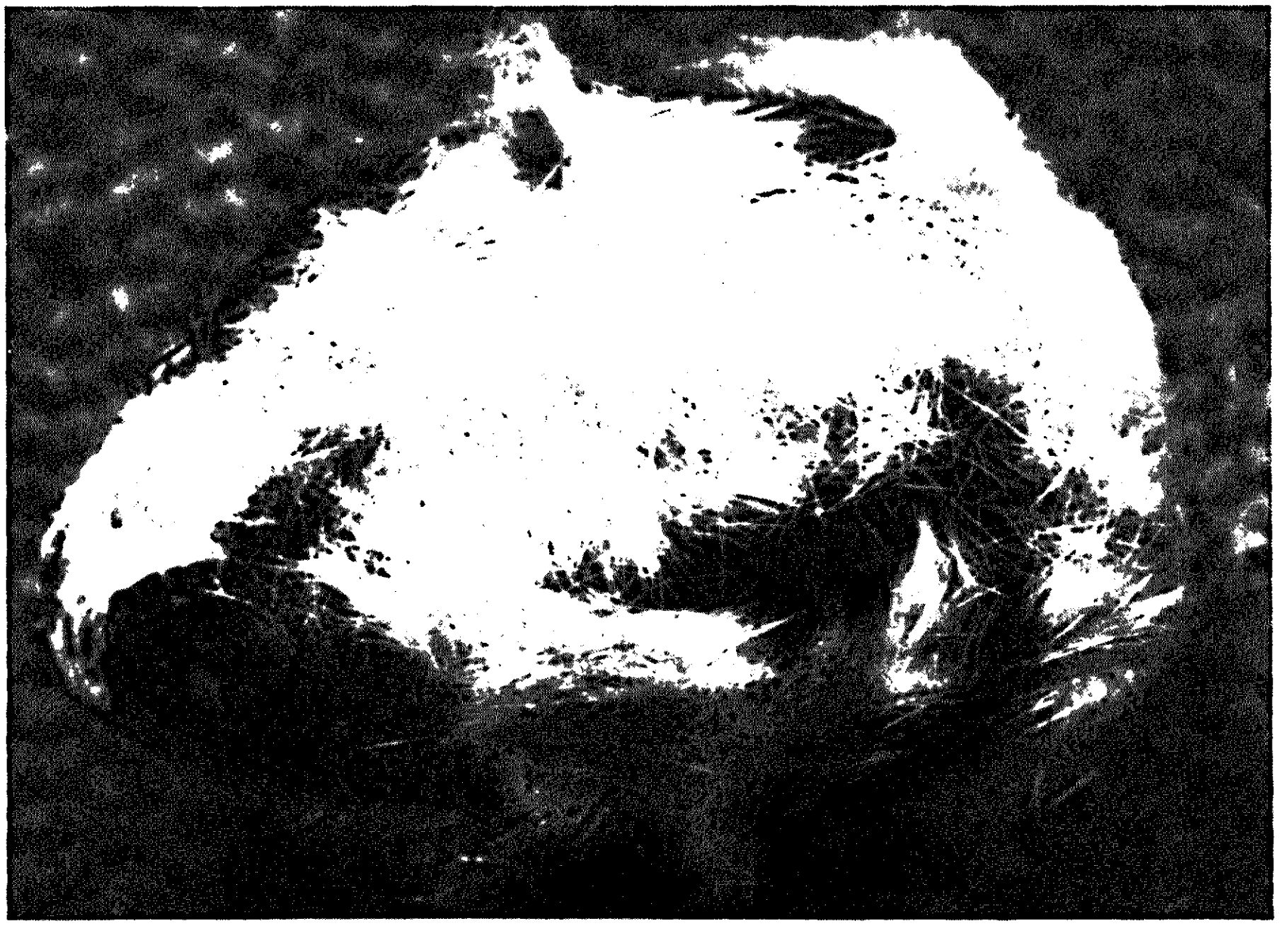
Onochie FHI 17428 (K, P); Southern Adoru F.R., *Latilo FHI 47777* (BR, FHI, K); Lagos, *Millen 5* (K); *Moloney s.n.* (K); Ikorodu, *Onochie FHI 26697* (K); Obomkpa, *Onochie FHI 33433* (FHI, K); Boshi Ext. F.R., *van Meer 1772* (WAG); near Ifan, *Wit 2313* (K, WAG).

Cameroun. Bitye, *Bates 1200* (BM); *1342* (BM, WAG); 6 km Kribi-Ebolowa, *Bos 3418* (WAG); 16 km Kribi-Lolodorf, *Bos 3659* (WAG); 6 km Kribi-Ebolowa, *Bos 4510* (WAG); 7.5 km Kribi-Ebolowa, *Bos & Breteler 7252* (WAG); 3 km N.W. of Yaoundé, *Breteler 1947* (BR, K, LISC, P, WAG); 4 km N.E. of Nguélémendouka, *Breteler 2070* (K, P, WAG); 7 km W. of Yaoundé, *Breteler 2742* (BR, FI, K, LISC, M, P, WAG); 10 km S. of Nguélémendouka, *Breteler 2753* (K, P, WAG); Bazou, *Jacques-Félix 2936* (P, WAG); Bamelap Forest, *Letouzy 1693* (P); 8 km W.N.W. of Edea, *Letouzey 12478* (YA); 10 km E.N.E. of Lolodorf, *Letouzey 12773* (YA); between Ebolowa and Nkomakak, *Mildbraed 5800* (HBG); near confluence of Lom and Djerem, *Mildbraed 8329* (K); Yaoundé, *Zenker 745* (B, BREM, K, WU, type of *D. cinereum*); Bipindi, *Zenker 2451* (B, BM, BP, BR, COI, E, G, GOET, K, L, M, P, PRE, W, WAG, WU, Z, type of *D. griseo-viride*).

Gabon. 23 km Moanda-Franceville, *Breteler 6260* (WAG); *6263* (WAG); 15 km Moanda-Bakoumba, *Breteler 6465* (WAG); 5 km Moanda-Bakoumba, *Breteler 6476* (WAG); 17 km Lastoursville-Moanda, *Breteler 6674* (WAG); 60 km S.S.W. of Moanda, *Breteler 6898* (WAG); Bélinga, *Hallé & Le Thomas 663* (P, WAG); near Libreville, *Klaine 749* (P); *799* (BM, K, LE, P); *1164* (BM, K, LE, P); *1313* (P); *1476* (P); *1821* (P); *2121* (P, WAG); *2152* (K, P); *2334* (FI, G, K, L, P, WAG); *2334 b* (BM, FI, G, K, L, LE); *2594* (P); *3452* (BR, K, P); Lastoursville, *Le Testu 7656* (BM, BR, P, WAG); Mavanga, *Le Testu 8239* (BM, P, WAG); Ngwasso, *Le Testu 8338* (BM, BR, P, WAG); Oyem, *Le Testu 9567* (BM, P, WAG).

Zaïre. Momfinu, Maluku zone, *Breyne 2308* (BR); Kisantu, *Callens 533* (BR); Luki, *Donis 2010* (BR, WAG); Gimbi, *Toussaint 569* (BR).

Angola. 70 km Sanza Pombo-Buenga Norte, *Matos & Figueira 913* (BR, WAG); sin. loc., *Welwitsch 4667* (BM, LISU, type of *D. hypoleucum*).



PHOT. 11. *D. pallidum*: seed covered with needle-like, stinging hairs (*Hedin 2612*; seed 2 × 1.5 cm; phot. J. W. MUGGE).

Cult. Ivory Coast. Adiopodoumé, *Breteler 6212* (WAG). Netherlands. Wageningen, *Breteler 6222* (WAG); *6233* (WAG); *7005* (WAG); *de Bruijn 1901* (WAG).

Notes. *D. pallidum* is a species which can be easily distinguished from other species (except from *D. albidum*, see BRETELER, 1973: 52) by its leaves which have a close-felted, usually persistent, pallid indumentum beneath. This character was clearly mentioned by OLIVER in the protologue, but in citing the type material, OLIVER did not mention BARTER's collection number. When ENGLER combined this species in *Dichapetalum*, he misinterpreted the nature of this character. He mistook the pallid lower surface of the leaves of West African material of *D. madagascariense*, as demonstrated in the widely distributed *Barter 2142* which he probably considered as OLIVER's type, for the pallid condition of the indumentum. The mistaken interpretation of ENGLER is demonstrated in his classification of the *Dichapetalum* species in 1896 and 1912. In both *D. pallidum* is classified as being synonymous with *D. madagascariense*. Moreover, duplicates distributed from Berlin, e.g. *Warnecke 88* now found in several herbaria, were labeled *D. pallidum* while representing *D. madagascariense*. PELLEGRIN was similarly misled. He identified the duplicate of *Barter 3299* (the type of *D. pallidum*) in Paris as '*D. cinereum* Engl.?' (a synonym of *D. pallidum*) and most of the West African material of *D. madagascariense* as *D. pallidum*. Although ENGLER made a mistake in the interpretation of the basionym *Chailletia pallida*, his new combination *Dichapetalum pallidum* must stand.

When treating *D. liberiae* (BRETELER, 1979: 59), it was not known that the holotype was still extant at Berlin. Last year this material was received on loan from Berlin, where it had recently been discovered. The duplicate material at Kew, which I designated holotype, thus remains an isotype.

