

A PRECURSOR TO THE TREATMENT OF DORSTENIA FOR THE FLORAS OF CAMEROUN AND GABON

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RÉSUMÉ : Résultats préliminaires de l'étude du genre *Dorstenia* effectuée pour les flores du Cameroun et du Gabon : remarques générales sur le genre, clé des espèces, énumération des taxons retenus, espèces et combinaisons nouvelles, synonymies et distribution.

ABSTRACT: The present paper is the result of a study of *Dorstenia* mainly made on behalf of the Floras of Cameroun and Gabon. It presents, as a precursor to the treatment in those Floras, some general remarks on the genus *Dorstenia*, a key to the species, a survey of the taxa distinguished, new combinations and new taxa, the synonymy (as far as based on study of types), and distribution.

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Dorstenia is the second largest genus in the *Moraceæ*. It shows a wide variation especially in the features of the inflorescences and habit, and occupies a rather wide range of habitats. Both with regard to number of species and variability the genus *Dorstenia* has its center in Africa.

One can roughly distinguish two groups of species in Africa. One group consists of mostly herbaceous plants with tuberous subterranean parts and/or succulent stems (and leaves). These plants can be found in drier regions outside the rain forest areas, mainly in Central and East Africa. This group is represented in Cameroun by *D. barnimiana*, *D. ben-guellensis*, *D. cuspidata*, and *D. preussii*.

The second group comprises herbaceous to suffrutescent plants, often with (more or less woody) rhizomatous parts or rarely stems, or shrubs. They usually inhabit rain forests. This group is distinctly centered in the rain forest area bordered by the Cross River (in SE Nigeria) and the Lower Congo River.

BUREAU (1873) grouped the Old World *Dorstenia* species mainly on the basis of characters of inflorescences and habit. ENGLER (1898) distinguished three sections within the African representatives of the genus: sect. *Nothodorstenia*, sect. *Eudorstenia*, and sect. *Kosaria*. This subdivision was adopted by RENDLE (1916). The latter two sections were (mainly) separated on the shape of the styles: being entire in sect. *Kosaria* (only comprising succulent plants), and bifid in sect. *Eudorstenia* (comprising both succulent and not succulent plants). Judging from the studies by

FRIES (1913) and by HAUMAN (1948) in *Dorstenia*, it appears that the difference in the number of stigmas is not a sound basis for subdivision. Differences in the endocarp body may prove to be useful to recognize groups of species. The above-mentioned four species with succulent subterranean parts have tuberculate and keeled endocarp bodies, whereas the other species studies have smooth and not keeled endocarp bodies. Section *Nothodorstenia* was characterized by the presence of bracts not only on but also below the margin of the receptacle. ENGLER inserted in this section the species *D. frutescens* and *D. elliptica*. These species proved to belong to a single species, *D. elliptica*.

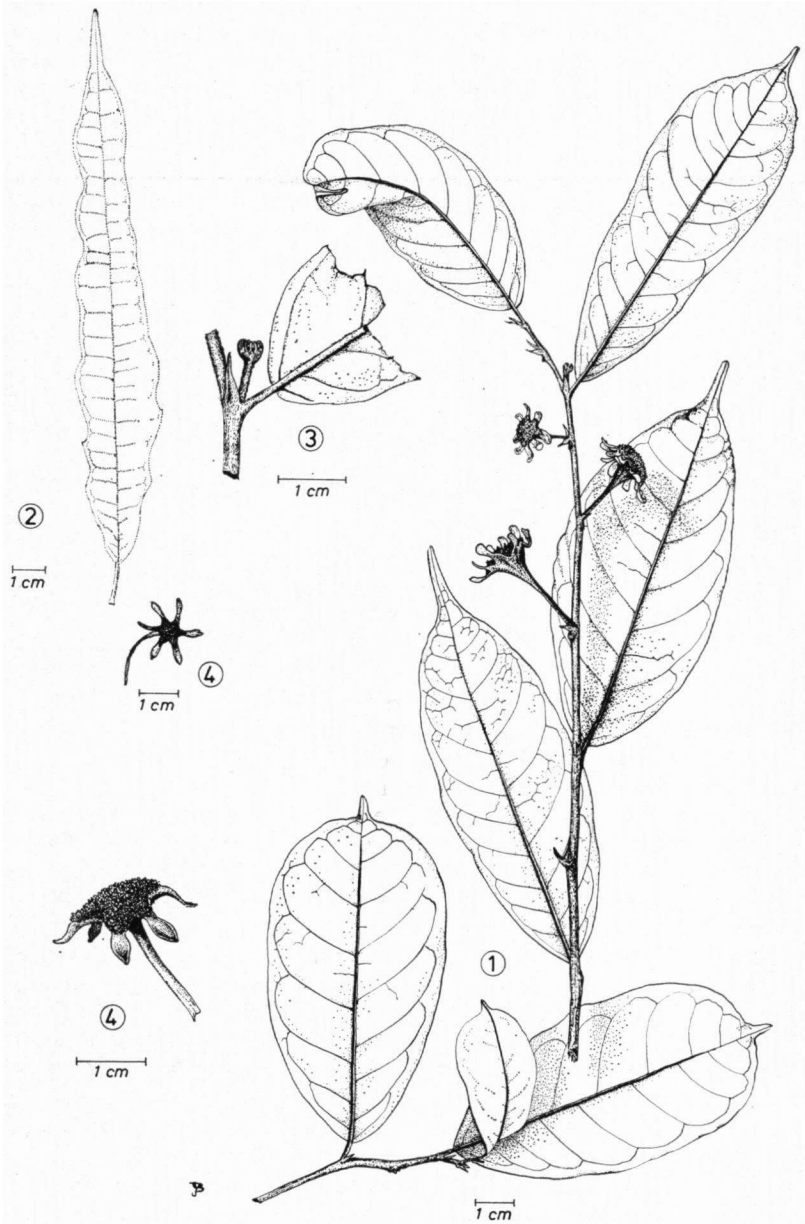
GUILLAUMET (1965) placed his new species *D. djettii*, described from Ivory Coast, near *D. elliptica*. HALLÉ & AKÉ ASSI (1967) transferred *D. djettii* to the genus *Craterogyne*. This genus was established by LANJOUW (1935), and it includes the former African species of *Trymatococcus*, the latter genus thereby becoming a Neotropical one only. LANJOUW recognized 4 species in his new genus: *C. africana*, *C. kameruniana*, *C. oligogyna*, and *C. dorstenioides*.

In the basical characters of the inflorescences and flowers *Craterogyne* proves to be similar to *Dorstenia*. For this reason *Craterogyne* has to be united with *Dorstenia*. *D. djettii* is distinct because of the presence of peltate bracts among the flowers, otherwise it is very similar to *D. oligogyna*. Except for *D. dorstenioides*, the species placed in *Craterogyne* resemble *D. elliptica* in the arrangement of the bracts. They constitute with the latter species and *D. djettii* a rather distinct group within *Dorstenia* ("sect. *Nothodorstenia*"). Except for the arrangement of the bracts these 5 species also agree in the characters of the bracts which still resemble the stipules; this is contrary to most other African *Dorstenia* species, in which the appendages of the receptacle often hardly remind to foliar structures. Moreover, these species are almost or completely woody, with branched or unbranched stems, often taller than 1 m. The seeds of these species are relatively large. In *D. africana*, *D. kameruniana*, and *D. oligogyna* the inflorescences contain a single pistillate flower, in *D. djettii* they have 1-3 pistillate flowers, and in *D. elliptica* up to 7.

The 5 species placed in "*Nothodorstenia*" resemble a group of closely interrelated species (*D. turbinata*, *D. involuta*, *D. angusticornis*, *D. dorstenioides*, *D. scaphigera*, and *D. alta*), all forming frutescent, often more than 1 m tall plants with branched stems. Beside the frutescent habit the two groups of species have in common the presence of a single or a few pistillate flowers in the inflorescence, the relatively large seeds, and the (rather) broad stipules.

The greater part of the *Dorstenia* species occurring in Cameroun and Gabon are herbaceous to suffrutescent plants with more or less woody rhizomes. The up to 1 m tall stems arising from the rhizomes are usually unbranched.

The inflorescences bear their "bracts" (appendages) (usually) in a single row on the margin of the often fringed receptacle, which contains several to many pistillate flowers, producing (rather) small seeds. The



Pl. 1. — *Dorstenia involuta* : 1, twigs (*Bos 3428*); 2, leaf (*Farron 7090*); 3, stipules (*Bos 3428*); 4, inflorescences (*Bos 3428*).

stipules are mostly subulate. *D. picta* is distinct because of its repent (more or less succulent) stem. In the shape of the stipules and in the inflorescence, especially in its shortly and regularly lobed margin, this species recalls to several Neotropical members of the genus (cf. CARAUTA, VALENTE & SUCRE, 1974). *D. subdentata* approaches *D. picta* in the characters of the inflorescence.

The habit can be used to single out species or to distinguish groups within *Dorstenia*, but the inflorescences play a dominant role in the delimitation of the species, and to a lesser degree in the delimitation of infra-specific taxa. Furthermore, stipules, leaves, and indument may provide differentiating characters. The vascular bundles of the petioles, which proved to be important to delimitate Brazilian *Dorstenia* species (cf. CARAUTA, VALENTE & SUCRE, 1974) are not involved in the present study.

The *Dorstenia* flora of Cameroun and Gabon contains taxa of a complex nature beside clear-cut species. Minor differences used to distinguish species, many remarks made about resemblances of species in previous taxonomic works (cf. ENGLER, 1898; RENDLE, 1916; DE WILDEMAN, 1932) and problems in identifying material, are already indications of close and unclear relationships in some groups of *Dorstenia*.

