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EDITORS

ANWARI DILMY
(Herbarium Bogoriense)

AND

C. G. G. J. VAN STEENIS
(Flora Malesiana)

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Stipulae ignotae. Petiolus lamina brevior, teres, basi et apice paulum in-crassatus, farinosus squamis fimbriatis minutissimis, glabrescens. Lamina coriacea, ovata, basi rotundata vel paulum cordata, apice gradatim acumi-nata, margine integra, basi 6—4-nervata; costa in apicem percurrens, basi in pagina inf eriore nectario lineari ornata; nervi laterales utrimque 2—3, sicut nervi basales ceteri erecto-patentes, paulum sursum curvati et ante marginem in venis ramosi; lamina in pagina superiore praecipue basi, squamis fimbriatis minutis dispersis, glabrescens, in pagina inferiore in angulis inter nervos basales, et inter costam et nervos laterales fasciculis pilorum simplicium brevium, glabrescens. Flores ignoti. Pedunculi solitarii in axillis superioribus, post anthesin teretes, parte superiore arti-culati, a basi ad articulum gradatim crassiores, supra articulum crassiores quam infra articulum et sulcati, squamis fimbriatis minutissimis densius vestiti. Epicalyx post anthesin cupulatus, a calice separatus, calice multo brevior, 8-fidus, segmentis erecto-patentibus triangularibus acutis, extus squamis fimbriatis minutis vestitus. Calyx post anthesin cupulatus-campanulatus, capsulam anguste involvens, 5-lobatus, segmentis late triangula-ribus (apices segmentorum in sicco destructi), 10-nervis extus paulum prominentibus, squamis integris majoribus dense obtectus. Capsula obo-voidea, apice acuta, extus dense sericeus pilis simplicibus, inter pilos sim-plices pilis stellatis minutis, 5-ocularis, valvis acutis, crassioribus, ligneis, intus levibus, glabris et paulum nitentibus; locus quisque plerumque in parte superiore seminibus 2 adultis, in parte inferiore seminibus 2 abor-tivis. Semina adulta magna, reniformia, corona densa pilorum appres-sorum longorum mollium.

TYPE.—Teijsmann 12597HB (BO 58063).

Twigs 2.5—5 mm thick. Petiole 2—7.5 cm long and 1—2 mm thick. Blade 7.5—15 long and 5.5—10 cm wide; nectary about 5 mm long. Pe-duncle during fruiting 3—4.5 cm long; joint 10—13 mm from the apex; peduncle below the joint about 2 mm thick, above the joint 4 mm thick. Epicalyx during fruiting about 8 mm high and 14 mm wide; segments about 0.5 cm long and 1 cm wide. Calyx about 2 cm wide; segments about 1 cm wide. Capsule about 2 cm long and 2.5 cm in diameter. Seeds about 5 mm long.

SPECIMENS EXAMINED.—CELEBES. Southwestern peninsula: Sehroh (Pangadjene Distr.), *Teijsmann 12597HB* (BO 58063 holotype, 58061, 58062, L 920.306-48).

The species is without doubt very closely allied to *H. floecosus* Mast. The most obvious differences are the ovate leaves and much smaller fruits.

THE GENUS *CULLENIA* Wight* (Bombacaceae)

A. J. G. H. KOSTERMANS**

The monotypic genus *Cullenia* was established by Wight (Icones Pl. Ind. or. 5 (1) : pi. 1761—62 & text, 1851), who differentiated it from *Durio* Adans. mainly by the lack of a corolla and the position and shape of the anthers. The only species, originally described as *Durio ceylanicus* by Gardner, was cited by Wight as *Cullenia excelsa* Wight. K. Schumann corrected the specific epithet rather casually and attributed it (wrongly) to Wight. Bentham (in Benth. & Hook., Gen. pi. 1: 212. 1867); Baillon (Hist. pi. 4: 159. 1872), Masters (in Hook, f., Fl. Br. Ind. 1: 350. 1874) and Beccari (Malesia 3: 219. 1889) accepted the genus.

Bakhuizen van den Brink (in Bull. Jard. bot. Buitenzorg III, 6: 228. 1924) incorporated the genus in *Durio*.

In my opinion *Cullenia* represents a "good" genus by its lack of corolla. Alston, although accepting Bakhuizen's reduction, informed me personally, that he, too, is inclined to consider *Cullenia* different from *Durio*.

The pollen were described as being naked and pedicellate by Gardner; this wrong statement was corrected by Wight; the anthers are pedicellate and one-celled.