HUTCHINSON & DALZIEL, followed by KEAY, placed *D. warneckei* in synonymy of *D. pallidum*. Their decision is fully supported.

Chailletia whytei Stapf is an illegitimate name, because the earlier *D. liberiae* was cited in synonymy. *Ch. whytei* is typified by *Dinklage 1832* (the type of *D. liberiae*) which collection was cited by the author.

D. pallidum is variable in its fruit characters. Strongly tuberculate as well as smooth-skinned fruits occur. The former have so far been collected mainly in Liberia and Gabon. Intermediates are manifold and therefore this condition could not be used for infraspecific segregation.

Another variation in fruit characters is seen in the indumentum. Most fruits have easily caducous stinging hairs and, as far as known, these fruits are dehiscent, exposing their often bright-coloured pyrenes (see photographs 8–9). However, in Ivory Coast as well as in Liberia, several specimens have been collected of which the fruits do not dehisce and lack caducous stinging hairs; they are shortly velutinous or even tomentellous instead. I named this material provisionally '*D. murinum*'. Different types of fruit indumentum occur also in other species, e.g. in *Mucuna pruriens* (L.)DC. (*Papilionaceae*), where the plants without stinging hairs on their pods are cultivated for their seeds and are either formally distinguished as an infraspecific taxon (var. *utilis* (Wall. ex Wight) Bak. ex Burck) or as a cultivated variety.

In order to see whether these fruit characters are linked with other characters all the material of *D. pallidum* has carefully been investigated. This demonstrated clearly that there are no correlated floral characters and that '*D. murinum*' cannot be separated by any other characters as a distinct taxon, neither on specific nor on infraspecific level. Moreover, the investigation revealed that the hairs of the fruits vary greatly in length, but are always of the same nature, the longer hairs being caducous and stinging, the shorter persistent and not stinging. As regards the dehiscent exocarp it must be noted, that it could not always be established whether the fruits are really dehiscent or not. Fieldwork in Ivory Coast revealed that the short-hairy '*D. murinum*' fruits are not dehiscent, but it may be that this condition also occurs in fruits with longer hairs, whether its indumentum is caducous and stinging or not.

Summarizing, the two entities dealt with can be circumscribed, but by no means clearly segregated, as follows:

Stipules 3 –5 × 1–2(3) mm; leaves cuneate to rounded at base, (4)7–10(15) × (2)3–5(6) cm, with (5)6–8(9) pairs of main lateral nerves; young leaves never folded; fruits never tuberculate, indehiscent, shortly velutinous to tomentellous, hairs not easily caducous and stinging . . . . . **'D. murinum'**

Stipules (3)5–8(16) × 1–3(6) mm; leaves rounded to subcordate sometimes cuneate at base, (4)7–13(32) × (2)4–7(12) cm, with (6)8–13(16) pairs of main

lateral nerves; young leaves folded or not; fruits dehiscent (or not?), tuberculate or not, usually with caducous stinging hairs . . . . . **D. pallidum** s.s.

Of '*D. murinum*' the following illustrative specimens are mentioned. Liberia: *Baldwin 13080* and *Dinklage 2851*; Ivory Coast: *Beentje 255* and *Breteler 5282, 5326, 5327, 5346, 5505, 6025.*

D. palustre Louis ex Haum. = **D. crassifolium** Chod. var. **crassifolium**

For details see BRETELER, 1978: 29.

D. paniculatum (Thonn. ex Schum.)De Wild. = **D. madagascariense** Poir. var. **madagascariense.**

For details see p. 14.

D. parvifolium Engl. **Fig. 17 Map 15**

D. parvifolium Engler, 1896-b: 136; 1896-a: 348, nomen; 1912-a: 578; De Wildeman, 1919: B 57; Exell, 1927: 130; Moss, 1928: 130, in synonymy of *D. retroversum* Hiern; Exell & Mendonça, 1951-b: 327; Hauman, 1958-a: 315; Breteler, 1973; 23, XIX; Punt, 1975: 38; Breteler, 1978: 10.

Type: Angola, Golungo Alto, *Welwitsch 4661* (holotype: COI; isotypes: BM, BR, C, G, K, LISU, P).

D. retroversum Hiern, 1896: 139; De Wildeman, 1919: B 61; Moss, 1928: 130; Exell & Mendonça, 1951-b: 327, in synonymy of *D. parvifolium*; Breteler, 1973: XIX, in synonymy of *D. parvifolium.* Type: Angola, Golungo Alto, *Welwitsch 4661* (lectotype: BM; isotypes: BR, C, COI, G, K, LISU, P).

D. mucronulatum Engler, 1912-a: 580; De Wildeman, 1919: B 54; Breteler, 1973: XIX, in synonymy of *D. parvifolium.* Type: Equatorial Guinea, Campo area, near Akonango, *Tessmann 1007* (holotype: B†; lectotype: K; isotype: BM).

Chailletia ciliata Chodat ex Barth, 1896: 497, nomen.

Diagnostic characters. Liana or shrub. Woodcylinder distinctly lobed. Branchlets villous-tomentose to puberulous. Stipules usually long persistent, narrowly triangular, (1)2–4(6) mm long. Leaves obovate-elliptic, (2)6–12(19) × (1)2–5(7) cm, usually rounded to cuneate at base, acuminate at top, and at least hairy on midrib both sides and main lateral nerves beneath. Inflorescences sessile to stalked, subglobose to subumbellate. Pedicel up to 3.5 mm long, the upper part always distinct, usually longer than lower part. Sepals reflexed. Petals erect to spreading, often with spreading lobes. Stamens suberect. Pistil 3-merous,

ovary velutinous. Fruits ellipsoid, distinctly beaked, puberulous-tomentellous.

Description. Small to medium sized liana, sometimes winding, up to ca 4 cm diam., lianescent shrub, or shrub. Main stem fluted or not, the woodcylinder always distinctly lobed by deeply intruding phloem, the bark usually with distinct large lenticels, often in 5 rows lengthwise. *Branches* grey, glabrous or glabrescent. *Branchlets* villous-tomentose to puberulous, glabrescent with age, the same indumentum present on stipules and petioles. *Stipules* usually rather long persistent, narrowly triangular, (1)2–4(6) mm long, entire or with a few small teeth. *Leaves*: petiole subterete, (1)2–5(9) mm long; blade obovate-elliptic, (1.5)2–3 times as long as wide, (2)6–12(19) × (1)2–5(7) cm, rounded to cuneate, sometimes obtuse to subcordate at base, usually acuminate at top, the acumen obtuse to acute, mucronate or not, up to 1.5(2) cm long; when young both sides villous-tomentose on midrib and the 5–9 pairs of main lateral nerves, sometimes entirely so or almost glabrous, soon glabrescent, but longer persistent on midrib both sides and main lateral nerves beneath, the margin often distinctly hairy, the midrib plane to slightly impressed above, the laterals rather indistinct above, prominent beneath; glands rather small, indistinct, usually on both sides. *Inflorescence* a few to many flowered, distinctly stalked subglobose to subumbellate head, or a sessile or nearly sessile glomerule, indistinctly branched, but in many flowered, long-flowering inflorescences with 2–4 scorpioid branches, tomentose to puberulous-tomentellous; peduncle usually slender, up to 2.5(3.5) cm long; bracts and bracteoles triangular to deltate, up to 2.5 mm long, obscurely dentate or not. *Pedicel* up to 3.5 mm long, the upper part always distinct, up to 2 mm long, at least as long as, but usually longer than the lower part, puberulous-tomentellous. *Sepals* reflexed, oblong-elliptic to oblong-obovate, 2–3.5(4) × ca 1 mm, puberulous-tomentellous outside, more sparsely so inside. *Petals* more or less erect, spreading, and/or geniculate below the lobes, shortly adnate to filaments at base, narrowly obovate in outline, (2.5)3–4(5) mm long, 0.5–2 mm split, with a few hairs below split usually on both sides, sometimes also on the lobes outside, the lobes concave, often spreading. *Stamens* erect or more or less spreading, (3)3.5–5(7) mm long, glabrous; anthers up to 0.5 mm long, with a prominent connective. *Staminodes* subquadrate, up to 0.2 × 0.2 mm, with an emarginate to bilobed top, glabrous or with a few hairs apically inside. *Pistil* 3-merous, (3)3.5–5(6.5) mm long; ovary and lower part of style velutinous, the upper part of style glabrous, usually obscurely 3-lobed. *Fruits* (1–3?)-seeded, ellipsoid, distinctly beaked, the aborted cells present by a distinct ridge or not, 2.8–4 cm long (beak inclusive), 1–2.5 cm diam., the beak up to 1 cm long, puberulous-tomentellous, sometimes nearly glabrous; exocarp 0.5–1 mm thick; mesocarp juicy, 3–5 mm thick, adhering to endocarp; endocarp pergamentaceous, glossy and glabrous inside. *Seeds* subellipsoid, 10–15 mm long, 5–8 mm diam.; testa thin, brown, distinctly veined, slightly impressed between the cotyledons, the latter with a hairy margin.

Distribution: West and Central Africa.

