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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 (illegitimatedly 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.

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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 *Icacinaeeae,* 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.

Four new species and a number of new infraspecific taxa have been distinguished.

Morphological notes and nomenclature

MORPHOLOGY.—1. Inflorescences. Among the species treated here three main types of inflorescences can be distinguished, though the boundaries between them are not very sharp. These types are:

(1) The inflorescences of some species, especially *D. timoriense* and *D. papuanum* seem at first sight to be genuinely dichotomously branched, at least in the lower bifurcations. There is no trace of a median flower in the lower forks which are only provided with one transversal bract (comparable with the 'angular leaves' in the dichotomous branchings in *Selaginella*, cf. H. J. Lam, Act. biotheor. 8: 119. 1948). The upper part of the inflorescence, however, seems to be dichasial or monochasial and in the South American *D. pedunculatum* I found a median flower even in the lower forks. This shows that the inflorescence in *Dichwpetalum* is essentially dichasial (cymose), though the median flower of the lower forks is suppressed in almost all species. Apparently the bracteoles of these median flowers are present and are each adnate to the stalk they sustain appearing then as a transversal bract to the next fork. In this way all bracteoles are shifted upwards one degree. Essentially similar adnations are known to occur in the family as is distinctly shown by both some African *Dichapetalums* and by the genus *Gonypetalum* in which the peduncle of the inflorescence is fully adnate to the petiole of the bract.

(2) Inflorescences glomerulous, small (typically developed in e.g. *D. griffithii, tenuifolium, longipetalum, helferianum,* and *laurocerasus).* Obviously derived by contraction from the first type.

(3) Inflorescences paniculate (best developed in some African species, for example *D. dusenii* and *D. toxicarium,* cf. Engl. & Prantl, Nat. Pfl. Fam. 2. Auf 1., 19c: 8, fig. 3B). As is shown by some deviating specimens of *D. geionioides,* this type is very probably derived from the second type (and may possibly also be derived from the first one). *D. geionioides* ssp. *geionioides* usually has glomerulous inflorescences of the second type. In some specimens, for instance *Wallich 4342,* these glomerules are inserted together on short axillary shoots with rather caducous, bract-like, stipulate leaves. An extreme example of this development is shown by *Cowan U2* (E) : the 'panicles' are up to 15 cm long, with up to c. 8 glomerules, the upper one being (sub ?) terminal; the bracts are usually either very caducous or (the upper ones) not developed with the exception of the stipules. This comes very close to the paniculate inflorescences as they

are to be found in some African species, for instance *D. dusenii,* in which often also some small leaves are still developed.

2. Flowers. It may be interesting to mention two specimens with abnormal flowers, who obviously point to a staminodial nature of the petals and the disk-lobes respectively. Both these specimens belong to *D. timoriense.*

In *Griffith Kew distr. 2170,* the upper part of one of the unguiculate petals consists of a normal petal-lobe on the one side and a fertile theca on the other. In my opinion this observation strengthens the idea that the petals have a staminodial nature, an impression one receives already looking at the young petals in bud.

In the other specimen, *Zollinger S392,* the disk-lobes are replaced by an inner circle of 5 stamens. Normally the disk-lobes are usually slightly narrowed at the base and with a broadened often distinctly 2-lobuled apex; these lobules are thickened in their central part, giving the disk-lobes a shape resembling that of very young stamens.

In other cases, however, the disk-lobes are larger, thinner, spathulate, and then they look like small, non-emarginate petals.

NOMENCLATURE.—Both *Dichapetalum* and *Leucosia,* which have for over a century been accepted as synonymous, were simultaneously described by Du Petit Thouars (Gen. nov. Madagasc.: 23. 1808). Both names were soon replaced by *Chailletia* DC. 1811, thus falling out of usage. As far as I was able to trace, Endlicher (Genera: 1105, no 5758. 1839) was the first who united them, choosing for the name *Dichapetalum,* reducing *Leucosia* to synonymy. It is possible that in some little known publication, published between 1808 and 1839, this or an other choice will have been made earlier, but I thought it a mere waste of time going through as many of these publications as possible, either to come to the same result, or to be obliged to propose the conservation of the name *Dichapetalum.*

Census of the species

Under each species collections are cited geographically. They have only been mentioned as far as examined and named by me; some dubious ones and most which were unnumbered have been omitted.

The following abbreviations of series-numbers have been used in citing the collections:

BS.—Bureau of Science, Manila

BW.—Boswezen, Hollandia

FB.—Forestry Bureau, Manila
KEP.—Conservator of Forests, Kepong
NBFD.—North Borneo Forest Department, Sandakan
NGF.—New Guinea Forestry, Lae
PNH.—Philippine National Herbarium, Manila
SF.—Singapore Field number, Singapore

These series-numbers always have been given priority over the personal numbering of the collectors.

1. DICHAPETALUM TIMORIENSE (DC.) Boerl.

Chailletia timoriensis DC. Prodr. 2: 57. 1825. — Timor, Unknown coll. s.n. (G).

