

## STUDIES IN MORACEAE I.

THE GENERA TRYMATOCOCCUS POEPP. ET ENDL. AND  
CRATEROGYNE LANJ.

by

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The genus *Trymatococcus* has been published in 1838 by Poeppig and Endlicher in *Nova Genera ac Spec. Plant* II. p. 30, and the genus was based on the species *T. amazonicus*. In 1876 Baillon added the species *T. africanus* to the genus. This gave a peculiar distribution for a genus with two species only: one in the Amazon region and one in West Africa. Later on several new species from Africa were described: three by Engler (*T. kamerunianus*, *dorstenioides*, and *Conrauanus*), one by De Wildeman (*T. Gilletii*) and one by Pellegrin (*T. oligogyne*). In 1922 (*Archivos do Jardim Botânico Rio de Janeiro* vol III. p. 22) Ducke described a second species from Amazonian Brazil (*T. paraensis*) and said in the notes to this new species that *Lanessania turbinata* Baill. should be transferred to the genus *Trymatococcus* and published a new combination (*T. turbinatus* Ducke). In 1925 (*Archivos* IV. p. 1) he emphasized his statements. *Trymatococcus* and published a new combination (*T. turbinatus* as well as *turbinatus* and *amazonicus* have the stamens erect in the bud and not inflexed as was described in the former publications. He also emphasized that the place of *Trymatococcus* in the system has to be changed and the genus has to take the place taken up to this moment by *Lanessania*. Among the material of the *Moraceae* from Surinam which I am studying for the Flora of Surinam, I found also a *Trymatococcus* species. By the study of this genus I was struck by the peculiar geographic distribution of the genus, which fully supported my observations on the *Euphorbiaceae* (cf. Lanjouw, *The Euphorbiaceae of Surinam* pp. 70—84). For the preparation of a map of this distribution I studied the african species and after a careful examination I noted a number of important differences between the african species and the american ones. Part of these differences were never noticed

before and no attention has ever been given to these facts. The first error in this case was made by Baillon. Most probably he had not seen *T. amazonicus* Poepp. et Endl. when he described his *T. africanus*. This is still more striking as he described in the same paper his genus *Lanessania* based on *L. turbinata*, which is a true *Trymatococcus* species. It is very curious that it was not possible for Baillon to observe his mistake because in his *Histoire des Plantes* (vol. VI. p. 199) he states „filamentis aestivatione inflexis vel nunc suberectis”. One can not understand why he did not observe that at least one of the species of *Trymatococcus* is the same as his genus *Lanessania*. After Baillon's publication, we could say that we had got two type species, one american (*Tr. amazonicus* Poepp. et Endl.) and one african (*Tr. africanus* Baill.). Apparently Engler did not study exactly *Tr. amazonicus* Poepp. et Endl. when he described his new species though he states (Monogr. Afr. Pfl. fam. I. Morac. p. 28): "Ein besonders auffallender Unterschied im Bau der Blüte und Frucht ist nicht zu constatieren; bei der amerikanischen Art sind die männlichen Blüten dreimännig mit dreiteiliger Blütenhülle, bei den afrikanischen Arten sind sie zweimännig". Likewise Ducke knew apparently only the american species when he pointed out the new place for this genus in the family. By these reasons only it is explained how confusion has crept into this genus.

I have studied many specimens of *Trymatococcus* from the following herbaria: Berlin-Dahlem, British Museum (Natural History Museum), Kew, Leiden, Paris and Utrecht. I wish to express my sincere thanks to the directors for their hospitality or for sending the material on loan.

I noticed the following differences between the two groups of species.

1. The shape of the receptacle. Rather long and more or less turbinate with the female flower deeply immersed and a long style exerting from a long and narrow tube in the american species. Topshaped and crateriform with the female flower less deeply immersed and not with a long and narrow tube in the african species.

2. Perianth of the female flower. Wanting in the american species. Two-lobed and with a thin tube round the ovary (sometimes adhering to the wall of the receptacle) in the african species. Baillon and Engler did not describe this perianth for *Tr. africanus* and *Tr. kamerunianus*. Engler, however, described it from *Tr. dorstenioides*. Rendle gave good descriptions in the

Flora of Tropical Africa (vol. IV. sect. II. p. 74) and described the perianth too but did not observe that it was wanting in the american species.

3. Male flower. Three-lobed perianth and 3 stamens which are erect in the bud in the american species. Two-lobed perianth and two stamens which are inflexed in the bud with a cushionlike base at the filament and a remarkable more or less thickened connective in the african species.

4. Consistency of the receptacle. Thick and fleshy in the american species; thin and fibrous in the african ones.

5. Fruit. Exocarp hard and rather woody in the american species, thin and chartaceous in the african ones.

6. Seed. Testa chartaceous and foveolate in the american species, membranous and not foveolate in the african ones.

In virtue of these differences the african species of *Trymatococcus* must be separated from this genus. I propose for them the generic name *Craterogyne* because of the shape of the receptacle.

In connection with this new genus the following notes are worth mentioning. In April of 1934 I studied the specimens of *Trymatococcus* in the British Museum. At that time the greater part of the manuscript had been written already and I had named the african species *Craterogyne*. In the herbarium of the British Museum I studied several sheets of Welwitsch n. 2594 belonging to *Cr. kameruniana* (Engl.) Lanj. All these sheets bear long notes, description and figures made by Welwitsch. Though they are not in his handwriting they are apparently copied from his notes. On one of the sheets is written: "*Trymatococcus? africanus* Welw. Cat. Angol. Mspt. Genus certe sat. aff. *Trymatococcus* Poepp." From this one may deduce that Welwitsch thought it probable that it did belong to a new genus. This is still more obvious from the following note on an other sheet: "*Trymatococcus africanus* Welw. n. sp. (*Centrogyne angolensis* Welw. mspt. olim)." It is still more remarkable that my generic name is nearly the same as suggested by Welwitsch for these plants about 80 years ago! It is a pity that Welwitsch did not publish his *Trymatococcus africanus*, as now this species, which is much more widely distributed (see fig. 1) than Engler's *Tr. africanus*, bears the local name *kamerunianus*, whilst the species now bearing the name *Tr. africanus* is restricted to the Cameroons.

