

## A TAXONOMIC REVISION OF THE GENUS SCOLOPIA SCHREB. (FLACOURTIACEAE)

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### SUMMARY

A taxonomic revision of *Scolopia*, based on the collections most important for the genus. Of the names of the about 80 taxa previously described in the genus, 28 remained valid; for 2 species and 1 variety a new combination had to be made, 7 new species and 1 new variety were added, and 5 species had to be transferred to other genera. This resulted in a total of 37 species (and 2 varieties); of these, 21 species are found in Africa (15 of them in Madagascar, the Comores, and the Mascarenes), 15 in Southeast Asia and Malesia (incl. New Ireland), and 1 in Australia.

### RÉSUMÉ

Révision taxonomique de *Scolopia*, basée sur les collections respectives des herbiers plus importants pour ce genre. Des à peu près 80 noms de taxa décrites antérieurement sont restés 28 valables dans le genre, qui avec des combinaisons et des espèces nouvelles, maintenant compte d'un total de 37 espèces (et 2 variétés), dont 21 espèces se trouvent en Afrique (dont 15 à Madagascar, aux Comores et aux Mascareignes), 15 dans le Sud Est de l'Asie et la Malésie (incl. la Nouvelle Irlande), et 1 en Australie.

### INTRODUCTION

In the course of the revision of the *Flacourtiaceae* of Africa, the author found himself confronted with the differentiation between *Scolopia* and *Ludia* (limited to Eastern Africa, Madagascar, the Mascarenes, Seychelles, and Aldabra), and with the problem of the delimitation of their species.

It seemed therefore necessary to revise both genera to get a more clear view on the differences between these genera and on the characters important for the discrimination of their species. In the meantime, the revision of *Ludia* has appeared in *Adansonia* 12 (1972) 79.

*Scolopia* has been revised by Clos in 1855, but since then only partial revisions (Madagascar: Perrier de la Bâthie, 1940 & 1946; Netherlands East Indies: van Slooten 1919 & 1925) or partial treatments in various local floras have been published. The author revised the genus in 1936 mainly on the base of the collections at that time at Berlin; these collections were lost in 1943, but the MS was saved and has served as a basis for the present revision. The numerous collections since made have contributed considerably to our knowledge of the genus. These materials were studied in Berlin (B, after 1943), Bruxelles (BR), Florence (FI), Genève (G), Göttingen (GOET), Hamburg (HBG), Kew (K), Leyden (L), London (BM), Oxford (FHO), Paris (P), Stockholm (S), Wageningen (WAG), Vienna (W, WU), and Zürich (Z). Specimens preserved in the Mauritius Herbarium at Reduit (MAU) and the Centre Techn. Forestier Tropical at Tananarive were kindly submitted by the Curators of these herbaria. Special thanks are due to the late Mr. R. Capuron, formerly

Chief of the Division of Forest Botany at Tananarive, who passed to the author the results of his field investigations on floral and vegetative characters of *Scolopia* and *Ludia*.

Specimens mentioned in the literature and not seen by the author, are marked with 'n.v.' (*non vidi*).

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### SCOLOPIA

Schreb., Gen (1789) 335, *nom. cons.*; Gmel., Syst. (1791) 770, 793; Lamk, Ill. (1798) t. 860, sphalm. '*Scopolia*'; Willd., Sp. Pl. 2 (1799) 981; Pers., Ench. 2 (1807) 33; Spr., Anl. 2, 2 (1818) 792; Poir., Dict. 5 (1827) 172; Clos, Ann. Sc. Nat. IV, 4 (1855) 364; *ibid.* 8 (1857) 244; Miq., Fl. Ind. Bat. I, 2 (1858) 106; Benth., J. (Proc.) Linn. Soc. 5, Suppl. 2 (1861) 86; in B. & H. f., Gen. Pl. 1 (1862) 127; Tul., Ann. Sc. Nat. V, 9 ('1868', 1869) 336; Baill., Hist. Pl. 4 (1873) 309; Warb. in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 29, incl. sect. *Adenoscolopia* Warb. & *Sphenoscolopia* Warb., l.c.; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 41; Gagnep., J. de Bot. II, 1 (1908) 164; Fl. Gén. I.-C. 1 (1909) 227; Sloot., Bijdr. Flac. Ned. Ind. (1919) 93; Ridl., Fl. Mal. Pen. 1 (1922) 155; Sloot., Bull. Jard. Bot. Btzg III, 7 (1925) 335; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 418; Lemée, Dict. Genr. 6 (1935) 21; Perr. de la Bâthie, Mém. Mus. Nat. Hist. Nat. [Paris] n.s., 13 (1940) 277; Fl. Madag., Fam. 140 (1946) 47; Sleum., Fl. Males. I, 5 (1954) 8; Capuron, Essai d'Introd. Étud. Fl. Madag., Tananarive (1957) 100; Sleum., Contr. N. S. Wales Nat. Herb., Fl. Ser. 136 (1963) 1; Back. & Bakh. v. d. Br. f., Fl. Java 1 (1963) 284; Bamps, Fl. Congo, Rwanda & Burundi, Sperm. Flacourt. pt. 1 (1968) 39; Mukherjee, N., Rev. Flac. India, Burma & Ceylon. Thesis, Calcutta 1969 (typewritten), p. 48—62; Lescot, Fl. Camb., Laos & Vietnam fasc. 11, Flacourt. (1970) 23. — Type: *S. pusilla* (Gaertn.) Willd. = *Limonia pusilla* Gaertn.