MALAYSIA. LINGGA ARCHIPELAGO. P. Selajar: *Biinnemeijer 6571* (BO). — MALAY PENINSULA. *Alvins 319* (SING); *Curtis 3571,* (SING); *DerrylO52* (SING), *1195* (P, SING); *Goodenough 1917* (E, K, SING; *Griffith Kew distr. 2170* (A, K, M, syntype *D. malaccense* Engl.); *Holmberg 687* (SING); *King's coll. 9U* (L), *2054* (US), *3869* (BM, K, syntype *D. malaccense* Engl.), *5345* (BM, K), *5501* (SING), *6697* (K); *Maingay 1125 = Kew distr. 368* (K, syntype *Ch. deflexifolia* var. *tomentosa* Hook./.); *Ridley 1602* (SING), *9636* (SING); *Scortechini 1282* (BM, K, syntype *Chailletia hookeri* King), *1654* (E, SING); *SF. 33282 = Spare 1296* (SING); *Wray jr. 3184* (SING), *3185* (BM, K, syntype *Chailletia tesselata* King).—JAVA. *Backer 17821* (BO, K, U), *17949* (BO, NY, SING), *18230* (BO); *Van Hasselt in herb. L 899. 255-10* (L, U); *Koorders 20916 ft* (BO); *Zollinger 3652-1* (BM, K, type *Chailletia deflexifolia* Turcz.). — LESS(ER SUNDA ISLANDS. Bali: *herb. L 899. 255-40 {IS),* Sumbawa: *Zollinger 3392* (BM, L). Sumba: *Iboet 249* (BO, L). Timor: *Baudin s. n.* (P); *Unknown coll. s.n.* (K, NY, P, type *Chailletia timoriensis* DC). — BORNEO. *Beccari PB. 3892* (K, syntype *D. beccarianum* Ridl.); *Endert 1527* (B, BO, K, L); *Haviland & Hose 3365* (A, BM, K, syntype *D. beccarianum* Ridl.); *Kostermans 7279 A* (A, BO, K, L); *Native coll. 1074* (A, K, PNH, US); *Ridley 12465* (BM, K, SING, syntype *D. beccarianum* Ridl.); *Teijsmann 11365* (B, BO, K, syntype *D. beccarianum* Ridl.), *in herb. BO 170454* (BO). — Natuna Islands, Bunguran: *Van Steenis 1381* (BO). — PHILIPPINES. Palawan: *BS. 15551, Kienholz* (NY), *15598, Fenix* (BM, K, US), *77734, Edano* (NY), *77793, id.* (NY, SING), *77871 = Edano 1918* (NY, SING), *77885 = id. 1884* (NY, SING); *Ebalo 60S* (A); *Elmer 12919* (A, BM, E, K, L, NY, U, US, type *D. olivaceum* Elm.); *FB. 19890, Danao,* (K, US); *Merrill 9398* (A, BM, K, NY, SING, US); *PNH. 6011, Alcacid* (A), *12281 = Sulit 3714* (BO, L, PNH), *12508 = Sulit 3968* (L, PNH), *13977 = Edano 2965* (L, PNH), *23080 — Celestino & Ramos 184 A* (L, PNH). Mindoro: *BS. 40975, Ramos* (A, US); *Merrill 2254* (K, US). Luzon: *BS. 1128, Ramos* (A, BO, K, NY, SING, US, syntype *D. luzoniense* Merr. & Rolfe), *7710, id.* (US), *7721, id.* (US), *17334, Robinson & Brown* (BM, US), *33465, Ramos & Edano* (A), *33481, id.* (SING), *33506, id.* (BM), *43532, McGregor* (A, BM, K); *Clemens 17889* (SING); *Cuming 1192* (BM, K, L, type *Chailletia benthamiana* Turcz.); *Elmer 9411* (E, K, syntype *D. luzoniense* Merr. & Rolfe), *16357* (A, NY); *FB. 3157, Ahern's coll.* (BR, NY, SING, US, syntype *D. luzoniense* Merr. & Rolfe), *24291, Bawan & Borromeo* (A, SING), *27091,*

Mabasa (A); *Loher 181* (K); *Merrill Sp. Blanc. 991* (A, BM, K, L, NY, US, neotype *Quilesia sericea* Blanco); *PNH. 3740, Gutierrez* (SING); *Vidal 469* (K, syntype *D. luzoniense* Merr. & Rolfe), *1690* (K), *2390* (K). Polillo: *PNH. 4294 — Salvoza 1044* (PNH). Sibuyan: *Elmer 12245* (A, BM, E, K, NY, US, type *D. submaritimum* Elm.). Samar: *PNH. 14460 = Sulit 4294* (K, L, PNH). Leyte: *Wenzel 775* (A, BM), *1350 (A,* BM, NY), *1414* (A, BM). Bohol: *BS. 43183, Ramos* (A, K). Cebu: *Cuming 1788* (BM, K). Mindanao: *BS. 11771, Robinson* (BM, K, L, US, type *D. robinsonii* Merr.), *BS. 34575, Ramos & Pascasio* (US), *34596, id.* (K, US, type *D. nitidum* Merr.), *34951, id.* (L, SING), *34987, id.* (A), *49052, Ramos & Edano* (B, BO, NY, SING); *FB. 9115, Whitford & Hutchinson* (NY), *23182, Agama* (US); *PNH. 11678 — Edano 1426* (PNH). — CELEBES. *Elbert 3291* (BO, L) *;Eyma 3502* (BO, L); *Kjellberg 658* (BO). — MOLUCCAS. Morotai: *Main & Aden 804* (BO, L). Sula Islands, Taliabu: *Hulstijn 96* (BO). Ceram: *Kornassi 778* (BO, L, U). — NEW GUINEA. *Brass 1661* (A, BRI, K, type *D. venulosum* C. T. White); *Carr 13639 (A,* BM, K, L), *14167* (A, BM, K), *15664* (A, BM, K, L, SING); *Clemens 8249a* (A, B), *8266a* (A, B), *8392* (A, B), *8427a* (B), *8640a* (A, B), *8709* (B); *Ledermann 6656* (SING, syntype *I), maluense* Krause), *6673* (SING, syntype *D. maluense* Krause); *Peekel 1947* (drawing in B sub nom. *D. missionum* Krause); *Schlechter 17862* (BR, K, type *D. schlechteri* Krause).