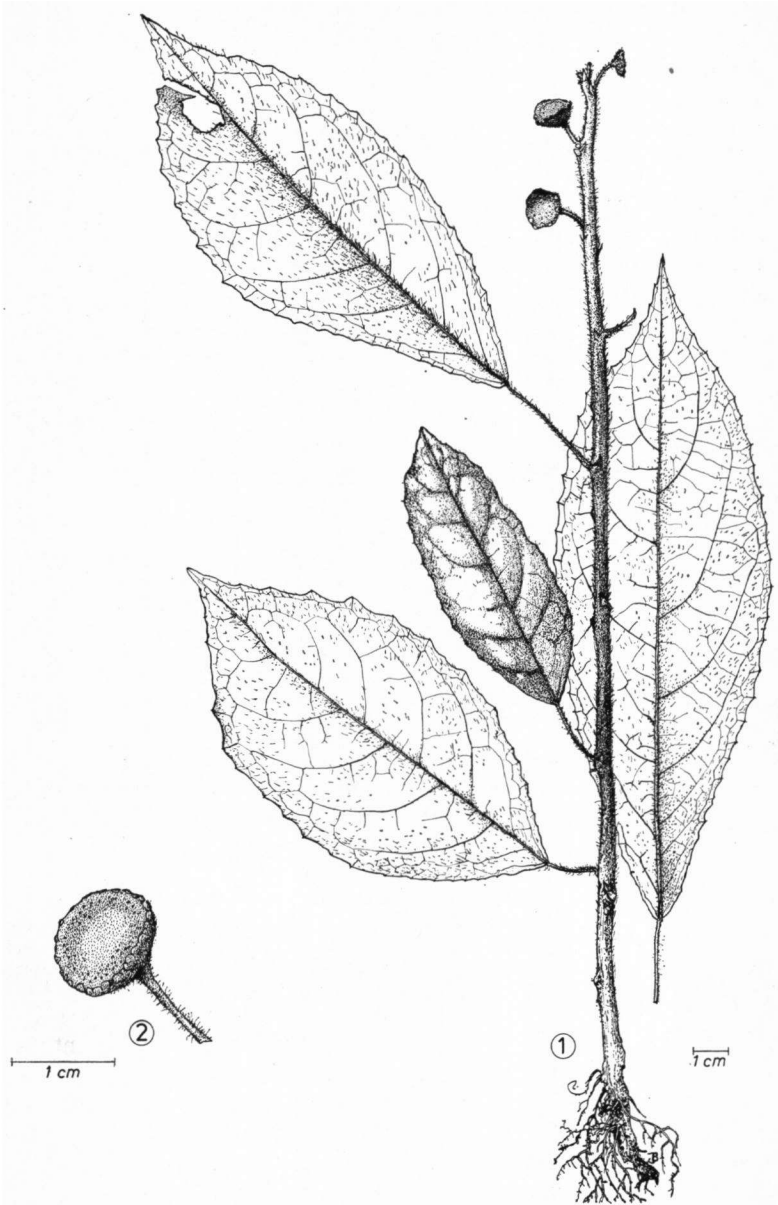
A taxonomic approach of these complexes with the help only of (rather) scarce colourless herbarium material, the labels of which usually provide poor information about the plant and its habitat and rarely about variation within populations, rests on a very poor base indeed.

Therefore, the present treatment of these complexes is more or less tentative and provisional. In further studies field work should be involved. Because of the considerable variation in chromosome numbers found in *Dorstenia* (cf. LE COQ, 1963; FEDOROV, 1969) cyto-taxonomic work may also prove to be useful to solve problems in these groups.

Judging from frequent fructification in several *Dorstenia* species grown in a green house without the presence of likely pollinating agents, self-pollination or apomixis might occur (cf. GUSTAFSON, 1946) and this is important with regard to the proper understanding of variation patterns in some groups of *Dorstenia*.

Naming the segregates of a complex is a rather precarious matter because of the poorly understood nature and cause of the variation. We realize that beginning to name the morphological entities of the complexes implies a risk for the future. But because of the fact that most segregates contain types of previously described species, we chose for granting them a formal status, mostly at the rank of variety.

Ctenocladus (= *Ctenocladium* Airy Shaw) with *C. mildbreadii* has been based on a monstrosity of a *Dorstenia* species, probably *D. psilurus*. The inflorescences of the type specimen (collected in Cameroun) are repeatedly branched in a strange manner.



Pl. 2. — *Dorstenia subdentata* : 1, habit (*Descoings 6517*); 2, inflorescence (*Descoings 6517*).

KEY TO THE SPECIES OF *DORSTENIA*
IN CAMEROUN AND GABON

1. Leaves pinnatifid to near the midrib; herb up to ca. 10 cm high.. 22. *D. letestui*
- 1'. Leaves not so deeply divided; plants herbaceous to frutescent.
 2. Leafy stems creeping; stipules with a broad base (triangular and semi-amplexicaul); inflorescences orbicular, the margin with small triangular lobes 9. *D. picta*
 - 2'. Plants with leafless rhizomes and ascending or erect stems, or plants succulent and mostly with tuberous subterranean parts.
3. Plants succulent, mostly with tuberous subterranean parts; endocarp tuberculate.
 4. Plants with a fleshy creeping rhizome 23. *D. preussii*
 - 4'. Plants with a discoid to placentiform or irregularly shaped tuber.
 5. Plants acaulescent 26. *D. barnimiana* var. *tropæolifolia*
 - 5'. Plants with leafy stems.
 6. Inflorescences with an orbicular receptacle; petioles very short (up to 2 mm) 25. *D. benguellensis*
 - 6'. Inflorescences with an obtriangular to stellately lobed receptacle; petioles usually longer (up to 20 mm) 24. *D. cuspidata*
- 3'. Plants not succulent or only the leaves slightly succulent; endocarp body smooth.
 7. Leaves with a rather long appressed hairs above; inflorescences orbicular, with a margin consisting of lobes up to 1 mm long 10. *D. subdentata*
 - 7'. Leaves without such hairs above.
 8. Inflorescences either actinomorphic or zygomorphous.
 9. Inflorescences actinomorphic, if tending to be zygomorphous, then the receptacle with a broad margin.
 10. Stipules with a broad base (semi-amplexicaul); shrubs, usually branched.
 11. At the margin of the receptacle a single row of appendages; shrubs up to 1.5 m tall.
 12. Receptacle turbinate; appendages 2-6, mostly 4, up to 27 mm long, narrowly spatulate and usually plane, usually pointing upwards; the flowering face often concave 5. *D. turbinata*
 - 12'. Receptacle not distinctly turbinate; appendages up to 6 mm long.
 13. Inflorescences discoid, stellate; the flowering face plane, almost orbicular; the appendages up to 3 mm long, (sub)deltoid, longer ones alternating with very short ones 8. *D. dorstenioides*
 - 13'. Inflorescences subturbinate; the flowering face convex and lobed; the appendages up to 6 mm long, linear, marginally and terminally undulate and involute..... 6. *D. involuta*
 - 11'. At the margin of the receptacle at least two rows of short appendages (bracts) which can also be present lower down on the lower surface of receptacle as far as the peduncle.
 14. Branched shrubs; leaves on the branches distichous; stipules usually shorter than 10 mm with a prominent midvein only.
 15. Leaf margin usually entire; inflorescences in groups of 2 or more, turbinate; peduncle 5-27 mm long 2. *D. africana*

- 15'. Leaf margin usually dentate to lobed; inflorescences often solitary, discoid to broadly turbinate; peduncle 2-9 mm long 3. *D. kameruniana*
- 14'. Usually unbranched shrubs; leaves on the stem in spirals, stipules usually longer than 10 mm, prominently parallel-veined 1. *D. oligogyna*
- 10'. Stipules subulate, lateral.
16. Short appendages (bracts) in at least 2 rows on the margin of the receptacle and lower down on lower surface of the receptacle as far as and including the peduncle 4. *D. elliptica*
- 16'. The receptacle with a single row of appendages on its margin, or if in 2 rows, then the appendages distinctly different in length.
17. Leaves with rather long appressed hairs above; the receptacle orbicular, with a margin consisting of lobes up to 1 mm long. . 10. *D. subdentata*
- 17'. Leaves without such hairs above; the marginal appendages much longer and mostly unequal in length, or the margin broader than 1 mm.
18. Receptacle with a margin 3-15 mm broad.
19. Flowers spaced; pistillode distinct; in the middle on the lower surface of the receptacle without 2 distinct ribs. 16. *D. barteri*
- 19'. Flowers crowded; pistillode strongly reduced or lacking; in the middle on the lower surface of the receptacle with 2 distinct ribs 18. *D. poinsettiiifolia* (var. *poinsettiiifolia*)
- 18'. Receptacle with a narrow margin which is at most 2(-3) mm broad.
20. Inflorescences with 4(-5) long appendages 2.5-12.5 cm and a peduncle (1.5-)4-8 cm long 15. *D. zenkeri*
- 20'. Inflorescences with more than 5 appendages, if with 4-5 appendages only (in some specimens of *D. ophiocoma*), then the peduncle not exceeding 25 mm in length.
21. The appendages numerous, the larger ones depart below the margin from a prominent rib at the lower surface of the receptacle 12. *D. ciliata*
- 21'. The appendages departing from the margin of the receptacle only.
22. The flowering face with lobes which pass into the larger appendages, sometimes in the sinuses (between the lobes) 1-6 short appendages 11. *D. ophiocoma*
- 22'. The flowering face orbicular of multangular.
23. Flowers spaced; pistillode distinct. . 16. *D. barteri* (var. *barteri*)
- 23'. Flowers crowded; pistillode strongly reduced or lacking.
24. The flowering face plane to sometimes convex in fruiting stage; primary appendages 10-15; 2-5 secondary appendages of various length between every two primary ones. 13. *D. harmsiana*
- 24'. The flowering face plane to strongly convex, primary appendages (3-)6-12; secondary appendages between every two primary ones none, sometimes 1, or occasionally 5, 1 mm long 14. *D. tenera*
- 9'. Inflorescences zygomorphous (obtriangular in *D. preusii*).
25. Branched shrubs 0.5-1.5 m tall; the inflorescences naviculate, with a single central pistillate flower 7. *D. angusticornis*
- 25'. Plants herbaceous to suffrutescent, up to 1 m tall; the inflorescences with several pistillate flowers.
26. Inflorescences naviculate, vertical, with a long appendage pointing upwards and a short appendage pointing downwards; the margin entire 17. *D. psilurus*

- 26'. Inflorescences not as above.
27. Inflorescences obtriangular, with 2-3 appendages on the short side and one appendage on the angle formed by the long sides; (succulent) herbs up to 20 cm tall 23. *D. preussii*
- 27'. Inflorescences not as above.
28. Inflorescences naviculate with terminal linear appendages up to 7 mm long and 7-12 linear appendages up to 4.5 mm long on each side; herbs up to 15 cm tall 21. *D. dinklagei*
- 28'. Inflorescences either not naviculate or the appendages not as above; plants herbaceous to suffrutescent, taller.
29. Inflorescences naviculate; the lateral appendages 1-2 mm long, triangular, the terminal appendages slightly longer; herbs 20-40 cm tall 20. *D. prorepens*
- 29'. Inflorescences funnel-shaped or discoid, sometimes compressed laterally, but not manifestly naviculate; plants 30-100 cm tall.
30. Inflorescences funnel-shaped, more or less compressed; terminal appendages 10-15 mm long, linear, lateral appendages on each side 10-13, 1-2 mm long, linear to triangular 19. *D. brieiyi*
- 30'. Inflorescences discoid or funnel-shaped (sometimes compressed laterally), variable in the breadth of the margin and in the number and length of the appendages 18. *D. poinsettiiifolia*
- 8'. Inflorescences neither distinctly actinomorphic nor distinctly zygomorphic.
31. Shrubs, receptacle turbinate 5. *D. turbinata*
- 31'. Herbs, only the stem woody; receptacle not turbinate.
32. Margin of the receptacle up to 1 or 2 mm broad. 18. *D. poinsettiiifolia* (var. *staudtii* and *angularis*)
- 32'. Margin of the receptacle 3-15 mm broad.
33. Flowers spaced; pistillode distinct; in the middle on the lower surface of the receptacle, without 2 distinct ribs 16. *D. barteri*
- 33'. Flowers crowded; pistillode strongly reduced or lacking; in the middle on the lower surface of the receptacle with 2 distinct ribs 18. *D. poinsettiiifolia* (var. *poinsettiiifolia*)

1. *Dorstenia oligogyna* (Pellegrin) C. C. Berg, *comb. nov.*

- *Trymatococcus oligogyna* PELLEGRIN, Bull. Mus. Hist. Nat. Paris, ser. 2, 1 : 62 (1929).
— *Craterogyne oligogyna* (PELLEGRIN) LANJOUW, Rec. Trav. Bot. Néerl. 32 : 277 (1935).