In this paper a new *Cullenia* species is described, which strengthens the position of the genus; both species are restricted to the rain forest region of Ceylon and the Southern Indian Peninsula.

Cullenia Wight

Trees; leaves alternate, lower surface covered with scales. Inflores-cence pseudo-umbellate on old wood. Flowers covered by scales, in bud covered by the epicalyx, which bursts at apex and drops before anthesis. Calyx tubular, 5-toothed. Corolla 0. Staminal tube exerted; upper part of filaments free, bearing along it the pedicellate, one-celled, glomerulate anthers. Ovary 5-celled; ovules 2 or more in each cell, superposed; style longer than staminal tube; stigma small, capitellate. Fruit globose, split-ting into 3—4 valves, densely covered by long spines. Seeds covered by a fleshy arill.

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** D. Sc, Botanist, Forest Service of Indonesia.

Type species. — *C. ceylanica* (Gardn.) K. Schum.

Key to the species.

- 1a. Leaves about 8,5 cm long; acumen abrupt, slender, long. Calyx 2 cm long; pedicel up to 2 cm long; free part of filaments 1–2 mm long. Fruit 5–7 cm in diameter; spines 1 cm long, conical. *C. ceylanica*
 b. Leaves 14–22 cm long; acumen short or long, broad, rather gradual. Calyx 4 cm long; pedicel 3 cm long; free part of filaments 10 mm long. Fruit 10–15 cm in diameter; spines 3–4 cm long, slender. *C. rosayroana*

1. *Cullenia ceylanica* (Gardn.) K. Schum.—Fig. 1, 2

Cullenia ceylanica (Gardn.) K. Schum. in Engl. & Pr., Pf 1. Fam. 3 (6) : 68, fig. 35D. 1895; Alston in Trimen, Fl. Ceyl. 6 (Suppl.) 30. 1931 (as a syn. of *Durio ceylanicus* Gardn.). — *Durio ceylanicus* Gardner in Calcutta J. Nat. Hist. 8: (29, H.) 1–2. 1847; Bakhuizen v.d. Brink in Bull. Jard. bot. Buitenzorg III, 6: 228. 1924; Alston, I.e. — Gardner 77 (K).

Cullenia excelsa Wight, Icon. 5 (11): 1761–62. & text. 1851, p.p.; Beddome, Sylv. Fl. anal. Gen. t. IV f. 3. 1869; Thwaites, Enum. pi. zeyl. 28. 1864; Masters in Hook., f, Fl. Br. Ind. 1: 350. 1874, p.p.; in J. Linn. Soc. Bot. 14: 498. 1875; Beccari, Malesia 3: 219. 1889; Trimen, Fl. Ceyl. 1: 162. 1893; Brandis, Ind. Trees 78. 1906, p.p.; Gamble, Fl. Madras 1: 101. 1915, p.p.; Troup, Silvicult. Ind. Trees 1: 151. 1921.

Durio zibethinus (non L.) Moon, Catal. Pl. zeyl. 56. 1874; Gardner, I.e. (as a syn. of *Durio ceylanicus* Gardn.; Trimen, I.e. (as a syn. of *Cullenia excelsa* Wight).

Tree up to 35 m tall; bark grey-brown, rather smooth, peeling off in small particles. Buttresses small, merging into bole, straight (hence lower part of bole usually a little angular). Living bark red-brown. Crown in young trees pyramidal, later irregular. Branchlets somewhat angular, slender; like petioles, lower leaf surface, calyx and epicalyx densely covered by pale glossy golden brown scales with fringed margin. Leaves chartaceous, elliptical (14,5—)8,5(—4) x (6—)3,5(—2,5) cm, base rounded, top conspicuously, slenderly acuminate (acumen up to 1,5 cm long); upper surface dark glossy green, smooth, midrib channeled; lower surface golden coloured, midrib strongly prominent; lateral nerves many, straight, rather patent, hardly visible. Petiole slender, swollen towards apex, angular, up to 1,5 cm. Flowers fascicled on gnarls on old wood, pale glossy brown. Pedicels 1,5–2 cm long. Epicalyx 1 cm long; tubular, about 4–5 mm in diameter, inside densely silky, tearing irregularly at apex. Calyx tubular, up to 2 cm long, swollen towards base, central part slightly constricted;