CULTIVATED. *Beccari herb. 2387* (PI); *Hort. bot. Bog. XI B 489* (BO, BR, K, L, NY); *Warburg 1928* (A).

According to the circumscription accepted here D, *timoriense* is a species which on the one hand is very variable in many characters — even such important ones as absence or presence of a disk, 2- or 3-merous pistil, and uni- or bisexual flowers —, but on the other hand, seems to represent a natural entity. The specific population encompasses a number of local races which, as they are often very constant, have usually been described as distinct species. The most striking case is that of the two main Philippine races, described as *D. luzoniense* and *D. sericeum,* which are not only well distinguishable vegetatively, but moreover nearly always differ in the number of pistil-cells (3, respectively 2). Therefore, considering the Philippines only, one should indeed be inclined to accept these two races as 'good' species.

The main local races are:

(a) *D. timoriense sensu strieto* (Java and Lesser Sunda Islands); medium-sized slightly pubescent leaves, glands often absent, if present exclusively beneath; inflorescences rather large, stalked; flowers bisexual, petals rarely more than halfway incised, disk nearly always absent, pistil 2-3-celled; fruits 1-seeded.

(b) *D. malaccense* (Malay Peninsula): medium-sized rather pubescent leaves, glands nearly always present, above; inflorescences large, not rarely subterminal (or sometimes truly terminal?), usually short-stalked or seemingly 2 collateral ones; flowers mostly unisexual, petals deeply cleft, disk present, pistil 2-celled; fruits 2-seeded.

(c) *D. beccarianum* (W. Borneo; closely related forms on Sumba and New Guinea) : leaves rather narrow, nearly glabrous, glands beneath; inflorescences rather small, stalked; flowers unisexual, petals halfway incised, disk present, pistil 2-celled.

(d) In E. Borneo and the Moluccas a narrow-leaved form of *D. beccarianum* can be distinguished; the leaves are somewhat more hairy and coriaceous, glands above or sometimes on both sides; the inflorescences are very small and few-flowered; the petals are incised for about a quarter of their length, the disk fails.

(e) *D. luzoniense* (Luzon, Mindanao) : leaves medium-sized, rather broad, rather densely yellowish-pilose, glands often absent, if present above; inflorescences not very large, distinctly stalked; flowers bisexual, petals slightly incised, disk present, pistil 3-celled; fruits 1-2-seeded.

(f) *D. sericeum* (Philippines) : distinguished from the foregoing one by its thinner, thinly greyish-pubescent leaves, which are often larger, by its rather large inflorescences, and by its 2-celled pistil.

(g) The few specimens from the Lingga and Natuna Islands are characterized by extremely large, very hairy leaves.

2. Dichapetalum sordidum (Hook./.) Leenh., *nov. comb.*

Chailletia deflexifolia Turcz. var. *sordida* Hook./., Fl. Br. Ind. 1: 571. 1875. — *Chailletia sordida* Ridl., Fl. Mai. Pen. 1: 418. 1922. — Singapore, Wallieh 9016, lectotype (K).

MALAYSIA. — SUMATRA. Riouw Archipelago: *Biinnemeijer 7722* (BO); *Tejjsmann HB. 6674* (BO, K, L, U), *6702* (BO, K, L). — MALAY PENINSULA. *Derry U6* (SING) ; *Maingay 3143 = Kew distr. 368/2* (K); *Ridley 6752* (BO) *12181* (SING), *12182* (K), *15848* (K, SING); *Wallieh 9016* (K, lectotype).

3. DICHAPETALUM PAPUANUM (Becc.) Boerl.

Chailletia papiuma Becc. Malesia 1: 176. 1877. — Netherlands New Guinea, Ramoi, Beccari PP. 307, lectotype (Fl).

SSp. PAPUANUM.