DISTRIBUTION : Gabon (Map 1).

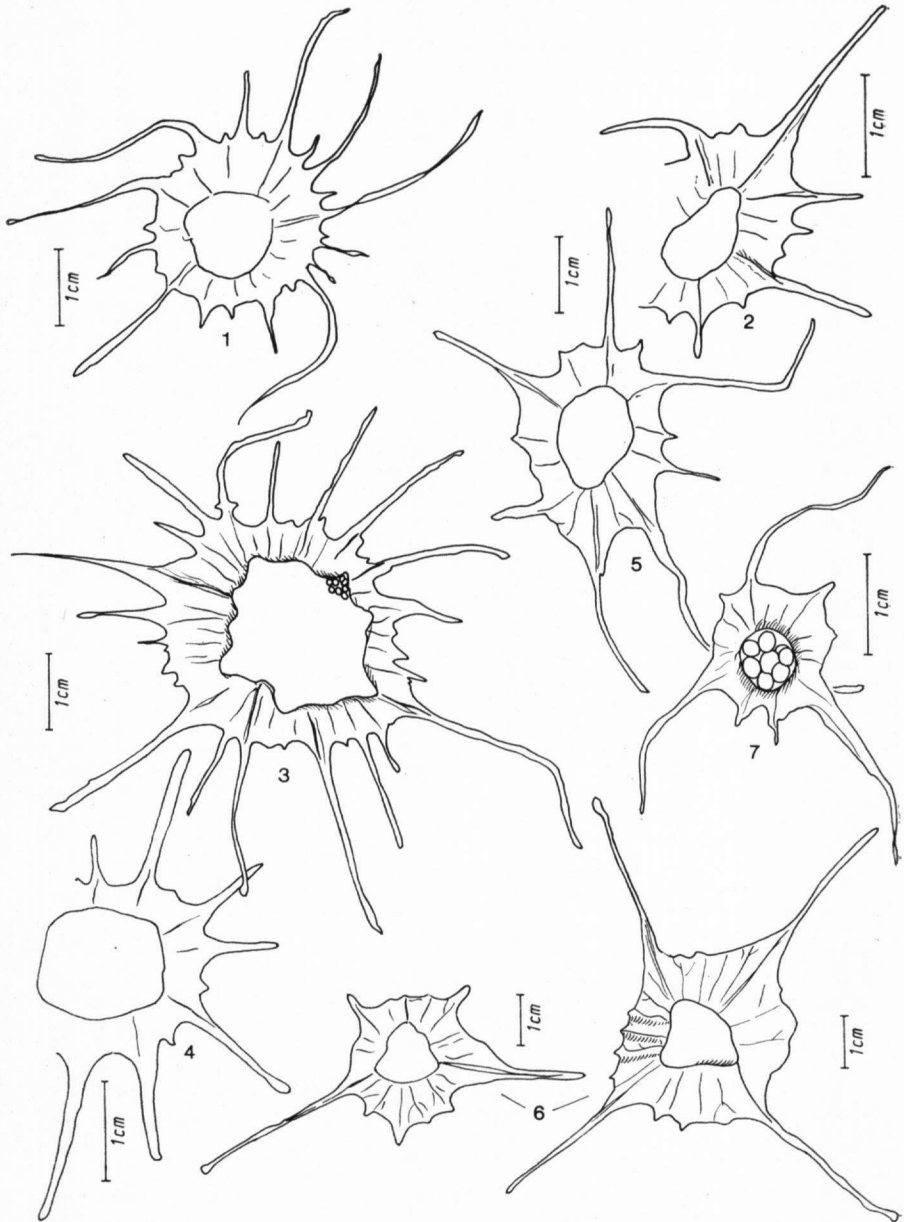
2. *Dorstenia africana* (Baillon) C. C. Berg, *comb. nov.*

- *Trymatococcus africanus* BAILLON, Adansonia 11 : 300 (1875).
— *Craterogyne africana* (BAILLON) LANJOUW, Rec. Trav. Bot. Néerl. 32 : 273 (1935).
— *Trymatococcus conrauanus* ENGLER, Bot. Jahrb. 33 : 117 (1902).

DISTRIBUTION : Cameroun and Gabon (Map 2), and in SE Nigeria.

3. *Dorstenia kameruniana* Engler

- Bot. Jahrb. 20 : 142 (1892).
— *Trymatococcus kamerunianus* (ENGLER) ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 29 (1898).



Pl. 3. — Variation in the inflorescence of *D. barteri*. — var. *barteri* : 1, Mann 152; 2, Coombe 166. — var. *multiradiata* : 3, Preuss 204. — specimen intermediate between var. *multiradiata* and var. *subtriangularis* : 4, Savory & Keay 25050. — var. *subtriangularis* : 5, Letouzey 11163; 6, Leeuwenberg 9082; 7, Maitland 390.

- *Trymatococcus kamerunianus* (ENGLER) ENGLER var. *welwitschii* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 29 (1898).
- *Craterogyne kameruniana* (ENGLER) LANJOUW, Rec. Trav. Bot. Néerl. 32 : 274 (1935).
- *Trymatococcus usambarensis* ENGLER, Bot. Jahrb. 33 : 117 (1902).
- *Trymatococcus gillettii* DE WILDEMAN, Ann. Mus. Congo, ser. 5, 1 : 119 (1904).
- *Dorstenia amana* A. CHEVALIER, Bull. Soc. Bot. France 58, mém. 8 : 208 (1912).

DISTRIBUTION : Cameroun (Map 1), and in Guinea, Liberia, Ivory Coast, Ghana, Congo, Angola, Zaïre, Central African Republic, Uganda, Kenia and Tanzania.

4. *Dorstenia elliptica* Bureau

in DE CANDOLLE, Prodr. 17 : 271 (1873).

- *Dorstenia frutescens* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 12 (1898).

DISTRIBUTION : Cameroun and Gabon (Map 3), and in Fernando Po, Congo, and Angola-Cabinda.

5. *Dorstenia turbinata* Engler

Bot. Jahrb. 33 : 115 (1904).

- *Dorstenia smythei* SPRAGUE, Kew Bull. : 299 (1908).
- *Dorstenia edeensis* ENGLER, Bot. Jahrb. 46 : 272 (1911).
- *Dorstenia ledermannii* ENGLER, Bot. Jahrb. 46 : 272 (1911).
- *Dorstenia buesgenii* ENGLER, Bot. Jahrb. 46 : 272 (1911).
- *Dorstenia dinklagei* auct. non ENGL. : ENGLER, Bot. Jahrb. 46 : 273 (1911).
- *Dorstenia spathulibracteata* ENGLER, Bot. Jahrb. 51 : 429 (1914).
- *Dorstenia aspera* A. CHEVALIER, Bull. Soc. Bot. France 58, mém. 8 : 207 (1912).
- *Dorstenia obanensis* HUTCHINSON & DALZIEL, Fl. Trop. W. Afr., ed. 1, 1 : 427 (1928), *nomen*; Kew Bull. : 18 (1929), *descr.*

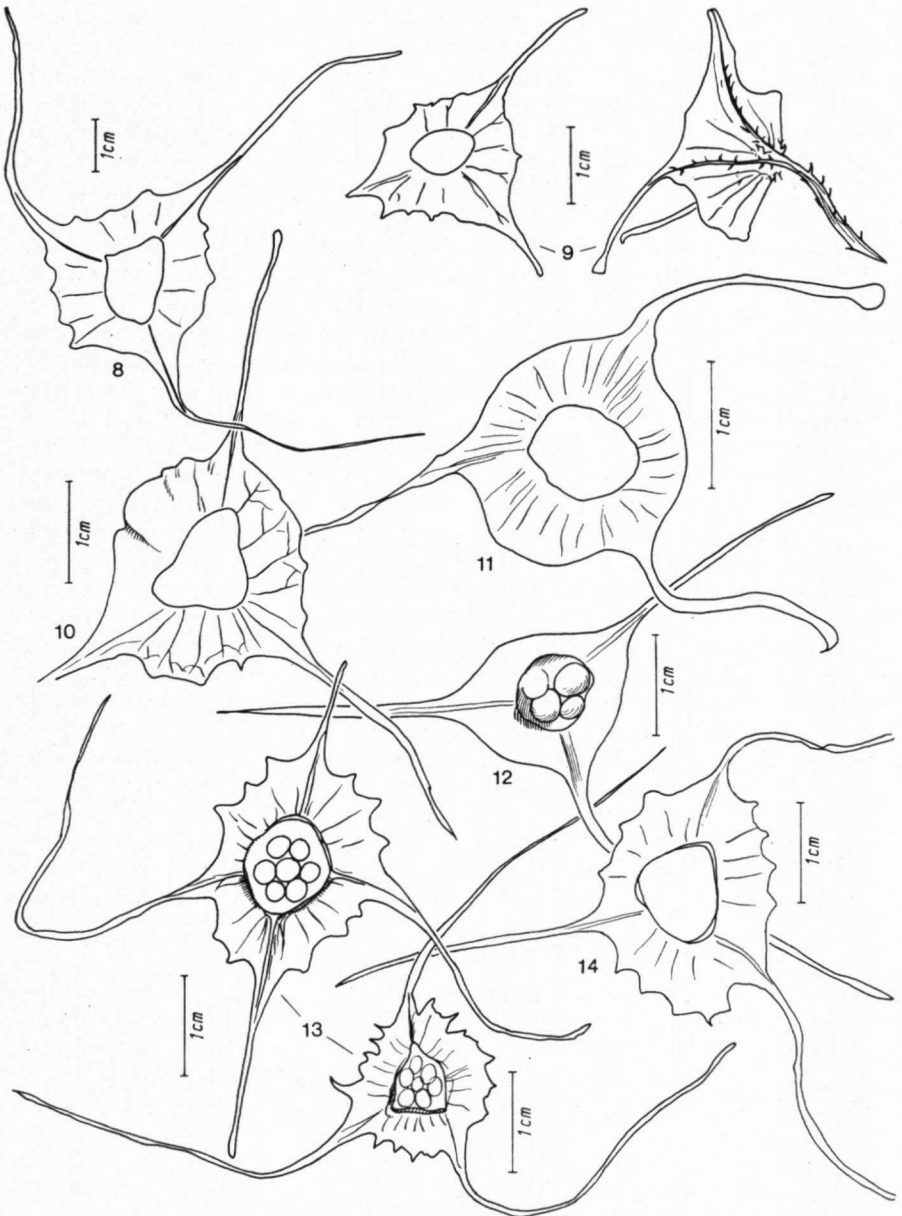
DISTRIBUTION : Cameroun and Gabon (Map 4), and in Sierra Leone, Liberia, Ivory Coast and Nigeria.