*Aembilla* Adans., Fam. 2 (1763) 448, *nom. rej.* — Type: *Aembilla* Hermann, Mus. Zeyl. (1717) 19.

*Limonia* Gaertn., Fruct. 1 (1788) 278, t. 58, f. 4, *nom. ill.*, *non* Linné 1762. — Type: *L. pusilla* Gaertn.

*Phoberos* Lour., Fl. Cochinch. (1790) 317; Benn. in Benn. & Br., Pl. Jav. Rar. (1840) 187, t. 39; Miq., Fl. Ind. Bat. Suppl. (1861) 388; Merr., Comm. Lour., Trans. Am. Phil. Soc. II, 24, 2 (1935) 272. — Lectotype: *P. cochinchinensis* Lour.

*Rhinanthera* Bl., Bijdr. (1826) 1121. — Type: *R. blumei* Steud., Nom. ed. 2, 2 (1841) 448. *Dasianthera* Presl., Rel. Haenk. 2 (1835) 90, t. 66; Reichb., Handb. (1837) 274 '*Dasyanthera*', *orth. mut.* — Type: *D. luzonensis* Presl.

*Eriudaphus* Nees in Eck. & Zeyh., Enum. (1836) 271; Spach, Hist. Vég. Phan. 6 (1838) 286 '*Eriodaphus*', *orth. mut.*; Wittstein, Etym. Handw. (1852) 335 '*Eriudaphos*', *orth. mut.* — Lectotype: *E. zeyheri* Nees.

*Adenogyrus* Kl. in App. [Gen. & Spec. nov. et minus cogn.] Ind. Sem. Hort. Berol. (1854) 1; Walp., Ann. 4 (1857) 226; Baill., Adansonia 1 (1860) 123, *nota.* — Type: *A. braunii* Kl.

*Rhamnicastrum* [Linné, Pl. Zeyl. (1747) 193] O. Kuntze, Rev. Gen. 1 (1891) 45. — Type: *R. pusillum* (Gaertn.) O. Kuntze = *Limonia pusilla* Gaertn.

*Richeopsis* Arènes, Not. Syst. Paris 15 (1954) 3; Capuron, Essai d'Introd. Étud. Fl. Madag., Tananarive (1957) 123; Ding Hou, Fl. Males. I, 5 (1958) 429; Sleum., l.c. 565 (Addenda). — Type: *R. perrierii* Arènes.

Trees or shrubs, often with spines on the trunk and/or the branches (branchlets). *Leaves* spirally arranged, petioled, generally persistent, rarely deciduous (Madagascar, in part), entire or shallowly to rather deeply glandular-serrate-crenate, generally glabrous, reddish or purplish when young, penni- or pli-nerved, sometimes with two distinct glands (hydathodes) at the very base of the blade or at the apex of the petiole; stipules minute, caducous. *Flowers* small, normally bisexual, very rarely andromonoecious, i.e. part of the flowers ♂; *racemes* axillary, mostly simple, sometimes compound, rarely reduced to few-flowered fascicles or to a solitary flower. Sepals (3—)4—6(—10), narrowly imbricate or subvalvate, ± connate at the base, expanded long before full anthesis. Petals as many as sepals and alternating with these, similar in shape or slightly narrower and generally equally persistent, rarely caducous. Receptacle flat, sometimes set with hairs around the base of the ovary and between the base of the filaments. Extrastaminal disk, if present, composed of one row of free, short, thick orange glands. Stamens indefinite in number, pluriseriate, incurved in bud, exceeding the petals in length at full anthesis; filaments about equal in length; anthers dorsifixed, the connective often produced beyond the thecae into an apicular, glabrous or sometimes hairy appendage. Ovary sessile, with 2—4(—5) few-ovuled placentas, far protruding into the cavity; style rather long, whether or not 3—4-partite distally; stigma(s) entire (then often subcapitate) or slightly 2- or 3(—5)-lobed. *Berry* (1 or) 2 or 3(—6, rarely up to 20)-seeded, somewhat fleshy, glabrous or glabrescent, with the withered sepals, petals, and stamens at the base; style ± permanent; seeds with a hard testa, no arillus; albumen abundant; cotyledons foliaceous.

**Distribution.** About 37 species in (sub)tropical Africa, Madagascar, Comores, Mascarenes, India and Ceylon, SE. Asia, Malesia, eastwards to New Ireland and NE. and E. Australia. — Fig. 1.