The genus *Craterogyne* has to be inserted in the *Moroideae-Dorsteniae* on the same place which is now occupied by *Trymatococcus* (cf. Engler in *Natürl. Pfl. fam.* III. 1. p. 80). *Trymato-*

*coccus* has to be removed to the *Artocarpoideae-Brosimae* taking the place of *Lanessania* (cf. Engler l.c. p. 88).

The latin descriptions of *Trymatococcus* and *Craterogyne*, keys to the species for both genera and descriptions from the species

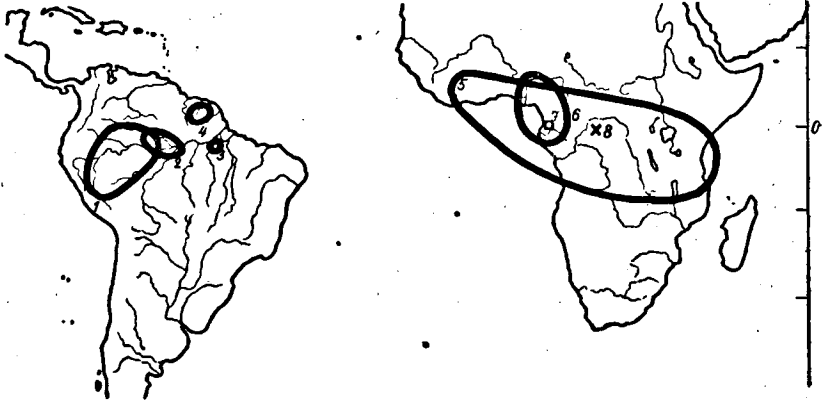


Fig. 1. Geographical distribution of *Trymatococcus* and *Craterogyne*. 1. *Tr. amazonicus* Poepp. et Endl. 2. *Tr. turbinatus* Ducke 3. *Tr. paraensis* Ducke 4. *Tr. oligandrus* Lanj. 5. *Cr. kameruniana* Lanj. 6. *Cr. africana* Lanj. 7. *Cr. dorstenioides* Lanj. 8. *Cr. oligogyne* Lanj.

of *Trymatococcus* follow here. For the descriptions of the species of *Craterogyne* I refer to those of Rendle in the Flora of Tropical Africa.

The following abbreviations have been used for the Herbaria:

Berlin—Dahlem	D
Kew	K
Leiden	L
British Museum	N-H
Paris	P
Utrecht	U

The numbers of those specimens which I have seen are indicated with !, and a herbarium indication.

*Trymatococcus* Poepp. et Endl. Nov. Gen. et Spec. II (1838) p. 30; Miquel in Fl. Bras. IV. 1 (1853) p. 107; Bureau in D.C. Prodr. xvii (1873) p. 277; Baillon Hist. des Plantes vi (1877) p. 199; Bentham et Hooker Gen. Pl. iii (1880) p. 366; Engler Natürl. Pfl. fam. iii. 1. (1889) p. 80.

Arbores vel frutices. Folia alterna, petiolata, bistipulata, subintegra, coriacea vel membranacea, nervis subtus prominentibus. Flores monoeci. Receptacula 1—3 in axillis foliorum pedunculata, fusca vel fulva, velutina vel pubescentia, bracteis nonnullis praesertim basi praedita, apice flores 2—∞ masculos gerentia, medio florem singulum femineum profunde immersum circumcludentia. Flores masculi perianthio 3-lobato, staminibus 2—3 in alabastro erectis, ovarii rudimento parvo, subulato praediti. Flores feminei sine perianthio, ovario 1-loculari, ovulo singulo pendulo, stylo longo, stigmatibus binis longis vel brevibus e receptaculo exsertis. Fructus subglobosus vel globosus, exocarpio duro e receptaculo facto, apice reliquiis florum masculorum coronatus. Semen globosum, testa fusca chartacea, foveolata, cotyledonibus equalibus vel inaequalibus.

Distributio: Peruvia, Brasilia et Guiana.

Typus generis: *Trymatococcus amazonicus* Poepp. et Endl.

Key to the species.

1. a. Leaves glabrous at both sides. Male flowers 2—4 on each receptacle ..... 4. *T. oligandrus* (Benoist) Lanj.
- b. Leaves more or less hairy along the nerves beneath. More than 4 male flowers on each receptacle. usually numerous ..... 2
2. a. Leaves usually 4—5 cm long, distinctly reticulate above, 4—6 side-nerves ..... 3. *T. paraensis* Ducke
- b. Leaves usually longer than 5 cm (10—20 cm), not distinctly reticulate above, 8—12 side nerves ..... 3
3. a. Young branches and petioles tomentose. Receptacles velutinous, without hook-shaped hairs. Filaments rather long c. 4—5 times as long as the anther  
2. *T. turbinatus* (Baill.) Ducke
- b. Young branches and petioles hirsute. Receptacles densely pubescent with short patent hairs intermixed with long, hyaline, patent and hook-shaped hairs. Filaments short about as long as the anther or shorter

1. *T. amazonicus* Poepp. et Endl.

1. *Trymatococcus amazonicus* Poepp. et Endl. Nov. Gen. et Spec. II (1838) p. 30, t. 142; Miquel in Fl. Bras. IV 1 (1853) p. 107, t. 35 fig. 5; Bureau in D.C. Prodr. XVII (1873) p. 278; Ducke in Arch. do Jard. Bot. Rio de Janeiro III (1922) p. 23; in Arch. IV (1925) p. 1.

