

A TAXONOMIC ACCOUNT OF THE
OLACACEAE OF ASIA, MALESIA, AND THE ADJACENT
AREAS

H. SLEUMER

Rijksherbarium, Leiden, The Netherlands

CONTENTS

1. Introduction	145
2. Artificial key to the genera of <i>Olacaceae</i> in Asia, Malesia, Australia, and the Pacific	146
3. An account of the genus <i>Anacolosa</i> Bl. in Asia, Malesia, and the Pacific.	146
4. The genus <i>Erythropalum</i> Bl.	151
5. The genus <i>Harmandia</i> Pierre ex Baill.	153
6. The genus <i>Ochanostachys</i> Mast.	153
7. An account of the genus <i>Olax</i> L. in Asia, Malesia, Australia, and the Pacific	154
8. The genus <i>Scorodocarpus</i> Becc.	160
9. The genus <i>Schoepfia</i> Schreb. in Asia and Malesia	161
10. The genus <i>Strombosia</i> Bl. in Asia and Malesia	163
11. The genus <i>Ximena</i> L. in Asia, Malesia, Australia, and the Pacific.	166

I. INTRODUCTION

In the present work details are given in the first place for the Malesian *Olacaceae*, representing the basis of my forthcoming treatment of the family in 'Flora Malesiana', in which full descriptions of the Malesian genera and species will be given. As the *Olacaceae* of Malesia are connected with those of South and Southeast Asia on the one, and those of Australia and the Pacific on the other side, it has been necessary to study the respective materials too. A part of the Malesian genera is represented also in Africa incl. Madagascar, and even in Central and South America; the appertaining species have been studied but are not mentioned in this paper.

A critical elaboration of the family for Africa and America is urgently needed, but will, as far as can be seen, be of no influence of the delimitation and scientific names of the Asiatic-Malesian *Olacaceae*.

Herbarium specimens (rather completely for Malesia only) were studied from loans from, resp. during visits to, the herbaria of Edinburgh (E), Kew (K), Leiden (L), London (BM), Paris (P), Singapore (SING), and Utrecht (U). Generally no collector's names in serial herbarium materials are mentioned. The following abbreviations are used:

- bb. = bosschen buitengewesten, i.e. collections outside Java of the Forest Research Institute at Bogor, Java
B.N.B. For. Dep. = British North Borneo Forestry Department
BRUN = Forestry Department Brunei
B.S. = Bureau of Science, Manila

- BSIP = British Solomon Islands Protectorate
 BW = Boswezen (in former Dutch New Guinea)
 CF = Conservator of Forests, early series of the Forest Research Institute, Kepong
 F.B. = Forestry Bureau, Manila
 F.M.S. = Federated Malay States (Museum)
 FRI = Forest Research Institute, Kepong
 H.B. = Herbarium Bogoriense
 I. = island or islands
 KEP = Forest Research Institute, Kepong
 LAE = Papua New Guinea Forest Department, Lae
 NGF = New Guinea Forest Department, Lae
 n.v. = non vidi (specimens not seen by the author)
 Phyt. Surv. Malaya = Phyto-Chemical Survey of the Federation of Malaysia, Kuala Lumpur
 PNH = Philippine National Herbarium, Manila
 S = Forest Department of Sarawak, Kuching
 SAN = Forest Department of Sabah (North Borneo), Sandakan (ditto San A)
 SF = Singapore Field Number

2. ARTIFICIAL KEY TO THE GENERA OF OLACACEAE IN ASIA, MALESIA, AUSTRALIA, AND THE PACIFIC

- 1a. Stamens and staminodes present **Olax**
 b. Stamens present; staminodes absent 2
 2a. Stamens fully fused to a tube. Flowers unisexual and monoecious
 Harmandia
 b. Stamens not fused (sometimes partly adnate to the petals). Flowers generally
 bisexual (rarely unisexual and andro-dioecious: *Erythrolalum*) 3
 3a. Stamens 8 or 10, half of them epipetalous, the other stamens epispalous
 Ximenea
 b. Stamens all epipetalous 4
 4a. Flowers interruptedly arranged in spikes **Ochanostachys**
 b. Flowers arranged in racemes, panicles, or mostly in fascicles 5
 5a. Stamens 8 or 10, arranged in pairs before each petal **Scorodocapus**
 b. Stamens 4 – 6 (– 7) solitary before each petal 6
 6a. Climbing shrub (tendrils often present). Leaves palmatinerved at base, higher
 up with several pinnate nerves; leaf-base subpeltate **Erythrolalum**
 b. Erect shrubs or trees. Leaves penninerved; leaf-base never peltate 7
 7a. Petals entirely free. Calyx accrescent with fruit and covering the latter almost to
 the top **Strombosia**
 b. Petals connate at least partly at base. Calyx, if any, not accrescent in fruit
 8
 8a. Calyx cup-shaped. Petals thick-fleshy. Anthers penicillate distally
 Anacolosa
 b. Calyx indistinct. Petals thin. Anthers not penicillate **Schoepfia**

3. AN ACCOUNT OF THE GENUS ANACOLOSA BL. IN ASIA, MALESIA, AND THE PACIFIC.

ANACOLOSA

Anacolosa Bl., Mus. Bot. Lugd.-Bat. 1 (1850) 250, t. 46. — Type: *A. frutescens* (Bl.) Bl. (*Stemonurus frutescens* Bl.).

TENTATIVE KEY TO THE SPECIES IN ASIA, MALESIA, AND
THE PACIFIC

- 1a. Inflorescence pedunculate for 6–10 mm; peduncle bare, i.e. without (numerous!) bracteoles or scales. (Fruit broadly ellipsoid or oblongoid, *c.* 2.5 by 1.5–1.8 cm). *Assam, Indochina, Thailand* **1. *A. ilicoides***
- b. Inflorescence sessile or almost so, i.e. it may include a short (1–3, rarely –4 mm) multibracteolate or scaly callus or axis, which may be several-parted **2**
- 2a. Flowers developing from stem or trunk. *N. New Guinea* **2. *A. cauliflora***
- b. Flowers developing from leaf axils on foliate or defoliate branchlets **3**
- 3a. Fruit usually markedly tubercled in the dry state **4**
- b. Fruit always smooth in the dry state **5**
- 4a. Flowers subsessile. Fruit finally cherry-red; beak formed by the remaining style very short. *New Guinea, New Britain, Solomon I.* **3. *A. papuana***
- b. Flowers pedicelled for at least 2 mm. Fruit finally yellow to orange; beak formed by the remaining style elongate. *Fiji & Tonga I.* **4. *A. lutea***
- 5a. Flowers relatively large: calyx 3–4, petals (7–)8 mm long. *Annam* **5. *A. moiorum***
- b. Flowers smaller: calyx up to 2.5, petals up to 4 mm long **6**
- 6a. Flowers subsessile, i.e. pedicels usually 0.5–1.5, very rarely to 2 mm long **7**
- b. Pedicels longer **8**
- 7a. Leaves smooth in dry specimens. *S. W. India.* **6. *A. densiflora***
- b. Leaves markedly tubercled on both faces or certainly on the undersurface in dry specimens **8**
- 8a. Pedicels *c.* 1 mm long. *Samoa I.* (Also here specimens of *A. frutescens* from Thailand with subsessile flowers). **7. *A. insularis***
- b. Pedicels longer **9**
- 9a. Pedicels 8–10 mm long. *Annam* **8. *A. poilanei***
- b. Pedicels 2–5(–6) mm long **10**
- 10a. Leaves in general rather small, 4–8(–9) by 2–3(–4) cm **11**
- b. Leaves usually larger, (6.5–)10–14(–22) by (3–)4–7 cm. **12**
- 11a. Pedicels puberulent. Fruit ovoid, 1.9–2.3 cm long. *Laos, Cambodia* **9. *A. clarkei***
- b. Pedicels glabrous. Fruit subglobular, *c.* 1 cm diam. *Lower Burma, Indochina, Thailand* **10. *A. griffithii***
- 12a. Fruit 1.2 by 1 cm. *Palau I.* **11. *A. glochidiiformis***
- b. Fruit obovoid-ellipsoid to oblongoid, (1.5–)1.8–2(–2.5) by (1.2–)1.5–2 cm. *Burma, Andaman & Nicobar I., Thailand, Sumatra, Malay Penins., Java, Borneo, Celebes, Sula I., Philippines* **12. *A. frutescens***

1. *Anacolosa ilicoides* Mast.

A. ilicoides Mast. in Hook. *f.*, Fl. Br. Ind. 1 (1875) 580: Valet., Crit. Overz. Olacin. (1886) 92; Brandis, Ind. Tr. (1906) 149; Gagnep., Fl. I. – C. 1 (1911) 817; Craib, Kew Bull. (1911) 28; Fl. Siam. En. 1 (1926) 271; Kanjil. *et al.*, Fl. Assam 1, 2 (1936) 250; Gagnep., Fl. I. – C. Suppl. (1948) 737; Razi, Lloydia 20 (1957) 240. — Type: *Hooker f. & Thomson s.n.*, Assam, Khasia Mts., defl. (K; P. iso).

Distribution: Assam, Indochina, Thailand.

ASSAM. *Chand* 2970, 4662; *Hooker & Thomson s.n.*; *Koelz* 24893, 24928 with mature fruit (L).
 INDOCHINA. C a m b o d i a : *Béjaud* 821 (P).
 THAILAND. *BKF* 26373; *Bunchuai & Nimanong* 1423; *Kerr* 1192, 6206, 20185, 20306; *Larsen et al.* 2834;
Noe 181; *Put* 3896; *Winit* 1556.

2. *Anacolosca cauliflora* Sleumer, *sp. nov.*

Arbuscula 3 m alta. *Ramuli* teretes glabri. *Folia* lanceolata, apice sensim longeque attenuata, basi subrotundata usque cuneata, glabra, utrinque in sicco opaca, brunnea et subdense tuberculata, integra, 20–26 cm longa, 4–5.5 cm lata, costa supra impressa, subtus valde prominente, nervis lateralibus arcuatis alte ascendentibus 4–5-paribus ante marginem inter sese conjunctis, supra obscuris, subtus elevatis, reticulatione nulla; petioli transverse fissurati, 5–7 mm longi, ca. 2 mm crassi. *Inflorescentiae* e trunco ortae glomerulatae, floribus numerosis ad axes multibracteatos 5–10 mm longos et 2–3 mm crassos dispositis, albidis, juvenilibus, nondum apertis, subsessilibus; pedicelli vix 1 mm longi. *Calyx* cupularis, deorsum quasi in stipitem attenuatus, glaber. *Petala* 6 crassiuscula, extus glabra, intus supra antheras barbata. *Stamina* 6; antheris apice barbatae. Cetera desunt.

NEW GUINEA. N o r t h e r n : Rouffaer R., in forest, 250 m, fl. buds Sept. 1926, *W. M. Docters van Leeuwen* 10389 (L, holotype; iso BO, n.v., K).

3. *Anacolosca papuana* Schellenb.

A. papuana Schellenb., *Bot. Jahrb.* 58 (1923) 157. — T y p e : *Schlechter* 18668, New Guinea, Bismarck Mts., c. 1200 m, (B, phot. L; K, P, iso).

NEW GUINEA. W e s t : *Docters van Leeuwen* 11217; *Kostermans & Soegeng* 262; *Reksodihardjo* 503. — E a s t : *Brass* 8026, 8158; *Hartley* 12024; *Ledermann* 8784 (L); *NGF* 18958, 27068, 39937, 41098, 48487; *Schlechter* 18668.

NEW BRITAIN. *NGF* 21964, 27323, 41500.

SOLOMON I. *Brass* 3291, 3435; *BSIP* 743, 1014, 1252, 2753, 2813, 3713, 3726, 3783, 4062, 4119, 4127, 4162, 4256, 4398, 4779, 4924, 5262b, 5273, 5352, 5575, 5623, 5711, 5718, 5834, 5875, 5988, 6136, 6245, 6638, 6667, 6816, 7084, 7232, 7281, 7437, 7515, 8321, 8524, 8576, 9011, 9117, 9435, 9550, 9750, 9834, 10100, 10982, 11095, 11255, 11449, 11656, 12685, 12779, 12780, 13003, 13083, 13152, 13354, 13788, 13835, 13959, 14080, 14011, 14104, 14139, 14167, 14227, 14352, 15140, 15316, 15386, 15634, 15695, 15876, 16076, 16163, 16214, 16282, 16351, 16581, 16871, 17267, 17462, 17563, 18338, 18642, 18740, 18986; *Craven & Schodde* 136; *Hombroen* anno 1841 (P); *Hunt* 2340, 2433; *Kajewski* 2000, 2466; *NGF* 19698, 19721, 45754; *Schodde (& Craven)* 3677, 3817; *Waterhouse* 538-B.

4. *Anacolosca lutea* Gillespie

A. lutea Gillespie, *Bull. Bernice P. Bishop Mus.* 91 (1932) 5; A. C. Smith, *J. Arn. Arb.* 31 (1950) 154; Yuncker, *Bull. Bernice P. Bishop Mus.* 220 (1959) 104; Parham, *Pl. Fiji Isl.* (1964) 150. — T y p e : *Gillespie* 4040, Fiji I., Viti Levu, Nandarivatu (BISH, n.v.).

D i s t r i b u t i o n : Fiji & Tonga I.

5. *Anacolosca moiorum* Gagnep.

A. moiorum Gagnep., *Fl. I.-C. Suppl.* (1948) 738. — T y p e : *Poilane* 32013, Annam, near Kontum (P; K iso).

D i s t r i b u t i o n . Only known from Annam, prov. Quang-nam and Kontum.

INDOCHINA. A n n a m : *Poilane* 31818, 32013, 32736.

6. *Anacolosa densiflora* Bedd.

A. densiflora Bedd., Madras. J. Sc. III, 1 (1864) 38; Trans. Linn. Soc. 25 (1865) 211, t. 22; Fl. Sylv. (1869) LX & t. 138 (1871); Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 580; Brandis, Ind. Tr. (1906) 149; Gamble, Fl. Madras 1 (1915) 191. — **T y p e**: *Beddome 1194 & 1195*, India, W. Ghats, Anamalai Hills (BM; K, P, iso).

D i s t r i b u t i o n: India, W. Ghats, Anamalai, and Travancore Hills, apparently rare.

7. *Anacolosa insularis* Christophersen

A. insularis Christophersen, Bull. Bernice P. Bishop Mus. 128 (1935) 80. — **T y p e**: *Christophersen 2771*, Samoa, Savaii, Tufutafu (BISH; n.v.; K, iso).

D i s t r i b u t i o n: Samoa I. (Savaii, Tutuila).

SAMOA I. S a v a i i : *Bristol 2483; Christophersen 2771, 3312; Whistler 957*. — T u t u i l a : *Whistler 3348*.