**Ecology.** In primary and secondary forests at low and medium altitudes, mostly scattered.

**Notes.** *Scolopia* is based on *S. pusilla* from Ceylon; this species shows short though well developed racemes; its flowers have an outer row of narrowly imbricate (or subvalvate) sepals and an inner row of similar and alternating petals. *Ludia*, however, has constantly a single row of tepals ('calyx lobes' or 'sepals'). Presence, respectively absence, of petals is generally regarded to be a character of generic taxonomic value in the *Flacourtiaceae*.

In *S. pusilla* and all other Asiatic, Malesian, and Australian species these petals are ± persistent at least as remnants even under the fruit. All these species have also distinct racemes, though occasionally the inflorescence in *S. novoquineensis* may be reduced to a single axillary flower.

In Africa and Madagascar also part of the *Scolopia* species has racemes and ± persistent petals, but a group of 9 species has constantly solitary flowers or fascicles of 2 or 3 flowers per axil, just as *Ludia* always has; in a few species of this group the petals drop early, i.e. are recognizable with certainty only when in the flowerbud stage, as R. Capuron has confirmed by observations in the field, kindly put at the author's disposal. Several species in this group with axillary solitary flowers, described in post-anthesis or fruiting stage, have been erroneously ascribed to *Ludia*, such as *L. heterophylla* and *L. myrtifolia*, though in reality they have petals and belong to *Scolopia*. On the other hand, species insufficiently known, which have no trace of petals, have been ascribed to *Scolopia*, such as *S. pinna-tinervia* and *S. urschii* from Madagascar, and *S. minutiflora* from Tanzania; these belong to *Ludia*.

Other floral characters, by previous authors up to Gilg (1925) regarded to be distinctive

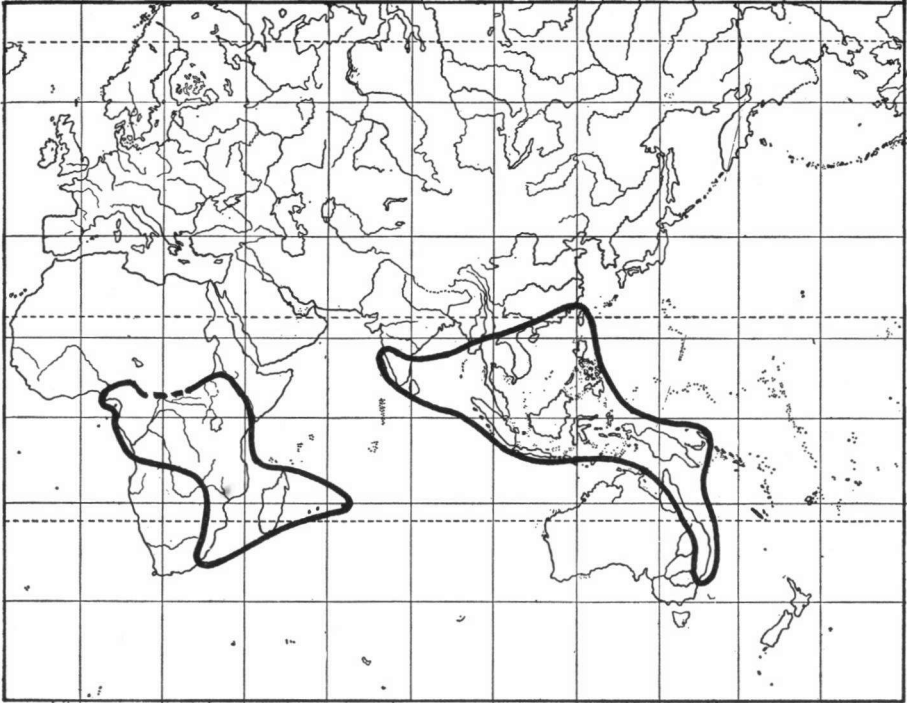


Fig. 1. Distribution of *Scolopia*.

on the generic level, such as the connective 'not or hardly enlarged' in *Ludia* versus 'elongate' (and may be hairy) in *Scolopia*, or the style 'deeply 3—4-forked' in *Ludia* versus 'shortly 3-lobed' or even 'entire (stigma subcapitate)' in *Scolopia*, are found in both genera and to various degree.

The very dense and prominent reticulation with  $\pm$  elongate meshes, as found in *Ludia mauritiana* (the type of that genus) and in related species, regarded by Warburg (1893) as distinctive on the generic level, is also found in various true species of *Scolopia* and also in other genera of the *Flacourtiaceae*.

There is, besides the presence or absence of petals, no other clear character to separate *Scolopia* from *Ludia*, as far as is known at the moment. The author sees no reason to unite these genera which belong to different tribes of the family.