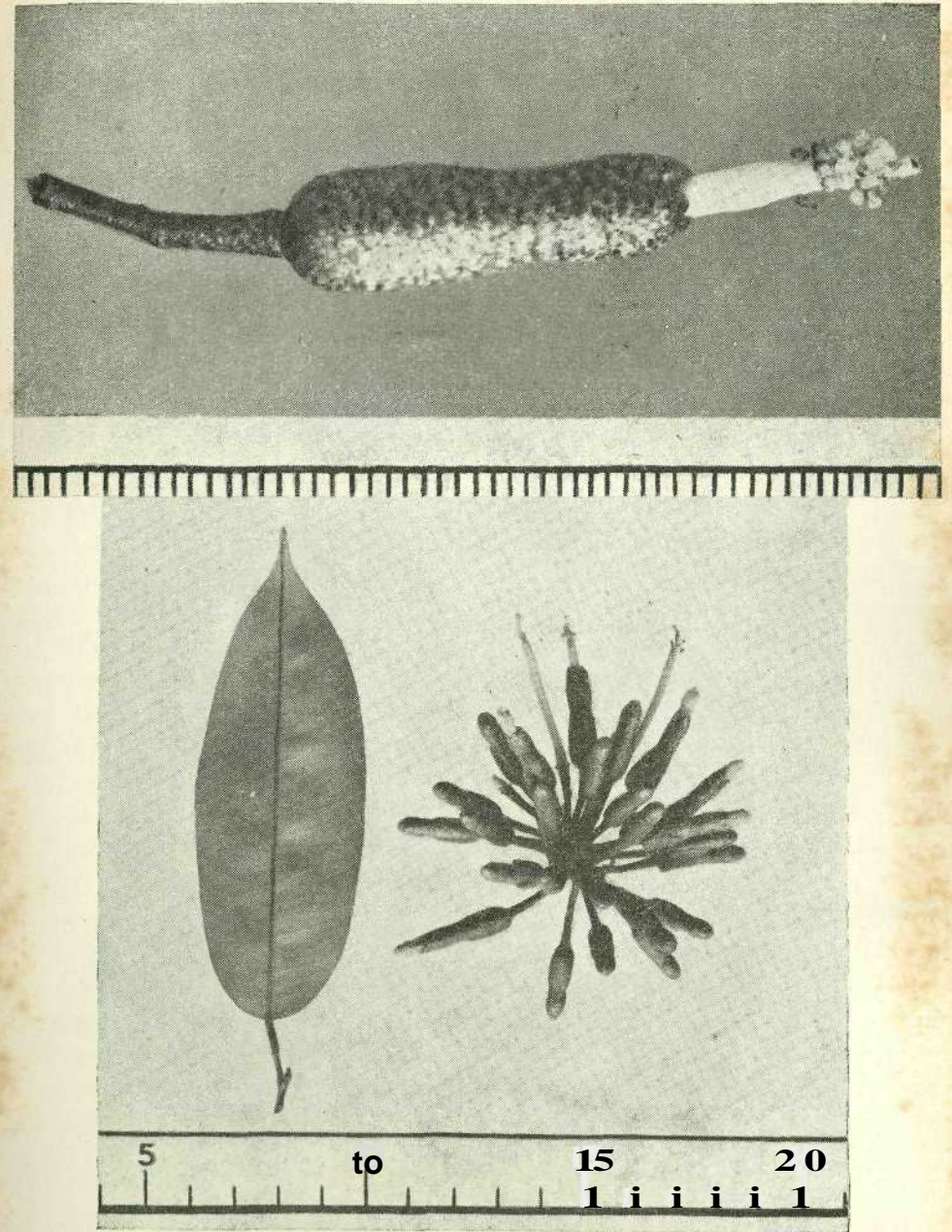
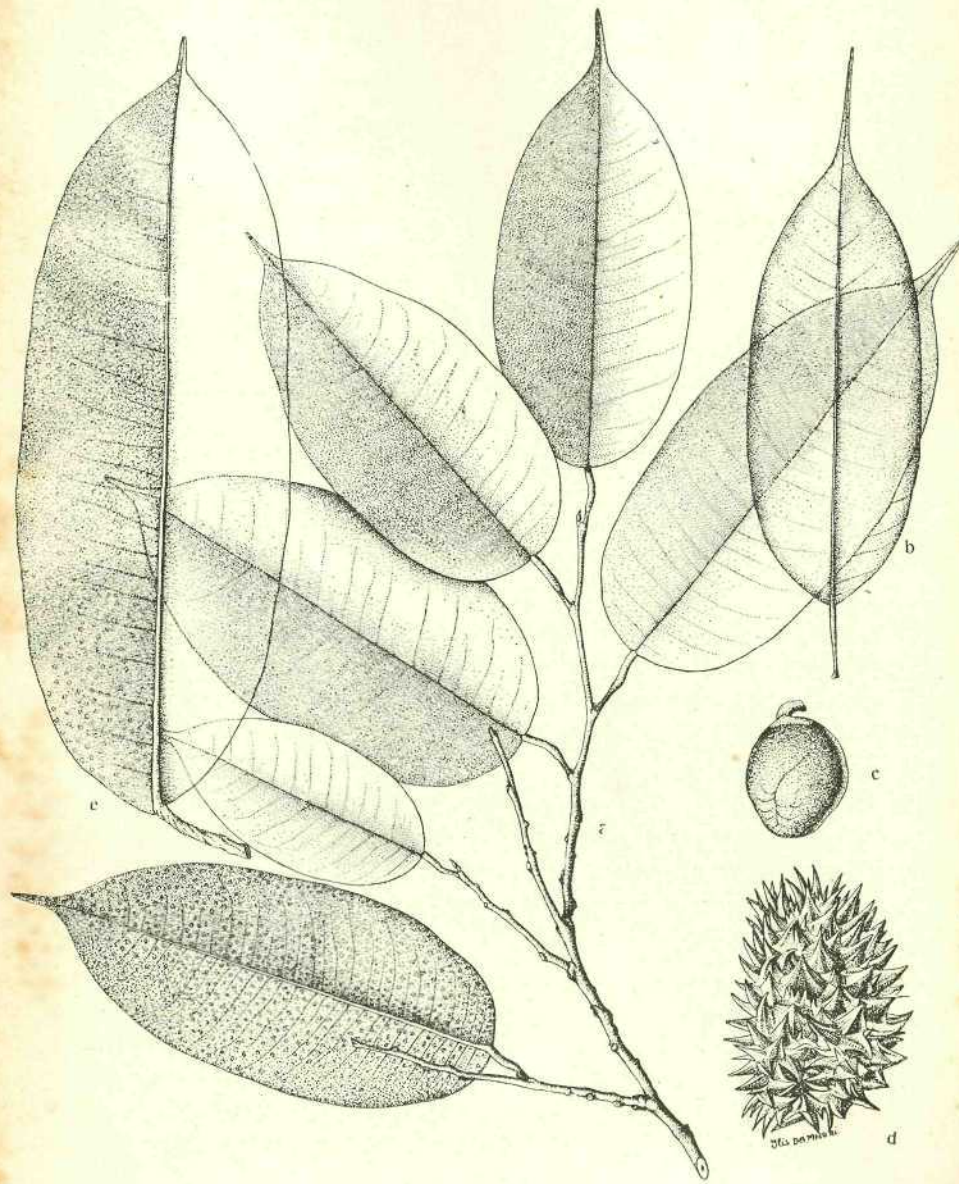