Small tree or shrub 4—6 m high, laticiferous. Young branches

and petioles sparsely or more or less densely and patently hirsute with often unequal hairs and angulate. Leaves alternate; stipules 2—5 mm long, lanceolate, acuminate, hirsute; petioles 4—12 mm long. Limb elliptic, oblong or sometimes slightly obovate-elliptic, rounded or obtuse or acute at the base, long caudate-acuminate or sometimes short acuminate at the apex, (7) 11—16 (22.5) cm long, (3) 4—7 (8) cm broad ( $13.5 \times 5.5$ ,  $20 \times 6.5$ ,  $13.5 \times 7$ ,  $9.5 \times 3.5$ ,  $10 \times 5$ ,  $13 \times 6.2$ ,  $22.5 \times 7$ ,  $7 \times 3$ ), membranaceous or subcoriaceous, but for the hirsute midrib glabrous above, sparsely hairy along the nerves and veins or nearly glabrous beneath, margin subentire or undulate; side-nerves c. 8—12, tertiary nerves reticulate, nerves and veins distinctly prominent beneath. Receptacles (1) 2 in the axils of the leaves, c. 4—7 mm long, the male flowers bearing apex c. 5—6 mm broad, and c. 1—2 mm broad at the base, angulate, densely pubescent with short patent hairs, intermixed with long, hyaline, patent and at the apex hook-shaped hairs just as the 2—5 (13) mm long peduncle, with broad triangular or lanceolate, acute bracts at the base and a few scattered on the receptacle especially just below the male flowers vested with the same hairs as the receptacle. Female flower immersed in the receptacle but less deep as in the other species and with a wider canal for the style, the two rather long and slightly hairy stigmas exerting. Male flowers numerous with a 3-lobed perianth, vested just as the bracts and the receptacle, rarely without the long hook-shaped hairs, stamens 3 (2) with a broad and very short filament, ovary rudiment very small, subulate. In fruit receptacle globose, hispid or glabrescent, up to 20 mm in diameter coronate by the bundle of male flowers; seed 10—15 mm in diameter, testa brown chartaceous, foveolate, cotyledons hemispherical, nearly equal.

**Distribution:** Brazil and Peru.

**Peru:** Near Yurimaguas (Poeppig s.n. Type! Herb. D.); id. Huallaga R. near Tarapoto (Spruce n. 3895! fl. May 1855, Herb. D. N-H.); id. in not inundated virgin forest (Kuhlmann Herb. Rio de Janeiro n. 18261! fr. Febr. 12th 1924, Herb. D. U.); near Iquitos (Ducke Herb. Goeldi n. 7537! fr. July 31st 1906, Herb. N-H. U.); id. (Kuhlmann Herb. Rio de Janeiro n. 18262! fl. Febr. 23rd 1924, Herb. D. K. U.); id. (Tessmann n. 5350! fl. Aug. 1925, Herb. D.); id. (Llewelyn Williams n. 3767! fl. Oct. 1929, Herb. K., n. 3735, Herb. N-H.);

**Brazil:** Rio Negro near Barra (R. Spruce s.n.! fr. Herb. D. N-H.); id. by a lake (R. Spruce n. 1391! y. fr. March 1851, Herb. K.); Rio Negro near San Gabriel da Cachoeira (R. Spruce n. 2242! fr. Herb. N-H.); Rio Uaupès near Panuré (R. Spruce n. 2859! fr. Herb. D. K. N-H.); Beside Igarape de Manaos (Traill n. 709! fl. Aug. 24th 1874, Herb. K. P.) specimen with slender peduncles up to 13 mm long and

rather long leaves; Amazonas near Teffe (Ducke Herb. Goeldi n. 7346! fl. June 19th 1906, Herb. N-H. U.); Amazonas, Rio Japura (Ducke Herb. Goeldi n. 6754! fl. Sept. 14th 1904, Herb. N-H); Amazonas near Sta Antonio do Iça (Ducke Herb. Goeldi n. 7697! fl. Sept. 27th 1906, Herb. U.).

2. *Trymatococcus turbinatus* (Baill.) Ducke in Arch. do Jard. Bot. Rio de Janeiro III (1922) p. 23; in Arch. IV (1925) p. 1; — *Lanessania turbinata* Baill. in Adansonia XI (1876) p. 298; Engler in Natürl. Pfl. fam. ed. 1, vol. III. 1. (1889) p. 88.

Small tree. Young branches and petioles fuscous-tomentose and angulate. Leaves alternate; stipules c. 8 mm long, lanceolate, acuminate; fuscous-pubescent, deciduous; petioles 3—12 mm long. Limb oblong, elliptic-oblong or elliptic, slightly unequal and obtuse or subacute at the base, caudate-acuminate at the apex, (5) 12—21 cm long, 5—8.5 cm broad, margin subentire or repand, rigid-chartaceous or subcoriaceous, but for the midrib and the lower part of the side-nerve glabrous above, densely pubescent especially along the nerves and veins beneath; side-nerve 10—11, tertiary veins reticulate, inconspicuous above, nerves and veins prominent and flavescent beneath. Receptacles in the axils of the leaves, c. 10 mm long, c. 10 mm broad at the apex and 4 mm broad at the base, angulate and rugose, brown velutinous like the 5—8 mm long peduncle, 5—6 thick, semi-orbicular, acute, thinner margined, small bracts at the base and a few of the same bracts on the receptacle at various places. Female flower deeply immersed in the receptacle, stigmas rather long, exserting. Male flowers with a 3-lobed perianth, lobes obtuse and imbricate, stamens 2 (3) filaments thick, anthers small introrse, ovary rudiment central, small, subulate. Fruit subglobose (?) velutinous, c. 3 cm in diameter, slightly angulate.