MALAYSIA.—MOLUCCAS. Ceram: *Kornassi 1370* (BO) ; *Rutten 14-5* (BO, U), *319* (BO); *Teijsmann 16387* (BO), *s.n. in herb. BO 170428/9/30* (BO). Ambon: *Boerlage 474* (BO); *Robinson 1858* (US), *PI. Rumph. Amb. 602* (A, BM, K, L, NY, type *D. moluccanum* Merr.). — NEW GUINEA. *Beccari PP. 307* (Fl, lectotype); *Brass 620* (A, BO), *5577* (A), *7972* (A, BO, K) ; *Carr 11068* (A, BM, K, NY, SING), *12007* (K, SING), *12785* (A, BM, SING), *13124* (K, SING), *13125* (A, BM, K, SING), *14938* (A, BM, K, L) ; *Clemens 456* (A), *950* (A), *3208* (A, B) ; *Docters van Leeuwen 9541* (BO, L), *10483* (BO), *10606* (BO, L), *11299* (BO, L) ; *Feuilletau de Bruyn 48* (BO) ; *Forbes 224* (K, L), *349* (BM), *414* (BM), *898* (BM) ; *Gjellerup 491* (BO); *Hollrung 37 G* (BO); *Kanehira & Hatusvma 11607* (A, BO), *11984* (A, BO); *Kloss s.n.* (BM, syntype *Pentastira flava* Ridl.), *Kloss s.n.* (BM, syntype *Pentastira nitida* Ridl.); *Von Romer 525* (BO); *Van Royen 3577* (L) ; *Schlechter 16957* (A, K, L, syntype *D. glabratum* Krause). Aru Islands: *Treub s.n. in herb. BO 170408/9/10* (BO).

MELANESIA.—SOLOMON ISLANDS. San Cristobal: *Brass 2797* (A, BISH, BRI).

AUSTRALIA—QUEENSLAND. *Brass 2510* (BRI, type *D. australianum C.* T. White).

D. glabratum Krause is based upon two syntypes, viz. *Schlechter 16463* and *16957*. The latter represents *D. papuanum* and is cited above; from the former I did see two specimens (E, K), both representing *Glochidion sp. (Euphorb.)*. Possibly they were mislabelled, as both were fruiting, and as Krause mentions flowering material only.

ssp. borneense Leenh., *nov. subsp.*

D. grandifolium Ridl. Kew Bull.: 373. 1930.—Borneo, Sarawak, Haviland 2192 (K).

MALAYSIA.—BORNEO. *Haviland 2192* (K, type); *NBFD. 1424, Puasa* (K, L).

4. DICHAPETALUM PLATYPHYLLUM Merr.

D. platyphyllum Merr. Philip. J. Sc. 30: 401. 1926. — Philippines, Sulu Archipelago, Tawitawi, BS. 44045 (Ramos & Edano) (PNH+).

MALAYSIA.—PHILIPPINES. Leyte: *Wenzel 1584* (A, BM, NY). Sulu Islands: *BS. 44045, Ramos & Edano* (A, B, BM, K, NY, SING, US, type).

5. DICHAPETALUM GELONIOIDES (Roxb.) Engl.

Moacurra gelonioides Roxb. Fl. ind. 2: 69. 1832. — Silhet, n.v.

SSp. GELONIOIDES.

CEYLON. *Gardner 194* (BM), *1205* (BM, K) ; *Rechinger 2467* (M); *Thwaites CP. 1231* (BR, MEL), *1245* (BO, BR, K, MEL, P) ; *Walther 1228* (K).

INDIA. SOUTH DECCAN. *Barber 3901* (K), *6195* (K) ; *Cole 76* (K); *Stocks in herb. BRI 417* (BR, BRI, E, K, MEL), *in herb. L 899.255-27* (K, L, M) ; *Wight 167* (E), *746* (E), *3504* (E).

EAST PAKISTAN. *Cowan 12* (CAL, E); *herb. Hooker in herb. L 899.255-28* (L, M), *in herb. U 45526A* (U); *Wallieh 4342* (BM, BR, K, M, P), pro parte.

ASSAM, *herb. Hooker in herb. L 899.255-29* (L, M, U); *Prazer in herb. L 899.255-26* (BO, L).

BURMA. *Kermode 7322* (K); *Lace 4486* (E); *Parker 2618* (K) ; *Parkinson 14134* (K).

SIAM. *Kerr 6008* (K, SING), *6036* (BK, K, SING, type *D. kerrii* Craib).

CHINA. Yunnan: *Henry 12692* (E, K).

MALAYSIA. SUMATRA. East Coast: *Krukoff 4362* (A, SING); *Rahmat 1143* (A, US). Simalur: *Achmad 1621* (B, BO, K, SING, U).

VERN. *Balunakuta,* Ceylon; *moukoora,* Assam (Silhet).

NOTE. The specimens from Ceylon possess sometimes very small leaves, which are caudate-acuminate.

ssp. tuberculatum Leenh., *nov. subsp.*

D. monospermum Merr. Govt. Lab. Publ. no 35: 34. 1906. — Philippines, Mindoro, Baco riv., MacGregor 230, lectotype (PNH f)-

INDO-CHINA. S. Annam: *Hayata 569* (P) type *D. gagnepainii* Pellegr.). Cochinchina: *Pierre 4000* (L, P), *4000 a* (E, P) ; *Thorel 608* (BM, K, P).

PENINSULAR SIAM. *Seidenfaden 26U* (SING); *SF. 2719, Haniff & Nur* (SING), *3921, id.* (SING), *3922, id.* (SING).