8. *Anacolosa poilanei* Gagnep.

A. poilanei Gagnep., Not. Syst. 13 (1947) 131; Fl. I.-C. Suppl. (1948) 737. — **T y p e**: *Poilane 4191*, Annam, Nhatrang (P).

D i s t r i b u t i o n: Only known from Annam.

INDOCHINA. A n n a m : *Poilane 4191, 4233, 6009, 32625*.

9. *Anacolosa clarkei* Pierre

A. clarkei Pierre, Fl. For. Cochinch. (1892) t. 266, f. *A. 'clarkii'*; Gagnep., Fl. I.-C. 1 (1911) 816, f. 94; Craib, Fl. Siam. En. 1 (1926) 271; Gagnep., Fl. I.-C. Suppl. (1948) 737. — **T y p e**: *Pierre 521*, Cambodia, in montibus et planitie prov. Samrongtong (P; K, L, iso).

D i s t r i b u t i o n: Indochina (Laos, Cambodia).

INDOCHINA. L a o s : *Harmand 373, 1295; Thorel 3190*. — C a m b o d i a : *Harmand 2947; Pierre 521; Poilane 14513, 14607; Thorel s.n.*

10. *Anacolosa griffithii* Mast.

A. griffithii Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 580; Kurz, J. As. Soc. Beng. 44, ii (1875) 153; For. Fl. Br. Burma 1 (1877) 236; King, J. As. Soc. Beng. 64, ii (1895) 109; Gagnep., Fl. I.-C. 1 (1911) 817; Suppl. (1948) 737. — **T y p e**: *Griffith 821*, Burma, Tenasserim, Mergui (K, lecto; CAL, n.v., L, P, iso); a syntype, *Kurz s.n.*, Andaman I., belongs to *A. frutescens*.

D i s t r i b u t i o n: Lower Burma, Indochina (Annam, Cambodia, Cochinchina) and Thailand.

BURMA. Lower Burma : *Griffith (Herb. Helfer) 821; Meebold 14176 (K)*.

INDOCHINA. A n n a m : *Poilane 27610*. — C a m b o d i a : *Harmand 2895; Martin 757; Pierre 1415, Poilane 14687*. — C o c h i n c h i n a : *Godefroy-Lebeuf 913; Pierre 1415e*.

THAILAND. *Burkill 3976; Hansen & Smitinand 12401, 12523; Kerr 14662, 17922, 18552, 18955; Phengnaran & Smitinand 599; Put 833, 2852; Thaworn 900*.

11. *Anacolosa glochidiiformis* Kaneh. & Hatus.

A. glochidiiformis Kaneh. & Hatus., Bot. Mag. Tokyo 50 (1936) 601, f. 58. — Syn types: *Nisida* 2766, Palau I., locality not mentioned (FU, lecto, n.v.); Kanehira 1860, Palau I., Korrör (FU); *ibid.*, Kanehira 1877 (FU; P, iso).

Distribution: Palau I.

12. *Anacolosa frutescens* (Bl.) Bl.

A. frutescens (Bl.) Bl., Mus. Bot. Lugd.-Bat. 1 (1850) 251, f. 46; Walp. Ann. 2 (1851) 182; Miq., Fl. Ind. Bat. 1, 1 (1856) 787; Baill., Adansonia 3 (1862) 118; Valet., Crit. Overz. Olacin. (1886) 92; O. Kuntze, Rev. Gen. Pl. 1 (1891) 111; Koord. & Valet., Bijdr. 5 (1900) 291; Ic. Bogor. 2 (1904) t. 136; Back., Schooffl. Java (1911) 224; Koord., Exk. Fl. Java 2 (1912) 172; Koord.-Schum., Syst. Verz. 1 (1912) 4; ditto 2 (1910) 18; Koord. & Valet., Atlas 1 (1913) f. 123; Ridl., Kew Bull. (1921) 34; Masam., En. Phan. Born. (1942) 258; Back., Bekn. Fl. Java (em. ed.) 6 (1948) fam. 137, p. 4; Anders., Gard. Bull. Singapore 20 (1963) 166; Back. & Bakh. f., Fl. Java 2 (1965) 65. — *Stemonurus frutescens* Bl., Bijdr. (1826) 649. — Type: *Blume '2168'*, Java, in sylvis montosis (L; P, U, iso).

A. zollingeri Baill., Adansonia 3 (1862) 118, cf. *Olacinea ignota*, Zoll. & Mor., Syst. Verz. (1846) 25. — Type: *Zollinger 699*, Java (P).

A. puberula Kurz, J. As. Soc. Beng. 41, II (1872) 297; ditto 44, II (1875) 153; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 581; Kurz, J. As. Soc. Beng. 44, II (1876) 123; For. Fl. Br. Burma 1 (1877) 235; Valet., Crit. Overz. Olacin. (1886) 93; King, J. As. Soc. Beng. 64, II (1895) 109; Chakrabarti, Bull. Bot. Surv. India 14 (1972) 171. — Type: *Kurz 1196*, Nicobar I., Kamorta & Katchall (CAL, n.v.; BM, K, P, iso).

Stemonurus? crassipes Kurz, J. As. Soc. Beng. 41, II (1872) 298; Valet., Crit. Overz. Olacin. (1886) 229; O. Kuntze, Rev. Gen. Pl. 1 (1891) 112. — *Gomphandra? crassipes* Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 587; Valet., Crit. Overz. Olacin. (1886) 229. — *A. crassipes* Kurz, J. As. Soc. Beng. 44, II (1875) 153; For. Fl. Br. Burma 1 (1877) 236; Sleum., Blumea 17 (1969) 209. — *Platea crassipes* Kurz, Prel. Rep. For. & Veg. Pegu, App. A, p. XXXIV (1875). — Type: *Kurz s.n.*, Burma, Pegu (CAL, n.v.; K, iso).

A. heptandra Maingay ex Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 581; Valet., Crit. Overz. Olacin. (1886) 93; King, J. As. Soc. Beng. 64, II (1895) 110; Ridl., Fl. Mal. Pen. 1 (1922) 425; Whitmore, Tr. Fl. Malaya 2 (1973) 300. — Type: *Maingay K. D. 386 (3046)*, Malacca (K; BM, L, P, iso).

A. puberula Kurz var. *andamanica* King, J. As. Soc. Beng. 64, II (1895) 110; Brandis, Ind. Tr. (1906) 149; Parkinson, For. Fl. Andaman I. (1923) 125; Chakrabarti, Bull. Bot. Surv. India 14 (1972) 171. — Syn types: *Kings Coll. 180*, Andaman I., S. Andamans, Port Blair, Mt. Harriett (CAL, lecto, n.v.; E, K, L, U, iso); *Kings Coll. 129*, Andaman I. (CAL, n.v.; L, P, iso); *Kings Coll. 252*, Andaman I. (CAL, n.v.; L, P, iso).

A. arborea Koord. & Valet., Bull. Inst. Bot. Btzg 2 (1899) 9; Bijdr. 5 (1900) 288; Koord., Nat. Tijd. Ned. Ind. 60 (1901) 388; Back., Schooffl. Java (1911) 224; Koord., Exk. Fl. Java 2 (1912) 172; Koord.-Schum., Syst. Verz. 1 (1912) 3; Koord. & Valet., Atlas 1 (1913) f. 122. — Type: *Koorders 9911*, Java, Priangan, Pangentjongan (BO, lecto, n.v.; L, iso); syntypes are numerous collections made by Koorders in W. and C. Java.

A. luzoniensis Merr., Philip. J. Sci. 4 Bot. (1909) 253; Foxw., Philip. J. Sci. 4 Bot. (1909) 449; Wester, Philip. Agr. Rev. 14 (1921) t. 35a; Bull. Agric. Philip. I. 39 (1921) 272; Brown, Min. Prod. Philip. For. 2 (1921) 270; Merr., En. Philip. 2 (1923) 117. — Type: *F. B. 2830 Meyer*, Luzon, Bataan, Mt. Mariveles (PNH, lost; K, L, P, iso).

A. celebica Valet. ex Koord.-Schum., Syst. Verz. 2, 3 (1914) 38, *nom. nud.*; Valet. in Koord. Meded. s'Lands Plantentuin 19 (1918) 391. — Type: *Koorders 18366*, Celebes, Minahasa (BO, n.v.; K, L, iso).

Salacia bartlettii Ridl., Kew Bull. (1938) 239; Ding Hou, Fl. Mal. 6, 2 (1964) 32. — Type: *E. Bartlett anno 1893*, Sarawak, Kuching (K).

Distribution: Burma (Pegu), Andaman & Nicobar I., Thailand, Sumatra (East Coast, Palembang), Malay Penins., W. & C. Java, Borneo, N. Celebes, Sula I. (Taliabu), Philippines.

THAILAND. P a y a p : Sörensen et al. 3126. — Maharat: Winit 134, 1744. — R a - c h a s i m a : van Beusekom & Charoenpol 2010; BKF 35262 (L).

SUMATRA. East coast: Bartlett 7593, 7638; Rahmat Si Toroes 3577, 4134. — Palembang: Grashoff 866.

MALAY PENINSULA. Kedah: SF 35222. — Trengganu: FRI 8336. — Perak: FRI 797. — Pahang: FRI 3684, 4714, 4792; KEP 97944; Shah 1367. — Selangor: For Dep. F.M.S. 11169; SF 34275. — Johore: FRI 8846, 12342. — Malacca: Maingay 386 (3046). — Singapore: Ridley 6371, 14139.

JAVA. West: Backer 22521; Bakhuizen van den Brink 1573, 3840, 4244; Blume '2168'; Buwalda 3495; Hallier anno 1896; Hochreutiner 1822; Horsfield s.n.; Koorders 9911; Kuhl & van Hasselt s.n.; O. Kuntze 5206; Sugandiredja 294; Valetton s.n.; Winckel 8, 235; Zollinger 699. — Central: Koorders 10078, 11045, 11084.

BORNEO. West: bb. 29045, 31643. — East: Ender 3190; Kostermans 7384, 7556; van Slooten 2237; Wiradinata 601. — Sarawak: E. Bartlett anno 1893; Chew Wee-Lek 1361, 1362; Ding Hou 380; Haviland 2950; Richards 1127; S 2675, 4089, 4335, 5215, 5237, 8065 (cit. Anderson, n.v.), 8436, 11718, 12481, 14585, 24647, 27751, 28394, 28494, 29191, 38109, 38927; Shah 5638. — Brunei: BRUN 5053. — Sabah: SAN A 4171, 20935, 26876, 26889, 32154, 56663, 58708, 62806, 70962, 74562, 75162, 75166.

CELEBES. Minahasa: bb. 17293; Koorders 17477, 18366.

SULA I. Taliabu: Atjé (Hulsteijn) 95.

PHILIPPINES. Luzon: Adduru 20, 254; B.S. 1417, 5166, 17375, 22407, 22552; F.B. 1199, 2830, 7222, 26617, 30846; Loher 12854; PNH 1656, 91905. — Mindoro: B.S. 39611; PNH 17412. — Masbate: F.B. 12601, cit. Merrill, n.v. — Panay: B.S. 32225, 35583. — Mindanao: PNH 37980; Wenzel 3082.

Note: Specimens suggesting *A. frutescens* by leaf characters, but flowers (sub)sessile, fruits not known yet, have been collected in Thailand, R a n o n g : Geesink & Santisuk 4893 (L). — P u k e t : Kerr 17050 (L), 19176 (K).

EXCLUDED

A. maingayi Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 580 = *Strombosia ceylanica* Gardn.

4. THE GENUS ERYTHROPALUM BL.

ERYTHROPALUM

Erythropalum Bl., Bijdr. (1826) 921; van Tiegh., Bull. Soc. Bot. Fr. 44 (1897) 128 *pro fam.*; Sleum. in E & P., Nat. Plifam. ed. 2, 20b (1942) 401–403, f. 121. — Type: *E. scandens* Bl.

Erythroropalum Bl., Fl. Javae (1828) praef. VIII, orth. mut.

Mackaya Arn., Jard. Magaz. Zool. Bot. 2 (1838) 550, *nom. rejic.* — Type: *M. populifolia* Arn.

Modecopsis Griff., Proc. Linn. Soc. 1 (1849) 171; Notul. 4 (1854) 633, t. 628 (*'Modecopsis'*). — Type: *M. vaga* Griff.

Erythropalla Hassk., Cat. Hort. Bogor. Alt. (1844) 191, orth. mut.

Dactylium Griff., Proc. Linn. Soc. 2 (1853) 252. — Type: *D. vagum* Griff.

Decastrophia Griff., Notul. 4 (1854) 737. — Type: *D. inconspicua* Griff.

Monaria Korth. ex Valet., Crit. Overz. Olacin. (1886) 130, *in syn.*

Erythropalum scandens Bl.