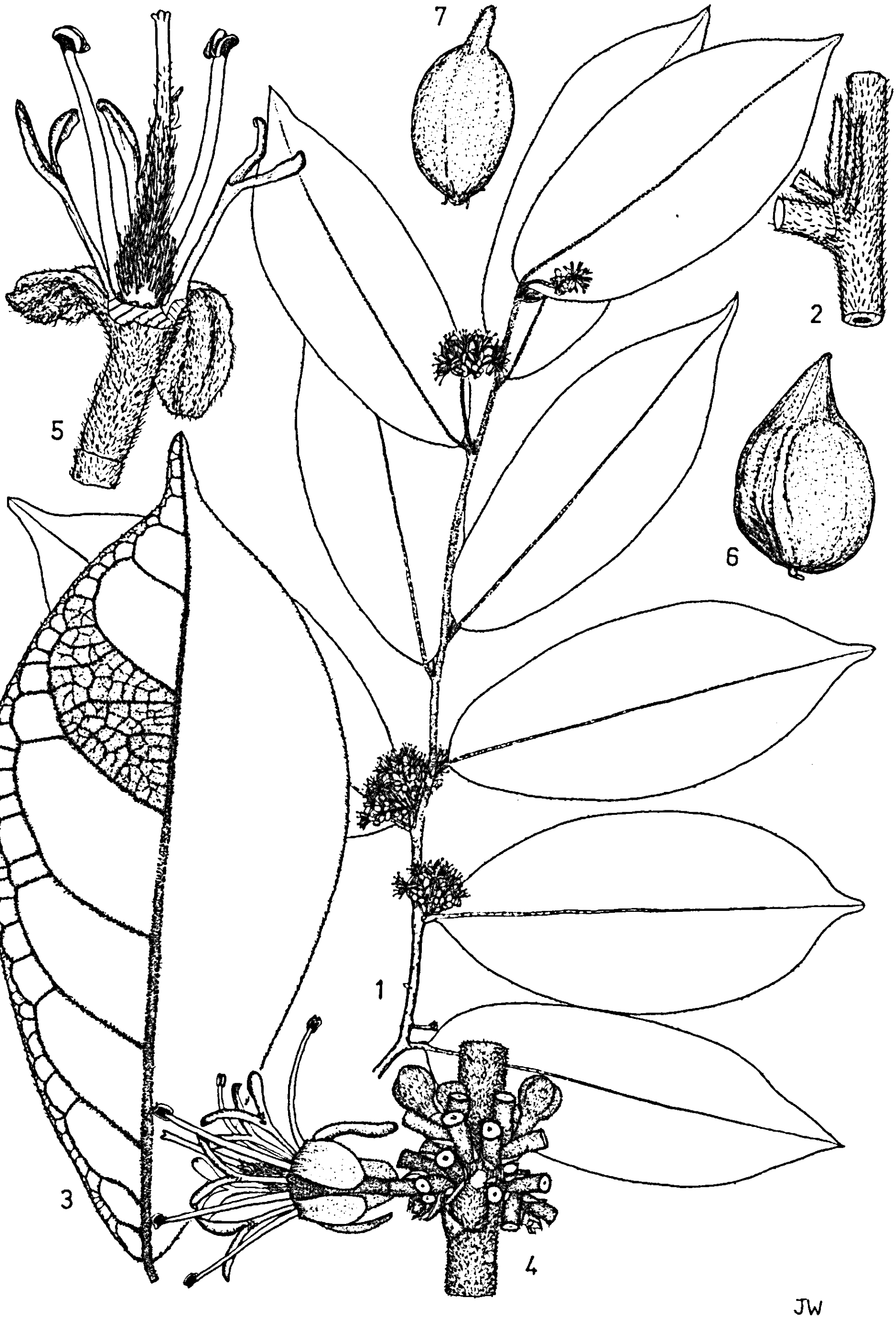
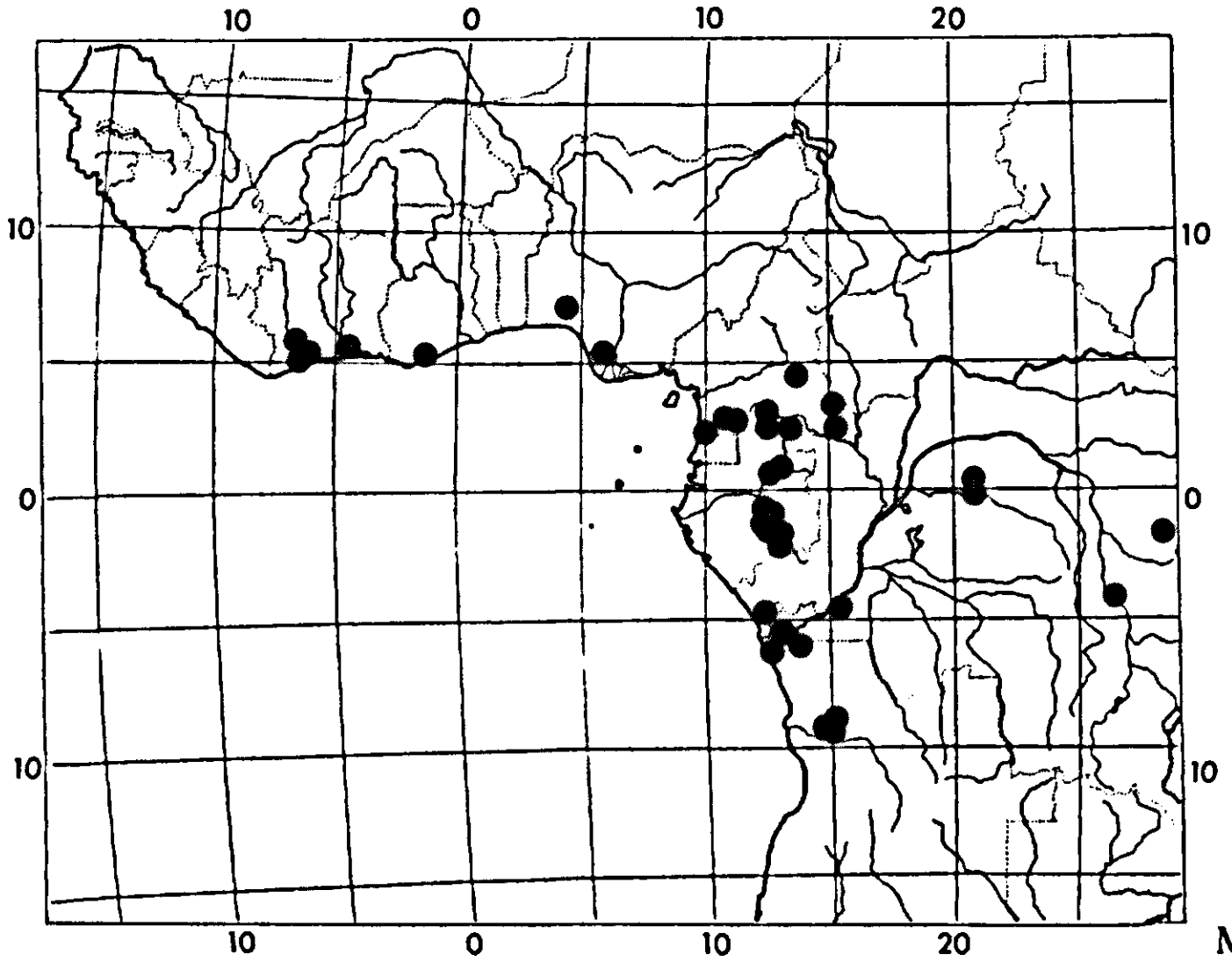


FIG. 17. *D. parvifolium*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. axil with stipules, 5×; 3. large leaf beneath, $\frac{5}{6}\times$; 4. inflorescence with one open flower, 5×; 5. flower partly, 10×; 6. 1-seeded fruit with ridge, $\frac{5}{6}\times$; 7. 1-seeded fruit, $\frac{5}{6}\times$. (1. *Le Testu 8794*; 2. *Breteler 6849*; 3. *Le Testu 8006*; 4–5. *Breteler 5832*; 6. *Leeuwenberg 3998*; 7. *J. J. de Wilde 8135A*).



MAP 15. *D. parvifolium*

Ecology: Rain forest, semi-deciduous forest.

Specimens examined:

Ivory Coast. 10 km N. of Sassandra, *Beentje 164* (WAG); 23 km N.W. of Sassandra, *Breteler 5827* (WAG); *5832* (WAG); *7319* (WAG); Niamagbi, W. of Soubré, Sassandra R., *W. de Wilde 163* (WAG); 56 km W. of Sassandra, E. of Beyo, *Leeuwenberg 3998* (WAG); 70 km E.S.E. of Tiassalé, near Bécédi, Brafouédi Rock, *Oldeman 261* (WAG).

Ghana. Near Cape Coast, *Hall 1919* (K).

Nigeria. Warri R. bank, 18 km Efferun-Ughelli, *Leeuwenberg 11324* (WAG); Sasha F.R., *Richards 3461* (BM, BR, COI, G); *Ross 91* (BM).