6. *Dorstenia involuta* M. Hijman & C. C. Berg, *sp. nov.*

Frutex 0.5-2 m altus, simplex vel ramosus. Folia disticha, membranacea vel subcoriacea, acuminata, basi (sub)obtusata, margine integro vel repando vel dentato, facie glabrescente; venæ secundariæ 7-14-jugæ; stipulæ triangulares, 2-4 mm longæ, caducæ. Inflorescentia singula; pedunculus in receptaculum sensim transiens; receptaculum discoideum vel late turbinatum, stellato-lobatum; lobi (3-) 6-8, reflexi, in appendices lineares vel subspatulatas 3-6 mm longas lateraliter apicaliterque involutos transeuntes; facies florifera stellata; flores masculi multi; flos femineus singulus, centralis; perianthium tubulosum; endocarpium ca. 10 mm longum.

Typus: *Bos* 3428, Cameroun, 13.5 km from Kribi, N of Ebolowa road, Kienke Reserve (holo-, WAG).

Shrub, 50-200 cm tall, with unbranched or branched stems, the stem and the lower parts of the lower branches woody, glabrous, the leafy parts of the branches puberulous with dense, short, white, (almost) straight and stiff, appressed hairs, usually intermixed with retrorse uncinata hairs; internodes 0.5-6 cm long, 1.5-5 mm in diameter. Leaves almost distichous, papery to subcoriaceous, obovate or oblanceolate to oblong, occasionally



Pl. 4. — Variation in the inflorescence of *D. barteri*. — var. *subtriangularis* : 8, Leeuwenberg 9142; 9, Leeuwenberg & Berg 9829; 10, Leeuwenberg 6905; 11, Leeuwenberg 5313; 12, Jacques-Félix 2524. — var. *paucinervis* : 13, Annet 442; 14, Zenker 140.

linear, (2-)6-20 cm long, (1-)2.5-6 cm broad; apex gradually or abruptly acuminate 5-20 mm long, 1.5-5 mm broad with an acute acumen; base cuneate or subobtuse, or one side cuneate and the other side subobtuse; margin entire or repand to sinuate or coarsely dentate; upper and lower surface glabrescent; veins slightly prominent above, more prominent beneath, in secondary veins 7-14 to occasionally 25 pairs, departing at 60°-80°(-90°) from the midrib, curving upwards and forming rather distinct connecting loops at 1-7 mm from margin; petioles 2-15 mm long, ca. 1.5 mm diameter, with the same indument as the stem but denser; stipules caducous, triangular and semi-amplexicaul, 2-4 mm long, ca. 1.5 mm broad at the base, with minute, stiff appressed hairs, mainly on the very prominent midrib.

Inflorescences solitary; peduncle often gradually passing into the receptacle, 6-25 mm long and 1-2 mm in diameter, densely puberulous with uncinata and stiff appressed hairs; receptacle subturbinate, becoming turbinate in fruit, the upper surface stellately lobed, strongly convex, at anthesis, but sometimes almost plane (very young receptacles concave), 2-5 mm high, in fruit up to 10 mm high, becoming 5-10 mm in diameter including the 0.5-1 mm broad, repand or slightly dentate margin; lobes of the receptacle (3-)6-8, reflexed, ca. 2 mm long and 2 mm broad, passing into linear, marginally and terminally involute and undulate, 3-6 mm long and 1-2 mm broad, reflexed primary appendages, between every two primary appendages occasionally one smaller secondary appendage; upper surface of margin and appendages as well as lower surface of the receptacle with rather dense, minute, white, uncinata and stiff, appressed hairs, lower surface of receptacle with conspicuous ribs passing into the primary appendages; staminate flowers numerous, perianth 2-lobed, with 2 stamens, perianth lobes ca. 0.25 mm in diameter, filament ca. 0.35 mm long, bent into several directions, anther ca. 0.35 mm long, ca. 0.25 mm broad, connective as broad as the theca; one central pistillate flower, perianth tubular, 0.5-1 mm in diameter at the base, ca. 0.5 mm high, style exceeding the perianth by 0.35 mm, stigmas two, spreading, ca. 0.7 mm long; endocarp body ca. 10 mm long, smooth.

DISTRIBUTION: Cameroun (Map 5).

D. involuta is closely related to *D. turbinata* from which it differs in the concave and lobed receptacle with reflexed short involute appendages. The inflorescences of *D. involuta* contain a single pistillate flower, whereas those of *D. turbinata* often contain more (up to 5) pistillate flowers.

7. *Dorstenia angusticornis* Engler

Bot. Jahrb. 46 : 274 (1911).

DISTRIBUTION : Cameroun (Map 5).

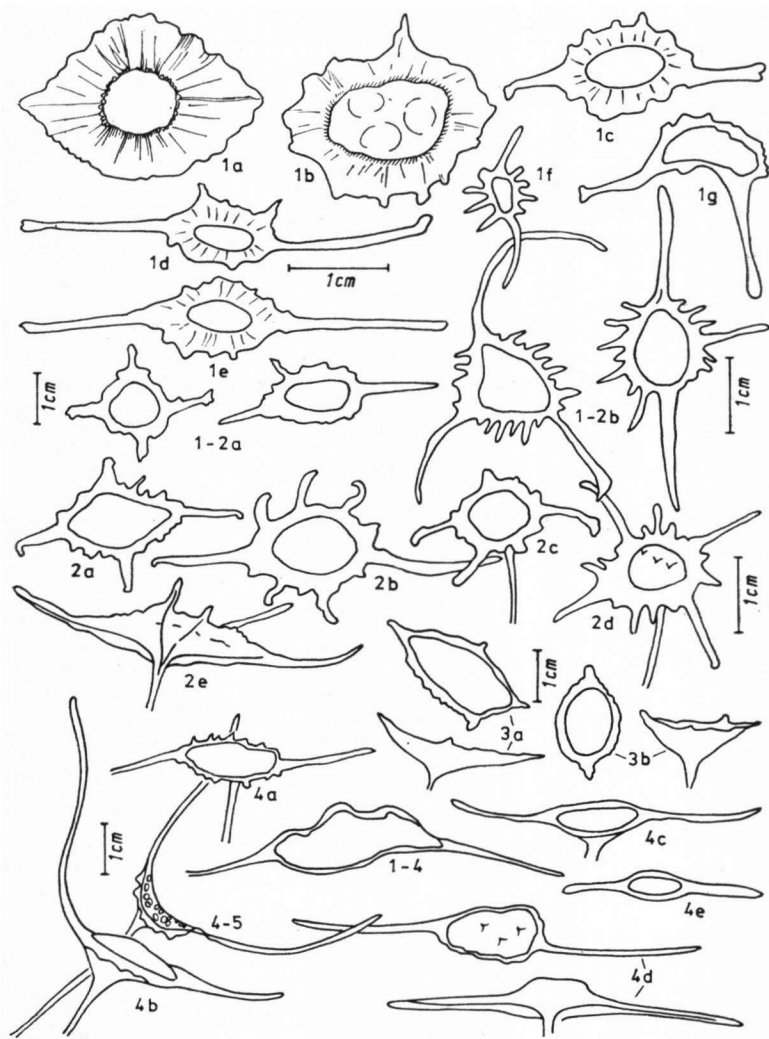


Fig. 5. — Variation in the inflorescence of *D. poinsettifolia*. — var. *poinsettifolia*: 1a, Letouzey 9503; 1b, Letouzey 10995; 1c, De Wilde 1676; 1d, Bamps 1340; 1e, Dinklage 206; 1f, Letouzey 12411; 1g, De Wilde 1470. — specimens intermediate between var. *poinsettifolia* and var. *staudtii*: 1-2a, Bamps 1473; 1-2b, De Wilde 2844. — specimen intermediate between var. *poinsettifolia* and var. *angusta*: 1-4, Buchholz s.n. — var. *staudtii*: 2a, Annet 371; 2b, Zenker 4647; 2c, Zenker 4117; 2d, Letouzey 10292; 2e, Staudt 148. — var. *angularis*: 3a, Letouzey 10876; 3b, Leeuwenberg 9090. — var. *angusta*: 4a, Letouzey 8467; 4b, Hallé 4557; 4c, Mildbraed 6110; 4d, Letouzey 12657; 4e, Bos 6321. — specimen intermediate between var. *angusta* and var. *librevillensis*: 4-5, Annet 506.

8. *Dorstenia dorstenioides* (Engler) M. Hijman & C. C. Berg, *comb. nov.*

— *Trymatococcus dorstenioides* ENGLER, Bot. Jahrb. 51 : 434 (1914).

— *Craterogyne dorstenioides* (ENGLER) LANJOUW, Rec. Trav. Bot. Néerl. 32 : 276 (1935).

DISTRIBUTION : Cameroun (Map 4).

9. *Dorstenia picta* Bureau

in DE CANDOLLE, Prodr. 17 : 277 (1873).

— *Dorstenia variegata* ENGLER, Monogr. Afr. Pfl. 1, Moraceæ : 16, tab. 6A (1898).

DISTRIBUTION : Cameroun and Gabon (Map 6) and in Congo.

10. *Dorstenia subdentata* M. Hijman & C. C. Berg, *sp. nov.*

Herba usque ad 25 cm alta, rhizomate repente et caulibus adscendentibus. Folia elliptica vel oblonga, acute acuminata, basi obtusa, margine irregulariter denticulato, facie superiore pilis albis longis rectis vel pro parte uncinatis; venæ secundariæ 7-9-jugæ; stipulæ subulatæ vel anguste triangulares, 2-4 mm longæ, persistentes. Inflorescentia singula; pedunculus 12-20 mm longus; receptaculum discoideum, suborbiculare, margine lobis multis ad 1 mm longis; perianthium florum pistilliferorum discoideum; stigmata dua.

TYPE : *Descoing 6517*, Gabon, Nyanga valley, 100 km S of Tchibanga (holo-, P).

Herb with a creeping, rhizome ca. 5 mm thick, and ascending stems ca. 25 cm tall, with dense, short and long, white, straight to curved or uncinuate hairs; internodes 1.5-5 cm long, 2.5-5 mm in diameter. Leaves in spirals, (thinly) papery, elliptic to oblong, broadest at or above the middle; apex sharply acuminate; base subobtuse; margin irregularly denticulate; upper surface hairy with long, white, straight, sometimes uncinuate hairs, lower surface with rather dense, short and long, white, straight to curved or uncinuate hairs mainly on the veins; midrib and secondary veins slightly impressed above, but plane, and even slightly prominent towards the apex, prominent beneath, 7-9 pairs of secondary veins; petioles 10-25 mm long, ca. 1 mm in diameter, indument like on the stem; stipules persistent, subulate or narrowly triangular, 2-4 mm long, ca. 1 mm broad at base, with rather dense short, white, straight hairs.