Fig. 1. *Cullenia ceylanica* (Gardn.) K. Schum.—After living material.



Jt Fig. 2. a-d. *Cullenia ceylanica* (Gardn.) K. Schum.; e. *C. rosayroana* Kosterm. (0.57 X)

inside up to halfway yellowish white, densely scaly and pilose, upper part pale or dark wine red, glossy, glabrous; lobes 5, concave, obtuse, about 3 mm long. Filament tube up to 4 cm long, white (central part red), the exerted part densely pilose; free part of filaments 1—2 mm long; anthers yellowish white, 0.75 mm long. Style pilose, white or yellowish white, 3—5 mm longer than tube, slender; stigma pinhead-shaped. Ovary with large, loose scales and few long hairs. *Fruit* globular, 5—7 cm in diameter, dehiscing on the tree into 3—4 valves. Spines 8—10 mm long, conical, at base 3—5 mm in diameter. Seeds like chestnuts, 3—4 cm long, 2—2.5 cm in diameter. Arillus white.

SPECIMENS EXAMINED.—Culta in HORTUS BOGOR. sub no. XVI H. 13, July, fl., *Kostermans 9981* (A, BO, CAL, K, L, NY, PNH); id., Febr., fr. (BO, L). CEYLON near Galle, rainforest, Mar., old fruit, *Kostermans 11111* (BO).

Local name. — Kattu-bodda (Ceylon).

Distribution.—Ceylon, rainforests.