E. scandens Bl., Bijdr. (1826) 922; Hassk., Pl. Jav. Rar. (1848) 193; Miq., Fl. Ind. Bat. 1 (1856) 704; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 578; Kurz, J. As. Soc. Beng. 44, ii (1875) 153; For. Fl. Burma 1 (1877) 234; Valet., Crit. Overz. Olacin. (1886) 130; Boerl., Handl. Fl. Ned. Ind. 1 (1890) 208; Warb., Bot. Jahrb. 13 (1891) 299; O. Kuntze, Rev. Gen. Pl. 1 (1891) 111; Pierre, Fl. For. Cochinch. (1892) t. 269, f. A; King, J. As. Soc. Beng. 64, ii (1895) 130; Ridl., J. Str. Br. R. As. Soc. 33 (1900) 61; Brandis, Ind. Tr. (1906) 148; Back., Schoolfl. Java (1911) 223; Gagnep., Fl. I.-C. 1 (1911) 822, f. 96; Koord., Exk. Fl. Java 2 (1912) 172; Koord.-Schum., Syst. Verz. 1 (1912) 4; Gamble, Fl. Madras 1 (1915) 190; Merr.,

- Philip. J. Sci. 14 (1919) 242; Ridl., Fl. Mal. Pen. 1 (1922) 436; Groff, Ding & Groff, Lingn. Agr. Rev. 1, 2 (1923) 77; Merr., En. Philip. 2 (1923) 118; Burk. & Henders., Gard. Bull. S.S. 3 (1925) 358; Craib, Fl. Siam. En. 1 (1926) 271; Merr., Lingn. Sci. J. 5 (1927) 70; Pl. Elm. Born. (1929) 58; Bartlett, Pap. Michigan Acad. Sci. Arts & Lett. 6 (1929) 49; Hu, Bull. Fan Mem. Inst. Biol. 1, 2 (1929) 15; Burk., Dict. (1935) 949; Kanjil. *et al.*, Fl. Assam 1, 2 (1937) 248; Tanaka & Odashima, J. Soc. Trop. Agr. 10, 4 (1938) 364; Chun, Sunyatsenia 4 (1940) 230; Masam., En. Phan. Born. (1942) 258; Fl. Kainant. (1943) 64; Holth. & Lam, Blumea 5 (1942) 78; Gagnep., Fl. I.-C. Suppl. (1948) 741; Back., Bekn. Fl. Java (em. ed.) 6 (1948) fam. 137, p. 5; Razi, Lloydia 20 (1957) 241; Back. & Bakh. *f.*, Fl. Java 2 (1965) 65; Hatusima, Fl. Batan I. (1966) 27; Steen., Blumea 15 (1967) 153. — *Type*: *Blume s.n.*, W. Java, in sylvis montanis G. Salak (L; iso, P, U).
- Mackaya populifolia* Arn., Jard. Mag. Zool. Bot. 2 (1838) 550. — *E. populifolium* Mast. in Hook. *f.*, Fl. Br. Ind. 1 (1875) 578; Brandis, Ind. Tr. (1906) 148; Razi, Lloydia 20 (1957) 241. — *Type*: *Wight 2465*, S. India, Travancore, Courtallum (K, type).
- Dactylum vagum* Griff., Proc. Linn. Soc. 2 (1853) 252. — *Modec(c)opsis vaga* Griff., Notul. 4 (1854) 633, t. 628. — *E. vagum* Mast. in Hook. *f.*, Fl. Br. Ind. 1 (1875) 578; Vidal, Phan. Cuming. Philip. (1885) 85; Ceron, Cat. Pl. Herb. Manila (1892) 45; Brandis, Ind. Tr. (1906) 148; Kanjil. *et al.*, Fl. Assam 1, 2 (1937) 248; Hara & Williams, En. Fl. Pl. Nepal 2 (1979) 86. — *Type*: *Griffith*, Tenasserim, in sylvis Noadwar, apparently no specimen preserved; t. 628.
- Decastrophia inconspicua* Griff., Notul. 4 (1854) 737; Ic. Pl. As. (1854) t. 613, f. 4 & t. 614. — *Type*: *Griffith*, Tenasserim, inter Mergui et Beiktown, apparently no specimen preserved; t. 613, f. 4 & t. 614.
- E. scandens* Bl. var. *abbreviatum* Hochr., Bull. Inst. Bot. Btzg 19 (1904) 39; ditto 22 (1905) 102; Ann. Jard. Bot. Btzg Suppl. 3, 2 (1910) 854. — *Type*: *Hochreutiner 22*, Hort. Bot. Bogor. (BO, type; iso K, L, P).
- E. grandifolium* Elm., Leaf. Philip. Bot. 8 (1915) 2788. — *Type*: *Elmer 12474*, Philippines, Sibuyan, Magallanes, Mt. Giting-giting (PNH, lost; BM, L, iso).

Distribution: Widely spread in S. India, and from Nepal to Assam, Bengal, Burma and the Andaman I., Indochina, Thailand, S. W. China (Kwangtung, Hainan), Sumatra, Malay Penins., W. Java, Borneo, Flores, N. Celebes incl. Talud I., and the Philippines. Doubtful for the Kei I.

SUMATRA. A t j e h : *de Wilde & de Wilde-Duyffes 16579*. — **E a s t c o a s t** : *Bartlett 8164*; *Bartlett & La Rue 170*; *Lörzing 5188, 5651, 12473*; *Rahmat Si Toroës 4205*. — **P a l e m b a n g** : *van Steenis 3273, 3313*.

MALAY PENINSULA. P e n a n g : *Curtis 2777*; *SF 3351*. — **P e r a k** : *For. Dep. F. M. S. 39226*; *Kings Coll. 4292, 4553, 6804, 8533*; *Ridley 10262, 10304*; *Scortechini s.n.*; *Wray 738, 2165*. — **P a h a n g** : *For. Dep. F.M.S. 872*; *Henderson 10643, 10783*. — **K e m a m a n** : *SF 30133*. — **S e l a n g o r** : *Phyt. Surv. Malaya 1382*; *For. Dep. F.M.S. 20891*. — **N e g r i S e m b i l a n** : *SF 3248, 3518*. — **M a l a c c a** : *Derry 1004*; *Maingay 381/2946*; *Ridley 1004*. — **S i n g a p o r e** : *Ridley 1852, 5102, 6175*; *Sinclair s.n.*

JAVA. B a n t a m : *Adelbert 290*; *van Steenis 10563*; *Wirawan 127*. — **B o g o r** : *Anderson s.n.*; *Backer 10028, 22861, 23948*; *Bakhuizen van den Brink 1885, 5299, 5698*; *Beumée 6095*; *Blume s.n.*; *Hochreutiner 22*; *Horsfield 94, 278*; *Junghuhn 526*; *Kuhl & van Hasselt s.n.*; *Pierre 5898*; *Reinwardt 1768a*; *de Vriese s.n.*; *Zollinger 1384*. — **P r i a n g a n** : *Backer 33682*; *van Steenis 12722*.

BORNEO. W e s t : *Hallier 3304*. — **S a r a w a k** : *S 9271, 24267*. — **S a b a h** : *Chew et al. 1391*; *Clemens 28316, 29555, 30373*; *Elmer 20653*; *SAN A 4408, 50291*.

FLORES. *Verheijen 2267*.

CELEBES. M i n a h a s a : *Forman 308*. — **T a l a u d I.** : *Karakelang, Lam 2806*.

PHILIPPINES. B a t a n I. : *Hatusima l.c.* — **L u z o n** : *Adduru 166, 258*; *B.S. 976, 7720, 11496, 19469*; *Elmer 6321, 8098, 8293, 9230, 17409, 17542*; *F.B. 21537*; *Loher 286, 287, 288, 5764, 5778, 5785, 5799*; *PNH 1634, 2876, 2910, 34562, 38551, 78168, 98604*; *Vidal 1132, 2072, 2389*. — **M i n d o r o** : *B.S. 40831*; *Merrill 2236, 4052*; *PNH 3323, 3549*. — **C a t a n d u a n e s** : *B.S. 30459*. — **S i b u y a n** : *Elmer 12474*. — **S a m a r** : *PNH 14486*. — **L e y t e** : *PNH 11974*; *Wenzel 429*. — **B o h o l** : *B.S. 42841*. — **P a l a w a n** : *Merrill 9542*. — **M i n d a n a o** : *B.S. 36906*; *Copeland 742*; *Elmer 13903*; *Wenzel 2860, 3295*. — **S u l u A r c h.** : *PNH 38845*.

KEI I. *Warburg anno 1889* (B, lost); not recollected.

Note. *Erythralum* has been considered by various authors to represent a family of its own, with bitegmic ovules pendent from the apex of an 1-celled ovary, within the *Celastrales*, though other authors have placed the genus as primitive in the *Olacales/Santalales*. Fagerlind (Sv. Bot. Tidskr. 40, 1946: 9–14) has shown,

that the ovary of *Erythrolalum* is (2—)3-celled in its lower, 1-celled in its upper part, and that the placenta is central and free, with (2—)3 unitegmic ovules pendent from its apex. With these characters *Erythrolalum* doubtless belongs to *Olacaceae*.

EXCLUDED

E. triandrum Quisumb. & Merr., Philip. J. Sci. 37 (1928) 143 = *Alsomitra macrocapa* (Bl.) Roem. (*Cucurb.*), *vide* Kew.

5. THE GENUS HARMANDIA PIERRE EX BAILL.

HARMANDIA

Harmandia Pierre ex Baill., Bull. Soc. Linn. Paris 2 (1889) 770; Baill., Hist. Pl. 11 (1892) 452. — *Type*: *H. mekongensis* Pierre ex Baill.

***Harmandia mekongensis* Pierre ex Baill.**

H. mekongensis Pierre ex Baill., Bull. Soc. Linn. Paris 2 (1889) 770; Pierre, Fl. For. Cochinch. (1892) t. 264; Gagnep., Fl. I.-C. 1 (1911) 818, f. 95; Suppl. (1948) 739. — *Type*: *Harmand 1322*, S. E. Laos, Attopeu, (P; BM, K, L, P, SING, iso).

H. kunstleri King, J. As. Soc. Beng. 64, ii (1895) 100; Ridl., Fl. Mal. Pen. 1 (1922) 421; Henders., Gard. Bull. Str. S. 4 (1928) 238; Heyne, Nutt. Pl. Ned. Ind. 3rd ed. (1950) 674 ('*Hernandia*', *cf.* Kosterm., Reinwardtia 2, 1953: 360); Desch, Mal. For. Rec. 15, 2 (1954) 414; Balan Menom, Mal. For. 24 (1961) 292; Whitmore, Tr. Fl. Malaya 2 (1973) 301, f. 1. — *Syn types*: *Kings Coll. 6123*, Mal. Peninsula, Perak (CAL, *n.v.*; E, K, P, SING); *7896* (CAL, lecto, *n.v.*; BM, K, iso).

INDOCHINA. Laos: *Harmand 1322; Poilane 13228, 13682, 13684, 13741*. — Annam: *Gaudichaud 227; Poilane 995, 29200*.

SUMATRA. Palembang: *Dumas 1587*.

MALAY PENINSULA. Perak: *Kings Coll. 6123, 7896*. — Pahang: *van Balgooy 2559; For. Dep. F.M.S. 16498, 20455*. — Trengganu: *FRI 10521*. — Selangor: *For. Dep. F.M.S. 24161; Ridley 8510*. — Negri Sembilan: *For. Dep. F.M.S. 2142*. — Malacca: *Derry 1072; Ridley 1611*.

BORNEO. Sabah: *SAN 51000*.

EXCLUDED

H. flavescens Pierre ms. [not ex Heim, J. Linn. Soc. Bot. 31 (1895) 123 *in syn.*], *Pierre 713*, S. Cochinchina, Saigon (BM) = *Dichapetalum gelonioides* (Roxb.) Engl., det. P. Leenhouts.

6. THE GENUS OCHANOSTACHYS MAST.

OCHANOSTACHYS

Ochanostachys Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 576; Engl. in E. & P., Nat. Pflanzenfam. Nachtr. III (1908) 99. — *Type*: *O. amentacea* Mast.

Petalinia Becc., Malesia 1 (1883) 257. — *Type*: *P. bancana* Becc.

***Ochanostachys amentacea* Mast.**

O. amentacea Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 577; Valet., Crit. Overz. Olacin. (1886) 104; Boerl., Handl. Fl. Ned. Ind. 1 (1890) 207; King, J. As. Soc. Beng. 64, ii (1895) 100; Ridl., J. Str. Br. R. As. Soc.

- 33 (1900) 60; Hook., Ic. Pl. 27 (1901) t. 2689; Hochr., Bull. Inst. Bot. Btzg 22 (1905) 44; Foxw., Philip. J. Sci. 4 Bot. (1909) 449; Winkl., Bot. Jahrb. 49 (1913) 365; Merr., En. Born. Pl. (1921) 242; Ridl., Fl. Mal. Pen. 1 (1922) 422, f. 42; S. Moore, J. Bot. 62 (1924) Suppl. 21; Heyne, Nutt. Pl. Ned. Ind. ed. 2 (1927) 593; Foxw., Malay. For. Rec. 3 (1927) 119, with plate; Henders., Gard. Bull. Str. Sett. 4 (1928) 238; Merr., Pl. Elm. Born. (1929) 58; Masam., En. Phan. Born. (1942) 259; Desch, Malay. For. Rec. 15, 2 (1954) 415, pl. 86, f. 1; Browne, For. Tr. Sarawak & Brunei (1955) 281; Stauff., Vierteljahrsschr. Nat. Ges. Zürich 106 (1961) 414; Wyatt-Smith & Kochum., Malay. For. Rec. 17 (1965) 309; Smythies, Common Sarawak Tr. (1965) 113; Burgess, Sabah For. Rec. 6 (1966) 420; Whitmore, Tr. Fl. Malaya 2 (1973) 302, f. 2; Meijer, Guide Tr. W. Males. (1974) 222, f. 57. — *Syn types*: *Maingay 384*, Malacca (K, lecto; P, iso); *Griffith 2500*, Malacca (K).
- Petalinia bancana* Becc., Malesia 1 (1883) 258. — *O. bancana* Valet., Crit. Overz. Olacin. (1886) 104. — *Syn types*: *Teysmann 6718*, Banka, Sg. Sian (BO, lecto; K, L, iso); *Teysmann 6719*, Banka (BO, K, L); *Teysmann 6720*, Banka (BO, K, L); *Teysmann 6723*, Banka (BO, K, L).
- O. amentacea* Mast, var. *rufa* Stapf ex Ridl., Kew Bull. (1921) 23; Masam., En. Phan. Born. (1942) 259 — *Syn types*: *Haviland 1950*, Sarawak, Kuching (K, lecto); *Lobb s.n.*, Sarawak, Kuching (K, P); *Haviland & Hose 3473*, Sarawak, Kuching (BM, K, L).

SUMATRA. East coast: *Bartlett 6988*; *bb. 5295, 5324, 7385, 7727, 7814, 16601, 16604*; *Krukoff 4055*; *Rahmat Si Boeaja 6507, 9867*. — Tapanuli: *bb. 6446*; *Rahmat Si Toroes 5250*. — Riau: *bb. 27472, 27486, 27650, 28602, 30090*; *Normand 642*; *Soepadmo 138*. — West coast: *bb. 5523, 5810, 5818, 9110, 18048, 23015*; *Meijer 6751* — Palembang: *bb. 23566, 31694, 32059, 32243, 35153*; *Boschproefst. T. 1162*; *Buwalda 6763*; *Castillo & Valderama 8*; *Dumas 1590*; *Ender 3 E 1 P/413, 436, 499, 503, 516, 524, 528, 529, 614, 3 E 2 P/722*; *Forbes 3075, 3086, 3194*; *Grashoff 165, 1005*; *Kostermans S. 138*; *Thorenaar 8 E 1 P/413, 503, 528, 529, 614, 722*. — Jambi: *bb. 14458*; *Rachman T. B. 230*.

BANKA. *bb. 26880, 26881, 26882, 34163*; *Berkhout 956*; *H. B. 3498*; *Kostermans & Anta 1117*, *Teysmann 6718, 6719, 6720, 6723*. — *Cult. Hort. Bogor. sub III-G-54*.