Inflorescences solitary; peduncle 12-20 mm long, ca. 1 mm in diameter, with dense, short and long, white, uncinuate or curved hairs; receptacle discoid (but slightly funnel-shaped, when young), the receptacle as well as the plane flowering face suborbicular, (8-)10-15 mm in diameter, the margin consisting of ca. 25 lobes, different in shape and size, blunt, at most 1 mm long and broad; lower surface of receptacle and lobes with minute, white, curved or uncinuate hairs, intermixed with sparser, longer and coarser, curved hairs; staminate flowers numerous, indistinct, perianth 2- or 3-lobed, with 2 or 3 stamens, filament ca. 0.2 mm long, anther ca. 0.1 mm long and broad, connective as broad as the theca; pistillate flowers ca. 16, perianth discoid, ca. 0.3 mm in diameter, 0.1 mm high, style not exceeding the perianth, stigmas two, spreading, ca. 0.4 mm long.

DISTRIBUTION : Gabon (Map 6), and in Congo.

The inflorescence of *D. subdentata* resembles that of *D. picta*. *D. subdentata* is distinct because of the rather long hairs on the upper leaf surface, in which character it resembles some East African species, like *D. brownii* Rendle.

11. *Dorstenia ophiocoma* K. Schumann & Engler

Bot. Jahrb. 20 : 145 (1894).

In this very variable species four varieties can be recognized in Cameroun and Gabon. They can be distinguished on various characters. Some specimens could not be satisfactorily placed in one of the varieties.

KEY TO THE VARIETIES OF *D. OPHIOCOMA*

1. Receptacle with 10-14(-18) lobes passing into primary appendages.
2. Stems (30-)50-100 cm tall var. *ophiocoma*
- 2'. Stems 5-30 cm tall var. *mungensis*
- 1'. Receptacle with less than 10 lobes passing into primary appendages.
3. Apex of the lamina (mostly) distinctly acuminate.
4. Stems 30-50 cm tall, almost glabrous; persistent stipules mostly conspicuous; receptacle with ca. 8 lobes var. *alternans*
- 4'. Stems (30-)50-100 cm tall, often rather densely puberulous; (sub)-persistent stipules mostly not conspicuous var. *ophiocoma*
- 3'. Apex of the lamina acute to faintly acuminate or obtuse.
5. Stipules crowded at the apex of the stem and in the leaf axils.
7. Secondary veins in the lamina ca. 8 pairs..... var. *stipulata* fa. *stipulata*
- 7'. Secondary veins in the lamina 4-6 pairs..... var. *stipulata* fa. *humilis*
- 5'. Stipules not crowded.
8. Secondary veins in the lamina 4-6 pairs..... var. *stipulata* fa. *humilis*
- 8'. Secondary veins in the lamina 4-10 pairs; margin of the lamina usually lobed var. *mungensis*

11a. var. *ophiocoma*

- *Dorstenia ophiocoma* K. SCHUMANN & ENGLER var. *longipes* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 18 (1898).
- *Dorstenia intermedia* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 17 (1898).
- *Dorstenia ophiocoma* K. SCHUMANN & ENGLER var. *minor* RENDLE in PRAIN, Fl. Trop. Afr. 6 (2) : 32 (1916).
- *Dorstenia vermoeseni* DE WILDEMAN, Pl. Bequaert. 6 : 70 (1932).

DISTRIBUTION : Cameroun and Gabon (Map 7), and in SE Nigeria and Zaïre.

11b. var. *alternans* (Engler) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia alternans* ENGLER, Bot. Jahrb. 46 : 273 (1911).
- *Dorstenia kribensis* ENGLER, Bot. Jahrb. 46 : 271 (1911).

DISTRIBUTION : Cameroun and Gabon (Map 8).

11c. var. mungensis (Engler) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia mungensis* ENGLER, Bot. Jahrb. 20 : 145 (1894).
- *Dorstenia mungensis* ENGLER var. *bipindensis* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 17, tab. 4B (1898).
- *Dorstenia mundamensis* ENGLER, Bot. Jahrb. 33 : 115 (1904).
- *Dorstenia ophiocomoides* ENGLER, Bot. Jahrb. 40 : 545 (1908).

DISTRIBUTION : Cameroun and Gabon (Map 9).

11d. var. stipulata (Rendle) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia stipulata* RENDLE, Jour. Bot. 53 : 298 (1915).

Within this variety two formæ can be recognized :

11d'. f. stipulata

DISTRIBUTION : Gabon (Map 10).

11d". f. humilis M. Hijman & C. C. Berg, *forma nov.*

Herba 5-20 cm alta. Folia 3-9 cm longa, venis secundariis 4-6 — jugis. Stipulæ haud congestæ. Receptaculum lobis triangularibus 2-5 vel interdum 8.

TYPE : Bos 6758, Cameroun, 4 km N of km 20 on Kribi-Lolodorf road (holo-, WAG).

Herb 5-20 cm tall. Leaves 3-9 cm long, with 4-6 pairs of lateral veins; stipules not crowded. Receptacle with 2-5, occasionally 8, triangular lobes.

DISTRIBUTION : Cameroun (Map 10).

12. *Dorstenia ciliata* Engler

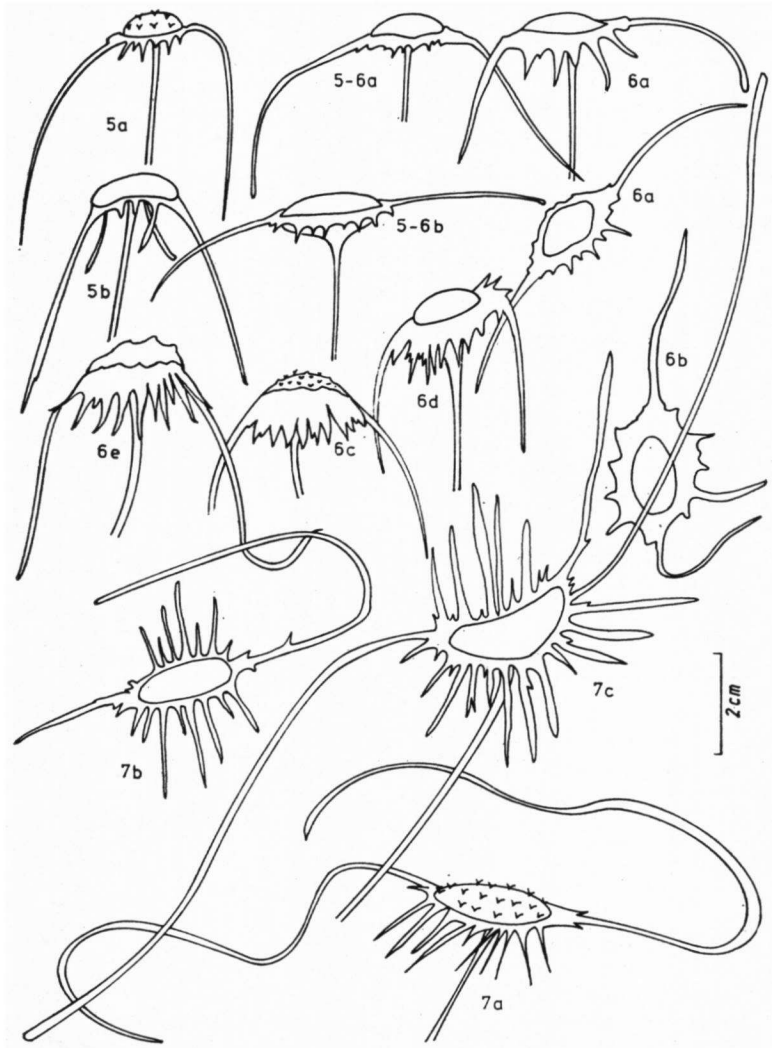
- Bot. Jahrb. 33 : 114 (1904).
- *Dorstenia jabassensis* ENGLER, Bot. Jahrb. 46 : 270 (1911).
- *Dorstenia jabassensis* ENGLER var. *cuneata* ENGLER, Bot. Jahrb. 46 : 271 (1911).
- *Dorstenia astericus* ENGLER, Bot. Jahrb. 51 : 428 (1914).

DISTRIBUTION : Cameroun and Gabon (Map 11), and in SE Nigeria.

13. *Dorstenia harmsiana* Engler

Bot. Jahrb. 33 : 115 (1904).

Two varieties can be recognized :



Pl. 6. — Variation in the inflorescence of *D. poinsettiiifolia*. — var. *glabrescens* : 5a, Hallé 4720 ; 5b, Hallé 834. — specimens intermediate between var. *glabrescens* and var. *librevillensis* : 5-6a, Letouzey 10047 ; 5-6b, Raynal 13420. — var. *librevillensis* : 6a, Klaine 214 ; 6b, Klaine 1212 ; 6c, Hallé 2221 ; 6d, Letouzey 18820 ; 6e, Hallé 2369. — var. *longicauda* : 7a, De Wilde 2053 ; 7b, Raynal 10505 ; 7c, Letouzey 10254.

13 a. var. harmsiana

- *Dorstenia lujæ* DE WILDEMAN, Pl. Nov. Herb. Thén. 1 : 221, tab. 50 (1907).
— *Dorstenia talbotii* RENDLE, Journ. Bot. 53 : 301 (1915).

Stipules often distinct, sometimes minute, 1-6 mm long, persistent. Peduncle, 10-25 mm long; appendages of the rather short (up to ca. 15 mm, occasionally up to 40 mm), rather broad (ca. 1 mm), primary appendages almost as long as the diameter of the receptacle and without small teeth or small appendages at their base or lower part.

DISTRIBUTION : Cameroun and Gabon (Map 11), and in SE Nigeria and Zaïre.

13 b. var. batesii (Rendle) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia batesii* RENDLE, Jour. Bot. 53 : 301 (1915).

Stipules absent or minute, at most 1 mm long, caducous. Peduncle 20-50 mm long; appendages of the receptacle up to ca. 30 mm long, primary appendages longer than the diameter of the receptacle and often with 1 or 2 teeth and occasionally also 1 or 2 small appendages at their base or lower part.

DISTRIBUTION : Cameroun and Gabon (Map 11), and in Congo.

14. *Dorstenia tenera* Bureau

in A. DE CANDOLLE, Prodr. 17 : 271 (1873).