Cameroun. Bitye, *Bates 1389* (BM); S.E. of Djoum, near Alati, *Biholong 272* (P, WAG); 5–6 km Bertoua-Batouri, *Breteler 1023* (K, P, WAG); *1275* (BR, FI, K, LISC, M, P, WAG); 24 km Nkoemvone-Akokas, Akokas Rock, *J. J. de Wilde 8134 A* (WAG); *8135 A* (WAG); Zingui, 21 km Ebolowa-Kribi, *J. J. de Wilde 8184* (WAG); 6 km S. of Yokadouma, *Leeuwenberg 6240* (BR, K, P, WAG); 24 km S. of Djoum, *Letouzey 8338* (P); Moloundou area, confluence of Bok R. and Boumba R., *Mildbraed 4297* (HBG).

Equatorial Guinea. Campo area, near Akonango, *Tessmann 1007* (BM, K, type of *D. mucronulatum*).

Gabon. 23 km Moanda-Bakoumba, *Breteler 6513* (WAG); 11 km Lastoursville-Moanda, *Breteler 6666* (WAG); 60 km S.S.W. of Moanda, *Breteler 6849* (WAG); 20 km Bélinga-Makokou, *Breteler & J. J. de Wilde 689* (WAG); 10 km S. of Makokou, *Florence 2055* (WAG); Lastoursville, *Le Testu 7077* (BM, BR, P, WAG); Koulamotou, *Le Testu 8006* (BM, BR, P, WAG); Lastoursville, *Le Testu 8707* (BM, P, WAG); Ivélé, *Le Testu 8794* (BM, BR, P, WAG).

Zaïre. Luki, *Donis 2454* (BR); Bongoy, *Evrard 3272* (BR, EA, K, SRGH); piste Bomandja, Ikelemba R. source, *Evrard 4206* (BR); Yangambi, *Germain 138* (BM, BR); *348* (BR, C); Pene Yumbi, *Germain 7882* (BR); between Walikale and Kalehe, *Lebrun 5322* (BR, EA); Yangambi, *Louis 6183* (BR, M, SRGH); *6587* (BR, M); *6717* (BM, BR, LISC, LISU, P); *7271* (BR); *7477* (BR, COI, Z); *8843* (BR); *12801* (BR, U); Manenga, Ndjili R., *Pauwels 5857* (BR).

Angola. Cazengo, Granja S. Luiz, *Gossweiler 4565* (BM, COI, K, M); *4565 a* (COI); *4586* (BM, COI, K); *4658* (BM, K); *4820* (BM, COI, K); *4832* (BM, COI, K); Buco Zau, *Gossweiler 7223* (BM, K, LISJC, LISU); Sumba Peco, *Gossweiler 8793* (BM, K); Luvuluge, *Gossweiler 8800* (BM, K);

Dalatando, *Gossweiler 10212* (BM, BR, COI, LISC, PRE); *s.n.* (PRE); Cazengo, Granja S. Luiz, *N. Hallé 6476* (P); *Pearson 2305* (K); *2325* (K); Cuanza Norte, Estrada da Trombeta, *Raimundo c.s. 313* (BR, WAG); Golungo Alto, *Welwitsch 4655* (BM, BR, COI, G, K, LISU, P); *4656* (BM, LISU); *4657* (BM, LISU); *4658* (BM, COI, G, K, LISU); *4659* (BM, COI, K, LISU); *4660* (BM, K, LISU); *4661* (BM, BR, C, COI, G, K, LISU, P, type, also type of *D. retroversum*).

Note. The names *D. parvifolium* and *D. retroversum* were both first published in 1896, the former in September, the latter in December. In the protologue of *D. retroversum* HIERN cited several specimens collected by WELWITSCH, namely *4665* up to *4661* inclusive, thus including the type of *D. parvifolum*. Of these syntypes the BM material of *4661* was selected by EXELL & MENDONÇA as the lectotype of *D. retroversum*, rendering both names homotypic.

D. patenti-hirsutum Ruhl. = **D. bangii** (F. Didr.)Engl.

For details see BRETELER, 1973: 70.

D. pedicellatum Krause **Fig. 18 Map 16**

D. pedicellatum Krause, 1912: 509; De Wildeman, 1914: 145; 1919: B 57; Hauman, 1958-a: 316; Breteler, 1973: 43, XIX; Punt, 1975: 27; Breteler, 1979: 66.

Type: Zaïre, Kimuenza, *Mildbraed 3715* (holotype: B†; lectotype: HBG).

D. longipedicellatum De Wildeman, 1919: B 43. See Breteler, 1979: 66 for full details.

Diagnostic characters. Liana or shrub. Branchlets densely rusty puberulous. Stipules early caducous. Leaves obovate-elliptic, (6)8–12(14) × (2)3–4(5) cm, rounded to cuneate at base, gradually acuminate at top, rusty puberulous on midrib above, glabrescent. Inflorescences subumbellate, rusty puberulous, peduncle 1–3(4) cm long. Pedicel slender up to ca 12 mm long. Sepals reflexed. Petals erect to reflexed, often geniculate, 3.5–4.5 mm long, 1–1.5 mm split. Stamens 5–6 mm long, glabrous. Pistil 3(–4)-merous, ovary lanate. Fruits 1–3-seeded, exocarp dehiscent, often warty, short-rusty hairy.

Description. Liana, lianescent shrub, shrub or treelet. *Branches* glabrous or glabrescent with a dark-brown to black bark, usually lenticellate when old. *Branchlets* sometimes hollow, densely rusty puberulous, the same indumentum present on stipules and petioles. *Stipules* early caducous, narrowly triangular to oblong, 3–7(9) mm long. *Leaves*: petiole subterete, 2–5(7) mm long; blade obovate-elliptic, (2)2.5–4 times as long as wide, (6)8–12(14) × (2)3–4(5) cm, rounded to cuneate at base, gradually acuminate, the acumen up to 1.5 cm long, obtuse to acute, mucronate or not; rusty puberulous on midrib above, more sparsely so on midrib and the 5–8 pairs of main lateral nerves beneath, both sides

FIG. 18. *D. pedicellatum*: 1. flowering branchlet, $\frac{5}{6}\times$; 2. part of branch showing lenticels, $2\frac{1}{2}\times$; 3. leaf axil showing stipules, $2\frac{1}{2}\times$; 4. flower, $10\times$; 5. flower partly, $10\times$; 6. dehiscing fruit, $\frac{5}{6}\times$; 7. enlarged part of fruit indumentum. (1. *Mildbraed 3715*; 2. *Bouquet 550*; 3. *Sita 983*; 4–5. *Butaye in coll. Gillet 2269*; 6–7. *Carlier 70*).

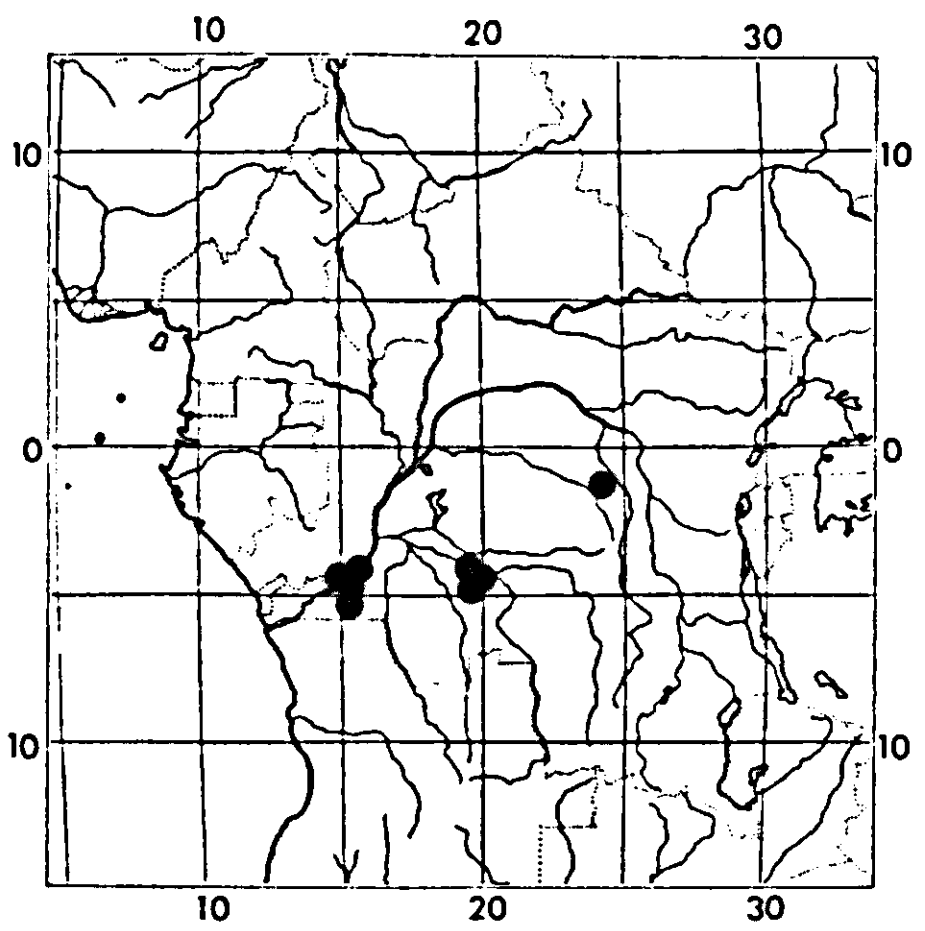
glabrescent, midrib and main lateral nerves usually plane above, prominent beneath; glands present or not, small, usually indistinct and beneath only, rarely some above. *Inflorescences* subumbellate, shortly and compactly branched, often 1–2 times distinctly so, usually many flowered, rusty puberulous; peduncle 1–3(4) cm long; bracts and bracteoles oblong-triangular, up to 3 mm long, puberulous. *Pedicel* slender, up to ca 12 mm long, puberulous, the upper part 0.5–1.5 mm long. *Sepals* reflexed, ca free at base, elliptic to obovate-elliptic, 2.5–3.5 × 1–2 mm, puberulous-tomentellous outside, more sparsely so inside. *Petals* erect, spreading or reflexed, often geniculate, free or very shortly adnate to filaments at base, narrowly obovate in outline, 3.5–4.5 mm long, 1–1.5 mm split, glabrous or with a few hairs apically on the concave lobes outside. *Stamens* suberect to loosely spreading, 5–6 mm long, glabrous; anthers reniform, ca 0.5 mm long, connective prominent. *Staminodes* subquadrate, thin, ca 0.2 × 0.2 mm, glabrous or nearly so. *Pistil* 2(–4)-merous, 4–5 mm long; ovary lanate; style lanate in basal part, glabrous and shortly 3(–4)-lobed in upper part. *Fruits* 1–3-seeded, subglobose to transversely ellipsoid in 2-seeded fruits, 3-lobed in 3-seeded fruits; 1-seeded fruits (or parts) 1.5–3 cm diam.; exocarp dehiscent, often warty, with short, deciduous, rusty hairs; endocarp bony, glossy and finely striate inside. *Seeds* subglobose, up to ca 1.5 cm diam., with a dark-brown seedcoat.