MALAY PENINSULA. Penang: *Curtis 938, 1510*. — Kedah: *KEP 73519*; *SF 35167*. — Kelantan: *FRI 4309, 4484, 7087, 11682*; *Stone & Mahmut S. 12465, 12482*; *FRI 8263, 11194, 17958*; *SF 30280, 33765*. — Perak: *For. Dep. F.M.S. 1125, 2151*; *FRI 815, 5879, 13320*; *KEP 16593*; *Kings Coll. 3426, 4523, 4620, 6705, 6747, 7800*; *Scortechini 1992*; *SF 13427*; *Wray 814, 1251, 2731, 3988*. — Pahang: *van Balgooy 2524*; *For. Dep. F.M.S. 2392, 3919, 4017, 4070, 4510, 5053, 5461, 6602*; *FRI 10954, 14357, 15248, 14567, 15300, 23374*; *KEP 17272, 26180*; *SF 24535*; *Soepadmo 850*. — Selangor: *Burn-Murdoch 50*; *For. Dep. F.M.S. 799, 2466, 3339, 4595, 4865, 4913, 4968, 5417, 23093*; *Hume 9230*; *KEP 72438, 85235, 98371, 98871, 99022*; *Ridley anno 1900*. — Johore. *KEP 105034*; *Ridley anno 1890*. — Negri Sembilan: *For. Dep. F.M.S. 576, 612, 613*; *FRI 14208, 17058*. — Malacca: *Derry 379*; *Lobb s.n.*; *S 15556, 22474, 22815, 23251, 23925, 23934, 23998, 29587, 32245, 37827*; *SF 35681*. — Singapore: *Cantley 80*; *Murton 1081*; *Ridley 4653, 4743, 6193, anno 1890*; *Sinclair anno 1949*.

BORNEO. West: *bb. 6329, 7443, 22514, 29054*. — East: *Kostermans 5812, 5863, 6542, 6588*. — Southeast: *bb. 10409, 13916, 14636, 14819, 14968, 15259, 15649, 15755, 15768, 15834, 16285, 16287, 16889, 16898, 20606, 23086, 24732, 24744, 29235, 34338, 34780, 34792, 34798*; *Ender 2555, 5013*; *Kostermans 10240, 12633*; *Schut K 32*; *Winkler 2356*. — Sarawak: *Haviland 1950*; *Haviland & Hose 3473*; *Hose 379*; *Lobb s.n.*; *S 15556, 22474, 22815, 23251, 23925, 23934, 23998, 29587, 32245, 37827*; *SF 35681*. — Brunei: *Hotta 12977*. — Sabah: *B.N.B. For. Dep. 4551, 5462, 9299*; *Elmer 21417, 21598, 21711, 21781*; *SAN 15284, 16757, 16964, 17685, 21128, 24031, 24168, 24880, 27355, 28676, 34177, 36569, 36939, 38772, 50056, 53885, 61173, 65979, 66030, 71192, 71947, 76107, 76275, 87846*.

7. AN ACCOUNT OF THE GENUS OLAX L. IN ASIA, MALESIA, AUSTRALIA, AND THE PACIFIC.

OLAX

The genus *Olax* L. is distributed with numerous species in the (sub)tropical Old World. Its greatest diversity is found in Africa incl. Madagascar, where all 4 sections distinguished by Engler (Bot. Jahrb. 43, 1909: 161) occur. One of these, i.e. sect. *Triandrae* Engl., extends from Africa far to the East, ending with an endemic species in New Caledonia. The species found in Asia, Malesia, Australia, and the Pacific can be separated by characters found in the following key.

KEY TO THE SPECIES

- 1a. Flowers in axillary racemes. 2
 b. Flowers solitary per leaf axil 6
- 2a. Branchlets in the dry state subacutely angled or short-winged, and also closely transversely ridged or wrinkled 3
 b. Branchlets in the dry state terete, smooth or longitudinally striate, never angled or wrinkled (though such wrinkles may occur on the petiole) 5
- 3a. Leaves discolorous, glaucous beneath, entire. Petals 4–5 mm long. Drupe almost completely covered by the enlarged calyx. *New Caledonia*
 1. *O. hypoglauca*
 b. Leaves isocolorous, their margin characteristically revolute-wrinkled or subcrenate in dry specimens. Drupe *c.* halfway covered by the enlarged calyx 4
- 4a. Petals 5–6 mm long. Drupe broadly ovoid. *Ceylon*. **2. *O. zeylanica***
 b. Petals 3 mm long. Drupe oblongoid. *Bhutan, Assam, Upper Burma*
 3. *O. acuminata*
- 5a. Branchlets unarmed, practically glabrous, early darkening to a reddish-brown colour. Petals becoming dark to blackish in the dry state, 10–12 mm long. Drupe 1.7–2.5 cm long, almost completely covered by the enlarged calyx. *India and Ceylon through S. E. Asia to Malesia and W. Pacific (Micronesia, Solomon I)* **4. *O. imbricata***
 b. Branchlets usually armed with strong ramal thorns, bearing a fine patent pubescence, not or hardly changing the colour in dry state. Petals remaining light-coloured when dry, 7–9 mm long. Drupe *c.* 1.5 cm long, covered for about the lower 2/3 by the enlarged calyx. *S. E. Asia to W. Malesia*
 5. *O. scandens*
- 6a. Staminodia undivided 7
 b. Staminodia bifid, *i.e.* 2-cleft to the middle 9
- 7a. Leaves reduced to minute scales. *Australia*. **6. *O. aphylla***
 b. Leaves normally developed 8
- 8a. Leaves ovate or broadly oblong, retuse. Staminodia subulate, glabrous. *Australia* **7. *O. phyllanthi***
 b. Leaves narrow-oblong, mucronulate. Staminodia linear, bearded at base. *Australia* **8. *O. stricta***
- 9a. Leaves (rather thin)retuse. *Australia* **9. *O. retusa***
 b. Leaves obtuse or acuminate 10
- 10a. Anthers with linear-elongate appendages. Leaves chartaceous. Drupe 1.1 by 0.8 cm). *Australia* **10. *O. pendula***
 b. Anthers not appendaged. 11
- 11a. Leaves rather thick. Drupe 0.8–1 cm diam. *Australia*. **11. *O. benthamiana***
 b. Leaves thin. Drupe 0.5 cm diam. *N. W. India to Bengal, Assam, Madras, Thailand (Nakawn Sawan)* **12. *O. nana***

1. *Olax hypoglauca* Baill.

O. hypoglauca Baill., *Adansonia* 8 (1868) 345; Guillaumin, *Fl. Anal. Nouv.-Caléd.* (1948) 107; *Mém. Mus. Hist. Nat. Paris* 8, 2 (1959) 132; ditto 15, 1 (1964) 15. — Type: *New Caledonia*, no locality mentioned, *Capt. Baudouin anno 1865* (P).

Distribution: *New Caledonia*.

2. *Olax zeylanica* L.

O. zeylanica L., Sp. Pl. (1753) 34; Burm. f., Fl. Ind. (1768) 16; Linné, Amoen. 1 (1787) 387; Vahl, Symb. 3 (1794) 7; En. 2 (1805) 33; De Cand., Prodr. 1 (1824) 532; Moon, Catal. (1824) 5; Wight & Arn., Prodr. (1834) 88; Thwaites, En. (1858) 42; Beddome, Fl. Sylv. 3 (1869) LX; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 576; Valet., Crit. Overz. Olacin. (1886) 112, f. 11; Trimen, Fl. Ceylon (1893) 257; Gamble, Fl. Madras 1 (1915) 190; Worthington, Ceylon Tr. (1959) t. 131. — Type: *Herb. Hermann*, Ceylon (BM). Another authentic specimen was found in *Herb. Hermann* at L on page 134, '*lignum stercorinum zeylanicum*'. Linné refers in the protologue both to Hermann, Mus. zeyl (1717) 13 and Burman. Thesaurus (1737) 26. A Burman specimen is preserved at L.

Distribution: Ceylon. According to Gamble also in the Indian Peninsula (Wight 302, K).

3. *Olax acuminata* Wall.

O. acuminata Wall. [*Cat. 6781* (1832), *nom. nud.*] ex Benth., Proc. Linn. Soc. 1 (1840) 89; Trans. Linn. Soc. Bot. 18 (1840) 678; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 576; Valet., Crit. Overz. Olacin. (1886) 113; Brandis, Ind. Tr. (1906) 148; Kanjil. *et al.*, Fl. Assam 1, 2 (1936) 247. — Type: *Wallich 6781*, Assam, Sylhet (K; BM, P, iso).

O. longifolia Wall., *Cat. 6782* (1832), *nom. nud.*, p.p.

O. zeylanica auct. non L: Kurz, J. As. Soc. Beng. 44, ii (1875) 152; For. Fl. Br. Burma 1 (1877) 233. Based on Griffith 797 and J. Anderson s.n. from Burma.

Distribution: Bhutan, Assam, Upper Burma.

4. *Olax imbricata* Roxb.

O. imbricata Roxb. [Hort. Beng. (1814) 5, *nom. nud.*] Fl. Ind. ed. Carey & Wall. 1 (1820) 169; De Cand., Prodr. 1 (1824) 532; Roxb., Fl. Ind. ed. 2 Carey 1 (1832) 164; Decaisne, Nouv. Ann. Mus. 3 (1834) 438 (= Herb. Timor. Descr. 1835: 110); Zoll. & Mor., Syst. Verz. (1846) 25; A. Gray, U.S. Expl. Exp. (1854) 305; Miq., Fl. Ind. Bat. 1, 1 (1856) 785; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 575; Kurz, J. As. Soc. Beng. 44, ii (1875) 153; For. Fl. Br. Burma 1 (1877) 234; F.-Vill., Novis. App. (1880) 45; Vidal, Sin. Atlas (1883) 20, t. 30, f. A; Phan. Cuming. Philip. (1885) 102; Rev. Pl. Vasc. Filip. (1886) 85; Valet., Grit. Overz. Olacin. (1886) 115; Ceron. Catal. Manila (1892) 45; King, J. As. Soc. Beng. 64, ii (1895) 99 p.p.; Hochr., Bull. Inst. Bot. Btzg 11 (1904) 38; Merr., Govt. Lab. Publ. (Philip.) 27 (1905) 32; Philip. J. Sci. 1 (1906) Suppl. 51; Brandis, Ind. Tr. (1906) 148; Back., Fl. Batavia 1 (1907) 292; Voorl. Schoolfl. Java (1908) 54; Merr., Philip. J. Sci. 3 (1908) Bot. 80; Back., Schoolfl. Java (1911) 222; Merr., Fl. Manila (1912) 185; Koord., Exk. Fl. Java 2 (1912) 171; Merr., Sp. Blancoan. (1918) 134; En. Born. Pl. (1921) 242; Ridl., Fl. Mal. Pen. 1 (1922) 421; Groff, Ding & Groff, Lingn. Agr. Rev. 1, 2 (1923) 77; Schellenb., Bot. Jahrb. 58 (1923) 158; Parkinson, For. Fl. Andam. (1923) 125; Craib, Fl. Siam. En. 1 (1926) 269; Merr., Lingn. Sci. J. 5 (1927) 70; Hu, Bull. Fan Mem. Inst. Biol. 1, 2 (1929) 12; Kanehira, Bot. Mag. Tokyo 45 (1931) 277; Fl. Micron. (1933) 42; Merr. & Chun, Sunyatsenia 2 (1934) 5; Kanehira; En. Micron. Pl. (1935) 312; Masam., Fl. Kainant. (1943) 64; Gagnep., Fl. I.-C. Suppl. (1948) 734; Back., Bekn. Fl. Java (em. ed.) 6 (1948) fam. 137, p. 2; Back. & Bakh. f., Fl. Java 2 (1965) 64; Hansen, Dansk Bot. Ark. 25, 2 (1967) 81. — *Pseudaleia imbricata* Hassk. ex Valet., Crit. Overz. Olacin. (1886) 115 *pr. syn.* — Type: *Roxburgh s.n.*, Bengal, Chittagong (CAL, n.v.).

O. lucida Heyne in Wall., *Cat. 6777* (1832), *nom. nud.*

O. wightiana Wall [*Cat. 6779* (1832) *nom. nud.*] ex Wight & Arn., Prodr. 1 (1834) 89; Thwaites, En. (1858) 42; Beddome, Fl. Sylv. (1859) LX, t. 9, f. 2; Dalz. & Gibs., Bombay Fl. (1861) 27; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 575; Trimen, Fl. Geyl. 1 (1893) 256; Talbot, Tr. Bombay (1894) 44; Woodr., J. Bomb. Nat. 11 (1897) 270; Cooke, Bombay Fl. 1 (1902) 221; Brandis, Ind. Tr. (1906) 148; Gagnep., Fl. I.-C. 1 (1911) 812; Gamble, Fl. Madras 1 (1915) 190; Chun & How, Act. Phytotour. Sin. 7 (1958) 61. — Type: *Wallich 6779* = Herb. Wight (424), India, Western Peninsula, Courtallum (K; L, P, iso). *Fissilia psittacorum* auct. non Lamk: Blanco, Fl. Filip. (1837) 28; ed 2 (1845) 20; ed. 3 (1877) 38, t. 311.

- O. multiflora* A. Rich ex Baill., *Adansonia* 3 (1862) 121. — Syn types: *Perrottet anno 1819*, Luzon, Manila (P, lecto; L, iso); *Gaudichaud 309*, Manila (P); *Berthe anno 1857*, Manila (P).
O. wrightiana Wall. ex Wight & Arn. var. *bracteata* Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 576. — Type: *Law s.n.*, India, Bombay (K).
O. merguensis Planch. ex Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 576 p.p. lectotyp. — Type: *Helper 662*. (798), Burma, Tenasserim, Mergui (K & P, lecto).
O. imbricata Roxb. var. *membranifolia* Kurz, J. As. Soc. Beng. 44, ii (1876) 123. — Type: *Kings Coll. s.n.*, Nicobar I., eastern coast of Katchall (CAL?; BM, L, P, possibly iso).
Pseudaleia longistylis Hassk. ex Valet., Crit. Overz. Olacin. (1886) 115 in syn. *O. imbricata*.
O. semiinfera Valet., Crit. Overz. Olacin. (1886) 116; Merr., En. Born. Pl. (1921) 242. — Syn types: *Teysmann s.n.*, S. Borneo, Marawang Kota Waringien & P. Pinang (BO, n.v.); *Korthals s.n.*, Borneo (L).
O. wrightiana Wall. ex Wight & Arn. var. *nigrescens* Gamble, Fl. Madras 1 (1915) 190. — Type: *Barber 6021*, India, W. Peninsula, Anamalais (K, lecto).
O. laxiflora Ridl., Kew Bull. (1921) 242. — Type: *Beccari anno 1873*, Kei I., Bandan a Weri (K).
O. rosea Ridl., Kew Bull. (1921) 33; Masam., En. Phan. Born. (1942) 259; Sinclair, Gard. Bull. Singapore 14 (1953) 31. — Type: *Haviland 3018 p.p.*, Sarawak, Kuching (K; BM, P, SING).
O. multiflora Ridl., Kew Bull. (1931) 34, non A. Richard ex Baill. 1862. — Type: *Beccari anno 1874*, Celebes, Penisole S. E. a Lepo-Lepo, presso Kandari (K).
O. laxiflora Merr. ex Li, J. Arn. Arb. 26 (1945) 60; Chun & How, Act. Phytotax. Sin. 7 (1958) 61, non Ridley 1931. — Type: *W. T. Tsang 22231*, Kwangsi, Shang-sze Dist. (A, n.v.).