Two more or less distinct varieties can be recognized :

14 a. var. tenera

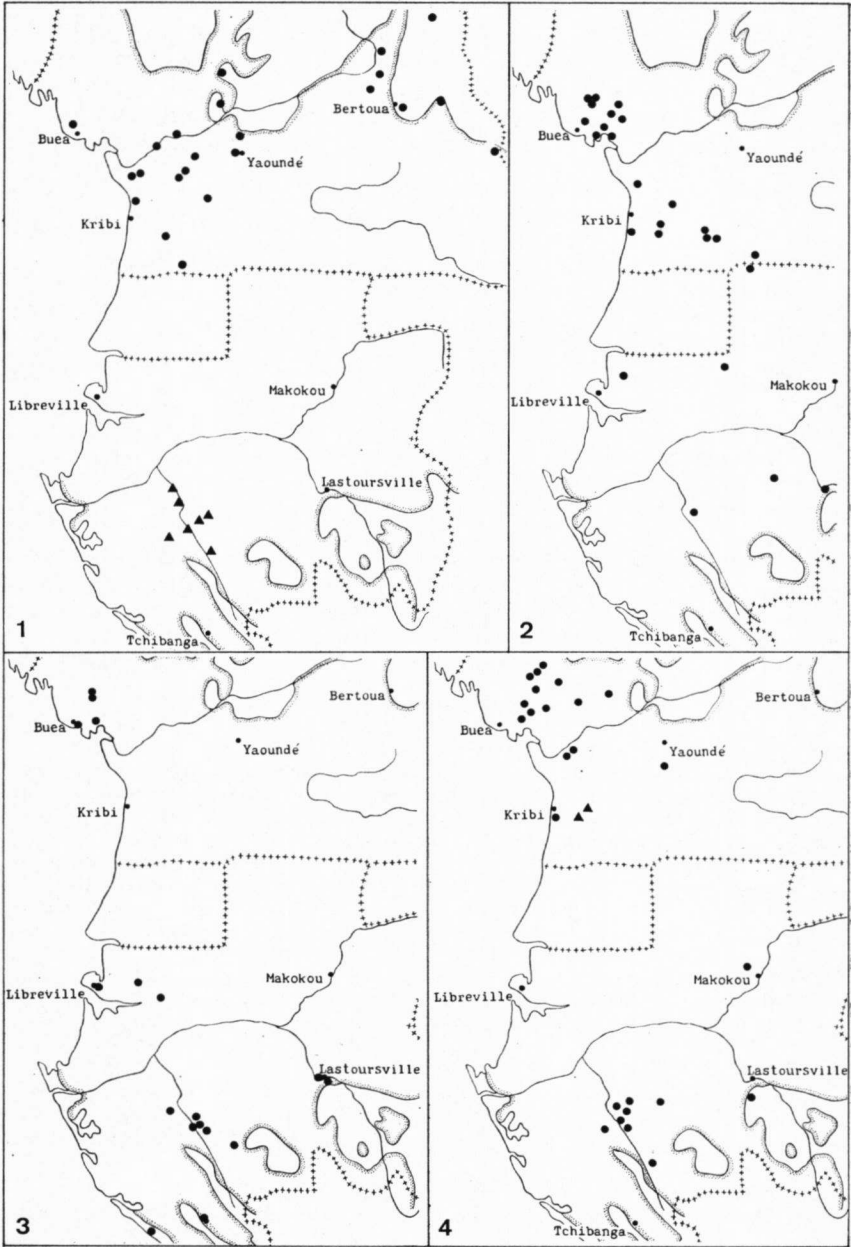
- *Dorstenia paucidentata* RENDLE, Jour. Bot. 53 : 300 (1915).

Stem and petioles with dense, long, coarse and curved hairs intermixed with sparse, short, uncinatè hairs, occasionally almost glabrous. Receptacle always without a margin, without or with one secondary appendage at the most; lower surface of the receptacle and appendages, as well as the peduncle, with rather dense, minute to uncinatè hairs intermixed mainly on the ribs of the receptacle, occasionally almost glabrous; pistillate flowers with a tubular perianth and rather long style exceeding the perianth, stigmas diverging at anthesis.

DISTRIBUTION : Cameroun and Gabon (Map 12), and in Rio Muni.

14 b. var. obtusibracteata (Engler) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia obtusibracteata* ENGLER, Bot. Jahrb. 46 : 271 (1911).



Pl. 7. — 1, ● *D. kameruniana*; ▲ *D. oligogyna*; 2, ● *D. africana*; 3, ● *D. elliptica*; 4, ● *D. turbinata*; ▲ *D. dorstenioides*.

Stem and petioles almost glabrous or sparsely puberulous with minute dome-shaped or uncinat hairs; stipules sometimes inconspicuous. Receptacle sometimes with a margin 0.5-1 mm broad, with 1-5 secondary appendages; lower surface of the receptacle and appendages, as well as the peduncle, almost glabrous; pistillate flowers with a discoid perianth and a short style not exceeding the perianth, stigmas divaricating at anthesis.

DISTRIBUTION : Cameroun and Gabon (Map 12).

15. *Dorstenia zenkeri* Engler

Monogr. Afr. Pfl. 1, *Moraceæ* : 14, tab. 7C (1898).
— *Dorstenia laurentii* DE WILDEMAN, Miss. Laur. : 69, tab. 32 (1905).

DISTRIBUTION : Cameroun (Map 12), and in Zaïre.

16. *Dorstenia barteri* Bureau

in A. DE CANDOLLE, Prodr. 17 : 272 (1873).

Within this very variable species four more or less distinct varieties can be recognized. The variation in the inflorescence is pictured in Pl. 3. and 4. Some specimens could not be satisfactorily placed in one of the varieties.

KEY TO THE VARIETIES OF *D. BARTERI*

1. Receptacle with up to 5 primary appendages, without or with a few secondary appendages, or appendages strongly reduced; flowers crowded or only slightly spaced.
2. Secondary veins in the lamina 5-6, apex gradually acuminate to acute var. *paucinervis*
- 2'. Secondary veins in the lamina 6-10, apex abruptly to gradually acuminate var. *subtriangularis*
- 1'. Receptacle with at least 5, to up to 20 primary appendages, usually alternating with 1-3 secondary appendages: flowers distinctly spaced.
3. Flowering face angular to stellate; margin 4-10 mm broad.... var. *multiradiata*
- 3'. Flowering face (sub)orbicular; margin mostly ca. 5 mm broad occasionally narrower (down to 1 mm broad) var. *barteri*

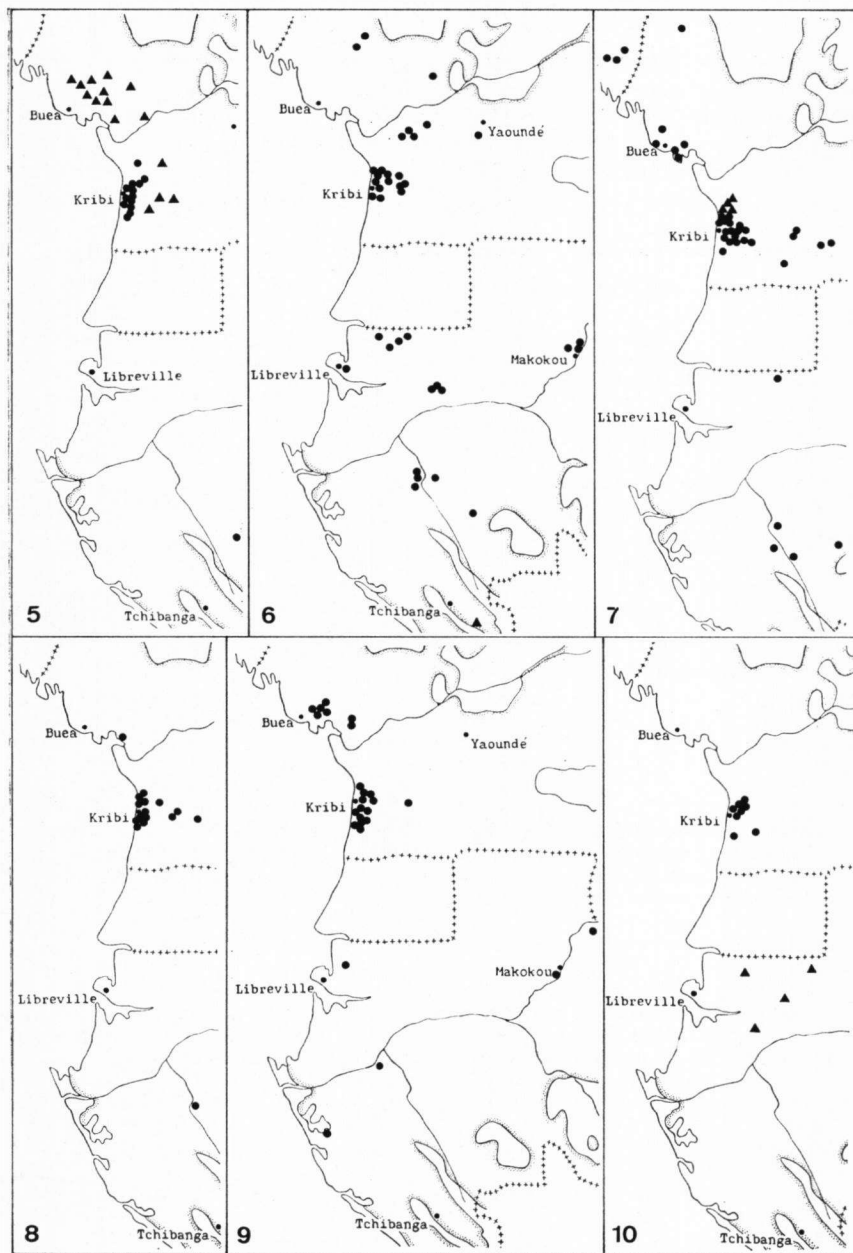
16 a. var. *barteri*

DISTRIBUTION : Cameroun (Map 13), and in Fernando Po and SE Nigeria.

16 b. var. *multiradiata* (Engler) M. Hijman & C. C. Berg, *stat. nov.*

— *Dorstenia multiradiata* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 15, tab. 3C (1898).

DISTRIBUTION : Cameroun (Map 13), and in Nigeria.



Pl. 8. — 5, ● *D. involuta*; ▲ *D. angusticornis*; 6, ● *D. picta*; ▲ *D. subdentata*; 7, ● *D. ophiocoma* var. *ophiocoma*, specimens with long peduncles, large receptacles and ca. 12 appendages; ▲ *D. ophiocoma* var. *ophiocoma*, specimens with short peduncles, small receptacles and 4-6 appendages; 8, ● *D. ophiocoma* var. *alternans*; 9, ● *D. ophiocoma* var. *mungensis*; 10, ● *D. ophiocoma* var. *stipulata* fā. *humilis*; ▲ *D. ophiocoma* var. *stipulata* fā. *stipulata*.

16 c. var. subtriangularis (Engler) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia subtriangularis* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 15, *tab. 4A* (1898).
- *Dorstenia piscaria* HUTCHINSON & DALZIEL, Fl. Trop. W. Afr., ed. 1, 1 : 427 (1928), *nomen*; Kew Bull. : 19 (1929), *descr.*

DISTRIBUTION : Cameroun and Gabon (Map 14), and in SE Nigeria.

16 d. var. paucinervis M. Hijman & C.C. Berg, *var. nov.*

Caules sat dense hirsuti. Folia venis secundariis 5-6-jugis. Stipulæ 2-5 mm longæ. subpersistentes. Inflorescentia virella; receptaculum et facies florifera subtriangularis vel subrhomboidalis, lobis primariis 3-4.