#### Distribution: Brazil.

Brazil: Prov. Rio Negro near Barra (Spruce n. 1825! fl. Oct. 1851. Type in Herb. Paris! duplicates seen in herb. K. and D.). Specimen in Kew labelled: "*Brosimum turbinatum* n. sp. Tree 20 ft  $\times$  12 in.—milk dirty white, reputed medicinal. Recept. fulvous at base passing to cream at apex."; Prov. Amazonas, near Uípiringa (Manaós) in not inundated forest (Kuhlmann herb. Rio de Janeiro n. 18263! Dec. 21st 1923, dupl. seen in herb. K. D. U.; Ducke herb. R. n. 23973! Nov. 29th 1932, dupl. herb. U.).

3. *Trymatococcus paraensis* Ducke in Arch. do Jard. Bot. Rio de Janeiro III (1922).

Tree 30 m high. Young branches and petioles ferruginous pubescent. Leaves alternate; stipules small lanceolate appressed pubescent, deciduous; petioles 3—6 mm long. Limb elliptic, obovate-

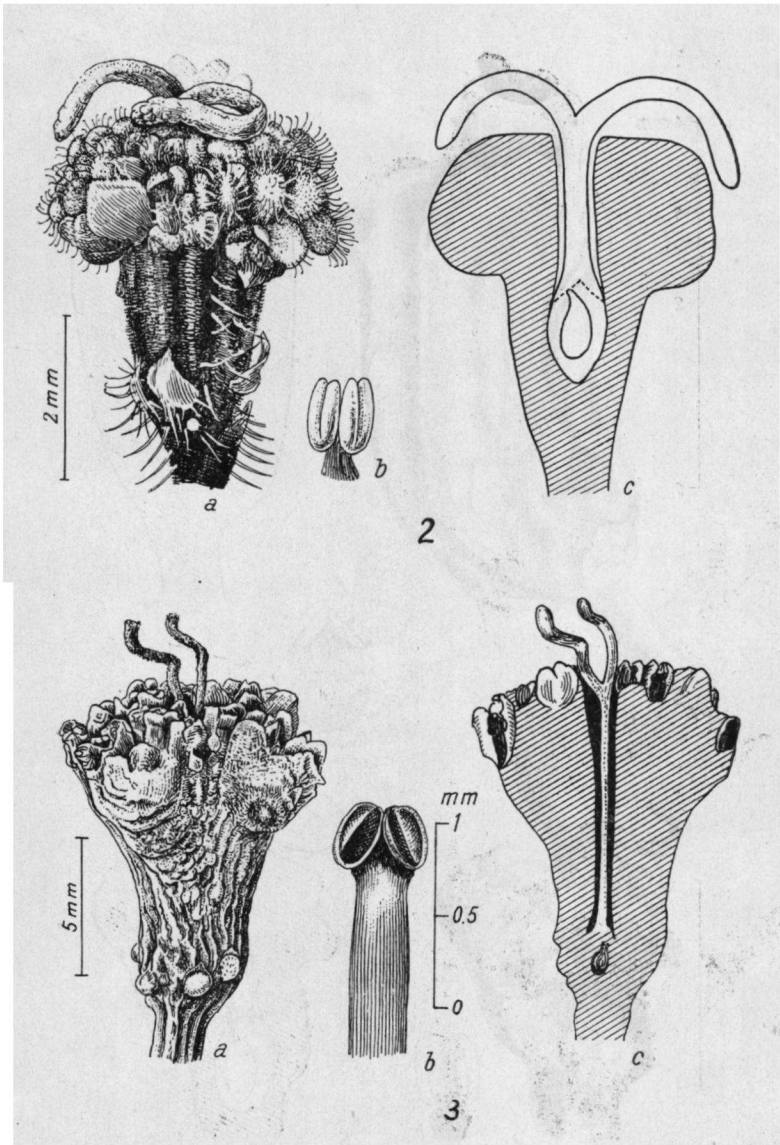


Fig. 2. *Trymatococcus amazonicus* Poepp. et Endl.

Fig. 3. *Trymatococcus turbinatus* (Baill.) Ducke. a. receptacle, b. stamen, c. longitudinal section (schematic).



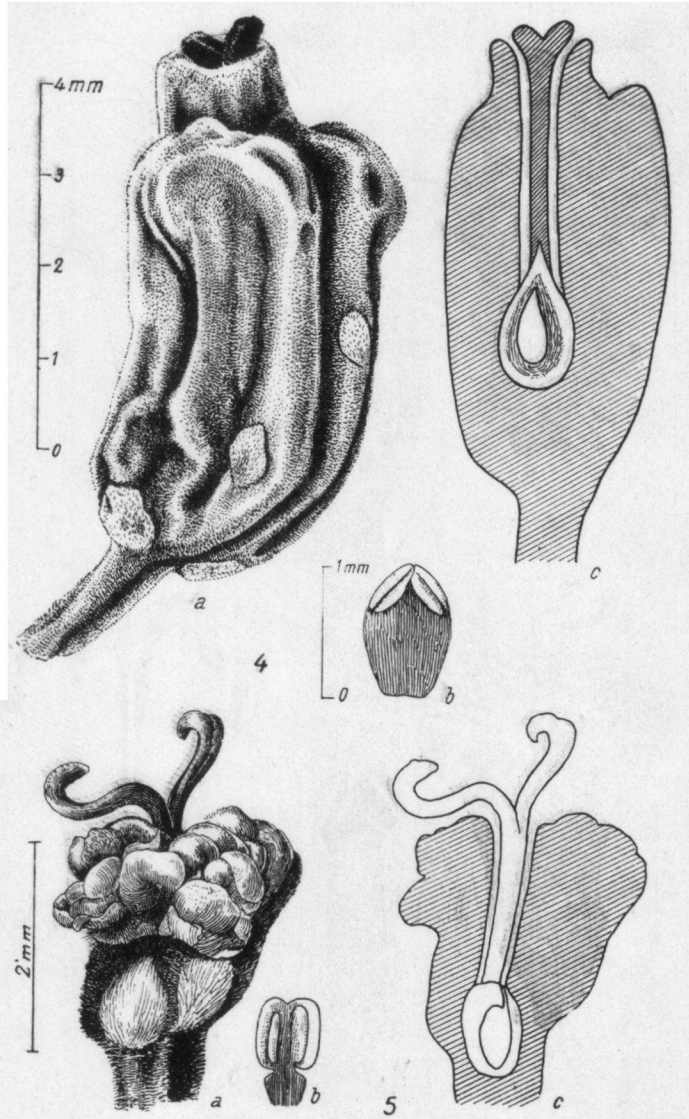


Fig. 4. *Trymatococcus oligandrus* (Benoist) Lanj.