The species is easily distinguished from *C. rosayroana* by its thin, abruptly long-acuminate, much smaller leaves; the smaller flowers, which are pale brown; the much smaller fruit with thicker, much shorter spines.

Through the courtesy of the Director of the Kew Gardens, I could examine a photograph of Gardner's type specimen (no. 77, from Hantana near Galle, 2—3000 ft), which consists of a branch with two fascicles of young flowers and a leafy branch. Gardner's description* is flawless and much better than Trimen's. There are two more specimens in the Kew Herbarium, one collected by Thwaites at the type locality in 1806 (C.P. 734, in flower) and another: Thwaites 216, collected in 1851, consisting of loose, young fruit.

In Kew Herbarium a specimen, collected near Coimbatore in 1850 from Wight's herbarium belongs to *C. rosayroana*.

Wight's plate, however, is (at any rate in part) *C. rosayroana*. Wight described the leaves as having a short acumen, whereas those in *C. ceylanica* are caudate-acuminate. The fruit depicted under 14—16 of Wight's plate are not mentioned by Wight in the explanation. They may be fruit of *C. ceylanica* with their short, conical spines, as correctly described by Gardner. The flower with its longer free filamental part is *C. rosayroana*.

As Wight's plate and description are a *mixtum compositum* and he, certainly did not intend to describe a new species, the binomial *Cullenia*

* Through the courtesy of Dr. D. Chatterjee, Superintendent of the Calcutta Botanical Garden, I obtained a copy of Gardner's paper.

excelsa should be relegated to *C. ceylanica* as a synonym. Of the two specimens of Wight's herbarium that I could examine, one from Ceylon (Thwaites 734) represents *C. ceylanica*; the other from Coimbatore is *C. rosayroana*.

The flowers are clustered like umbels on protuberances of the old wood; they are not axillary (as contended by Masters in his generic description and by Baillon). The epicalyx is certainly not 3-toothed, as contended by K. Schumann, neither is the stigma 5-cleft. Schumann's figure of the fruit is rather poor.

In young plants the leaves are not much larger and hence young specimens of *C. rosayroana* with elliptical, large, often coriaceous leaves with short or long, but broad and gradual tip, may be easily distinguished from those of *C. ceylanica* with much smaller, chartaceous, ovate leaves with a long slender and more abrupt acumen. The tree flowers at night; the flowers dissipate a rather faint durio-smell. Actually the flowers are attached to very short branchlets. The epicalyx usually tears into two parts, but often into more parts, starting from the apex. It drops completely, like the calyx.

2. ***Cullenia rosayroana*** Kostermans, spec. nov.—Fig. 2e, 3.

Cullenia excelsa Wight, Icon. 5 (1) : 1761—62 and text, 1851, p.p.; Beddome, Sylv. Fl. anal. t. IV, fig. 3. 1869, p.p.; Masters in Hook, f. Fl. Brit. Ind. 1: 350. 1874, p.p.; Brandis, Ind. trees 78. 1926, p.p.; Fl. Madras 1: 101. 1915, p.p.

Arbor, foliis coriaceis oblongis breviter acuminatis. Calyx .£ cm longus. Pars libera filamentorum 10 mm longa. Fructus 15 cm diametro, spinis gracilibus 3—4 cm longis.

Tree up to 30 m tall. Buttresses merging gradually into bole. Bark roughish, grey-brown, peeling off in small pieces. Wood white, rather soft. Branchlets densely covered with golden peltate scales. Leaves chartaceous or coriaceous, oblong or narrowly oblong, about 14—22 cm long, 4—6 cm wide, shortly or long and broadly acuminate. Flowers reddish brown, in large clusters on the old wood. Epicalyx and calyx as in *C. ceylanica*, but longer (calyx 4 cm long). Staminal tube exerted, at its apex divided in 5 filiform segments, 10 mm long. The anthers (as in *C. ceylanica*) in globose clusters along these segments. Style hirsute. Fruit globose, about (10—)15cm in diameter, with 3—4 cm long, slender, very

* Named in honour of Mr. R. A. de Rosayro of the Forest Service of Ceylon, a well known student of Ceylonese vegetation and an amiable guide on a trip in Ceylon in March 1956.

sharp spines. Seeds like chestnuts; arillus fleshy, large, white, covering base and middle of seed; apical part of arillus mace-like and ending in threads.

Typus. — *Kostermans 11110* (BO).