Distribution: Congo, Zaïre.
Ecology: Semi-deciduous forest, gallery forest, thickets in savannah.

Specimens examined:

Congo. Ndonzari swamp, Brazzaville-Kinkala Rd, *Bouquet 550* (IEC, P); 9 km Kibossi-Koubola, *Sita 983* (P).

Zaïre. Ngaenke Lake, Maluku, *Breyne 3225* (BR); Ngaenke Lake, near Kimpete, *Breyne 3649* (BR); Dingi-Dingi, Ndjili, *Breyne 3657* (BR); Lemfu, *Butaye in coll. Gillet 2269* (BR, WAG, type of



MAP 16. *D. pedicellatum*

D. longipedicellatum); Kimuenza, Lovanium, *Carlier 70* (BR); *Carrington 165* (WAG); Kasangulu, *Compère 1999* (BR); near Kinshasa, *Evrard 6544* (BR, K); Kimuenza, *Gillet 781* (BR); *1636* (BR); *1738* (BR); border of Lukaya R., *Gillet 1922* (BR); Kimuenza, *Gillet 2154* (BR); Mbruye Djelo, *Jans 322* (BR); Opala-Masua, near Lonieke village, *Lisowski 43331* (K); Kimuenza, *Mildbraed 3715* (BM, HBG, type); Kinsila near Kibambi, *Pauwels 6195* (BR, WAG); Binza, *Tondeur 13* (BR); Idiofa, *Vanderyst 8651* (BR); Ipamu, *Vanderyst 10822* (BR); Idiofa, *Vanderyst 12613* (BR); between Lulue R. and Loange R., *Vanderyst 12629* (BR).

Note. *D. pedicellatum* is closely related to *D. acuminatum* De Wild. For details see under the latter species (BRETELER, 1973: 43).

D. perrieri Desc. = **D. leucosia** (Spreng.)Engl.

For details see BRETELER, 1979: 54, 58.

D. petersianum Dinkl. & Engl. = **D. angolense** Chod.

For details see BRETELER, 1973: 55.

D. pierrei Pellegr. **Fig. 19 Map 17**

D. pierrei Pellegrin, 1912: 273; 1913: 644; De Wildeman, 1919: B 58; Breteler, 1973: XIX; Punt, 1975: 36.
Type: Gabon, near Libreville, *Klaine 1625* (lectotype: P).

Diagnostic characters. Liana or shrub. Branches with numerous small lenticels. Branchlets sparsely hairy at first, soon glabrous. Leaves obovate-elliptic, (6)13–16(20) × (2)5–8(10) cm, rounded to cuneate at base, acuminate at top, glabrous or nearly so except for hairy domatia beneath. Inflorescences subumbellate, up to ca 15-flowered, peduncle usually partly adnate to petiole. Sepals erect, unequal. Petals, stamens, and pistil subequal in length, ovary lanate. Fruits ellipsoid, with a distinct, thick, blunt beak, puberulous-tomentellous up to 6 × 2 cm.

Description. Liana, lianescent shrub, or shrub. *Branches* glabrous with numerous small lenticels. *Branchlets* sparsely appressed-hairy when young, soon glabrous. *Stipules* usually early caducous, narrowly triangular, 1–3 mm long, sparsely appressed-hairy. *Leaves*: petiole semiterete to subterete, often grooved above, (3)4–10(13) mm long, not or hardly any longer when united with peduncle of inflorescence, glabrous or with a few appressed hairs when young; blade obovate-elliptic, 2–2.5(3) times as long as wide, (6)13–16(20) × (2)5–8(10) cm, rounded to cuneate at base, top acuminate, the acumen up to 1.5 cm long, obtuse to rounded apically; when young with a few subappressed hairs on midrib and main lateral nerves beneath, sometimes also on the midrib above as well as on the

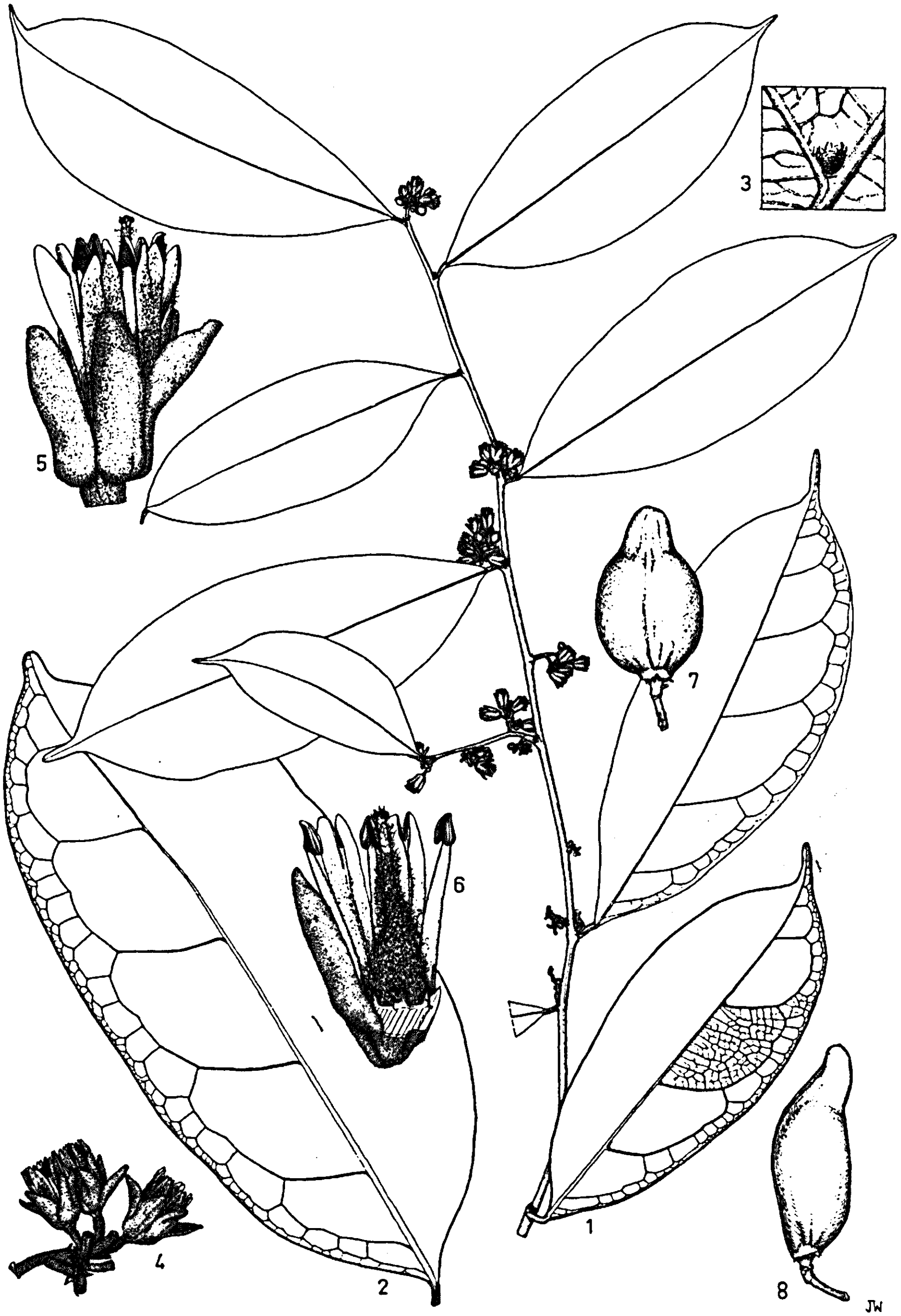
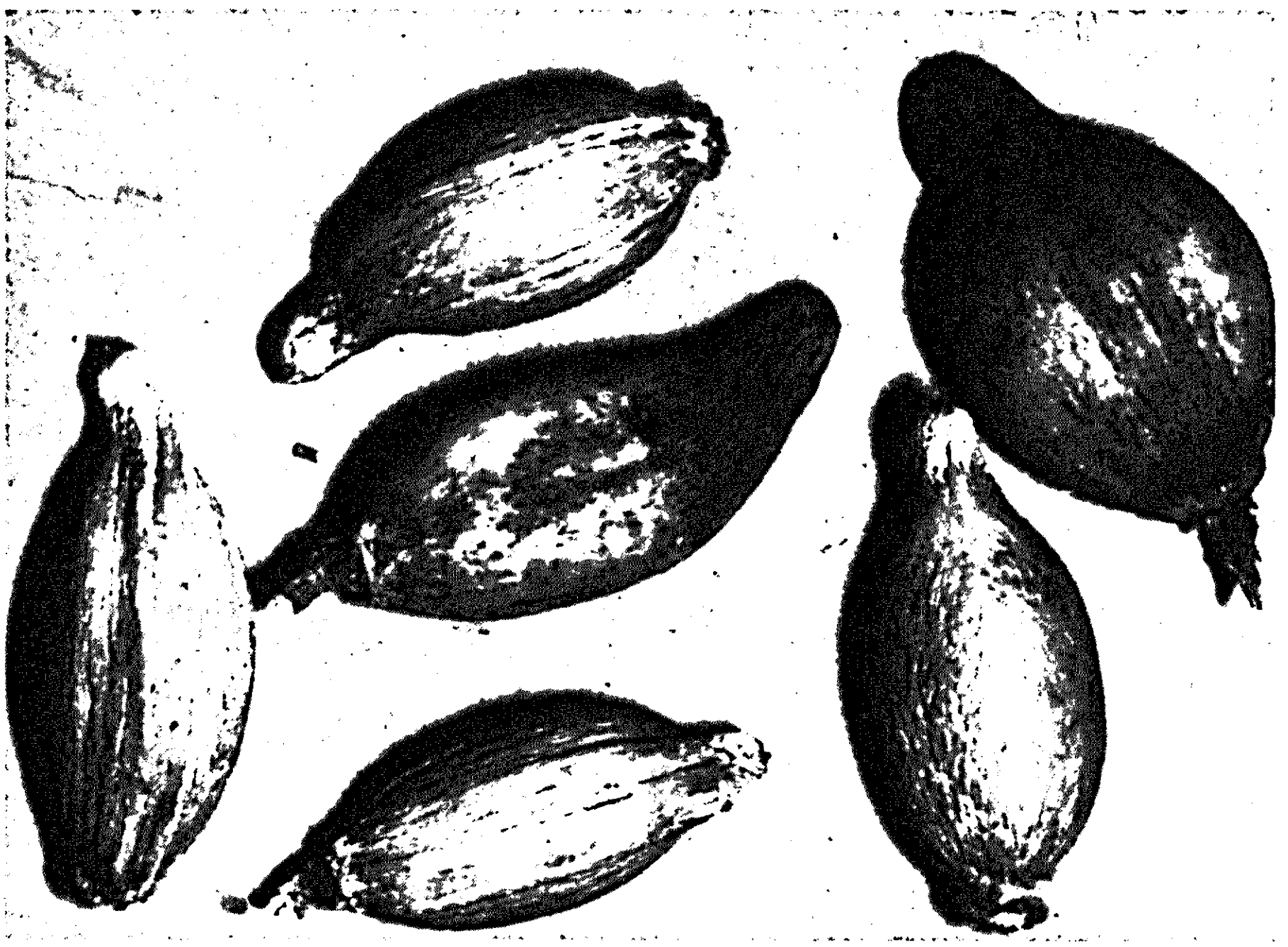