Fig. 5. *Trymatococcus paraensis* Ducke. a. receptacle, b. stamen, c. longitudinal section (schematic).

elliptic or oblong-elliptic, (3) 4—5 (6) cm long, 2—4 cm broad, obtuse or acute at the base, shortly acuminate or obtusely apiculate at the apex, margin entire slightly recurved, coriaceous, but for the pilose midrib, glabrous and often rather shining above, pallid and shortly pilose along the nerves and veins beneath; side-nerves 4—6, tertiary veins reticulate, slightly impressed above, strongly prominent and flavescent beneath. Receptacles 2 (1—3) in the axils of the leaves, in youth c. 2 mm long and 1 mm broad, brown velutinous, 4—5, often unequal sericeous bracts at the base, many young male flowers at the apex with the two long exerting stigma's in the centre. Peduncle tomentellous, 2—5 mm long. The elder receptacles c. 8 mm long, ovate-turbinate, rugose, at the apex dilated by the part bearing the male flowers. Female flower deeply immersed in the centre of the receptacle, ovary 1-celled with 1 pending ovule, style with two long exerting stigma's. Male flowers, perianth 3-lobed, stamens (2)—3, filaments broad, and narrowed just below the anther, rudimentary ovary very small, subulate. Fruit not seen.

**Distribution:** Only known from Para.

**Brazil:** Near Gurupá (Para), in the moist, not inundated virgin forest (Ducke n. 16560! Sept. 29th 1916, Type in Herb. Rio de Janeiro, duplicates seen in herb. D. K. N-H. U.).

4. *Trymatococcus oligandrus* (Benoist) Lanj. nov. comb.; — *Lanessania oligandra* Benoist in Bull. du Mus. Nat. Hist. nat. 27 (1921) p. 199.

Large tree. Young branches minutely puberulous. Leaves alternate; small, 1.5—2 mm long, puberulous, lanceolate, acute, deciduous; petioles 2—5 mm long, puberulous, canaliculate above. Limb elliptic, oblanceolate-elliptic, oblanceolate or rarely oblong-elliptic, 4—9 cm long and 1.8—3.7 cm broad, at the apex with a 0.5—2 cm long and 2—4 mm broad obtuse acumen, coriaceous or subcoriaceous, side-nerves 8—10 arcuately connected at a small distance from the margin, tertiary nerves reticulate, nerves slightly prominent above, strongly prominent beneath. Receptacles 1—2 in the axils of the leaves, turbinate and angulate (when dried) brown velutinous, 3—4 semiorbicular bracts at the base of the receptacle and often a few small bracts on the receptacle, all bracts are velutinous. Peduncle velutinous. Female flower solitary deeply immersed in the centre of the receptacle, ovary 1-celled, with 1 pending ovule, style long bearing two stigmas which slightly exert at the top of the receptacle from the central cavity. Male flowers 2—4 (often 3) inserted at the top of the receptacle, perianth 3-lobed, outside but for the utmost top velutinous, the outer

lobe larger and semiorbicular, the two inner lobes small; stamens (2)—3, with a short and thick filament, and small divergent anthers, rudimentary ovary small subulate, hairy. Fruit globose c. 12 mm in diameter, velutinous, fruitwall formed by the receptacle hard papery, bearing still at the apex the rest of the male flowers. Seed globose c. 9 mm in diameter, with two very unequal cotyledons.

**Distribution:** French and Dutch Guiana.

**French Guiana:** In the Forest near Gourdonville (Benoist n. 1573! fl. Aug. 27th 1914). (Type herb. Paris).

**Surinam:** Brownsberg tree n. 1268 (B.W. n. 6645! fl. Oct. U.; B.W. n. 6823! fr. March U.); Sectie O, tree n. 683 (B.W. 1365! st. U.; B.W. n. 3417! fr. Nov. U.; B.W. n. 6098! fr. March U.); Upper Suriname R. near Goddo (Stahel n. 50! fr. Jan. U.); Wilhelmina Mountains (Stahel 357- B.W. n. 7236! fr. May U.); without precise locality (B.W. s.n.! U.).

**Vernacular names:** Letterhout (Surin. Dutch), Beloekoro (Arow.); Joekoeipio (Karaib.).

**Craterogyne** Lanj. nov. gen.; — *Trymatococcus* Poepp. et Endl. sensu Baill. et Auct. p.p. Baillon in Hist. des Plantes Vol. VI (1877) p. 199; Engler in Monogr. Afr. Pfl. fam. I. Morac. (1898) p. 28; Rendle in Fl. Trop. Afr. Vol. VI. sect. II. (1917) p. 74; Bentham et Hooker, Genera Plantarum Vol. III. pars I. (1880) p. 366.

Frutices vel arbores parvae. Folia alterna, petiolata, bistipulata, integra vel dentata, membranacea, nervis subtus prominentibus. Flores monoeci. Receptacula 1—5 in axillis foliorum pedunculata, obconica, apice crateriformia, glabra vel minute pilosa, extus ebracteata vel rarius bracteis nonnullis praedita, in margine craterae bracteigera superficie, flores masculos numerosos gerentia, medio florem singulum femineum, immersum circumcludentia. Flores masculi perianthio 2-lobato, staminibus 2 in alabastro erectis, filamentò basi in torum incrassato, connectivo interdum transversaliter dilatato, ovarii rudimento nullo. Flores feminei perianthio apice bilobato praediti, perianthii parte immersa tenuissima et saepe plus minusve cum receptaculo connata, ovario 1-loculari, ovulo singulo pendulo, stylo breviusculo, ramis binis longis e receptaculo exsertis. Fructus subglobosus, exocarpio firme chartaceo e receptaculo facto, endocarpio pelliculiformi, apice reliquiis florum masculorum coronatus. Semen globosum testa membranacea, cotyledonibus inaequalibus.