MALAYSIA. MALAY PENINSULA. *Curtis 2589* (SING), *3208* (SING); *Ridley 5839* (SING), *13538* (SING), *15519, Haniff* (K, SING); *Scortechini 607 b* (BM, K, L, type *Ellipanthus scortechinii* King) ; *SF. 11684, Nur* (K, SING), *18843, id.* (SING), *21791, Henderson* (SING), *35288, Kiah* (SING). — BORNEO. British North B.: *Evangelista 1108* (A, NY, SING). — PHILIPPINES Palawan: *BS. 77830, Edaño* (NY, SING); *Elmer 12616* (A, BM, E, K, NY, U, US); *FB. 3815, Cm-ran* (K, US), *30092, Cenabre* (US); *PNH. 12434 = Sulit 3916* (L, PNH). Mindoro: *BS. 39365, Ramos* (A), *39518, id.* (A, NY, SING), *39708, id.* (A, BM, BRI), *40913, id.* (A); *FB. 11870, Amarillas* (K, US), *12009, Merritt* (US), *31201, Lasquety* (NY); *MacGregor 230* (K, NY, US, lectotype *D. monospermum* Merr.) ; *Merrill 1801* (A, K, NY, US, syntype *D. monospermum* Merr.), *3323* (K, NY, US, syntype *D. monospermum); PNH. 1931, Celestino & Castro* (A, NY, SING). Luzon: *Cuming 1551* (BM, K). Sibuyan: *Elmer 12121* (A, BM, E, K, NY, US), *12211* (A, BM, E, K, L, NY, US), *12284* (A, BM, E, K, L, NY, US).

ssp. sumatranum (Miq.) Leenh., *nov. stat.*

Chailletia sumatrana Miq. Sum.: 328. 1861. — Sumatra, Palenibang, Muara Enim, Teijsmann HB. 3817 (L).

MALAYSIA. SUMATRA. *Forbes 2781* (A, BM, L, SING), *3149* (A, BM, L), *3176* (A, BM, L, SING) ; *Junghuhn in herb. L 908. 352-858* (L) ; *Lörzing & Jochems 71,76* (BO); *Rahmat 807* (A, SING), *U09* (A, NY, SING), *1516* (A, NY, SING); *Teijsmann HB. 3817* (A, BO, K, L, MEL, type); *Yates 2051* (BRI, NY). — BORNEO. *BS. 21804 = Clemens 5935* (A, K, NY), *26256, Clemens* (A, B, K, M), *26862, id.* (A, B, BM, K, M, NY, SING), *26282, id.* (A, K, M, NY), *27027, id.* (A, B, K, M, NY), *29928, id.,* (K); *Darnton 246* (BM) ; *Elmer 20139* (A, BM, BO, BR, K, L, M, NY, SING, U, paratype *D. bomeense* Merr.), *20378* (A, BM, K, L, M, NY, SING, type *D. bomeense* Merr.); *Hoilier B. 1230* (BO, L), *1240* (BO); *Jaheri 974* (BO, L), *1736* (BO, L) ; *Korthals in herb. L 909.54-151* (L) ; *Kostermans 5172* (BO, K, L) ; *W. Meijer 2164* (BO, L) ; *Motley 419* (K); *NBFD. 1309 = Ramos 192* (A, K, PNH, US, paratype *D. bomeense* Merr.), *SH. 4008, Puasa Angian* (K, KEP, SING); *Rutten 252* (U); *SF. 27211, Carr* (SING); *Teijsmann 11264* (BO), *in herb. BO 170445/6* (BO). - PHILIPPINES. Mindanao: *Zwickey 78* (NY).

ssp. pilosum Leenh., *nov. subsp.*

D. holopetalum Merr. Philip. J. Sc. 17: 271. 1921. — Philippines, Mindanao, Lake Lanao, camp Keithley, Clemens 1039 (PNH f).

MALAYSIA. BORNEO. *Elmer 20037* (A, BM, K, L, M, NY, SING, U), 2073?' (A, BM, BR, K, L, M, NY, SING, U) ; *Endert 2784* (B, BO, K) ; *NBFD. 1296 — Ramos 179* (A, BM, K, PNH, US), *1750 = Ramos 681* (A, BM, L, PNH),

1971, Goklin (K), *2640, id.* (A, K), *2666, Tandom* (A, K), *3771, Sales* (A), *9422, Keith* (A, BO, K, KEP, L, SING), *A-923, Kadir* (K, KEP, PNH, SING); *Wood 2032* (BM, K, SING). — PHILIPPINES. Mindanao: *BS. 36702, Ramos & Edaño* (US, paratype *D. euphlebium* Merr.), *37284, id.* (A, K, L, type *D. euphlebium* Merr.); *Clemens 1039* (M, US, type *D. holopetalum* Merr.).

ssp. andamanicum (King) Leenh., *nov. stat.*

Chailletia andamanica King, J. As. Soc. Beng. 64, ii: 93. 1895. — South Andamans, Hobdaypur, 28-11-1891, King's coll. s.n. in herb. L 899.255-2, lectotype (L).