SPECIMENS EXAMINED. — CEYLON. Galle, rain forest, fr. and old flowers, Mar., *Kostermans 11110* (BO, L); *ibid. 11113* (BO), ster. (narrow leaved specimen); fl., *Thwaites 73[^]* (Calc.). INDIA. Travancore, alt. 1500 m., fr., *Meebold 297 = 12890* (Calc.); *ibid.*, in bud, *Meebold 949 = 12942* (Calc.); *ibid.*, ster., *Beddome 5* (Calc.); Madras, Nilgiris, Devata Ghats, alt. 1000m., ster., *Gamble 15626* (Calc).

Local name. — Kattu-bodda (Ceylon).

Distribution.—Southern Peninsular India and Ceylon.

The flowers are in clusters on gnarls of the older branches. In Ceylon, where I could study living specimens, the two species have the same local name. The two species are easily distinguished by their leaves; the fruit is also completely different.

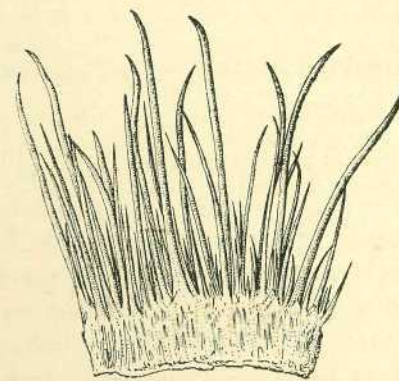


Fig. 3. *Cullenia rosayroana* Kosterm. Fruit spines (0.5 X).

Wight's figure was drawn from different specimens. The fruit are rather poorly drawn, but are likely to belong to this species, as the description fits. The leaves and flowers are also perhaps of this species; the flowers are stated to be taken from a fruiting branch. The figures 14, 15 and 16 are not mentioned in the text; it is possible that they belong to *Cullenia ceylanica*, as the spines are rather short. A specimen from Coimbatore from Wight's herbarium and now in Kew represents *C. rosayroana*. From the Calcutta material, which I could examine through the courtesy of Dr. D. Chatterjee, it is evident, that Wight's description was

mainly based on material from the Indian Peninsula, which represents *C. rosayroana*. Wight had, however, at least one Ceylonese specimen of *C. ceylanica* (Thwaites 734) before him.

Wight changed (illegitimately according to modern rules) Gardner's name *Durio ceylanicus* into *Cullenia excelsa*, but it is beyond doubt that he intended to give only some corrections and emendations to Gardner's description (which he cited frequently). Moreover Wight had before him two different species.

The binomial *Cullenia excelsa* consequently should be considered a mere synonym of *Durio ceylanicus*.

As in Malaysian species of *Durio*, it is extremely difficult to differentiate species by their leaves, because of their variability in texture, shape and size. The only reliable characters are as a rule found in the fruit.

FLORAE MALESIANAE PRAECURSORES XII

SOME NOTES ON THE GENUS DICHAPETALUM (DICHAPETALACEAE) IN ASIA, AUSTRALIA, AND MELANESIA

P. W. LEENHOUTS*

SUMMARY

Some general notes are given on the morphology of the inflorescences and flowers in the genus *Dichapetalum* and on the nomenclature of the generic name *Dichapetalum*.

An attempt has been made to revise the c. 40 species described in it from the Indo-Australian area. It appeared necessary to reduce a large number of specific names to synonymy. In the present paper 16 species have been recognized among which 4 are new. Besides, a number of infraspecific taxa have been distinguished. *Pentastira* Ridley, referred to the *Icacinaeae*, has been reduced to *Dichapetalum*. A census is given of Indo-Australian species including one extra-Malaysian one, 16. *D. vitiense*.

Introduction

Up till the present about 40 species had been described in *Dichapetalum* from SE.Asia, Malaysia, Australia, and Melanesia. Though in Africa, where the genus possesses its greatest development, many revisional papers have been devoted to its taxonomy, no revision has hitherto been envisaged to frame for the Indo-Australian representatives.

During my attempt in preparing a revision for the Flora Malesiana I have given attention to some morphological features of the inflorescence and flowers and to the nomenclature of the generic name. These notes are followed by a census of the species.

It has appeared that the number of taxa deserving specific rank is very much less than those proposed by random description. This is in accordance with Hauman's experience with the African species of which he finds specific delimitation generally too narrowly drawn (cf. Bull. Jard. bot. Brux. 25: 339. 1955). A few species, notably *D. timoriense* and *D. gelonioides*, are exceedingly variable, specially in vegetative characters, with no possibility to draw specific demarcations in the population.

*) Flora Malesiana Foundation, Leyden.