TYPUS : *Zenker 140*, Cameroun, Mimfia (holo-, U; iso-, WAG).

Stems densely hirsute. Leaves with 5-6 pairs of secondary veins; stipules 2-5 mm long, subpersistent. Inflorescences greenish; receptacle and flowering face subtriangular to subrhomboid; primary lobes 3-4.

DISTRIBUTION : Cameroun (Map 13).

17. *Dorstenia psilurus* Welwitsch

Trans. Linn. Soc. London, ser. 1, 27 : 71 (1869).

- *Dorstenia bicornis* SCHWEINFURTH, Bot. Zeit. 29 : 332 (1871), by mistake as *D. bicuspis* SCHWEINFURTH in Bull. Mus. Hist. Nat. Paris, ser. 1, 1 : 62 (1895).
- *Dorstenia psilurus* WELWITSCH var. *scabra* BUREAU in DE CANDOLLE, Prodr. 17 : 275 (1873).
- *Dorstenia scabra* (BUREAU) ENGLER, Bot. Jahrb. 20 : 142 (1894).
- *Dorstenia massonii* BUREAU, Bull. Soc. Bot. France 33 : 70, *tab. 1* (1886).
- *Dorstenia scabra* (BUREAU) ENGLER var. *denticulata* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 20 (1898).
- *Dorstenia klainei* HECKEL, Bull. Soc. Bot. France 47 : 260 (1900).
- *Dorstenia gillettii* DE WILDEMAN, Bull. Herb. Boiss., ser. 2, 1 : 838 (1901).
- *Dorstenia lukafuensis* DE WILDEMAN, Ann. Mus. Congo, ser. 4, 1 : 28 (1902).
- *Dorstenia tenuifolia* ENGLER, Bot. Jahrb. 33 : 116 (1904).
- *Dorstenia psilurus* WELWITSCH var. *compacta* DE WILDEMAN, Pl. Nov. Herb. Thén. 1 : 233, *tab. 54* (1907).
- *Dorstenia psilurus* WELWITSCH var. *subintegrifolia* DE WILDEMAN, Ann. Mus. Congo, ser. 5, 3 : 64 (1909).
- *Dorstenia scabra* (BUREAU) ENGLER var. *subintegrifolia* (DE WILDEMAN) RENDLE in PRAIN, Fl. Trop. Afr. 6 (2) : 52 (1916).
- *Dorstenia psiluroides* ENGLER, Wiss. Ergebn. Deutsch. Zentr.- Afr. Exped. 2 : 181 (1911).
- *Dorstenia psiluroides* ENGLER f. *subintegra* ENGLER, Wiss. Ergebn. Deutsch. Zentr.- Afr. Exped. 2 : 181 (1911).
- *Dorstenia stolzii* ENGLER, Bot. Jahrb. 51 : 432 (1914).
- *Dorstenia scabra* (BUREAU) ENGLER var. *longicaudata* ENGLER, Bot. Jahrb. 51 : 431 (1914).
- *Dorstenia psilurus* WELWITSCH var. *brevicaudata* RENDLE, Jour. Bot. 53 : 301 (1915).

DISTRIBUTION : Cameroun and Gabon (Map 15), and in Nigeria, Congo, Angola, Central African Republic, Zaïre, Uganda, Tanzania, Malawi, and Moçambique.

18. *Dorstenia poinsettiifolia* Engler

Bot. Jahrb. 20 : 142 (1894).

This species varies in many characters, especially in the shape and the size of the inflorescence, the indument of the stem petioles, lower leaf surface and inflorescences, the length of the stipules, and the number of pistillate flowers. The variation of the inflorescence is pictured in Pl. 5 and 6. Seven varieties can be recognized for Cameroun and Gabon. Some specimens could not be satisfactorily placed in the varieties.

KEY TO THE VARIETIES OF *D. POINSETTIIFOLIA*

1. Plants with sparse to dense white uncinata hairs, always intermixed with coarse white curved hairs; receptacle mostly with two primary appendages.
 2. Receptacle discoid and plane, or slightly turbinate in fruit; flowering face orbicular to angular.
 3. Margin 1-5 mm broad, undulate or with a few to many, up to 3 mm long, more or less triangular, secondary appendages var. *poinsettiifolia*
 - 3'. Margin up to ca. 1 mm broad, with many, up to 23(-40) mm long, linear, secondary appendages var. *longicauda*
 - 2'. Receptacle funnel-shaped, or to almost discoid, but then the flowering face angular.
 4. Margin up to 1 mm broad, not reflexed.
 5. Receptacle discoid and concave or funnel-shaped; margin entire or faintly lobed var. *angusta*
 - 5'. Receptacle funnel-shaped to almost discoid and plane; margin sinuate or lobed, fleshy; receptacle and flowering face angular var. *angularis*
 - 4'. Margin 1-5 mm broad, reflexed, distinctly lobed; receptacle discoid and convex var. *librevillensis*
- 1'. Plants glabrous to puberulous, with short white uncinata hairs only.
 6. Receptacle discoid and plane, or slightly convex in fruit; margin ca. 2 mm broad, with at least 3 primary appendages; plants puberulous var. *staudtii*
 - 6'. Receptacle discoid and convex; margin ca. 0.5 mm broad, reflexed, sparsely lobed and with 2 primary appendages; plants almost glabrous var. *glabrescens*

18 a. var. *poinsettiifolia*

- *Dorstenia poinsettiifolia* ENGLER var. *grossedentata* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 18, tab. 2A, a, b, d, e (1898).
- *Dorstenia poinsettiifolia* ENGLER var. *subdentata* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 18 (1898).
- *Dorstenia poinsettiifolia* ENGLER var. *undulata* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 18, tab. 2A, c, f, g (1898).
- *Dorstenia gabunensis* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 14 (1898).

DISTRIBUTION : Cameroun and Gabon (Map 16).

18 b. var. *longicauda* (Engler) M. Hijman & C. C. Berg, stat. nov.

- *Dorstenia longicauda* ENGLER, Bot. Jahrb. 51 : 429 (1914).

DISTRIBUTION : Cameroun and Gabon (Map 17).

18 c. var. angusta (Engler) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia angusta* ENGLER, Bot. Jahrb. 51 : 430 (1914).
- *Dorstenia lotziana* ENGLER, Bot. Jahrb. 51 : 431 (1914).

DISTRIBUTION : Cameroun and Gabon (Map 17).

18 d. var. librevillensis (De Wildeman) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia librevillensis* DE WILDEMAN, Pl. Bequaert. 6 : 42 (1932).
- *Dorstenia pierrei* DE WILDEMAN, Pl. Bequaert. 6 : 53 (1932).

DISTRIBUTION : Cameroun and Gabon (Map 18).

18 e. var. glabrescens M. Hijman & C. C. Berg, *var. nov.*

Planta subglabra. Stipulæ 2-3.5(-6) mm longæ, caducæ. Inflorescentia singula; pedunculus 10-27 mm longus; receptaculum discoideum, perconvexum; limbus ca. 0.5 mm latus, reflexus; appendices secundariæ paucæ, 1-5(-12) mm longæ, primariæ duæ, reflexæ, 20-80 mm longæ; flores feminei ca. 12.

TYPUS : Hallé & Villiers 5361, Gabon, Monts de Cristal, 12 km SW of the falls of the Kinguélé (holo-, P).

Plants glabrous or with sparse minute uncinatè or dome-shaped hairs. Stipules caducous, 2-3.5(-6) mm long, at the tip of the stem often up to 6 mm long and crowded. Inflorescences green, solitary; peduncle 10-27 mm long, ca. 0.5 mm thick; receptacle discoid and strongly convex, flowering face elliptic, margin ca. 0.5 mm broad, reflexed, with a few 1-5(-12 mm) long secondary lobes and two 20-80 mm long, reflexed primary lobes; pistillate flowers ca. 12.

DISTRIBUTION : Gabon (Map 18).

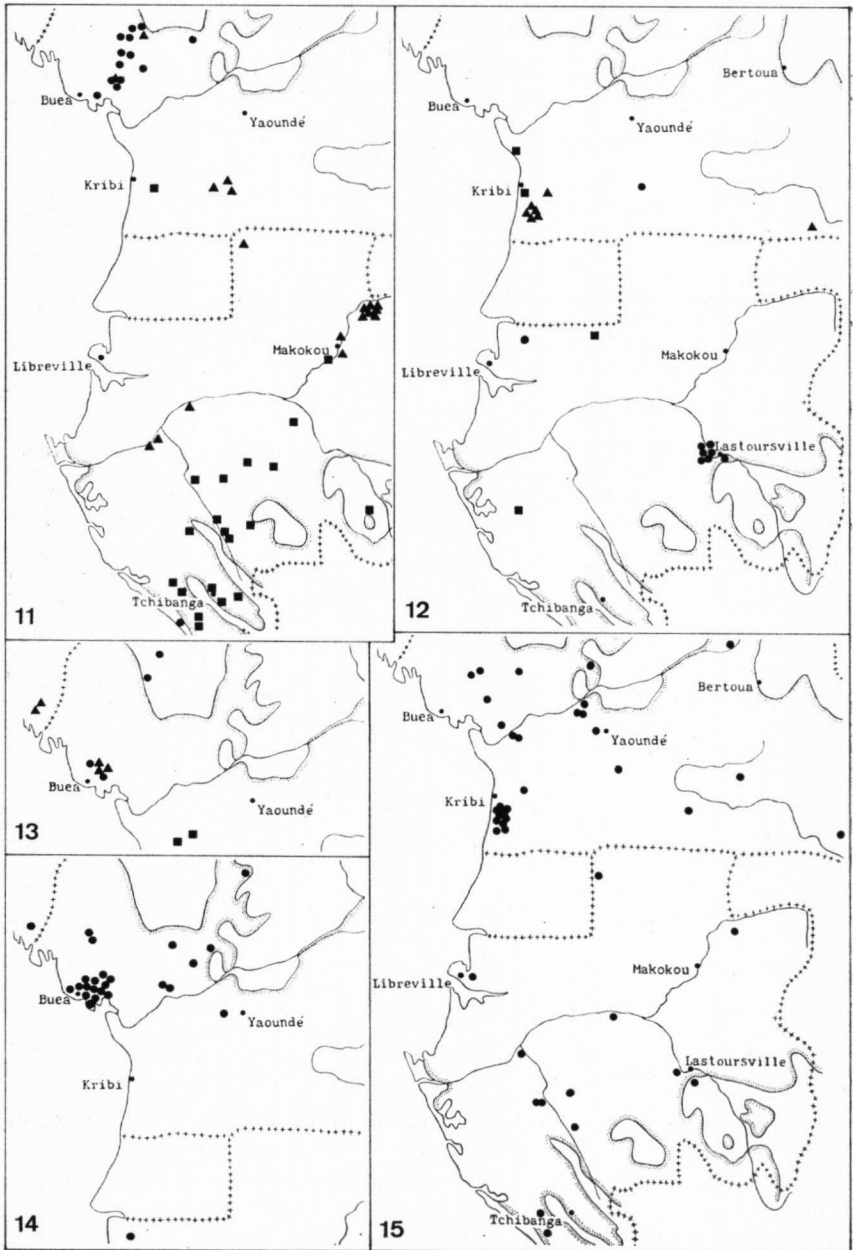
18 f. var. angularis M. Hijman & C. C. Berg, *var. nov.*

Planta puberula. Stipulæ ca. 2 mm longæ, persistentes. Inflorescentiæ binæ; pedunculus 3-7 mm longus; receptaculum infundibuliforme vel fere discoideum, facies florifera angularis, angulis 3-5, distinctis; limbus ad 1 mm latus, carnosus, sinuatus vel lobatus; appendices 2-5, triangulares, 2-4 mm longæ, carnosæ.