**Distributio:** Africa tropica.

**Typus generis:** *Craterogyne africana* (Baill.) Lanj.

## Key to the species.

1. a. Receptacle outside with bracts. Leaves with a long decurrent base ..... 4. *Cr. oligogyna* (Pellegrin) Lanj.
  - b. Receptacle outside without bracts. Leaves not with a long decurrent base ..... 2
  2. a. Margin of the receptacle bearing rather long bracts. .... 3. *Cr. dorstenioides* (Engl.) Lanj.
  - b. Margin of the receptacle with minute lobes ..... 3
  3. a. Peduncle 9—20 mm long. Connective narrow. Leaves not toothed ..... 1. *Cr. africana* (Baill.) Lanj.
  - b. Peduncle 2—6 mm long. Connective broad. Leaves usually more or less toothed .... 2. *Cr. kameruniana* (Engl.) Lanj.
1. *Craterogyne africana* (Baill.) Lanj. nov. comb. — *Trymatococcus africanus* Baill. in *Adansonia* XI (1876) p. 300; Engler in *Monogr. afr. Pfl. fam. I. Morac.* (1898) p. 28, t. xi. fig. A.; Rendle in *Fl. Trop. Afr. vol. VI. sect. II.* (1917) p. 75; Hutchinson and Dalziel *Fl. West Trop. Afr. Vol. I. part. 2* (1928) p. 427; — *Trymatococcus Conrauanus* Engl. in *Engl. Bot. Jahrb. vol. 33* (1902) p. 117.

Southern Nigeria: Oban (Talbot 631! 2327! K. N-H.).

Cameroons: Cameroon River (Mann 723! Type Mann 2228! K.); Lokundje River, near Bipinde in moist places (Zenker 59! April N-H.; Zenker 875! April D. K. L. N-H.; Zenker 3092! May D. K. L. N-H.; Zenker 3506! K. N-H.; Zenker 4169! D. K. N-H.); between Bipinde and Mamiaca, 100 m moist river-bank (Zenker 1032! July D. K. N-H.); Mongo River, between Njoke and Malende (Schlechter 12870! D. N-H.); Mongo River, between Ediki and Bakundu (Winkler 1058! April, D. N-H.); Mongo River, Mundane near Johann-Albrechtshöhe 140 m (Staudt 611! D. K.); Mongo River near Barombi (Preuss 201! D.); Wuri River near Jabassi, swamp-forest, 60 m (Ledermann 1094! November D.), Shrub 1—2 m high with yellow receptacle and white flowers; Mbo River near Sanchu, Mbo mountains (Ledermann 6075! D. November); Mbu River near Tinto (Conrau 130! D.); Manenguba mountain (Buesgen 279! Mongo River, between Njoke and Malende (Schlechter 12870! D. shrub with reddish flowers; Bell Town, in moisty and shady places (Buchholz s.n.! D. K.), with yellow flowers; Mimbia (Zenker 97! U.; Zenker s.n.! P.).

Spanish Guinea: Nkolentang, 450 m (Tessmann 342! D. April).

Gabon: without precise locality (Le Testu 2157! P.).

The leaves are less variable than in *C. kameruniana*, but the base of the leaves shows a rather important variation. The base is generally obtuse and unequal but sometimes it is not or only slightly unequal and more or less cuneate. The margin is nearly always entire and only in a few specimens slightly undulate. The length varies between 10 cm and 25 cm, the width between 3 cm and 8.5 cm. The usual dimensions of the leaves are 12.5 × 4.3,

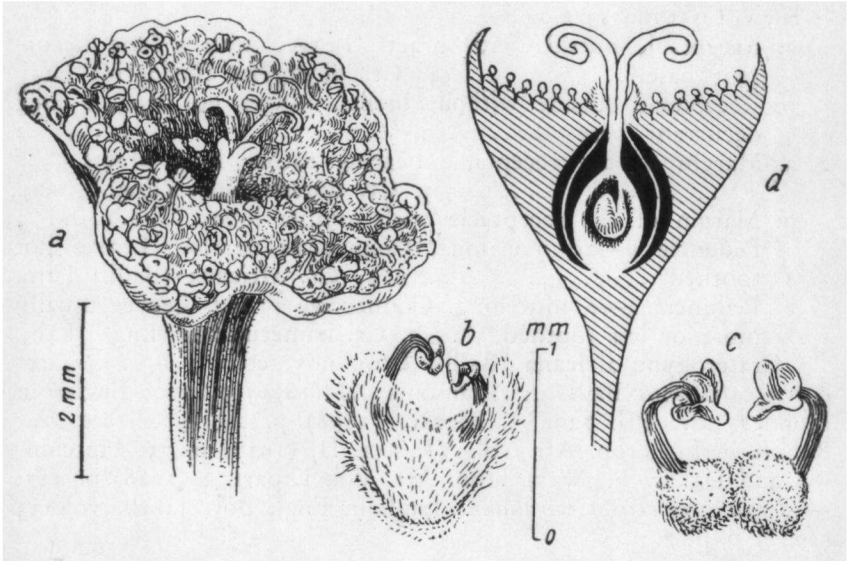


Fig. 6. *Craterogyne africana* (Baill.) Lanj. a. receptacle, b. male flower, c. stamens, d. longitudinal section (schematic).