ANDAMANS. *King's coll. 316* (BM, E, L, syntype), *in herb. L 899.255-2* (BM, L, lectotype) ; *Prain's coll. 3* (BR, U).

6. DICHAPETALUM TRICAPSULARE (Blanco) Merr.

Riana tricapsularis Blanco, Fl. Filip.: 850. 1837. — Luzon, Bataan prov., Mt Mariveles, Elmer 6642, neotype (K).

MALAYSIA. PHILIPPINES. Luzon: *BS. 5087, Ramos* (A, K), *26851, Edaño* (A, K), *26852, id.* (BM, US), *38324, id.* (A), *78739, Ramos* (NY); *Elmer 6642* (E, K, NY, neotype); *FB. 145, Barnes* (NY, US), *2077, Borden* (E, K, NY, US), *2824 = R. Meyer 359* (K, NY, SING, US), *8121, Curran & Merritt* (US), *27295, Udasco* (A); *Loher 5202* (K, US); *Merrill 3191* (K, NY), *5190* (BRI, NY, US); *PNH. 3137 = Edaño 395* (A) ; *Whitford in herb. HK 4871* (K) ; *Williams 441* (NY). Leyte: *Elmer 7275* (NY, type *D. glabrum* Elm.) ; *Wenzel 282 (A,* E, US), *342* (US), *1282* (A, BM, NY), *1518* (A, BM, NY). Bohoi: *BS. 43171, Ramos* (A, K, US), *43280* id.* (A. K). Bucas Grande Is1.: *BS. 35044, Ramos & Pascasio* (A, K, US, type *D. oblongifoliwn* Merr.). Mindanao: *BS. 11819, Robinson* (K, US, paratype *D. ciliatum* Merr.) ; *Clemens 1204* (M); *FB. 9139, Whitford & Hutchinson* (K, type *D. ciliatum* Merr.); *PNH. 13572 — Anonuevo 161* (A, L, PNH); *Williams 2172* (NY).

7. DICHAPETALUM TENUIFOLIUM (King) Engl.

Chailletia tenuifolia King, J. As. Soc. Beng. 64, ii: 91. 1895. — Malay Peninsula, Perak, Larut, King's coll. 3498 (CAL).

MALAYSIA. MALAY PENINSULA. Perak: *King's coll. $101* (BM, L, SING, US), *3498* (BM, K, type), *4954* (BM, K) ; *Wray jr. 1850* (SING), *3304* (SING).

8. DICHAPETALUM GRIFFITHII (Hook. /.) Engl.

Chailletia griffithii Hook. /. Fl. Br. Ind. 1: 571. 1875. — Malacca, Griffith s.n., lectotype (K).

MALAYSIA. MALAY PENINSULA. *Alvins 435* (SING), *1989* (SING), *2300* (SING), *2323* (SING); *Griffith Kew distr. 2169* (K, syntype), *s.n.* (K, lectotype); *Hume 7180* (SING), *7505* (SING), *7855* (SING); *KEP. 7419* (KEP, SING), *15210, Kassim* (KEP, SING), *17016, Osman* (KEP), *20895, Symington* (KEP), *23067, id.* (KEP, SING), *4581S, id.* (KEP) ; *King's coll. 6117* (BM, K, L, SING, US), *10429* (BM, K, SING, type *Chailletia setosa* King) ; *Kloss UU* (K) ; *Maingay Kew distr. 370* (K, syntype); *Melville 4710* (K) ; *Ridley 3315* (SING), *7375* **(SING),** *7377* **(SING),**

8261 (K, SING); *SF. 214, Murdok* (K, SING), *1621, Nur* (SING), *157S6, Burkill & Haniff* (SING), *16726, id.* (SING), *30734, Corner* (PNH, SING), *40087, Sinclair* (E, K, SING).

9. Dichapetalum setosum Leenh., *nov. sp.*

Frutex scandens dioecus. Ramuli pilosi. Folia elliptica, 13-19 x G^-ll cm, rigide herbacea, bullata, supra sparse pilosa, subtus in costa nervisque et ad marginem pilosa, setis basi bulbiformibus; subtus glandulosa, basi late cuneata, apice breviter acuminata; nervi utrimque 7-9, conspicue arcuatim conjuncti. Infructescentiae axillares, c. 1 cm longae, fructus 2 gerentes. Fructus subdidymi, l%-2 x 2-2% x % cm, dense pilosi, sutura dorsali conspicua omnino cincti; pyrena bilocularis endocarpio tenui.

TYPUS.—Borneo, Sarawak, Gat, Upper Rejang riv., July 25, 1929, Clemens 6159 = BS. 21803 (K).

MALAYSIA. BORNEO. *Clemens 6475 = BS, 21101* (A, K, NY), *6159 = BS. 21803* (K, NY, type); *Teijsmann 8547* (BO, L).

10. Dichapetalum steenisii Leenh., *nov. sp.*

Dioeca. Ramuli pilosi, glabrescentes. Folia lanceolata 14-19 x 4-5 cm herbacea utrimque sparse pilosa, subtus glandulosa, basi acuta, apice sensim acute acuminata; nervi utrimque 7-9, conspicue arcuatim conjuncti. Infructescentiae axillares 1 cm longae, fructus 1-3 gerentes. Fructus subdidymi, 1% x 1% x % cm, dense tomentosi, sutura dorsali conspicua omnino cincti.