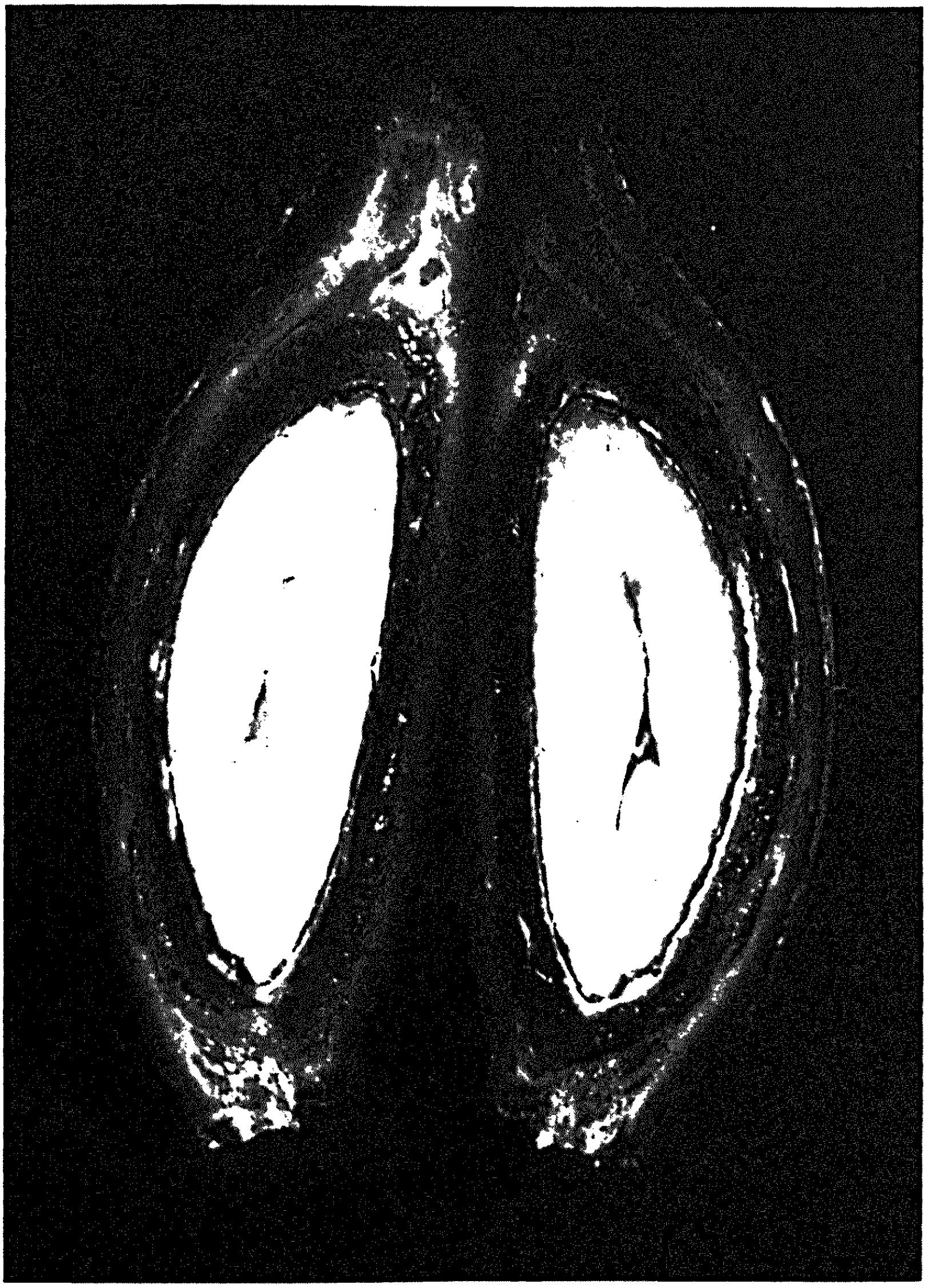
FIG. 19. *D. pierrei*: 1. flowering branchlet, ½×; 2. large leaf, ½×; 3. domatium, 4×; 4. inflorescence, 2×; 5. flower, 5×; 6. flower partly, 5×; 7. 2-seeded fruit, ½×; 8. 1-seeded fruit, ½×. (1, 3–4. *Le Testu 7308*; 2. *Klaine 2192*; 5–6. *Le Testu 7248*; 7–8. *Breteler 7660*).

margin, soon glabrous except for the hairy domatia in some axils of main lateral nerves beneath, these domatia often perceptible above as a small bulge, the midrib slightly impressed, plane, or slightly prominent above, always prominent beneath, the (4)5–7(8) pairs of main lateral nerves usually slightly prominent above, distinctly so beneath; glands few, small, mainly in lower half alongside and close to the midrib beneath, sometimes a few, dispersed ones above as well. *Inflorescences* subumbellate, not or hardly distinctly branched, up to ca 15-flowered, tomentellous; peduncle 1–4(7) mm long, up to 4 mm adnate to petiole, sometimes free from petiole, the supporting leaf sometimes not or scarcely developed, especially so when inflorescences are grouped on short axillary shoots; bracts and bracteoles minute, triangular, less than 1 mm long. *Pedicel* up to ca 3 mm long, tomentellous, the upper part very short or indistinct. *Sepals* erect, free, unequal, obovate-oblong, 3.5–5 × 1–2.5 mm, flat to slightly concave, tomentellous outside and inside on upper part. *Petals* erect, at base shortly adnate to filaments, narrowly oblong, (3.5)4–5 mm long, 0.5–0.7 mm split, tomentose outside and on keel inside, lobes concave with rounded top. *Stamens* 4.5–5 mm long; filaments puberulous mainly in lower part; anthers arrow-shaped, 0.8–1 mm long, glabrous, connective prominent. *Staminodes* subquadrate, 0.5 × 0.5 mm, hairy inside, glabrous outside, emarginate at top. *Pistil* 3-merous, 4–6 mm long; ovary and lower part of style lanate, upper part of style glabrous or nearly so, obscurely 3-lobed. *Fruits* 1–2(–3?)-seeded, ellipsoid, with a distinct, thick, blunt beak, orange at maturity, aborted cells present as a distinct