Distribution: India and Ceylon, Bengal, Burma, Andaman & Nicobar I., Indochina, Thailand, S. W. China (Kwangsi, Kwangtung, Hainan), Taiwan (Botel Tobago), in Malesia from the Malay Peninsula to New Guinea and Solomon I., also in Micronesia (Palau I).

SUMATRA. East coast: *Rahmat Si Toroes 2952*. — West coast: *Meijer 4959*.

MALAY PENINSULA. Perak: *FRI 15751*. — Pahang: *FRI 3717; SF 32815*. — Malacca: *Ridley anno 1890; SF 2190*. — Singapore: *SF 39238*.

JAVA. West: *Bakhuizen van den Brink 3028, 5922; Hochreutiner 97; Horsfield s.n.; Koorders 31237; Soepadmo 289; van Steenis 11235; Zollinger 289*. — Central: *Koorders 27052*.

MADURA. *De Vriese s.n.*

BORNEO. South: *Korthals s.n.; Teysmann s.n.* — Sarawak: *Haviland 484, 3018 p.p.; S 23684*. — Sabah: *SAN A 4503, 33525, 34570, 35259, 63503, 80520, 83411*.

LESSER SUNDA I. Sumbawa: *de Voogd 2220*. — Flores: *Schmutz 1716, 1744, 2105b, 2717; Verheijen 2736, 3177; de Voogd 2836*. — Alor: *Jaag 797*.

CELEBES. Southeast: *Beccari anno 1874*. — Buton: *Elbert 2656, 2771, 2742*. — Kaibana: *Elbert 3314*.

PHILIPPINES. Luzon: *Barthe s.n.; B. S. 497, 1858, 5036, 7220, 7581, 9618, 19154, 27688, 30066, 37884, 43653, 46546; Cuming 1132; Elmer 5558, 5687, 8141, 8219; F. B. 2281, 2327, 2358, 2705, 2923, 5964, 19150, 25018; Gaudichaud 309; Hallier 4338; Llanos 1858 (G); Lobb s.n.; Loher 293, 294, 295, 296, 5775, 14342; Merrill 5036, Sp. Blanc. 234; Perrottet anno 1819; PNH 18001, 18003, 35495; Santos 5712; Vidal 179, 1699, 2380*. — Mindoro: *PNH 16902*. — Romblon: *Elmer 12151, Hallier 4338a*. — Cebu: *B.S. 11090*. — Guimaras I.: *F.B. 255*. — Palawan: *Hallier 4338b; PNH 80780, 91308*. — Mindanao: *Copeland 593, 1335; Hallier 4338c*. — Sulu I.: *B.S. 43938*.

TIMOR. *Riedlé s.n.; Zippelius s.n.*

TENIMBER I. *Buwalda 4437; Pleyte 78*.

KEI I. *Beccari anno 1873; Jaheri 381; Jensen 103, 357*.

NEW GUINEA. West: *B.W. 5973; Meyer Drees 372, 379*. — East: *Brass 8130; Carr 16177; Craven & Schodde 829; Jacobs 8693; LAE 61273; NGF 30745; Schlechter 19196*.

SOLOMON I. *BSIP 4071a, 6982, 14687, 16221, 16955, 17439, 17511; Hunt R.S.S. 2732*.

5. *Olax scandens* Roxb.

- O. scandens* Roxb., Pl. Corom. 2 (1798) 2, t. 102; Hort. Beng. (1814) 5; Fl. Ind. ed. Carey & Wall. 1 (1820) 163; De Cand., Prodr. 1 (1824) 532; Wall., Cat. 6774 A-G (1832); Wight & Arn., Prodr. 1 (1834) 89; Walp., Rep. 1 (1842) 377; Miq., Fl. Ind. Bat. I, 1 (1856) 785; Dalz. & Gibs., Bombay Fl. (1861) 27; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 575; Kurz, J. As. Soc. Beng. 44, ii (1875) 152; For. Fl. Br. Burma

- 1 (1877) 233; Valet., Crit. Overz. Olacin. (1886) 114; Trimen, Fl. Ceyl. 1 (1893) 256; Ridl., Trans. Linn. Soc. London II, 3 (1893) 286; Woodr., J. Bombay Nat. 11 (1897) 270; Talbot, Tr. Bombay (1894) 44; Cooke, Bombay Fl. (1902) 221; Brandis, Ind. Tr. (1906) 147, f. 68; Back., Fl. Batavia 1 (1907) 290; Voorl. Schoolfl. Java (1908) 54; Schoolfl. Java (1911) 222; Gagnep., Fl. I.-C. 1 (1911) 814; Craib, Kew Bull. (1911) 28; Ridl., J. Str. Br. R. As. Soc. 59 (1911) 84; Koord., Exk. Fl. Java 2 (1912) 172; Koord.-Schum., Syst. Verz. 1 (1912) 2; Gagnep., Notul. Syst. 2 (1912) 283; Gamble, Fl. Madras 1 (1915) 190; Beumée, Flor. anal. onderz. djatihossen (1922) 113; Ridl., Fl. Mal. Pen. 1 (1922) 421; Craib, Fl. Siam. En. 1 (1926) 270; Heyne, Nutt. Pl. Ned. Ind. end. 2 (1927) 592; Burk., Dict. (1935) 1578; Gagnep., Fl. I.-C. Suppl. (1948) 736; Back., Bekn. Fl. Java (em. ed.) 6 (1948) fam. 137, p. 2; Back. & Bakh. f., Fl. Java 2 (1965) 64; Burk., Dict. 3rd. ed. (1966) 1605. — **T y p e** : *Roxburgh*, India, locality not indicated (BM).
- O. psittacorum* (Lamk) Vahl, En. (1805) 33, *quoad pl. ceylan. Koenig*.
Roxburghia baccata Koenig ex Roxb., Fl. Ind. ed. Carey & Wall. 1 (1820) 168, *in syn.*; Fl. Ind. ed. Carey 1 (1832) 163, *in syn.*; Wight & Arn., Prodr. 1 (1834) 89. — **T y p e** : *Koenig s.n.*, India, Coromandel (BM).
- O. bador* Buch.-Ham. in Wall., *Cat. 6778* (1832), *nom. nud.*
O. obtusa Bl., Bijdr. (1825) 131; Walp., Rep. 1 (1842) 377; Miq., Fl. Ind. Bat. 1, 1 (1856) 785; Gagnep., Fl. I.-C. 1 (1911) 812, f. 93, 1–4; Suppl. (1948) 735. — **T y p e** : *Blume s.n.*, Java, no locality indicated (L; K, P, U, iso).
- Drebellia subarborescens* Zoll., Nat. Tijd. Ned. Ind. 14 (1857) 160. — **T y p e** : *Zollinger 2741*, Bali (BO?; B, BM, K, P, iso).
- O. imbricata* Roxb. var. *cambodiana* Pierre, Fl. For. Cochinch. (1892) pl. 269 C. — **T y p e** : *Pierre 861*, Cochinchina, Baria (P; E, K, iso).
- Loranthus securidacoides* Warb. ex De Wildeman, Pl. Nov. Herb. Hort. Then. 2 (1909) 71, t. 81. — **T y p e** : *Zimmermann 119*, Thailand, Bangkok (BR; BM, K, L, P, U, iso).

D i s t r i b u t i o n : Fom tropical W. Himalaya through India, Ceylon, Burma, Indochina, Thailand and W. Malesia (Malay Peninsula, Java, Bali).

MALAY PENINSULA. Perlis: *Ridley 15151; SF 22913*. — Kedah: *Ridley anno 1890*. — Kelantan: *Gimlette anno 1914*. — Trengganu: *Kasim 5130; Soepadmo & Mahmud 9180; SF 15347, 39913*. — Pahang: *Ridley 1608a; SF 29878*. — Malacca: *Griffith 802; Maingay 372* (K, syntype *O. merguensis*).

JAVA. West: *Backer 59, anno 1903; Blume s.n.; Bennett s.n.; Hochreutiner 2085, 2584; Horsfield 2, 261, 468; van Oostrooem 12614; Perrottet anno 1819; Raap 393, 411*. — Central: *Beumée 1186; Koorders 27505, 28165, 35760, 36401*. — East: *Buwalda 7162, 7437; Dorgelo 1564; Jacobs 4912, 4937; Koorders 20621, 20897, 29133, 29959, 32422; Soetjatmi 19; de Voogd 893*. — Kangean I.: *Hoogerwerf anno 1954*.

MADURA. *H. B. 1758; Rant anno 1924*.

BALI. *Van Dillewijn & Demondt 629; Zollinger 2741*.

6. *Olax aphylla* R. Br.

- O. aphylla* R. Br., Prodr. (1810) 358; Benth., Fl. Austral. 1 (1863) 393; Bailey, Queensl. Fl. 1 (1899) 246; Compr. Cat. Queensl. Pl. (1913) 93, f. 74; Ewart & Davies, Fl. North Terr. Austral. (1917) 90; Specht, Records Am.-Austral. Sc. Exp. Arnhem Land 3, Botany & Pl. Ecol. (1958) 221. — *Spermaxyrum aphyllum* De Cand., Prodr. 1 (1824) 532. — **T y p e** : *R. Brown 6359*, Australia, North Terr., Morgans I. in the Mud Bay (BM; K, iso).

D i s t r i b u t i o n : Australia (Northern Terr., N. Queensland).

7. *Olax phyllanthi* (Labill.) R. Br.

- O. phyllanthi* (Labill.) R. Br., Prodr. (1810) 358; Benth., Fl. Austral. 1 (1863) 392. — *Spermaxyrum phyllanthi* Labill., Pl. Nov. Holl. 2 (1805) 84 & t. 233 (1807); De Cand., Prodr. 1 (1824) 532. — **T y p e** : *Lebillardière s.n.*, W. Australia, Port du R. Georges (P; BM, iso).

Lopadocalyx phyllanthoides Klotzsch in Lehmann, Pl. Preiss. 1 (1848) 178, corrected to *O. phyllanthi* l.c. 2 (1848) 230. — **T y p e** : *Preiss 1211*, W. Australia, Swan R., Albany (B, lost; P, iso).

D i s t r i b u t i o n : W. Australia.

8. *Olax stricta* R. Br.

O. stricta R. Br., Prodr. (1810) 358; Benth., Fl. Austral. 1 (1863) 392; Bailey, Queensl. Fl. (1899) 246; Compr. Cat. Queensl. Pl. (1913) 93. — *Spermaxyrum strictum* De Cand., Prodr. 1 (1824) 532. — Type: *R. Brown 6360*, N. S. Wales, Port Jackson (BM; E, K, P, iso).

D i s t r i b u t i o n : Australia (Queensland, N.S. Wales).

9. *Olax retusa* F. v. Mueller ex Benth.

O. retusa F. v. Mueller ex Benth., Fl. Austral. 1 (1863) 392; Bailey, Queensland Fl. (1899) 245; Compr. Cat. Queensl. Pl. (1913) 93; Domin, Bibl. Bot. 85, 1 (1929) 603. — Type: *von Mueller s.n.*, Queensland, Moreton Bay (K; BM, iso).

D i s t r i b u t i o n : Australia (Queensland, N.S. Wales).

10. *Olax pendula* L. S. Smith

O. pendula L. S. Smith, Contr. Queensl. Herb. 6 (1969) 9. — Type: *L. S. Smith 12428*, Queensland, Cook Distr., Cape York Peninsula, Fishbone Creek (BRI, *n.v.*).

D i s t r i b u t i o n : Australia (Northern Terr., N. Queensland).

11. *Olax benthamiana* Miq.

O. benthamiana Miq. in Lehmann, Pl. Preiss. 1 (1845) 228; Benth., Fl. Austral. 1 (1863) 393; Ewart & Davies, Fl. North Terr. Australia (1917) 90; Everist, Poisonous Pl. Austral. (1974) 389, f. 34. — Type: *Preiss 2095*, W. Australia, Perth (U; L, P, iso).

Lopadocalyx uliginosus Klotzsch in Lehmann, Pl. Preiss. 1 (1845) 178; Benth., Fl. Austral. 1 (1863) 393, *in obs.* — *O. uliginosa* Klotzsch in Lehmann, Pl. Preiss. 2 (1848) 230. — Type: *Preiss 1210*, W. Australia, in the swampy plains between Mounts Melville and Elphinstone (B, lost).

D i s t r i b u t i o n : Australia (W. Australia, S. Australia, North. Terr.).

12. *Olax nana* Wall. ex Benth

O. nana Wall. [Cat. (1832) 6783 A, B, *nom. nud.*] ex Benth., Proc. Linn. Soc. 1 (1840) 88; Trans. Linn. Soc. Bot. 18 (1840) 678; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 576; Cooke, Bombay Fl. 1 (1902) 222; Brandis, Ind. Tr. (1906) 148; Gamble, Fl. Madras 1 (1915) 190; Craib, Fl. Siam. En. 1 (1926) 270; Kanjilal *et al.*, Fl. Assam 1, 2 (1936) 247; Gagnep., Fl. I.-C. Suppl. (1948) 735; Biswas, Ind. For. 17 (1971) 508; Hara & Williams, En. Fl. Pl. Nepal 2 (1979) 86. — Type: *Wallich 6783*, Nepal (K). *O. sphaerocarpa* Griff., Not. 4 (1854) 689, t. 644. *ex descr.* No locality mentioned, and no specimen preserved.

D i s t r i b u t i o n : N.W. and C. India, Nepal, Assam, Bengal, N.W. Thailand.

OBSCURE NAMES

Olax loranthiformis Griff., Not. 4 (1854) 691, t. 645, f. 5; Kurz, J. As. Soc. Beng. 44, ii (1875) 153. — Type: *Griffith anno 1833*, Lower Burma, Moulmein, on the coast of Madamacan. Apparently no specimen preserved.

Olax phoenicarpa Roxb., Hort. Beng. (1814) 5, *nom. nud.* India Orientalis. No specimen seen.

EXCLUDED

O.? *sumatrana* Miq., Fl. Ind. Bat. Suppl. 1 (1860) 342 = *Cansjera scandens* Roxb. (*Opil.*).

8. THE GENUS SCORODOCARPUS BECC.

SCORODOCARPUS

Scorodocarpus Becc., Nuov. Giorn. Bot. Ital. 9 (1877) 274, t. 11, f. 12–17. — Type: *S. borneensis* (Baill.) Becc.