15 × 5, 18 × 6.7, 22 × 8. The length of the peduncle varies between 9 mm and 20 mm, usually c. 14 mm. The best distinction from *C. kameruniana* is the shape of the connective, which is much narrower in *C. africana* (see fig. 6 b. and c. and fig. 7 b. In fig. 6 d. one may see that the perianth is very thin round the ovary. It is only observable by a very careful preparation.

2. *Craterogyne kameruniana* (Engl.) Lanj. nov. comb.; — *Trymatococcus spec.* Welwitsch in Transact. Linn. Soc. XXVII (1869) p. 61; — *Dorstenia kameruniana* Engl. in Engl. Bot. Jahrb. vol. XX (1895) p. 142; — *Trymatococcus kamerunianus* Engl. in Monogr. afr. Pfl. fam. I. Morac. (1898) p. 29, t. XI, fig. B; de Wildeman, Etudes Fl. Bas- et Moyen-Congo vol. I (1904) p. 119; Engler, Die Pflanzenwelt Afr. I. 2 (1910) p. 647, fig. 558; Rendle in Fl. Trop. Afr. vol. VI. sect. II (1927) p. 76; Hutchinson and Dalziel Fl. West Trop. Afr. vol. I. part 2 (1928) p. 427; — var. *Welwitschii* Engl. in Monogr. afr. Pfl. fam. I. Morac. (1898) p. 29; Hiern, Cat. Afr. Pl. coll. by Welwitsch part IV (1900) p. 1024; — *Trymatococcus usambarensis* Engl. in Engl. Bot. Jahrb. XXXIII (1904) p. 117; — *Trymatococcus Gilletii* de Wildeman, Etudes Fl. Bas- et Moyen-Congo vol. I (1904) p. 119, t. XXVI; — *Dorstenia amoena* A. Chevalier in Bull. Soc. Bot. France vol. LVIII.

Mém. VIII (1912) p. 208; Rendle in Fl. Trop. Afr. vol. VI, Sect. II (1917) p. 59.

Ivory Coast: Sassandra River between Diodandougou and Nian-gouépleu (Chevalier 21528, 21531! May K, named *Dorstenia amoena* A. Chev.).

Gold Coast: Ashanti, 210 m, in closed forest (Vigne 1864! March K.).  
Cameroons: Batanga (Bates 440! N-H, K); Lokundje River near Ebea Falls (Dinklage 232! November, D, Type!); Sanaga River near Joko (Mildbraed 8593! March, D, K); Sanaga River near Tinatistadt (Banjong), in the forest, 800 m (Zenker 1446! June, D, K, N-H); Sanaga River near Dengreng (Mildbraed 8567! March, D); Lokundje River near Bipindi (Mildbraed 7576! Dec. D); Efulen (Bates 303! July, K), shrub 2-3 feet high.

Spanish Guinea: Near Mebamenga (Tessmann 445! July, D).

Belgian Congo: Mogala River near Abumonbazi, 440 m (Thonner 191! Febr. D); Sanguru River near Kondué, 420 m, forest (Ledermann 80! June, D); Kimuenza (Gillet 2194); Forests of the Sankuru (Luja 11); Valley of the Djuma (Gillet 2841, Gentil); Likimi (Malchair 17, 400).

Angola: Golungo Alto, forest at Capopa cataract, between Sange and Ndelle (Welwitsch 2594! August, D, K, N-H), shrub 4-7 feet high.

Uganda Protectorate: Near Mulange (Dummer 4264! Sept. N-H); Semliki River near Beni, forest (Mildbraed 2279! Jan. D), shrubs c. 1 m high; Forest of Budongo, in dry ground on ridge (Rolfe, Uganda Forestry Dep. 438! Febr. K).

Tanganyika Territory: Morogoro, Turiani River, in evergreen forest with Khaga, Parkia and Pandanus (Burt 4725! June K); Amani near Languya (Zimmermann 3543! D, U), flowers white; Useguhu, in thick shady damp coast-forest at Makingumbi (Scheffler 251! August, D, Type of *Trymatococcus usambarensis* Engl.); Sigi River between Muhesa and Lungusa, 170 m, forest (Engler 388! Sept. D), flowers white, shrub 4 m high; Near Amani on shady dry rocks, 500 m (Warnecke 309! March, D, K, N-H).

Kenya Colony: near Gongoni (Graham 241! K; H. M. Gardner 1406! K), undershrub up to 6 feet high.

Vernacular names: Ngonã (Span. Guinea); Mkingano (Kenya Colony, Swa.), flowers are similar to the disc ornaments in Swahili women's nostrils, hence the name.

The leaves of this species are very variable. They are generally more or less toothed. I fully agree with Rendle (l. c. p. 76) that *Trymatococcus usambarensis* Engl. and the var. *Welwitschii* Engl. of *Tr. kamerunianus* Engl. only differ in the more marked toothedness of the leaves, but in the many specimens I saw, there occur all transitions even in the same specimen. The variation is shown in fig. 8. The leaves fig. 8 a, d and e are very common in this species. In the eastern part of the area of the species often specimens are found with leaves like that of fig. 8 h, but also the other kind of leaves have been found in that district. The greater variability of this species is easily understandable as it is much

wider distributed than *Cr. africana*, as may be seen from fig. 1. The length varies between 7.2 and 22 cm, the width between 2.8 and 8.2 cm. The usual dimensions of the leaves are  $10.7 \times 3$ ,  $14.5 \times 6$ ,  $18.5 \times 6.5$ ; the length of the peduncles varies between 2 mm and 6 mm, in fruit up to 11 mm, usually c. 4 mm. The connective is always broad and by this characteristic the species