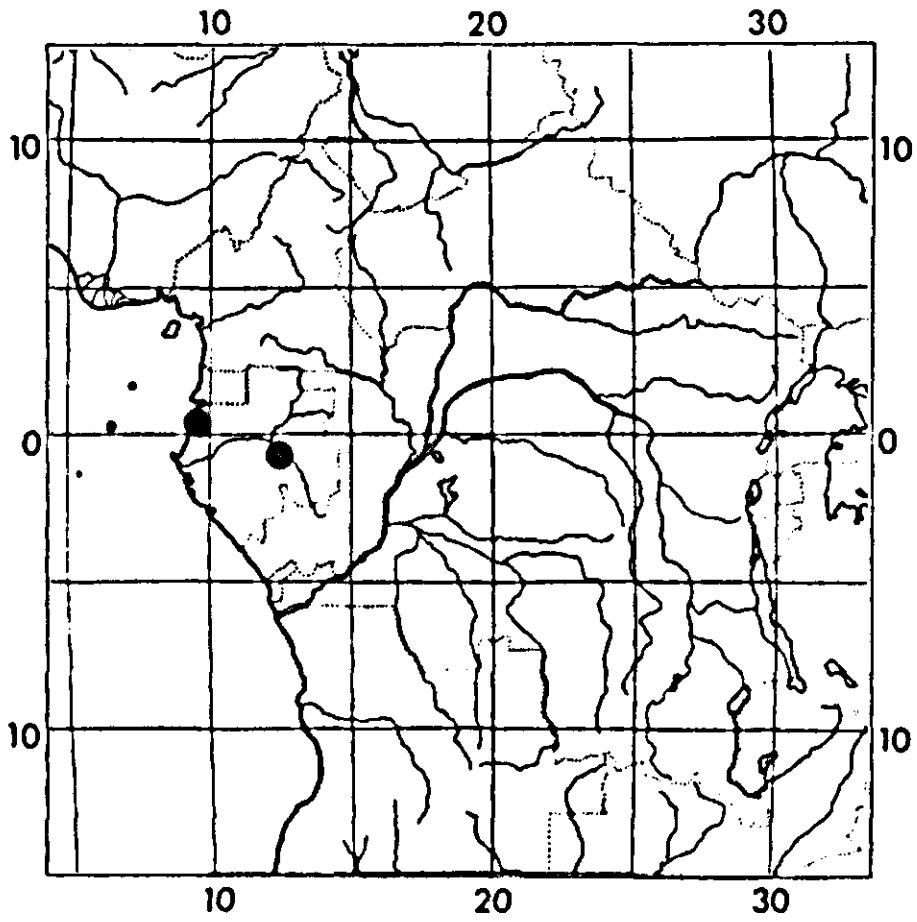


PHOT. 12. *D. pierrei*: fruits (*Breteler 7660*; phot. H. C. D. DE WIT).

ridge, puberulous-tomentellous, sparsely so or not; 1-seeded fruits: up to 6 cm long (beak inclusive) and 2 cm diam., the beak up to 1.5 cm long; exocarp firm, 1–1.5 mm thick, the inner layer brownish; mesocarp juicy, fibrous, 1–3 mm thick, adhering to endocarp; endocarp bony, rugose outside, glabrous and glossy inside. *Seed* ovoid-ellipsoid, up to 30 × 10 mm; hilum up to 15 mm long; testa brown, smooth, glossy. *Seedling* with a firm taproot; epicotyle up to 11 cm long, puberulous; first pair of leaves opposite.



PHOT. 13. *D. pierrei*: fruit cut lengthwise (*Breteler 7660*; phot. H. C. D. DE WIT).



MAP 17. *D. pierrei*

Distribution: Gabon.

Ecology: Rain forest.

Specimens examined:

Gabon. Sibange, near Libreville, *Breteler 7660* (WAG); near Libreville, *Klaine 1625* (P, type); *2192* (P); *2223* (P); *2742* (P); *3240* (P); *s.n.* (K); Lastoursville, *Le Testu 7248* (BM, BR, P, WAG); *7308* (BM, BR, P, WAG).
Cult. Netherlands. Wageningen, *van Setten 503* (WAG).

D. poggei Engl. = **D. heudelotii** (Planch. ex Oliv.)Baill. var. **heudelotii**

For details see BRETELER, 1979: 28.

D. pulchrum Bret., *sp.nov.* **Fig. 20 Map 18**

D. pulchrum Breteler ex Punt, 1975: 29, nomen.

Liana magna, frutex vel arbuscula apice lianescente. Cylindrus ligneus integer. Ramuli dense persistente velutini usque villosi. Stipulae anguste triangulari-ovatae, pinnatilobae usque integrae, (4)8–17(22) mm longae. Folia anguste obovato-elliptica,(15)20–35(42) × (6)7–11(14) cm, basi rotundata usque cordata, apice acuminata, juvenilia supra floccosa, nervis lateralibus principalibus utrinque (10)11–14(16). Inflorescentia glomerata. Pedicellus haud distincte articulatus, floribus persistentibus. Sepala, petala, staminaque erecta. Pistillum 3-merum; ovarium velutinum. Fructus usque 4 cm longus, 1.5–2 cm diametro, velutinus usque villosus.

Type: Gabon, 25 km N.E. of Asok, *Breteler & J. J. de Wilde 100* (holotype: WAG).

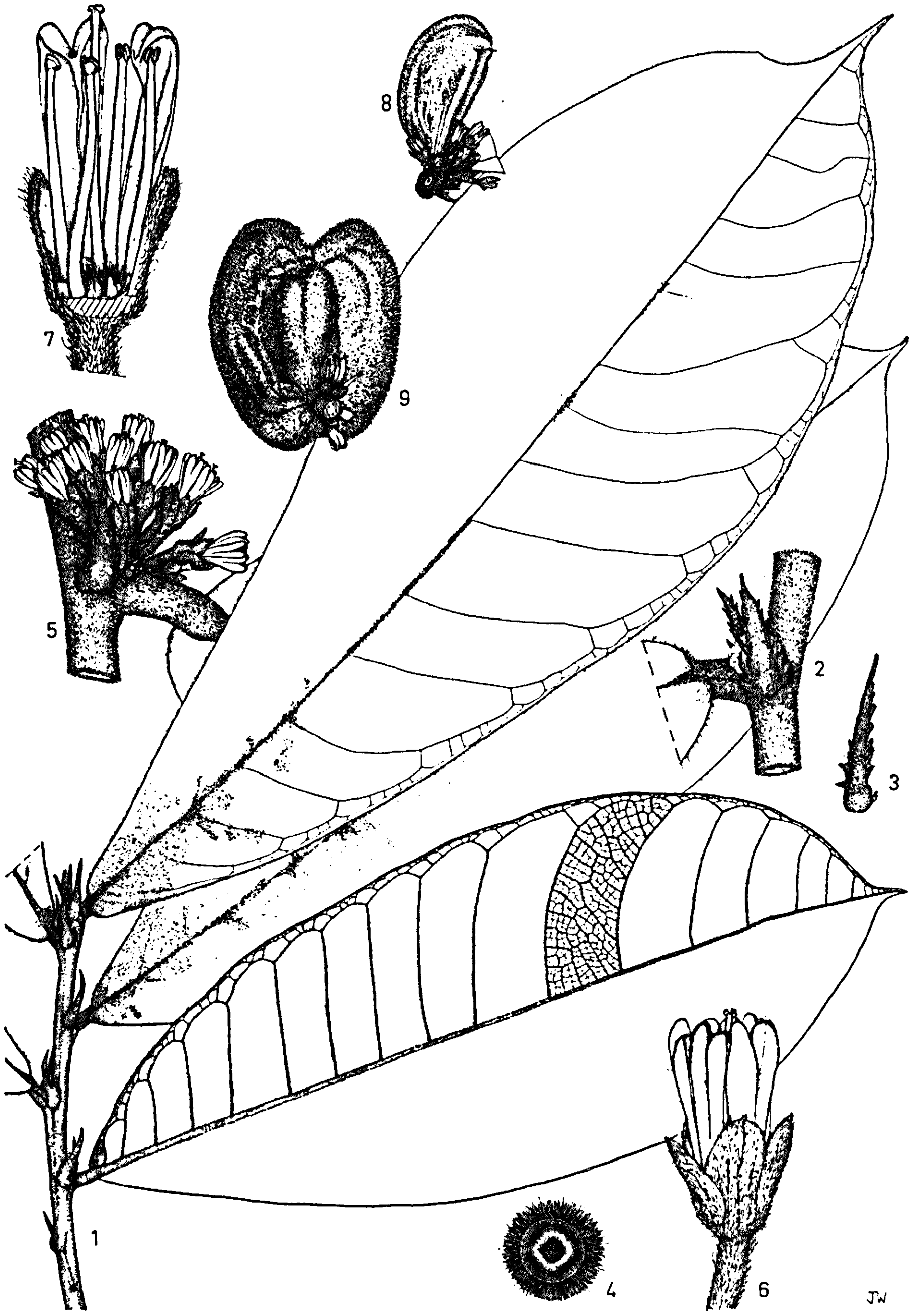


FIG. 20. *D. pulchrum*: 1. leafy branchlet with stipules, $\frac{1}{2}\times$; 2. leaf axil with young inflorescence and stipules, 1×; 3. stipule, 1×; 4. transverse section of branchlet, 2×; 5. inflorescence, 1×; 6. flower, 3×; 7. flower partly, 4×; 8. infructescence with 1-seeded fruit and dry flowers, $\frac{1}{2}\times$; 9. 2-seeded fruit, 1×. (1, 3. *Bos & Breteler 7296*; 2, 4–7. *Breteler & J. J. de Wilde 100*; 8–9. *Breteler & J. J. de Wilde 299*).