Presence or absence of basal foliar glands has been considered by Warburg (1893) a character to be used for the division of *Scolopia* into 2 sections, viz sect. *Adenoscolopia* with, and sect. *Sphenoscolopia* without, such glands; the former is based on several species in Asia—Malesia and *S. zeyheri* from Africa, the latter on species both found in Asia—Malesia and Africa. As no other character is correlated with the occurrence of such basal foliar glands, and as *S. zeyheri* has no such glands at all, the author does not accept these sections based on a single vegetative character in this otherwise coherent genus.

## KEY TO THE SPECIES

1. Leaves (all or at least most of them on the same branchlet) with 2 distinct orange (blackish when dry) secretory glands at the very base of the lamina or at the apex of the petiole. Asia—Malesia . . . . . 2
1. Leaves without such distinct basal glands, at most sometimes with one or two small glands on descending dentation on the leaf margin near the insertion of the petiole. Asia—Malesia, Africa . . . . . 6
2. Extrastaminal disk glands absent . . . . . 3
2. Extrastaminal disk glands distinct . . . . . 4
3. Inflorescence pubescent to various density, rather slender and lax-flowered; pedicels slender, 6—11 mm at anthesis. Berry elliptic to ovate-elliptic. *Nicobar Is., Burma (Mergui), Thailand, Cambodia, Laos, Malay Peninsula, Sumatra, Banka, Java, Borneo, Palawan* . . . . . I. *S. spinosa*
3. Inflorescence glabrous (pedicels only puberulent), rather stoutish and dense-flowered; pedicels robust, 3—5 mm at anthesis. Berry subglobose. *Malay Peninsula (Kelantan)* . . . . . 2. *S. steenisiana*
4. Inflorescence practically glabrous. *Andaman Is., Burma* . . . . . 3. *S. kermodei*
4. Inflorescence ± densely short-pubescent to tomentose . . . . . 5
5. Leaves ovate or ovate-elliptic to lanceolate, tapering to the acute apex; nerves 6—8 pairs, a little or not prominent beneath. Rhachis and pedicels coarsely rusty-tomentose. *Thailand, Cambodia, Vietnam (South), Malay Peninsula, Sumatra, Java, Borneo* . . . . . 4. *S. macrophylla*
5. Leaves elliptic to orbicular- or oblong-elliptic, apex shortly subacuminate or rounded; nerves 3—5(—6) pairs, slightly though distinctly prominent beneath. Rhachis and pedicels patently puberulous. *Thailand, Laos, Vietnam (North & South), S. and SE. China* . . . . . 5. *S. chinensis*
6. Species in Asia, Malesia and Australia . . . . . 7
6. Species in Africa *sensu lato* . . . . . 18
7. Extrastaminal disk glands absent or practically so . . . . . 8
7. Extrastaminal disk glands present as distinct fleshy lobes or papillae . . . . . 11
8. Leaves variable in shape, subovate- or oblong-elliptic, apex generally obtuse, edge subcrenate or usually entire. (Connective glabrous). *Ceylon, S. India (Travancore)* . . . . . 6. *S. pusilla*
8. Leaves (sub)ovate or lanceolate-oblong, sometimes lanceolate, ± acuminate . . . . . 9
9. Leaves subcoriaceous, subtentire to shallowly repand-dentate. *Ceylon* . . . . . 13. *S. acuminata*
9. Leaves ± coriaceous, generally ± coarsely crenate or serrate-crenate . . . . . 10
10. Connective at least in bud stage hairy. *Philippines, N. Borneo, Celebes, W. Flores* . . . . . 7. *S. luzonensis*
10. Connective quite glabrous. *India, ?Andaman Is.* . . . . . 8. *S. crenata*
11. Inflorescence in flowering time quite glabrous (except the ciliate edge of sepals and petals). *Australia (Queensland, New South Wales)* . . . . . 9. *S. braunii*
11. Inflorescence in flowering time short-pubescent (at least finely puberulous) . . . . . 12
12. Racemes 2—3 (very rarely —6)—flowered, or occasionally reduced to a single axillary flower; rhachis up to 1 cm. . . . . 13
12. Racemes many-flowered, and rhachis generally longer than 1 cm . . . . . 14
13. Leaves ovate to oblong-ovate or obovate, or elliptic, or almost orbicular, apex broadly attenuate or obtuse, sometimes rounded, or even emarginate, edge entire to shallowly crenate, (1.5—)2—5(—7.5) by (0.9—)1.5—3.5(—4.5) cm. *New Guinea, New Ireland* . . . . . 10. *S. novoguineensis*
13. Leaves elliptic-lanceolate or lanceolate, apex obtusely acuminate, regularly glandular-serrate-crenate, (6—)9—12 by 3—4.5 cm. *Burma (Tenasserim), Thailand (Puket)* . . . . . 11. *S. lucida*
14. Leaves rather small, *Buxus*-like (generally edge somewhat revolute), (1.5—)2—4(—5) by (0.6—)1—2 cm. *Thailand, Vietnam (South), China (Hainan)* . . . . . 12. *S. buxifolia*
14. Leaves generally larger and flattish . . . . . 15
15. Pedicels (also sepals and petals) ± densely greyish-yellowish puberulous. Disk glands present as papillae. (Leaves acuminate). *Ceylon* (at low altitudes) . . . . . 13. *S. acuminata*
15. Pedicels grey-puberulous. Disk glands present as short thick lobes . . . . . 16
16. Pedicels rather robust in anthesis, *c.* 1 mm Ø in fruiting time. *Ceylon* (at higher altitudes) . . . . . 14. *S. crassipes*
16. Pedicels rather slender in anthesis, *c.* 0.5 mm Ø in fruiting time . . . . . 17
17. Leaf apex subacuminate or subcaudate, tip blunt. Berry orange to red when ripe. *Vietnam (South), S. & SE. China* . . . . . 15. *S. saeva*
17. Leaf apex gradually and broadly attenuate and obtuse or rounded. Berry (blackish-) green when ripe. *Formosa, Ryu Kyu Is.* . . . . . 16. *S. oldhamii*
18. Flowers solitary or in few-flowered fascicles in foliate and/or defoliate axils. (Petals often early dropping) . . . . . 19
18. Flowers in few- to rather many-flowered axillary simple (or compound) racemes. (Petals generally persistent up to fruiting time) . . . . . 29