TYPUS.—Natuna Is, P. Bunguran, G. Ranai, E-slope, April 10, 1928, Van Steenis 1182 (BO).

SSp. STEENISII.

MALAYSIA. NATUNA ISLANDS. P. Bunguran: *Van Steenis 1182* (B, BO, NY, SING, type), *1184* **(BO).**

ssp. celebicum Leenh., *nov. subsp.*

A ssp. *steenisii* praecipue differt characteribus sequentibus: Nervi utrimque 9-10. Fructus tricocci.

TYPUS.—SE. Celebes, Mengkoka, Baula, Sept. 26, 1909, Elbert 3215 (BO).

MALAYSIA. SE. CELEBES. *Elbert 3135* (L), *3215* (A, BO, type).

11. DICHAPETALUM LONGIPETALUM (Turcz.) Engl.

Chailletia longipetala Turcz. Bull. Soc. nat. Mosc. 36, 1: 611. 1863. — India orientalis, Moulmeyn, Griffith Kew distr. 701 (CW) *n.v.*

S. BURMA. *Heifer Kew distr. 2171* (K); *Packman 70* (BM); *Su Koe 9091* (K).

INDO-CHINA. *Balansa 3327* (K, syntype *D. tonkinense* Engl.), *3328* (BR, K, L, P, syntype *D. tonkinense* Engl.), *3852* (K); *Bon 6229* (P); *Chevalier 31788* (P); *Clemens 4206* (K); *Eberhardt 3292* (P); *Pierre 1528* (K, L, P, syntype *D. baillonii* Pierre); *Poilane 1O1SS* (P), *15229* (P); *C. B. Robinson 1460* (K).

HAINAN. *Fung 20117* (BM, E); *How 70-492* (K), *73245* (BM), *73457* (SING); *Lau 52* (BM, E); *Lei 100* (K, L, SING), *358* (SING), *Tsang 180* (K); *Wang 3461.2* (E, M).

MALAYSIA. MALAY PENINSULA (including also Peninsular Siam). *Curtis 2909* (SING); *Kloss 6782* (K), *6801* (K); *Ridley 12183* (BM, K, SING).

12. DICHAPETALUM HELFERIANUM (Kurz) Pierre

Chailletia helferiana Kurz, J. As. Soc. Beng. 41, ii: 297. 1872. — S. Burma, Tenasserim, Heifer Kew distr. 2172 (ace. to King, J. As. Soc. Beng. 64, ii: 92. 1895), n.v.

S. BURMA. *Wallich 4038* (K).

S. SIAM. *Khoon Winit 607* (K); *Pierre 2780* (BM, BO, K, L, P, SING).

MALAYSIA. MALAY PENINSULA. Perlis: *Ridley 15103* (BM, K, SING). Kedah, Langkawi Is l.: *Curtis 1687* (K, SING); *Ridley 8314* (SING), *15802* (BM, K, SING); *H. C. Robinson 6299* (BM, K); *SF. 1057, Haniff* (BM, K, KEP, SING).

13. DICHAPETALUM LAUROCERASUS (Hook./.) Engl.

Chailletia lauroeeraeus Planch, *ex* Hook. /. Fl. Br. Ind. I: 572. 1875. — Malay Peninsula, P. Penang, Government hill, Maingay 2279 = Kew distr. 369, lectotype (K).

MALAYSIA. MALAY PENINSULA. Perak: *King's coll. 6056 (BM,* SING). P. Penang: *Burkill 815* (SING); *Curtis 152* (K, SING), *1553* (SING); *Lobb s.n.* (K, syntype); *Maingay 2279 = Kew distr. 369* (BM, K, L, lectotype); *Ridley 9352* (SING); *SF. 815, Burkill* (SING), *1533, Nur* (SING), *3355, Haniff* (BRI, SING), *3441, Haniff* (SING), *35766, Johya* (SING).

14. Dichapetalum sessiliflorum Leenh., *nov. sp.*

Liana dioeca. Ramuli dense tomentosi, glabrescentes. Folia lanceolata, 12-14 x 3-4 cm, chartacea, supra glabra, subtus in costa nervisque sparse et appresse pilosa; subtus basi glandulosa; basin et apicem versus angustata, acuta; margo crenulatus; nervi utrimque 8-9 curvati conspicue arcuatim conjuncti. Flores 1-2 axillares subsessiles. Calyx dense tomentosus. Petala minute emarginata, extus margine excepto, et intus ad basin longe pilosa. Discum non vidi. Pistillodium patente pilosum.

TYPUS.—SE. New Guinea, Boridi, alt. 4000 ft. Nov. 21, 1935, Carr 13455 (K).

MALAYSIA. SE. NEW GUINEA. *Carr 13455* (K, SING, type), *13487 (A,* BM, K), *14474* (SING).

NOTE, Possibly *Aet 78* (BO, L) from NW. New Guinea (Vogelkop) belongs to the same species. This specimen mainly differs by its larger (14-25 by 6V2-IO cm), more pubescent, and more nerved (10-12 pairs) leaves, which are rounded at base and blunt-acuminate at apex; the fruits are apparently rather alike, flowers are unknown.