Diagnostic characters. Large liana, shrub, or treelet with lianescent top. Woodcylinder entire. Branchlets densely and persistently velutinous to villous. Stipules narrowly triangular-ovate, pinnately lobed to entire, (4)8–17(22) mm long. Leaves narrowly obovate-elliptic, (15)20–35(42) × (6)7–11(14) cm, rounded to cordate at base, acuminate at top, floccose above when young, with (10)11–14(16) pairs of main lateral nerves. Inflorescences glomerate. Pedicel without a distinct joint, the flowers persistent. Sepals, petals, and stamens erect. Pistil 3-merous, ovary velutinous. Fruits up to 4 cm long and 1.5–2 cm diam., velutinous to villous.

Description. Large liana, shrub, or treelet with lianescent top. Woodcylinder entire, wood dense, hard. Bark of stem and older *branches* rather smooth, whitish, thin, corky. *Branchlets* densely and usually pale-brown velutinous to villous, the indumentum long persistent and also present on petioles and, more appressedly so, on stipules as well. *Stipules* long persistent, narrowly triangular-ovate in outline, pinnately lobed to serrate or entire, (4)8–17(22) mm long. *Leaves*: petiole subterete, 3–8(12) mm long; blade narrowly obovate-elliptic, (2)2.5–3.5(4) times as long as wide, (15)20–35(42) × (6)7–11(14) cm, rounded to cordate at base, acuminate at top, the acumen rounded to acutish or even mucronate, 0.5–2(3) cm long; floccose above when young, soon glabrescent but usually except for the basal part of the impressed midrib, beneath with a more or less persistent (soon glabrescent in Congo material), velutinous-villous indumentum on the usually very prominent venation, more densely so on the midrib and to a lesser extent on the (10)11–14(16) pairs of main lateral nerves; glands usually present, beneath only, usually small and rather indistinct, sometimes not well developed, well dispersed or more concentrated alongside the midrib. *Inflorescences* glomerate, villous-velutinous, usually many flowered; bracts and bracteoles ovate-triangular, usually narrowly so, up to 3 mm long, appressed hairy outside, glabrous inside. *Pedicel* up to 7 mm long, appressed-pubescent, without a distinct joint, the flowers persistent. *Sepals* erect, ovate-elliptic to oblong, 3–5 × 1–3 mm, appressed-pubescent outside, glabrous or with a few hairs apically inside. *Petals* erect, narrowly obovate in outline, 4.5–8 mm long, 0.5–2 mm split, free at base, glabrous or with a very few hairs outside. *Stamens* erect, 4.5–7.5 mm long, glabrous; anthers ca 0.5 mm diam. *Staminodes* subquadrate to oblong, up to 0.7 × 0.7 mm, glabrous, obtuse to bilobed at top. *Pistil* 3-merous, 5.5–9 mm long; ovary velutinous, style glabrous, very shortly 3-lobed apically. *Fruits* 1–2(–3?)-seeded, ovoid-ellipsoid to obovoid, up to 4 cm long and 1.5–2 cm diam., velutinous to villous; exocarp and mesocarp together 1–2 mm thick; endocarp pergamentaceous, smooth and glossy inside. *Seeds* ovoid-ellipsoid, laterally compressed, up to 28 × 11 × 7 mm; testa smooth, brown, 0.5–0.7 mm thick.

Distribution: Cameroun, Gabon, Congo.
Ecology: Rain forest.

PHOT. 14. *D. pulchrum*: apical part of lianescent shrub (*Bos & Breteler 7296*; phot. F. J. BRETELER).

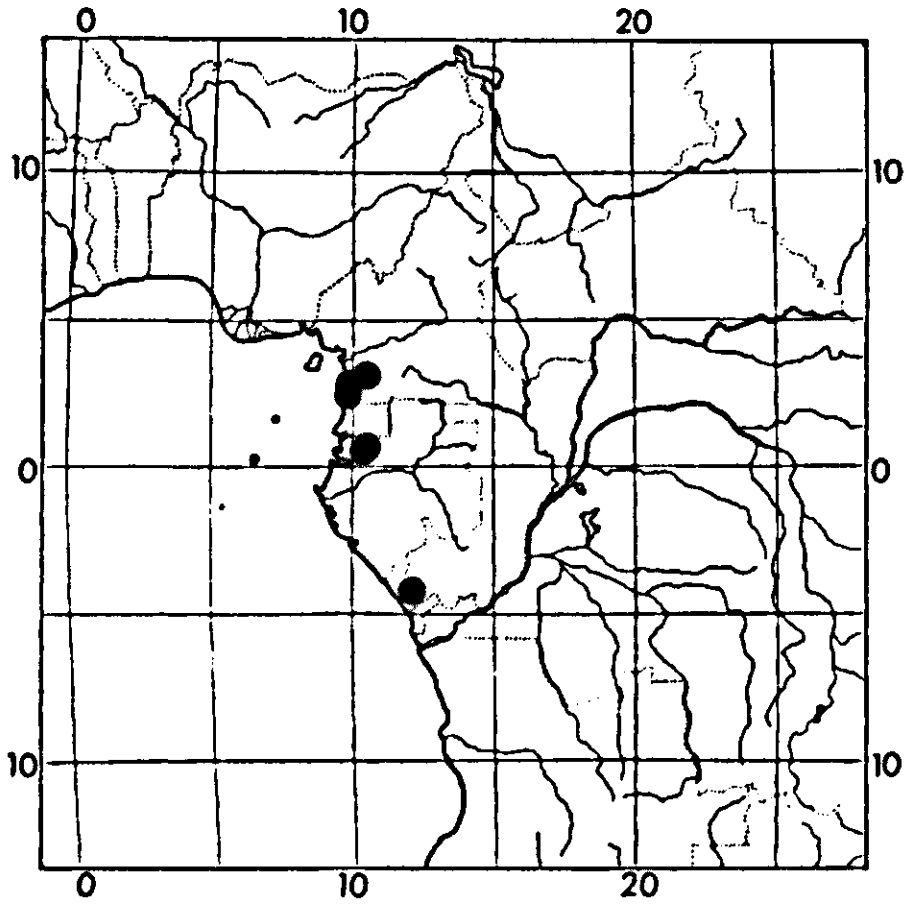
Specimens examined:

Cameroun. 13 km Kribi-Ebolowa, *Bos 5073* (WAG); 45 km Kribi-Campo, *Bos & Breteler 7296* (WAG); Mimfia, *Zenker s.n.* (FH, P).

Gabon. 25 km N.E. of Asok, *Breteler & J. J. de Wilde 100* (WAG, type); 3 km S.E. of Asok, *Breteler & J. J. de Wilde 299* (WAG); Nkan, 8 km Asok-Mela, *Breteler & J. J. de Wilde 364* (WAG).

Congo. 15 km from Mandzi to Moula and Pointe Noire, *Sita 1291* (IEC, P); Kakamoeka region, *Sita 1336* (IEC, P).

Notes. *D. pulchrum* is closely related to *D. glomeratum* Engl. Both species show the same tendency to arborescent habit and have both an entire woodcylinder with very dense wood. The indumentum of the branchlets and leaves is also of the same nature. The flowers are rather similar as well, differing only slightly in



MAP 18. *D. pulchrum*

size, and both lack a distinct joint in their pedicel. These species may be distinguished as follows:

Stipules always entire, 1–5(6) mm long; leaves (4)10–16(24) × (1.5)3.5–6(12) cm with 8–12(16) pairs of main lateral nerves; sepals 1.5–2.5 mm long, petals (3)4–6 mm long. . . . . **D. glomeratum**

Stipules pinnately lobed to entire, (4)8–17(22) mm long; leaves (15)20–35(42) × (6)7–11(14) cm with (10)11–14(16) pairs of main lateral nerves; sepals 3–5 mm long, petals 4.5–8 mm long. . . . . **D. pulchrum**

D. pynaerti De Wild. = **D. madagascariense** Poir. var. **madagascariense**

For details see p. 15.

In *Dichapetalum* there are no epitheta starting with the letter q.

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INDEX OF NAMES

New names are in **bold face,** synonyms in *italics.* Page numbers of principal entries are in **bold type.**