***Scorodocarpus borneensis* (Baill.) Becc.**

S. borneensis (Baill.) Becc., Nuov. Giorn. Bot. Ital. 9 (1877) 274, t. 11, f. 12–17; Valet., Crit. Overz. Olacin. (1886) 89; Boerl., Handl. Fl. Ned. Ind. 1 (1890) 205; King, J. As. Soc. Beng. 64, ii (1895) 108; Ridl., J. Str. Br. R. As. Soc. 33 (1900) 60; Hochr., Bull. Inst. Bot. Btzg 22 (1905) 42; Foxw., Philip. J. Sci. 4 Bot. (1909) 449, pl. 22, f. 11; Merr., En. Born. Pl. (1921) 242; Ridl., Fl. Mal. Pen. 1 (1922) 424; Burk. & Henders., Gard. Bull. Str. Settl. 3 (1925) 358; Foxw., Malay. For. Rec. 3 (1927) 121 & plates; Heyne, Nutt. Pl. Ned. Ind. ed. 2 (1927) 593; Desch, Malay. For. Rec. 15, 2 (1954) 418, f. 2; Browne, For. Tr. Sarawak & Brunei (1955) 280; Smythies, Common Sarawak Tr. (1965) 113; Wyatt-Smith & Kochum., Malay. For. Rec. 17 (1965) 347; Burgess, Sabah For. Rec. 6 (1966) 422; Whitmore, Tr. Fl. Malaya 2 (1973) 303, f. 3; Meijer, Field Guide Tr. W. Malesia (1974) 224, f. 58; Rao, Malay. For. 38 (1975) 184, f. 1–5. — *Ximenesia borneensis* Baill., Adansonia 11 (1874) 271. — Type: *Beccari 1581*, Sarawak, Mt. Mattang (P; iso W).

Schmidelia foetidissima Wall., Cat. 8064 (1847), *nom nud.*

Distribution: Peninsular Thailand, Sumatra, Lingga I., Malay Penins., and Borneo.

THAILAND. Peninsular: Narativat, Sangkachan 1260.

SUMATRA. East coast: *Beguín 560*. — West coast: *bb. 6150, 24144*. — Palembang: *bb. 32244, 35151; Boschproefst. T. 606; Dumas 1593; Enderi 204 E 3 P 969; Grashoff 1137*. — Rieuw: *bb. 23860, 27455, 27647, 28582; Buwalda 6420, 6738, 6762; Meijer 4082; Soepadmo 202*. — Djambi: *Rachman T.B. 231*.

LINGGA I. Singkep: *bb. 26614, 26615*.

MALAY PENINSULA. Perlis: *FRI 493*. — Kelantan: *FRI 4382, 4466, 7155, 17743, SF 29629*. — Pahang: *For. Dep. F.M.S. 837, 3626, 6700; FRI 4784; Sanger-Davies (Ridley 14560)*. — Perak: *For. Dep. F.M.S. 2988; FRI 13978, 17574; Haron 45; Kings Coll. 2984, 3385, 4609; Scortechini 65; Wary 2361, 2548*. — Trengganu: *FRI 13014, 17928*. — Selangor: *FRI 6307; KEP 70968, 79144, 99366, 10968*. — Johore: *FRI 16486, 17777; KEP 105041; M. Shah & Kadim 408, 420; Ridley 4179; SF 29388, 32038; Sinclair 10558*. — Negri Sembilan: *FRI 14807; KEP 80958*. — Singapore: *Burbidge s.n.; Murton 112; Ridley 423, 1844, 3773, 3974; SF 36414, 36419, 36433, 39572; Wallich 8064*.

BORNEO. West: *bb. 9661, 26865*. — Northeast: *Kostermans 8736*. — East: *Kostermans 4024, 4080, 4519, 6854; Meijer 2025; Wiradinata 319*. — Southeast: *Enderi 5229; bb. 14800, 14829, 15625, 15664, 16778, 16881, 18168, 24176, 24640, 24738, 26146*. — Sarawak: *Beccari 1581; 2481; S 391, 13717, 27030, 27981, 30680, 32175, 35043, 36079, 39139*. — Brunei: *Ashton 213, 5268*. — Sabah: *B. N. B. For. Dep. A 832, A 1623, A 2050, 2155, 2314, A 2571, A 2621, A 2763, 4012, 4355, 4556, 10178, 10325, 10463, 10693; SAN A 3704, A 4766, 19611, 21340, 25853, 27156, 30121, 30129, 32017, 33025, 35499, 35867, 45111, 56184, 73373, 79496; SF 18745; Villamil 46; Wood 1945*.

9. THE GENUS *SCHOEPFIA* SCHREB. IN ASIA AND MALESIA

SCHOEPFIA

Schoepfia Schreb., Gen. (1789) 129; Engl. in E. & P., Nat. Pflfam. ed. 1, III, 1 (1894) 233; Sleum. in E. & P., Nat. Pflfam. ed. 2, 16 b (1935) 30. — Type: *S. schreberi* Gmel.

The genus *Schoepfia* has been divided by Engler (in E. & P., Nat. Pflfam. ed. 1, Nachtr. 1, 1897: 145) into 3 sections which can be arranged in the following key:

- 1a. Bract connate with apex of each pedicel; bracteoles 0. Base of inflorescence (peduncle) without perular bracts. Flowers in single axillary spikes
 - 1. Sect. *Schoepfiopsis*
- b. Bract and 2 bracteoles at apex of each pedicel connate to a 3-lobed epicalyx. Base of inflorescence (peduncle) with a few small imbricate persistent perular bracts 2
- 2a. Flowers in fascicled axillary spikes 2. Sect. *Schoepfia*
- b. Flowers in axillary racemes 3. Sect. *Alloschoepfia*

1. SECT. SCHOEPIOPSIS

Sect. *Schoepfiopsis* (Miers) Engl. in E. & P., Nat. Pflfam. ed. 1, Nachtr. 1 (1897) 146; Sleum. in E. & P., Nat. Pflfam. ed. 2, 16b (1935) 31; Steen., *Reinwardtia* 1 (1952) 468. — *Schoepfiopsis* Miers, J. Linn. Soc. Bot. 17 (1878) 75 p. p. *lectotyp.*; van Tiegh., Bull. Soc. Bot. Fr. 43 (1896) 551. — Lectotype: *S. jasminodora* S. & Z.

KEY TO THE SPECIES OF SECT. SCHOEPIOPSIS

- 1a. Flowers more or less tubular, corolla tube slightly broadened towards the throat. Leaves ovate. Corolla (8–)10 mm long. Drupe 10–12 mm long. *China, Japan* 1. *S. jasminodora*
- b. Flowers more or less urceolate, corolla tube broadest below ovary 2
- 2a. Leaves ovate to ovate-lanceolate. Corolla 8(–10) mm long. Style included. Drupe less than 10 mm long. *Bhutan, Assam* 2. *S. griffithii*
- b. Leaves elliptic-oblong. Corolla (10–)12 mm long. Style exerted. Drupe (10–)15 mm long. *Hongkong* 3. *S. chinensis*

1. *Schoepfia jasminodora* S. & Z.

S. jasminodora S. & Z., Abh. Akad. Wiss. München IV, 3 (1846) 135; Walp., Ann. 1 (1849) 960: Bl., Mus. Bot. Lugd.-Bat. 1 (1850) 175; Forb. & Hemsl., J. Linn. Soc. Bot. 23 (1886) 114; Diels, Bot. Jahrb. 29 (1900) 306; Urban, Symb. Antill. 5 (1907) 179 in text; Not. R. Bot. Gard. Edinb. 7 (1912) 30, 92; Schneid. in Sargent, Pl. Wilson. 3 (1916) 321; Rehd., J. Arn. Arb. 10 (1929) 131; Sasaki, Cat. Govt. Herb. Formosa (1926) 185; Chun, *Sunyatsenia* 1 (1934) 227; Hand.-Mazz., Symb. Sin. 7 (1936) 1371; Masam., En. Trach. 4 (1954) 75; Ohwi, Fl. Jap. (1965) 395; Lauener, Not. R. Bot. Gard. Edinb. 27 (1967) 272; Walker, Fl. Okinawa & S. Riu Kiu I. (1976) 420. — *Schoepfiopsis jasminodora* Miers, J. Linn. Soc. Bot. 17 (1878) 77. — Type: *Siebold s.n.*, Japan, Kyushu, in insula Makisima (S. of Nagasaki) (M; L, U, iso).

S. gibbosa van Tiegh., Bull. Soc. Bot. Fr. 43 (1896) 551, in text, *nom. nud.* — *Schoepfiopsis gibbosa* van Tiegh., l.c. 551, *nom. nud. altern.* — Type: *Calléry 241*, Macao (P).

Vaccinium cavalieri Lévl. & Vaniot, Fedde Rep. 9 (1911) 447; Lévl., Fl. Kouy-Tchéou (1914) 154. — Type: *Cavalerie 20 bis*, China, Kweichow, Pin-fa (E).

S. chinensis auct. non Gardn. & Champ.: Merr. & Metcalf, Lingn. Sci. J. 16 (1937) 190; Masam., Fl. Kainant. (1943) 64.

Distribution: Tibet/Burma border, China (Szechuan, Yunnan, Anhwei Hunan, Chekiang, Hupeh, Kiangsi, Kwangsi, Kweichow, Kwangtung, Hainan), Macao, Japan (Kyushu, Riu kiu I.).

2. *Schoepfia griffithii* van Tiegh. ex Steen.

S. griffithii van Tiegh. [Bull. Soc. Bot. Fr. 43 (1896) 551, in text; Engl. in E. & P., Nat. Pflfam. ed. 1, Nachtr. 1 (1897) 146, *nom. nud.*] ex Steen., Reinwardtia 1 (1952) 472, descr.: Hara, Fl. East. Himalaya 2 (1971) 21. — *Schoepfia* sp., Griff., Not. 4 (1854) 639; Ic. Pl. As. 4 (1854) pl. 629; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 582. — Type: *Griffith 819*, Bhutan (K; P, iso).

Distribution: Bhutan, Assam.

BHUTAN. *Griffith 876, 919, 2487; Ludloff, Sheriff & Hicks 18768, 20126, 20592.*
ASSAM. *Cox & Hutchinson 516; Kingdon-Ward 8040, 11441, 13631.*

3. *Schoepfia chinensis* Gardn. & Champ.

S. chinensis Gardn. & Champ. in Hook., Kew J. Bot. 1 (1849) 308; Walp., Ann. 2 (1851) 181; Benth., Fl. Hongk. (1861) 52; Forb. & Hemsl., J. Linn. Soc. Bot. 23 (1886) 114; van Tiegh., Bull. Soc. Bot. Fr. 43 (1896) 551; Urban, Symb. Antill. 5 (1907) 179, in text; Dunn & Tutcher, Fl. Kwangtung & Hongkong (1912) 58; Herklots, The Hongkong Natur. 4, 1 (1935) 321, f. 6 & pl. 8. — *Schoepfiopsis chinensis* Miers, J. Linn. Soc. Bot. 17 (1878) 77. — Type: *Champion 58*, Hongkong (K).

Distribution: Apparently limited to Hongkong (Mt. Victoria, Happy Valley woods). Materials from Kwangtung, Kweichow, and Hainan, published as *S. chinensis*, belong to *S. jasminodora*.

2. SECT. SCHOEPFIA

Schoepfia Schreb., Gen. Pl. ed. 8 (1789) 129.
Codonium Rohr ex Vahl, Skrivt. Naturh. Selsk. København 2 (1792) 206. t. 6; Vahl, Symb. 3 (1794) 36.
— *S. sect. Codonium* Endl., Gen. (1839) 744. — Type: *C. arborescens* Vahl.
Haenkea R. & P., Fl. Per. 3 (1802) 8, t. 231. — Type: *H. flexuosa* R. & P.
Diplocalyx A. Rich. in Sagra, Hist. Fis. Cuba 11 (1850) 81, t. 54. — Type: *D. chrysophylloides* A Rich.

Distribution: Tropical Central and South America, and Antillia.

3. SECT. ALLOSCHOEPFIA

sect. *Alloschoepfia* Sleum., *nom. nov.* — *Schoepfiopsis* Miers, J. Linn. Soc. Bot. 17 (1878) 75, *p.p.*; van Tiegh., Bull. Soc. Bot. Fr. 43 (1896) 551, *p.p.* — *S. sect. Euschoepfia* Engl. in E. & P., Nat. Pflfam. ed. 1, Nachtr. 1 (1897) 146; Sleum. in E. & P., Nat. Pflfam. ed. 2, 16b (1935) 31. — Type: *S. fragrans* Wall.

Distribution: Monotypic in S. E. Asia and W. Malesia.

Schoepfia fragrans Wall.

S. fragrans Wall. in Roxb., Fl. Ind. ed. Wall. & Carey 2 (1824) 188; Tent. Fl. Nepal. (1824) 18, pl. 9; D. Don, Fl. Nepal. (1825) 145; G. Don, Gen. Syst. 3 (1834) 432; De Cand., Prodr. 4 (1830) 320; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 581 excl. Griffith t. 629; Engl. in E. & P., Nat. Pflfam. ed. 1, Nachtr. 1

- (1897) 146, f. 148 A-C; Brandis, Ind. Tr. (1906) 149; Urban, Symb. Antill. 5 (1907) 179, in text; Burkill, Rec. Bot. Surv. India 4 (1910) 102; Sargent, Pl. Wilson. 3 (1917) 322; Craib, Fl. Siam. En. 1 (1926) 272; Sleum. in E. & P., Nat. Pflfam. ed. 2, 16b (1935) 31, f. 18 A-C; Kanj. *et al.*, Fl. Assam 1, 2 (1936) 249; Merr., J. Arn. Arb. 19 (1938) 26; Gagnep., Fl. I.-C. Suppl. (1948) 740; Steen, Reinwardtia 1 (1952) 470, f. 1; Razi, Lloydia 20 (1957) 241; Hara, Fl. East. Himal. 2 (1971) 21; — Hara & Williams, En. Fl. Pl. Nepal 2 (1979) 86. — *Schoepfiopsis fragrans* Miers., J. Linn. Soc. Bot. 17 (1878) 76. — **T y p e**: *Wallich H. I.* 485, Nepal (K, sub *S. odorata* ms.)
- S. acuminata* Wall. Cat. nr. 486 (1829) *nom. nud.* ex De Cand., Prodr. 4 (1830) 320; G. Don, Gen. Syst. 3 (1834) 432; Mast. in Hook. *f.*, Fl. Br. Ind. 1 (1875) 582; Brandis, Ind. Tr. (1906) 149; Craib, Fl. Siam. En. 1 (1926) 272; Kanj. *et al.*, Fl. Assam, 1, 2 (1936) 249; Gagnep., Fl. I.-C. Suppl. (1948) 739, f. 87, 1-4. — *Schoepfiopsis acuminata* Miers, J. Linn. Soc. Bot. 17 (1878) 77, pl. 2. — **T y p e**: *Wallich H. I.* 486 (leg. *De Silva*), Nepal, Pundua (G-DC; BM, K, iso).
- S. griffithiana* Valet., Crit. Overz. Olacin. (1886) 128; Brandis, Ind. Tr. (1906) 149. — **T y p e**: *Griffith 822*, East Bengal (L; K, P, iso).
- S. miersii* Pierre, Fl. For. Cochinch. (1892) pl. 265 B; Gagnep., Fl. I.-C. 1 (1911) 820, f. 93, 5-7; Suppl. (1948) 740. — **T y p e**: *Pierre 617*, Cambodia, in montibus Knang-krepeuh, prov. Thepong (P; K, iso).
- Olax evrardii* Gagnep., Bull. Soc. Bot. Fr. 95 (1948) 30; Fl. I.-C. Suppl. (1948) 736. — **T y p e**: *Evrard 1462*, Annam, près Dalat (P; K, iso).
- S. fragrans* Wall. var. *shanensis* Gamble ms. ex Steen., Reinwardtia 1 (1952) 470, *pr. syn.*, based on *Robertson 418*, Burma, S. Shan States (K).