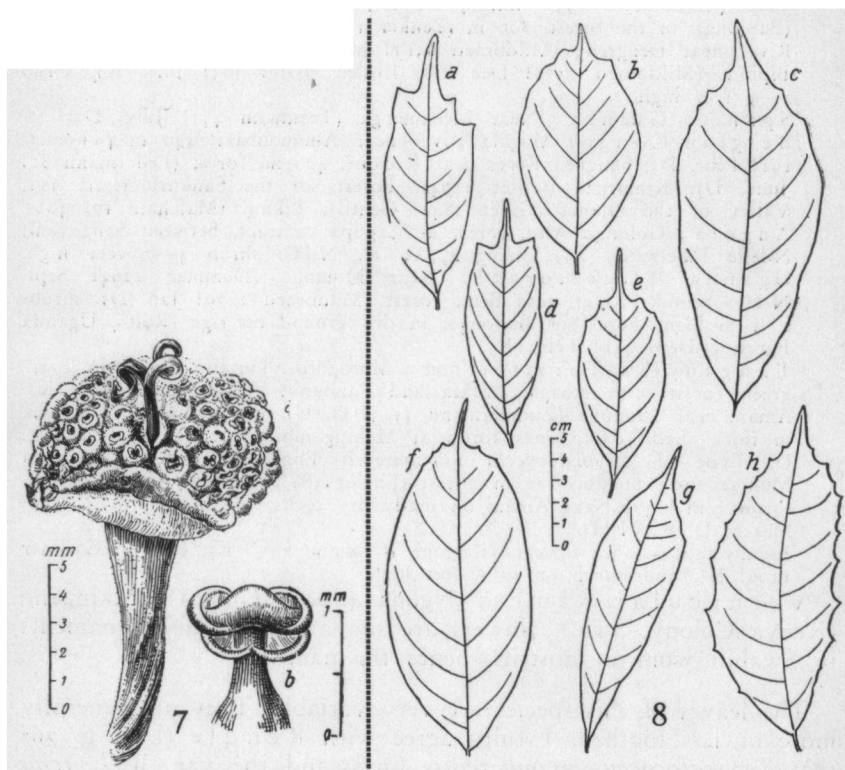


Fig. 7. *Craterogyne kameruniana* (Engl.) Lanj. a. receptacle, b. stamen.

Fig. 8. *Craterogyne kameruniana* (Engl.) Lanj.

can at once be distinguished from *Cr. africana* (Baill) Lanj. The toothed leaves and the length of the peduncle are generally also useful as a reliable distinction from the latter species.

3. *Craterogyne dorstenioides* (Engl.) Lanj. nov. comb.; — *Trymatococcus dorstenioides* Engl. in Engl. Bot. Jahrb. vol. LI (1914)

p. 434; Rendle in Fl. Trop. Afr. vol. VI, sect. II (1917) p. 75.  
 Cameroons: Kribi district, in hilly country near Fenda, 200 m (Mildbraed 5988! July Herb. D).

*Cr. dorstenioides* can be distinguished from all other specimens by the marginal bracts of the receptacle.

4. *Craterogyne oligogyna* (Pellegrin) Lanj. nov. comb.; — *Trymatococcus oligogyna* Pellegrin in Bull. Mus. Hist. Nat. 2e série, Tome I (1929) p. 162.

Belgian Congo: Waka valley near Moundou (Le Testu 2360! October, Herb. P); Sindara (Le Testu 2234! October Herb. P).

From this species I have seen a sterile branch from Le Testu 2360, and one receptacle from Le Testu 2234. The species can at once be distinguished by the shape of the leaves especially the long acute base and by the large bracts on the outside of the

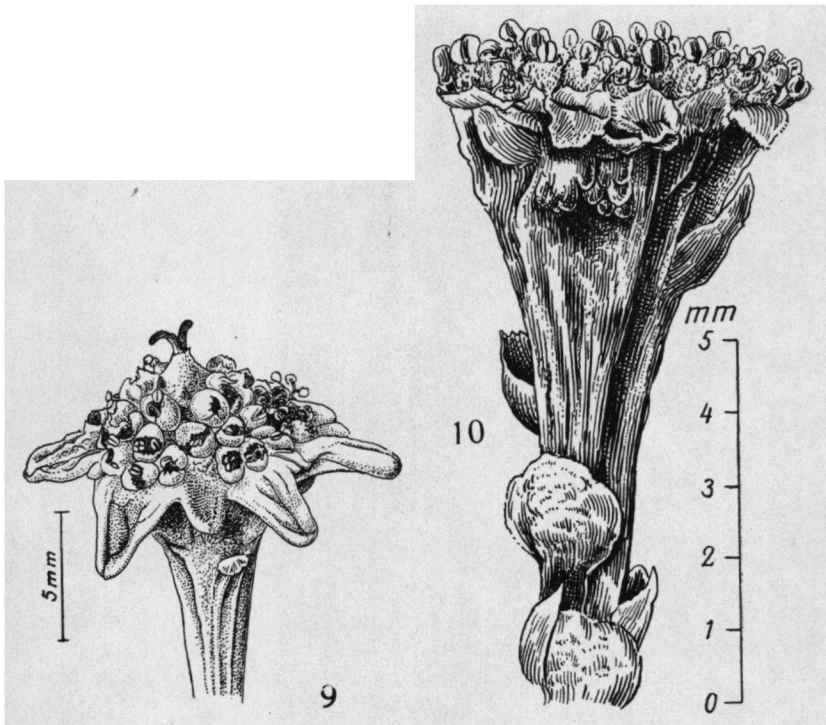


Fig. 9. *Craterogyne dorstenioides* (Engl.) Lanj.

Fig. 10. *Craterogyne oligogyna* (Pellegrin) Lanj.



receptacle. I have seen only one receptacle and that without female flower, thus I am not quite certain that these female flowers are the same as in the other species. As Pellegrin states, the receptacles are mostly with male flowers only. The receptacle rather resembles those of the genus *Trymatococcus* as may be seen from fig. 10. Nevertheless I am quite sure it can not be united with the latter genus, though it is possible that this species has to be separated from the genus *Craterogyne* as a distinct genus.