TYPUS : Leeuwenberg 9090, Cameroun, 7 km E of Yingui (holo-, WAG).

Plants densely puberulous with curved and uncinatè hairs. Stipules persistent, ca. 2 mm long. Inflorescences purplish, in pairs; peduncle 3-7 mm long, 1-2.5 mm thick; receptacle funnel-shaped to almost discoid, flowering face angular, mostly with 3-5 distinct angles, margin very narrow (up to 1 mm broad), sinuate or lobed, with 2-5, narrowly triangular, fleshy, 2-4 mm long, ca. 2 mm broad primary lobes proceeding from the angles of the receptacle.

DISTRIBUTION : Cameroun (Map 18).



Pl. 9. — 11, ● *D. ciliata*; ▲ *D. harmsiana* var. *harmsiana*; ■ *D. harmsiana* var. *batesii*; 12, ● *D. tenera* var. *tenera*; ■ *D. tenera* var. *obtusibractea*; ▲ *D. zenkeri*; 13, ● *D. barteri* var. *barteri*; ▲ *D. barteri* var. *multiradiata*; ■ *D. barteri* var. *paucinervis*; 14, ● *D. barteri* var. *subtriangularis*; 15, ● *D. psilurus*.

18 g. var. staudtii (Engler) M. Hijman & C. C. Berg, *stat. nov.*

- *Dorstenia staudtii* ENGLER, Monogr. Afr. Pfl. 1, *Moraceæ* : 13 (1898).
- *Dorstenia subrhombiformis* ENGLER, Bot. Jahrb. 51 : 428 (1914).

DISTRIBUTION : Cameroun (Map 18).

19. *Dorstenia brieyi* De Wildeman

- Repert. Sp. Nov. 13 : 373 (1914).
- *Dorstenia equatorialis* RENDLE, Jour. Bot. 53 : 300 (1915).
- *Dorstenia nyangensis* PELLEGRIN, Mém. Soc. Linn. Norm., ser. 2, 1 (3) : 78 (1928).

DISTRIBUTION : Gabon (Map 19), and in Congo and Zaïre.

20. *Dorstenia prorepens* Engler

- Bot. Jahrb. 20 : 144 (1894); Monogr. Afr. Pfl. 1, *Moraceæ* : 18, *tab. 1A, 3A* (1898)
- *Dorstenia prorepens* ENGLER var. *robustior* RENDLE, Jour. Bot. 53 : 300 (1915).

DISTRIBUTION : Cameroun (Map 19), and in Fernando Po and Nigeria.

21. *Dorstenia dinklagei* Engler

Bot. Jahrb. 20 : 143 (1894); Monogr. Afr. Pfl. 1, *Moraceæ* : 19, *tab. 3C* (1898).

DISTRIBUTION : Cameroun and Gabon (Map 19).

22. *Dorstenia letestui* Pellegrin

Mém. Soc. Linn. Norm, ser. 2, 1 (3) : 77, *tab. 5* (1928).

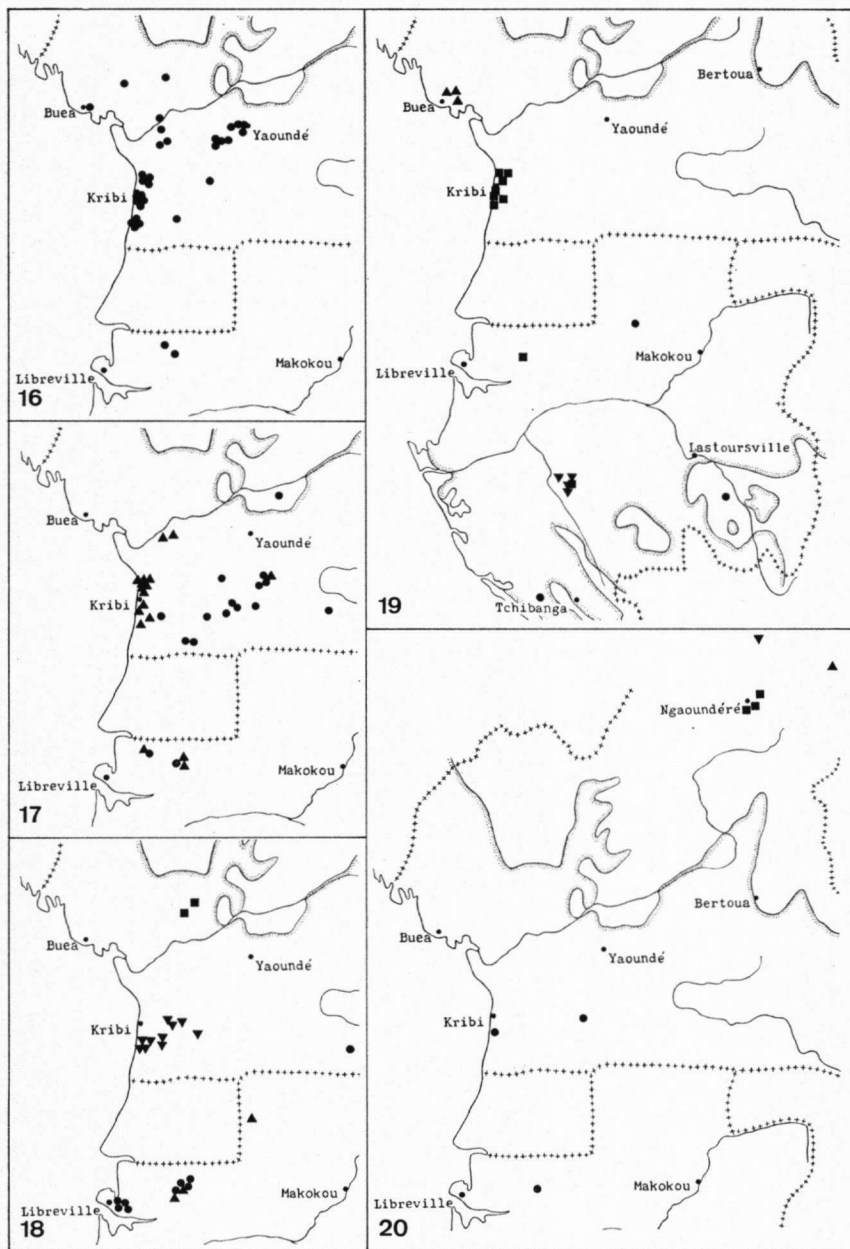
DISTRIBUTION : Gabon (Map 19).

23. *Dorstenia preussii* Engler

- Bot. Jahrb. 20 : 143 (1894); Monogr. Afr. Pfl. 1, *Moraceæ* : 21, *tab. 7D* (1898).
- *Dorstenia preussii* ENGLER var. *latidentata* ENGLER, Bot. Jahrb. 51 : 432 (1914).

DISTRIBUTION : Cameroun and Gabon (Map 20), and in Sierra Leone and Nigeria.

The following species have their main distribution in dry regions in Central Africa; within Cameroun they are known from a small area only. A thorough study of them would seem to fall slightly outside the scope of the present treatment. They are included in the key and in the enumeration, but no attempt has been made to provide their full synonymy.



Pl. 10. — 16, ● *D. poinsettiifolia* var. *poinsettiifolia*; 17, ● *D. poinsettiifolia* var. *longicauda*; ▲ *D. poinsettiifolia* var. *angusta*; 18, ● *D. poinsettiifolia* var. *librevillensis*; ▲ *D. poinsettiifolia* var. *glabrescens*; ■ *D. poinsettiifolia* var. *angularis*; ▼ *D. poinsettiifolia* var. *staudtii*; 19, ● *D. letestui*; ▲ *D. prorepens*; ■ *D. dinklagei*; ▼ *D. briei*; 20, ● *D. preusii*; ▲ *D. cuspidata*; ■ *D. benguellensis*; ▼ *D. barnimiana* var. *tropaeifolia*.

24. *Dorstenia cuspidata* Hochstetter ex A. Richard

Tent. Fl. Abyss. 2 : 272 (1851).

- *Dorstenia walleri* HEMSLEY, Gard. Chron. 2 : 178 (1893).
- *Dorstenia caulescens* SCHWEINFURTH ex ENGLER, Bot. Jahrb. 20 : 144 (1894).
- *Dorstenia unykæ* ENGLER & WARBURG, Bot. Jahrb. 30 : 291 (1901).
- *Dorstenia gourmaensis* A. CHEVALIER, Bull. Soc. Bot. France 58, mém. 8 : 207 (1912).
- *Dorstenia gourmaensis* A. CHEVALIER var. *floribunda* A. CHEVALIER, Bull. Soc. Bot. France 58, mém. 8 : 207 (1912).

DISTRIBUTION : Cameroun (Map 20), and in Upper Volta, Nigeria, Central African Republic, Sudan, Ethiopia, Tanzania, Malawi, Moçambique, Rhodesia, and Madagascar.

25. *Dorstenia benguellensis* Welwitsch

Trans. Linn. Soc., ser. 1, 27 : 71 (1869).

- *Dorstenia poggei* ENGLER, Bot. Jahrb. 20 : 146 (1894).
- *Dorstenia hockii* DE WILDEMAN, Bull. Bot. Bruxelles 3 : 278 (1911).
- *Dorstenia stenophylla* R. E. FRIES, Ark. Bot. 13 : 9 (1913).
- *Dorstenia poggei* ENGLER var. *meyeri-johannis* ENGLER, Bot. Jahrb. 51 : 434 (1914).

DISTRIBUTION : Cameroun (Map 20), and the Central African Republic, Sudan, Angola, Zaïre, Tanzania, Zambia, and Rhodesia.

26. *Dorstenia barnimiana* Schweinfurth var. *tropæolifolia* (Schweinfurth) Rendle

in PRAIN, Fl. Trop. Afr. 6 (2) : 71 (1916).

- *Kosaria tropæolifolia* SCHWEINFURTH, Verh. Zool.-Bot. Ges. Wien 18 : 687 (1868).
- *Dorstenia tropæolifolia* (SCHWEINFURTH) BUREAU, in A. DE CANDOLLE, Prodr. 17 : 276 (1873).
- *Dorstenia peltata* ENGLER, Bot. Jahrb. 46 : 277 (1911).

DISTRIBUTION : Cameroun (Map 20), and in the Central African Republic, and Ethiopia.

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