D i s t r i b u t i o n: Nepal, Bhutan, East Bengal, Assam, Burma, SW. China (Yunnan), Thailand, Indochina, N. Sumatra.

SUMATRA. A t j e h : *van Steenis 6534, 9719, 9872; de Wilde & de Wilde-Duyffes 13295, 15342, 15397, 16146.*

10. THE GENUS STROMBOSIA BL. IN ASIA AND MALESIA

STROMBOSIA

Strombosia Bl., Bijdr. (1826) 1154. — **T y p e**: *S. javanica* Bl.
Lavallea Baill., Adansonia 2 (1862) 361. — **T y p e**: *L. philippinensis* Baill.

KEY TO THE SPECIES

- 1a. Cymes pedunculate for 0.5-1 cm. Bracts and bracteoles caducous in early anthesis. Petals (6-)-8-10 mm long. Drupe obovoid-subturbinata, apex truncate, apiculate by the remaining hard style-base. Leaves smooth on upper surface, not pellucid-punctate. *Burma (Tenasserim), Thailand, Malay Penins., Sumatra incl. Nias I., Java, Borneo* **1. S. javanica**
- b. Cymes or fascicles sessile. Bracts and bracteoles persisting into anthesis. Petals 2-5 mm long. Drupe pyriform when young, subglobose at full maturity, apex obtuse-rounded. Remains of calyx and style base inconspicuous. 2
- 2a. Leaves hardly or not pellucid-punctate, their surface smooth. Petals 2 mm long. *Thailand?; Philippines, Moluccas.* **2. S. philippinensis**
- b. Leaves generally distinctly pellucid-punctulate, their surfaces markedly parchment-like (shagreened) from tiny surface wrinkles or bumps, often glaucous-green and dull in dry specimens. Petals (2.5-)-3-4(-5) mm long. *Ceylon, India (W. Peninsula), Sumatra, Malay Penins., Anambas I., Java, Borneo*
3. S. ceylanica

1. *Strombosia javanica* Bl.

- S. javanica* Bl., Bijdr. (1826) 1155; Hassk., Cat. Hort. Bog. (1844) 232; Pl. Jav. Rar. (1848) 238; Bl., Mus. Bot. Lugd.-Bat. I (1850) 251, f. 47; Miq., Fl. Ind. Bat. I (1856) 787; Mast. in Hook. f., Fl. Br. Ind. I (1875) 597; Kurz, J. As. Soc. Beng. 44, ii (1875) 153; For. Fl. Br. Burma I (1877) 253; Valet., Crit. Overz. Olacin. (1886) 86, pl. 1, 16 a–n; King, J. As. Soc. Beng. 64, ii (1895) 590; Koord. & Valet., Bijdr. Booms. Java 5 (1900) 282; Hochr., Bull. Inst. Bot. Btzg 22 (1905) 43; Brandis, Ind. Tr. (1906) 149; Koord.-Schum., Syst. Verz. I (1912) 172; Koord. & Valet., Atlas Booms. Java I (1913) f. 124; Merr., En. Born. Pl. (1921) 242; Ridl., Fl. Mal. Pen. I (1922) 425; Burk. & Henders., Gard. Bull. Str. Settl. 3 (1925) 358; Heyne, Nutt. Pl. Ned. Ind. ed. 2 (1927) 594; Foxw., Malay. For. Rec. 3 (1927) 125, 2 plates; Henders., Gard. Bull. Str. Settl. 4 (1928) 238; Back., Bekn. Fl. Java (em. ed.) 6 (1948) fam. 137, p. 4; Desch., Malay. For. Rec. 15, 2 (1954) 422, pl. 87, f. 1; Browne, For. Tr. Sarawak & Brunei (1955) 282; Back. & Bakh. f., Fl. Java 2 (1965) 65; Wyatt-Smith & Kochummen, Malay. For. Rec. 17 (1965) 353; Whitmore, Tr. Fl. Malaya 2 (1973) 306, f. 4. — Type: *Blume s.n.*, W. Java, in monte Salak (L; K, P, iso).
- S. javanica* Bl. var. *sumatrana* Valet., Crit. Overz. Olacin. (1886) 86; Hochr., Bull. Inst. Bot. Btzg 22 (1905) 44. — Type: *Teysmann '139'*, Sumatra, Padang, cult. at Bogor (L); from type tree, *Hochreutiner 99* (K, L).

BURMA. Tenasserim: *Helper 818*.

THAILAND. Peninsular: *Kerr 16661; Phusomsaeng 52, 129; Plerichit 640*.

SUMATRA. Atjeh: *van Steenis 9872*. — East coast: *Beguïn 553*. — Tapanuli: *bb. 5702*. — West coast: *bb. 2986, 5205, 6076*. — Benkulen: *bb. 2430, 2549*. — Palembang: *bb. 32198; Boschproefst. T. 1044, T 3 P 385; Endert 60 E 1 P/571, 586, 650; Grashoff 846, 1103*. — No locality indicated: *Korthals s.n.*

MALAY PENINSULA. Penang: *Porter anno 1823*. — Kedah: *FRI 16321; SF 35992*. — Perak: *Curtis 2890; For. Dep. F.M.S. 210; Kings Coll. 7994, 10382*. — Pahang: *For. Dep. F.M.S. 4521, 5466, 6826; FRI 23309; Kadim & Mahmood 24; KEP 78612; SP 16500*. — Selangor: *Hardial & Sidek 459; KEP 29476, 78977, 97762; Ridley 8267*. — Johore: *FRI 15917; SF 952*. — Natuna I.: *van Steenis 1368*. — Malacca: *Maingay 373*. — Singapore: *Corner anno 1937 & 1940; Hardial 517; Ridley 15464; SF 10919, 34637*.

JAVA. Bantam: *Koorders 1135, 6076, 6077, 30349; Kostermans U. 24*. — Bogor: *Blume s.n.; Hochreutiner 98; Horsfield s.n.; Korthals s.n.; Koorders 31036, 31037; Nasution 27; Teysmann anno 1867; de Vriese s.n.* — Priangan: *Koorders 6072, 34525*.

BORNEO. East: *bb. 1991, 2142, 2145, 12882, 14103, 16933, 25619, 29417; Kostermans 4038, 6875, 7004, 9570, 9790, 10593; Schut K. 35*. — South: *Delmaar 1991; Korthals s.n.; Kostermans 8094; Ramlı 2004*. — Sarawak: *1st Div., G. Gading, S 34250*.

2. *Strombosia philippinensis* (Baill.) Rolfe

- S. philippinensis* (Baill.) Rolfe, J. Bot. 23 (1885) 211; Vidal, Phan. Cuming. Philip. (1885) 23, 102; Rev. Pl. Vasc. Filip. (1886) 86; Valet., Crit. Overz. Olacin. (1886) 87; Ceron, Catal. Manila (1892) 45; Foxw., Philip. J. Sci. Bot. 2 (1907) 393 (wood); ditto 4 (1909) 449, pl. 22, f. 12 (wood); Merr., En. Philip. Pl. 2 (1923) 117. — *Lavallea philippinensis* Baill., Adansonia 2 (1862) 361. — Type: *Cuming 848*, Luzon. Albay (P; BM, K, L, P, iso).
- S. dubia* Vidal, Sin. Atl. (1883) 20, t. 30, f. D; Merr., Govt. Lab. Publ. (Philip.) 17 (1904) 15. — Type: *Vidal, Sin. Atl. t. 30, f. D*.
- S. minor* Elmer ex Merr., En. Philip. Pl. 2 (1923) 117, *nota*; Elmer, Leaf. Philip. Bot. 10 (1939) 3770, descr. angl. — *S. elmeri* Salvoa, Lexic. Philipp. Tr., Bull. For. Prod. Res. Inst. Coll. Laguna I (1963) 125. — Type: *Elmer 14866*, Luzon, Sorsogon, Mt. Bulusan (PNH, lost; BM, L, U, iso).

PHILIPPINES. Luzon: *B.S. 1878, 14946, 23375, 23530, 46856; Cuming 848; Elmer 9091, 9096, 14866, 17538; F.B. 607, 639, 660, 661, 1367, 1439, 1761, 1776, 3268, 10434, 10764, 11981, 21240, 22055, 24570, 28531; Merrill 2515; PNH 18561; Sinclair & Edano 9590; Vidal 182, 183, 712; Whitford 1046*. — Mindoro: *B.S. 40912; PNH 18958*. — Catanduanes: *B.S. 75123*. — Sibuyan: *Elmer 12478*. — Leyte: *Elmer 7147*. — Mindanao: *Wenzel 3055*. — Basilan: *F.B. 18960, 18989*.

MOLUCCAS. Morotai: *bb. 24576, 33869; Kostermans 1442*. — Halmahera: *de Vogel 3481*.

Notes: 1. Very similar in leaves, known only in past flowering state, uncertain if really conspecific, is a collection from Thailand, Chantaburi, Khao Sra Barb, *Bunnak 301* (= *BKF 9514*).

2. *S. philippinensis* auct. non (Baill.) Rolfe: Lam & Holthuis, *Blumea* 5 (1942) 178, based on *Lam 3175* from Talaud I. = *Celtis paniculata* (Endl.) Planch., det. van Steenis.

3. *Strombosia ceylanica* Gardn.

S. ceylanica Gardn., *Calc. J. Nat. Hist.* 6 (1845) 350; Miq., *Fl. Ind. Bat.* 1 (1856) 787; Mast. in Hook. *f.*, *Fl. Br. Ind.* 1 (1875) 579; Bedd., *Fl. Sylv.* (1869) LX; (1871) t. 137; Valet., *Crit. Overz. Olacin.* (1886) 87; Trimen, *Fl. Ceyl.* 1 (1893) 257; Koord & Valet., *Bijdr.* 5 (1900) 284; Cooke, *Bombay Fl.* 1 (1902) 222; Brandis, *Ind. Tr.* (1906) 148; Back., *Schoolfl. Java* (1911) 223; Koord., *Exk. Fl. Java* 2 (1912) 172; Koord.-Schum., *Syst. Verz.* 1 (1912) 2; Koord. & Valet., *Atl. Baumart. Java* 1 (1813) t. 125; Gamble, *Fl. Madras* 1 (1915) 191; Back., *Bekn. Fl. Java* (em. ed.) 6 (1948) fam. 137, p. 4; Worthington, *Ceylon Tr.* (1959) t. 132; Back. & Bakh. *f.*, *Fl. Java* 2 (1965) 64. — *Lavallea ceylanica* Baill., *Adansonia* 2 (1862) 361. — **T y p e:** *Gardner*, Ceylon, Hantane, (K; BM, K, iso).

Stemonurus? membranaceus Bl., *Mus. Bot. Lugd.-Bat.* 1 (1850) 250. — *S. membranacea* Valet., *Crit. Overz. Olacin.* (1886) 87; Koord. & Valet., *Bijdr. Booms. Java* 5 (1900) 284. — *S. ceylanica* Gardn. var. *membranacea* Hochr., *Bull. Inst. Bot. Btzg* 22 (1905) 43. — **T y p e:** *Blume s.n.*, Java (L; U, iso).

Sphaerocarya leprosa Dalz. in Hook., *Kew J. Bot.* 3 (1851) 34; Dalz. & Gibs., *Bombay Fl.* (1861) 223. — **T y p e:** *Dalzell s.n.*, Bombay (K).

S. javanica auct. non Blume: Thwaites, *En. Pl. Ceyl.* (1858) 42, based on *Thwaites C.P. 1237*.

S. lucida Teysm. & Binn. [Cat. Hort. Bog. (1866) 207, *nom. nud.*] ex Valet., *Crit. Overz. Olacin.* (1886) 86, pl. 2, f. 18; Koord. & Valet., *Bijdr. Booms. Java* 5 (1900) 286. — *S. ceylanica* Gardn. var. *lucida* Hochr., *Bull. Inst. Bot. Btzg* 22 (1905) 43. — **T y p e:** *Teysmann H.B. 6734*, cult. Hort. Bogor., originally brought by Teysmann from Bantam, W. Java (L; K, iso); cult. at BO under III-G-29, from which *Hochreutiner 100* was collected.

Anacolosa maingayi Mast. in Hook. *f.*, *Fl. Br. Ind.* 1 (1875) 580; Valet., *Crit. Overz. Olacin.* (1886) 93. — *S. rotundifolia* King, *J. As. Soc. Beng.* 64, ii (1895) 103, *nom. inval.*; Ridl., *J. Str. Br. R. As. Soc.* 33 (1900) 60; *Fl. Mal. Penins.* 1 (1922) 425; Burk. & Henders., *Gard. Bull. Str. Settl.* 3 (1925) 358; Foxw., *Malay. For. Rec.* 3 (1927) 123, fig.; Henders., *Gard. Bull. Str. Settl.* 4 (1928) 239; Desch., *Malay. For. Rec.* 15, 2 (1954) 423, pl. 87, f. 2; Wyatt-Smith & Kochummen, *Malay. For. Rec.* 17 (1965) 352. — *S. maingayi* Whitmore, *Gard. Bull. Singapore* 26 (1973) 285; *Tr. Fl. Malaya* 2 (1973) 306; Corner, *Gard. Bull. Singapore Suppl.* 1 (1978) 207. — **T y p e:** *Maingay 1019*, Singapore (K; P, iso).