19. Lateral nerves rather numerous, close and subparallel to each other, straight-ascending in a narrow angle from the midrib, fine, hardly more distinctly raised than the veins . . . . . 20
19. Lateral nerves generally fewer, distant from each other and  $\pm$  curved-ascending (rarely steeply so), much more distinct (generally more prominent) than the veins. (Disk always with marginal gland-lobes) . . . . . 22
20. Disk, if any, not properly gland-lobed at the margin. Ovary pubescent. *Madagascar* . . . . . 21
17. *S. meridionalis*
20. Disk with distinct marginal glands or glands-lobes. Ovary glabrous . . . . . 21
21. Leaves narrowly oblong-obovate, 3—8 mm wide. *Madagascar* . . . . . 18. *S. septentrionalis*
21. Leaves obovate, 7—12 mm wide. *Madagascar* . . . . . 19. *S. calcicola*
22. Flowers markedly pedicelled . . . . . 23
22. Flowers (sub)sessile . . . . . 25
23. Unarmed shrub or treelet, heterophyllous (with very small *Ilex*-like leaves) in young specimens. Leaves persistent, 2—4.5 by 1.5—2.5 cm. *Mauritius, Réunion, Rodriguez I.* . . . . 20. *S. heterophylla*
23. Spiny, not heterophyllous shrubs . . . . . 24
24. Leaves persistent, obovate-cuneate to suborbicular, (0.5—)1—1.5(—2.4) cm long *Madagascar* . . . . . 21. *S. spinescens*
24. Leaves deciduous, subovate-elliptic, (2—)3.6—6(—8) cm long. *Madagascar* . . . . . 22. *S. inappendiculata*
25. Style abruptly marked against the developed ovary and/or young fruit. Fruit oblongoid-ovoid, hardly 1 cm long, seeds 1—3. (Leaves (2.5—)3—6(—7) by 1.2—2.7(—4) cm,  $\pm$  subcoriaceous, regularly and rather coarsely subserrate-crenate along the whole edge. Stamens 30—40). *S. Sudan, Ethiopia, N. Uganda, Kenya, Tanzania.* . . . . . 23. *S. theifolia*
25. Style gradually narrowing upwards from the ovary and/or the (young) fruit. Fruit ellipsoid-subglobose . . . . . 26
26. Leaves up to 3.5 by 2 cm. Stamens 12—20. Fruit  $\approx$  0.6 cm  $\varnothing$  . . . . . 27
26. Leaves larger. Stamens 40—60. Fruit 2—2.5 cm  $\varnothing$  . . . . . 28
27. Leaves lanceolate to oblanceolate, crenations rather fine ( $\pm$  0.5 mm), 2—3.5 by 0.5—1.3(—1.6) cm. Ovary pubescent or glabrous. *South Africa (Natal, Cape Prov.)* . . . . . 24. *S. flanaganii* var. *flanaganii*
27. Leaves ovate to ovate-elliptic or -oblong, sometimes almost rhombic, crenations rather coarse ( $\pm$  1 mm), 1.5—2.5 by 1—2 cm. Ovary glabrous. *South Africa (Natal)* . . . . . 24. *S. flanaganii* var. *oreophila*
28. Leaves  $\pm$  coriaceous, edge  $\pm$  shallowly undulate, sometimes subserrate-crenate, (5—)7—10(—13) by (2—)3.5—5.5 cm. Ovary glabrous or slightly pubescent. *Cameroun (Bafoussam), Zaïre (Haut-Katanga), Malawi, Zambia, Rhodesia, Tanzania, Mozambique* . . . . . 25. *S. stolzii* var. *stolzii*
28. Leaves  $\pm$  subcoriaceous, edge more regularly glandular-subserate-crenate or -crenulate, 3—5(—7) by 2—3(—4) cm. Ovary  $\pm$  densely pubescent. *Malawi, S. Tanzania* . . . . . 25. *S. stolzii* var. *riparia*
29. Leaves  $\pm$  distinctly pli-nerved, i.e. the outer pair(s) of the nerves basal, high curved-ascending, close and/or parallel to the edge, the inner (i.e. upper) ones spreading from the midrib and shorter, often vein-like (*Madagascar & Comores*) . . . . . 30
29. Leaves  $\pm$  distinctly penni-nerved (the lowest pair of nerves rather short, certainly not high-ascending) (*continental Africa*) . . . . . 38
30. Sepals and petals at inside densely covered with appressed hairs (these hairs persisting in fruiting stage). *Madagascar* . . . . . 26. *S. manongarivae*
30. Sepals and petals at inside glabrous from the beginning . . . . . 31
31. Leaves oblong-obovate to obovate, apex (at least for the greater number of leaves in the same specimen) obtuse-rounded, base cuneate . . . . . 32
31. Leaves ovate or oblong, or elliptic, apex shortly or more elongately, and obtusely attenuate-acuminate, base attenuate to rounded . . . . . 33
32. Inflorescence short, few-flowered. Pedicels 0.5—1 mm in anthesis, up to 2 mm in fruit. Stamens 20—30. *Madagascar* . . . . . 27. *S. erythrocarpa*
32. Inflorescences up to 3 cm, flowers more numerous. Pedicels (3—)4—5 mm in anthesis, up to 10 mm in fruit. Stamens 80—100. *Madagascar* . . . . . 28. *S. orientalis*
33. Leaves 1.5—3.6 by 0.8—1.9 cm. . . . . 34
33. Leaves (much) larger (at least partly in the same specimen longer than 4.5 cm). Flowers  $\pm$  distinctly pedicellate . . . . . 35
34. Leaves elliptic-ovate, obtuse, 2—3.5 by 1.2—1.8 cm. Pedicels 2—3 mm. *Madagascar* 29. *S. taimbarina*
34. Leaves ovate or lanceolate-ovate, bluntly acuminate, 1.5—3.6 by 0.8—1.9 cm. Flowers subsessile (pedicels hardly up to 1 mm). *Madagascar* . . . . . 30. *S. thouvenotii*
35. Leaves (4—)5—7.5 by (1.5—)2.5—3.5 cm. Pedicels rather slender, 1—2 mm. Stamens 25—60 . . . . . 36
35. Leaves (at least for the greater number in the same specimen) much larger. Pedicels more stoutish, 2—4 mm. Stamens generally more numerous . . . . . 37
36. Leaves subovate-elliptic or -oblong, apex subcaudate-acuminate. Stamens 25—40. *Madagascar* . . . . . 31. *S. hazomb*