15. Dichapetalum tenerum Leenh., *nov. sp.*

Liana dioeca(?). Ramuli velutini glabrescentes. Folia elliptica vel ovata, 7-9 X 3-4 cm, herbacea, supra in costa, subtus in costa venisque, insuper ad marginem pilosa, subtus glandulosa; basi rotundata; apice sensim obtuso-acuminata; nervis utrimque c. 8 curvati. Fructus axillares solitarii subdidymi, 1 1/4 x 11/4 cm, velutini minute tuberculati, sutura dorsali conspicua omnino cincti.

TYPUS.—West New Guinea, East of Sorong, near kampong Baru, alt. 20 m, March 26, 1954, Van Royen 3180 (L).

MALAYSIA. NW. NEW GUINEA. *Aet 78* (BO, L), *286* (BO, L); *Kanehira & Hatusima 12982* (A, BO); *Van Royen 3180* (L, type).

NOTE. Possibly the specimens Brass *3834* (A, NY) from the Central Division, Papua, and *BW. 1563, Schram* (L) from Holtekang near Hollandia belong to this same species; they are slightly different, however, in their leaves.

16. DICHAPETALUM VITIENSE (Seem.) Engl.

Chailletia vitiensis Seem. [Viti: 434, 1862. *no-men]* Fl. Vit.: 38. 1865. — *D. vitiense* Engl. in E. & P. Nat. Pfl. Fam. 3, 4: 348. 1896. — Fiji, Storck 876, lectotype (K).

Dioecious liana or scandent shrub. Branchlets thinly tomentose when young, glabrescent, grey to purple-brown, sometimes strongly lenticellate. Leaves elliptic to oblong or lanceolate, 6-15 by *21/2-6 1/2* cm, chartaceous (to subcoriaceous), (glabrous to) more or less densely soft-pubescent, especially on the nerves beneath; glands nearly always present, rather many, scattered, beneath, usually one between every pair of nerves; base usually strongly oblique, broadly cuneate or rounded on one side, more or less decurrent; apex blunt or faintly blunt-acuminate; nerves 7-8 pairs, curved, indistinctly interarching. Inflorescences compact, dichotomously branched, 1 cm long, subsessile, rather many-flowered, fulvous-tomentose. Flowers (S unknown) c. 2 1/2 mm. Petals elliptic, *2 1/2* by 1 1/2 mm, 3/4 mm incised, glabrous. Disk-lobes nail-shaped, 2 1/2 mm, glabrous. Pistilloid densely woolly pubescent. Fruits solitary, short-stalked, l-2(-3)-lobed, the lobes bean-shaped, 2 1/2 by 1 1/2 cm, densely minutely tawny tomentose, possibly more or less glabrescent; sutures conspicuous; endocarp ruggy.

MELANESIA. FIJI ISLANDS. *Degener & Ordonez 11,045* (K, L); *Gillespie 2025* (K, P), *3510* (K); *Greenwood 509* (K), *509 a* (BRI); *Meebold 16899* (M); *Setchell & Parks 15005* (BM); *A. C. Smith 1831* (K), *4385* (A, K), *6504* (K, L), *6902* (A, K, L); *Storck 876* (K, lectotype); *Tothill 530* (K); *Vaughan 3307* (BM). — TONGA ISLANDS. Vavau: *Crosby 2U* (K, MEL). Eua: *Parks 16357* (K).

ECOL. In forests and mangroves, up to c. 900 m. Fl. mainly Oct.-Dec.; fr. mainly May-Aug.

VERN. *Wa ramende,* Vanua Levu.

NOTES. This species can be inserted in the key as published in Flora Malesiana I, 5, p. 307 as follows:

12(b). Dioecious. Petals as long as the sepals or only slightly longer. Branches terete. Fruits always with distinct sutures.

12A. Pistil 2-merous. Fruits up to lMs cm long. Leaves ± equilateral, nearly always subglabrous; glands usually few, mainly near the base . . 5. D. gelonioides

12A. Pistil 3-merous. Fruits 2% cm long. Leaves more or less inequilateral at base, nearly always more or less pubescent; glands usually rather many, one between every pair of nerves. . . . . .16. D. vitiense

The specimens from Tonga differ slightly from those of Fiji; their leaves are thinner and fully glabrous. As a whole the species is rather variable.

Dubious species

DICHAPETALUM HOWII Merr. & Chun.

D. howii Merr. & Chun, Sunyatsenia 2: 256, f. 28. 1935. — Hainan, Ngai Yuen, How 71068 (NY), n. v.

I did see only one specimen which very probably belongs to this species, *viz. Wang 34201* (E, K, M), and this resembles *D. longipetalum* Engl., which is a rather variable species and the only one furthermore known from Hainan; so I am rather convinced of the conspecificity of *D. howii* and *D. longipetalum,* but as there are still some slight differences in the leaves and as the flowers are still unknown, I hesitate in uniting them. Moreover, another specimen from Hainan, *Lav, 530* (BM, E, K), possibly also belongs to *D. howii;* this specimen, with very young fruits, is rather different from *D. longipetalum.*