S. multiflora King, *J. As. Soc. Beng.* 64, ii (1895) 102; Ridl., *Fl. Mal. Penins.* 1 (1922) 425; Whitmore, *Gard. Bull. Singapore* 26, 2 (1973) 285; *Tr. Fl. Malaya* 2 (1973) 306. — **S y n t y p e s:** *Kings Coll. 7824*, Perak, Batang Padang Distr. (CAL, lecto, *n.v.*; BM, K, iso); *Curtis 859*, Penang (CAL, *n.v.*; SING).

S. ceylanica Gard. var. *sessilis* Hochr., *Bull. Inst. Bot. Btzg* 22 (1905) 44; *Ann. Jard. Bot. Btzg Suppl.* III, 2 (1910) 854. — **T y p e:** *Hochreutiner 102*, cult. Hort. Bogor sub III-G-63, introduced from Banka (BO; K, L, iso).

S. latifolia Stapf, *Kew Bull.* (1906) 71; Merr., *En. Born. Pl.* (1921) 242. — **T y p e:** *Haviland's Coll. 2007*, Sarawak, Bau (K).

S. rapaneoides S. Moore, *J. Bot.* 42 (1924) *Suppl.* 22. — **T y p e:** *Forbes 1749*, Sumatra, Lampongs, Penangoengan (BM; SING, iso).

Distribution: Ceylon and SW. India (W. Ghats from Kanara southwards), Malay Penins., Sumatra, Java, Borneo. *S. ceylanica* can be expected to exist in Lower Burma and Peninsular Thailand.

Note: *S. ceylanica* is conceived here in a broad sense including *S. latifolia*, a variant with larger more coriaceous leaves and up to 12 pairs of lateral nerves, which in flower and fruit characters hardly differs from *S. ceylanica* found in Ceylon, SW. India, and otherwise in W. Malesia. The variability in leaf size and texture — sometimes found in the same specimen — is remarkable, e.g. in Kostermans' recent Ceylon collections.

SUMATRA. Atjeh: *de Wilde & de Wilde-Duyffjes 15704, 16551*. — Eastcoast: *bb. 5343; Deli Proefstation 3266*. — Riouw (Indragiri): *bb. 23476, 27464, 27612, 28600, 30043*. — Benkulen: *bb. 2547, 2728*. — Lampong: *Forbes 1749*. — Palembang: *bb. 32094, 32156; Endert E3 P996; Grashoff 844; Thorenaar 97-E-1-P-762/937*.

MALAY PENINSULA. Penang: *Curtis 859*. — Kelantan: *FRI 4330; M. Shah 3159*. — Trengganu: *FRI 12536*. — Perak: *Burn-Murdoch 332; Kings Coll. 7824*. — Pahang: *For. Dep. F. M. S. 2733, 2746, 5494, 5734; FRI 3629, 3684, 3748; KEP 29995*. — Selangor: *FRI 16698; Ridley anno 1915*. — Johore: *FRI 16373, 17096, 17631; SF 28464, 29264, 29496; Shah & Kadim 435*. — Negri Sembilan: *SF 2526*. — Singapore: *Ahmad 1253; Maxwell 78–57; Maingay 1019; Ridley 4744, 4794, 6370; SF 26160, 35552, 36497, 37257, 37707, 37740, 37748, 38567; 40027; Sinclair anno 1951*.

ANAMBAS I. *van Steenis 20399*.

JAVA. Bogor/Priangan: *Blume s.n.; Koorders 6075, 6076; cult. Hort. Bogor., Teysmann H. B. 6734; Hochreutiner 100, 101, 102; cult. Hort. Bogor. sub III-G-29, III-G-35, III-G-63, III-G-122a*. — Banjumas: *Koorders 9995*. — Pekalongan: *Koorders 11695, 13330, 13360, 13513, 22469, 22556, 22568, 37008, 37133*.

BORNEO. Northeast: *bb. 29332, 29380; Kostermans 8697*. — West: *bb. 13722, 26853*. — East: *bb. 14578, 16937, 16938, 17796, 28380, 29596; Kostermans 6358, 6392, 7132, 10584 A; Paymans 156*. — South: *Kuswata Kartawinata 772, 818*. — Sarawak: *Haviland's Coll. 2007; Richards 1127; S 3372, 10297 A, 15067, 15174, 15757, 18068, 21933, 22437, 23262, 25973, 27603, 28182, 28469, 35255, 36265, 36406*. — Sabah: *SAN A 4790, 44082, 49454*.

Note: The following specimens with coriaceous large leaves (up to 25 by 11 cm), flowers not known, fruits immature, are doubtfully conspecific:

MALAY PENINSULA. Trengganu: *SF 30023, 30386*. — Pahang: *For. Dep. F.M.S. 16537; SF 28917, Shah & Noor 1954*. — Selangor: *For. Dep. F.M.S. 22771*.

BORNEO. Sarawak: *Anderson & Keng 45; Ashton 3240; Purselove 5313*.

11. THE GENUS XIMENIA L. IN ASIA, MALESIA, AUSTRALIA, AND THE PACIFIC.

XIMENIA

Ximenia L., Sp. Pl. ed. 1 (1753) 1193. — Lectotype: *X. americana* L.; Britt. & Millsp., Bahama Fl. (1920) 112.

Ximenia americana L.

X. americana L., Sp. Pl. (1753) 1193; Jaume St.-Hil., Exp. Fam. Nat. 2 (1805) 34; DC., Prodr. 1 (1824) 533; Bl., Bijdr. (1825) 247; Roxb., Fl. Ind. 2 (1832) 252; Wight & Arn., Prodr. 1 (1834) 89; Decaisne, Herb. Timor. Descr. (1835) 111; Benth. in Hook., London J. Bot. 2 (1843) 231; Bl., Mus. Lugd.-Bat. 1 (1850) 247; Miq., Fl. Ind. Bat. 1, 1 (1856) 786; Suppl. 1 (1860) 136; Benth., Fl. Austr. 1 (1863) 391; Mast. in Hook. f., Fl. Br. Ind. 1 (1875) 574; Kurz, J. As. Soc. Beng. 44, ii (1875) 152; ditto 45, ii (1876) 123; For. Fl. Br. Burma 1 (1877) 232; Becc., Nuov. Giorn. Bot. Ital. 9 (1877) 278, t. 11, f. 1–11; F.-Vill., Novis. App. (1880) 45; Bischof Greveling, Planten Ned. Ind. (1883) 221; Hemsley, Rep. Challenger Bot. 1 (1884) 132; Valet., Crit. Overz. Olacin. (1886) 74, t. 2, 20–22; Warb., Bot. Jahrb. 13 (1891) 299; Schimper, Ind. Mal. Strandpfl. (1891) 176; Pierre, For. Fl. Cochinch. (1892) pl. 256 A; Drake del Castillo, Fl. Polyn. Fr. (1893) 29; Trimen, Fl. Ceyl. 1 (1893) 255; King, J. As. Soc. Beng. 64, ii (1895) 107; Bail., Queensl. Fl. 1 (1899) 245; Ridl., J. Str. Br. R. As. Soc. 33 (1900) 61; Koord. & Valet., Bijdr. Booms. Java 5 (1900) 280; Schum. & Laut., Fl. Deutsch. Schutzgeb. Südsee (1901) 301; Cooke, Bombay Fl. 1 (1902) 220; Merr., Govt. Lab. Publ. Manila 6, 2 (1904) 33; Philip. J. Sci. 1 (1906) Suppl. 190; Brandis, Ind. Tr. (1906) 148; Valet., Pl. Papuan., Bull. Dep. Agric. Ind. Néerl. 10 (1907) 8; Back., Schoolfl. Batavia (1907) 288; Voorl. Schoolfl. Java (1908) 53; Foxw., Philip. J. Sci. 4 Bot. (1909) 450; Back., Schoolfl. Java (1911) 222; Gagnep., Fl. I.-C. 1 (1911) 814; Koord., Exk. Fl. Java 2 (1912) 172; Koord.-Schum., Syst. Verz. 1 (1912) 3; Sargent, Tr. Shr. 2 (1913) 129; Reehinger, Bot. Ergebn. Wiss.

- Reise Salomon Ins. (1913) 107; Bail., Compr. Catal. Queensl. Fl. (1913) 91; Gamble, Fl. Madras 1 (1915) 188; Merr., Interpret. Herb. Amboin. (1917) 209; Ewart & Davies, Fl. North. Terr. Austral. (1917) 90; Valet., Meded. s'Lands Plantentuin 19 (1918) 391; Ridl., Kew Bull. (1921) 33; Brown, Min. Prod. Philip. For. 2 (1921) 274, f. 23; Ridl., Fl. Mal. Pen. 1 (1922) 424; Parkins., For. Fl. Andaman I. (1923) 124; Merr., En. Philip. Pl. 2 (1923) 117; Schellenb., Bot. Jahrb. 58 (1923) 158; Craib, Fl. Siam. En. 1 (1926) 269; Heyne, Nutt. Pl. Ned. Ind. ed. 2 (1927) 592; White, J. Arn. Arb. 10 (1929) 211; Kaneh., Bot. Mag. Tokyo 45 (1931) 278; Fl. Micron. (1933) 96; Booberg, Bot. Jahrb. 66 (1933) 13; Sleum. in E. & P., Nat. Pflfam. ed. 2, 16b (1935) 23, f. 11; Merr. & Chun, Sunyatsenia 2 (1935) 218; Christoph., Bull. Bern. P. Bish. Mus. 128 (1935) 80; Tanaka & Odashima, J. Soc. Trop. Agric. 10, 4 (1938) 364; Holthuis & Lam, Blumea 5 (1942) 178; Masamune, En. Phan. Born. (1942) 259; Fl. Kaitan. (1943) 64; Guill., Annal. Mus. Colon. Marseille 55/56 (1948) 20; Back., Bekn. Fl. Java (em. ed.) 6 (1948) fam. 137, p. 3; Qusumb., Med. Pl. Philipp. (1951) 253; Corner, Wayside Tr. Malaysia ed. 2 (1952) 728; Razi, Lloydia 20 (1957) 240; Yuncker, Bull. Bern. P. Bishop Mus. 220 (1959) 105; Hundley & Chit, List Tr. Shr. Burma 3rd ed. (1961) 45; Parham, Pl. Fiji I. (1964) 150; Back. & Bakh., f. Fl. Java 2 (1965) 64; De Filipps, Trans. Illinois State Acad. Sci. 62 (1969) 350; Bol. Soc. Broter. II, 43 (1969) 194; Everist, Poison. Pl. Austral. (1974) 390. — *Type*: *Hort. Cliffort.* 483, Tropical America (BM, lecto), cf. Lucas, Fl. Tr. E. Afr. Olac. (1968) 5.
- [*Vidara littorea* Rumph., Herb. Amboin. 2 (1741) 119, t. 37.] — *Zizyphus littorea* Teysm. ex Hassk., Abh. Naturf. Ges. Halle 9 (1866) 176, *nom. nud.* — *Type*: *Teysmann s.n.*, Celebes (L).
- X. elliptica* Forst. f., Prodr. (1896) 27; Labill., Sert. Austr.-Caled. (1824) 34, t. 37; DC., Prodr. 1 (1824) 533; Guill., Fl. Anal. Nouv.-Caled. (1948) 107; Mém. Mus. Nat. Paris 8, 2 (1959) 132; ditto 15, 1 (1964) 15. — *X. americana* L. var. *elliptica* Valet., Crit. Overz. Olacin. (1886) 76. — *Type*: *Forster s.n.*, New Caledonia (B, K).
- X. russeliana* Wall., Cat. (1832) nr. 6784, *nom. nud.*
- X. loranthifolia* Span., Linnaea 15 (1841) 177; Ic. Ined. t. 44. — *Type*: *Spanoghe 44*, Timor (L).
- X. subscandens* Griff., Notul. 4 (1854) 691, t. 644, f. 3. — *Type*: *Griffith s.n.*, Mal. Penins., Malacca, Tanjong Cling, apparently no specimen preserved. Possibly represented by *Griffith 824* (K, L, P).
- X. exarmata* F. v. M., Trans. Phil. Inst. Victoria 3 (1858) 22. — *Type*: *F. v. Mueller s.n.*, N. Australia, Suttor R. (K).

Distribution: Scattered from India and Ceylon to Burma, Indochina, Thailand, Hainan, Andaman I., Malesia, N. and NE. Australia, and the Pacific. Also in (sub)tropical America and Africa.

SUMATRA. East coast: *H.B.* 595.

MALAY PENINSULA. Penang: *Kiah 433*. — Kedah: *van Balgooy 2232, 2380; Batten-Pool anno 1940*. — Perak: *Bulkill 197; FRI 3003; SF 31661*. — Pahang: *Corner s.n.; SF 18422, 29786*. — Malacca: *Avim 1866*. — Johore: *SF 884*. — Perlis: *Ridley 15227*. — Negri Sembilan: *FRI 2489*. — Singapore: *Burkill 499; Ridley 1859; SF 29962, 38921; Sinclair s.n.*

JAVA. West.: *Backer 60; Bennett s.n.; Blume s.n.; Koorders 10082; Perrottet anno 1819; de Vriese s.n.*

BORNEO. Sabah: *For. Dep. Br. N. Borneo 6722; SAN 74858*.

CELEBES. North.: *b.b. 29462; Forsten 307; Meijer 10115; Rachmat 341*.

FLORES. *Schmutz 1497, 1668*.

MOLUCCAS. Ceram: *H.B. 1924; Rutten 1679*. — Halmahera: *Beguín 1879; Idjan/Mochtar 393; Yoshida 2496*. — Sula I.: *Bloembergen 4636*. — Ternate: *Beguín 1445*. — Taliabu: *Hulsteijn 270*. — Talaud I.: *Lam 2508*. — Amboina: *Robinson, Pl. amb. 260*. — Aru I.: *Buwalda 5541*.

PHILIPPINES. Luzon: *Santos 4339*. — Mindoro: *PNH 16926*. — Mindanao: *Elmer 11982*.

TIMOR. *Kooy 544; Spanoghe 44; de Voogd 2322*.

NEW GUINEA. N. West: *Atasrip 93; B.W. 9779, 15547; van Royen 3299*. — S. West: *Aet 584*. — S. East: *Brass 22088; 26025; Carr 11432; Hoogland 4275; LAE 52631; Schodde 2694; Turner 135*.

NEW BRITAIN. *NGF 6583, 29473*.

SOLOMON I. Guadalcanal: *Morrison 300*.

EXCLUDED

X. borneensis Baill., *Adansonia* 11 (1874) 271 = *Scorodocarpus borneensis* (Baill.) Becc.

- X. oblongifolia* Steudel, Nom. ed. 2, 2 (1841) 792, *nom. nud.*, based on *Gela oblongifolia* A. Cunn. ex Sweet, Hort. Brit. ed. 3 (1839) 91, *nom. nud.*
- X. olacoides* W. & A., Prodr. (1834) 89; Baill., Adansonia 3 (1862) 122 = *Opilia amentacea* Roxb.