36. Leaves oblong, apex  $\pm$  gradually attenuate. Stamens 50—60. *Madagascar* . . . . . 32. *S. montana*  
 37. Flowers 6—7(—8)—merous. Anthers apiculate by a minutely protruding connective. *Comores*  
 33. *S. coriacea*  
 37. Flowers 4—5—merous. Anthers distinctly appendiculate by the elongate connective. *Madagascar*  
 34. *S. madagascariensis*  
 38. Receptacle glabrous to moderately hairy. Disk glands absent. Inflorescence rather lax-flowered.  
 Pedicels slender and accrescent. *Cameroun, NW. Angola, Zaïre, Rwanda, Uganda, Kenya, Tanzania*  
 35. *S. rhamniphylla*  
 38. Receptacle  $\pm$  densely white-hairy. Disk glands present. Inflorescence rather dense-flowered. Pedicels  
 stoutish, hardly accrescent . . . . . 39  
 39. Leaves  $\pm$  deeply callose-serrate-dentate. *Ngwane, Lesotho, South Africa (Transvaal, Natal, Cape Prov.)*  
 36. *S. mundii*  
 39. Leaves  $\pm$  obtusely crenate to wavy and even entire. *Cameroun (Adamaua), Angola, Rwanda, Uganda,*  
*Kenya, Tanzania, Mozambique, Zambia, Rhodesia, Malawi?, Botswana, Ngwane, South Africa (Transvaal,*  
*Natal, Cape Prov.)* . . . . . 37. *S. zeyheri*

**I. *Scolopia spinosa* (Roxb.) Warb.** in E.-P., Nat. Pflfam. ed. 1, III, 6a (1893) 29; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 46; Pritzel, Bot. Jahrb. 24 (1898) 376 (seed anat.); Merr., En. Philip. 3 (1923) 110; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 418; Sloot., Bull. Jard. Bot. Btzg III, 7 (1925) 338; Craib, Fl. Siam. En. 1 (1925) 94; Doct. v. Leeuwen, Zooecidia Ned. Ind. (1926) 396; Heyne, Nutt. Pl. (1927) 1139; Merr., Pl. Elm. Born. (1929) 209; Burk., Dict. (1935) 1983; Back., Bekn. Fl. Java (em. ed.) 4 A (1942) fam. 84, p. 6; Sleum., Fl. Males. I, 5 (1954) 10, f. 2 & 3; Back. & Bakh. f., Fl. Java I (1963) 284; Sleumer, Dansk Bot. Ark. 27 (1969) 89; Mukherjee, Thesis (1969) 50; Lescot, Fl. Camb., Laos & Vietnam n. 11 (1970) 27. — *Ludia spinosa* Roxb. [Hort. Beng. (1814) 38, *nom. nud.*] Fl. Ind. ed. Carey 2 (1832) 507. — *Phoberos roxburghii* Benn. in Benn. & Br., Pl. Jav. Rar. (1840) 192, *nom. ill.* (based on *Ludia spinosa* Roxb.); Voigt, Hort. Suburb. Calc. (1845) 84; Miq., Fl. Ind. Bat. Suppl. (1861) 388. — *Scolopia roxburghii* (Benn.) Clos, Ann. Sc. Nat. IV, 8 (1857) 250; Miq., Fl. Ind. Bat. 1, 2 (1858) 107; Hook. f. & Th. in Hook. f., Fl. Br. Ind. 1 (1872) 190; Kurz, For. Fl. Br. Burma 1 (1877) 73; King, J. As. Soc. Beng. 59, ii (1890) 115; Boerl., Cat. Hort. Bog. 1 (1899) 53, incl. var. *ovata* Boerl. & var. *lamponga* Boerl.; K. & V., Bijdr. 5 (1900) 14; Moll & Janss., Mikr. 1 (1906) 202 (wood anat.); Gagnep., Journ. de Bot. II, 1 (1908) 167; in Fl. Gén. I.-C. 1 (1909) 228; Brandis, Ind. Tr. (1911) 39; Ridl., J. Str. Br. R. As. Soc. 59 (1911) 72; Back., Schoolfl. Java (1911) 70; Koord.-Schum., Syst. Verz. 1 (1911) fam. 199, p. 3 p.p.; Koord., Exk. Fl. Java 2 (1912) 632; Atlas 2 (1914) t. 339; Sloot., Bijdr. Flac. Ned. Ind. (1919) 97; Ridl., Fl. Mal. Pen. 1 (1922) 156; Sloot., Bull. Jard. Bot. Btzg III, 4 (1922) 280; Sp. Moore, J. Bot. 67 (1924) Suppl. 6. — *Rhamnistrum spinosum* (Roxb.) O. Ktze, Rev. Gen. 1 (1891) 45. — *Scolopia fragrans* Elm., Leaf. Philip. Bot. 5 (1913) 1780; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420.

Tree (3)—6—15(—27) m, rarely shrub; trunk of old trees with grey or brownish smooth bark and unarmed, sometimes buttressed, up to 40 cm  $\varnothing$ ; young stems and suckers armed with branched spines; young twigs not rarely with axillary simple thorns; lenticels elliptic. *Leaves* persistent, ovate to oblong-(rarely lanceolate)-ovate,  $\pm$  long acuminate, tip bluntish, base cuneate, sometimes almost rounded,  $\pm$  coriaceous, rose-coloured when young, glabrous, subentire to remotely crenate, with a basal pair of rather thick glands, 7—18 by 3—8 cm; nerves 4—6 pairs (the basal pair sometimes rather markedly curved-ascending), slightly prominent beneath, reticulation fine, dense, a little raised on both faces or rather obscure beneath; petiole pubescent initially, 6—12 mm. *Racemes* lax-flowered,  $\pm$  densely grey to yellowish pubescent including the flowers, 2—4.5(—8) cm. Pedicels slender, 6—11 mm. *Flowers* sordid-white, 5- or 6- (or 7)-merous. Sepals ovate,

2.5(—4) mm. Petals ovate-lanceolate, sometimes glabrescent dorsally, slightly larger than the sepals. Receptacle hairy. Disk glands absent. Stamens 50—80(—100); connective ± elongate, ± hairy, sometimes almost glabrous. Ovary glabrous; style 4—6 mm, stigma small. Berry ellipsoid to ovate-elliptic, often apiculate to mamillate, 1.5—2.5 cm Ø, green to greenish-purplish, black when dry, with 6 or more, rarely up to 20 red and bitter seeds, embedded in soft pulp; pericarp coriaceous, hard when dry, 1—2 mm.

NICOBAR IS. Car Nicobar, *Thothathri 9353* (MH, cit. Mukherjee, n.v.).

BURMA. Mergui, *Griffith K. D. 209*, *Helfer K. D. 211*.

THAILAND. Maharat. Lampang, 180 m, *Winit 1511*. — Chantaburi. Makam, Chantabun, 20 m, *Kerr 9577*. — Prachinburi. Sriracha, *Collins 1795, 1804, 1977*. — Surat. Ban Pak Klawng, Chumpawn, 20 m, *Kerr 11394*; Yangao, 50 m, *Kerr 18196*; Ban Bua, *Kerr 15698*. — Phuket. Ban Kawp Kep, 200 m, *Kerr 13354*; Ko Yao Yai, 20 m, *Hansen & Smitinand 12405, 12407*; Terutao, Langkawi, *Curtis s.n.*

CAMBODIA. Kompong Speu, Knang Repocu, *Pierre 786*.

LAOS. Attopeu, *Harmand 1378 & in Herb. Pierre 766*. Phou Chieng, prov. Sedone, *Vidal 1864*.

MALAY PENINSULA. Kedah. Alor Star, *Ridley 15162*. — Penang. *Curtis 778, King's Coll. 1681, 4850, Ridley a. 1915, SF 3688, S. b. Kiah 245*. — WELLESLEY. Tasek, *Ridley (BM)*. — Perak. Larut, 100—150 m, *King's Coll. 3989, 7430, 7647, 8259*; Dindings, *Ridley 7211*. — Pahang. Temerloh, *SF 5725*; Taman Negara, *FRI 8518*; Kemansul F. R., *KEP 99571*. — Malacca. *Maingay K.D. 129*. — Trengganu. Ulu Brang, *SF 33824*; SE. Kelantan, *FRI 7133*. — Johore. Mersing F. R., *KEP 77819*; Sg. Sedili, *Corner 29279, 36901*; Sg. Tiram, *SF 40329*.

SUMATRA. East coast. R. Si Toroes 1378, 4830, 5077, 5431. — Tapanuli. *Loerzing 9603*. — West coast. *Koorders-Yzerman 15770*; Indrapura, *Korthals*; Pasir Ganting, *Korthals*; Pajakumbuh, *Mt Sago, 900—1200 m, Meijer 3580*. — Palembang, *de Voogd 393*; Mt Karangnata, R. Rawas, 300 m, *Forbes 3105*; Ogan-hulu, *Teysmann 3957*; Lematang Ilir, *Endert 106*; Lake Ranau, 500 m, *van Steenis 3307*. — Simaluri. *Achmad 1328, 1461, 1640*.

BANKA. Arung Dalam, 5 m, *F.R.I. hb. 11653*. Mt Mangkol, 50 m, *Kostermans 779*.

JAVA. Bantam. *van Hasselt a. 1822/23, Hasskarl a. 1841*; Mt Hondje, 100 m, *Kostermans 19277*; Peutjang I., Udjung Kulon R., *Kostermans 39 A, Kostermans & Kuswata 42, Supadmo 283, 288, 298, Wirawan 397, 398*. — Preanger. 200—550 m, *Backer 2232, 25511, 25557, Koorders 836—843, 11712, 11906, 11907, 25637, 25649, 25772, 32707, 32804, 34298, 37257, 39626, 39649, Winckel 262, 1745*. — Banjarmasin. Nusa Kambangan, *Amdjah 58, den Berger 282, Docters van Leeuwen 2056, Koorders 848, 849, 9322, 20030, 20069, 20199, 20212, 24579, 24594, 24769, 24797, 24804, 30308, Kostermans 56, Valetton 240*. — Semarang. *Beumée 5275, Jansen 4691, Koorders 817, 818, 844—847, 850, 851, 3470, 25175, 25264, 26171, 28206, 28209, 33705, 34088, Vincent 4691 a.* — Rembang. *Beumée 911, Ja. 1659 & 2085, Koorders 36442*. — Kediri. *Gruiterink 3074, Thorenaar 41, de Voogd 88*. — Malang. Tengger, *Koorders 38034*. — Besuki. *Koorders 12743, 12843*.

BORNEO. Serawak. *Beccari P.B. 2179*. Bintulu, *Similajau F. R., S 8613*. — W. Borneo. Sintang, P. Sepandan, *Main 2001*. — S. Borneo. Banjarmasin, *Korthals, Motley 1214*; P. Lampei, *Korthals*; Pleihari, *Sauvem 935*. — S. E. Borneo. Buntok-Danau Bababilla, *Hub. Winkler 3252*; Kutei, 100—200 m, *Endert 5272, 5382*. — E. Borneo. Sangkulirang, Mt Medadem, 200 m, *Kostermans 13357*. — Central Borneo. Sg. Blu'u, *Jaheri (Exp. Nieuwenhuis) 400, 1439*. — N. Borneo (Sabah). Sipitang, 830 m, *SAN 16584*. Memumbok, *B. N. B. For. Dep. 3020*. Marutai, *B. N. B. For. Dep. 2427*. Jesselton, Gaya I., *SAN 13151, 37630, 56111, 56135*. Kudat, *SAN 30921, 30931*; Banggi I., *SAN 42113*; Penangso, *B. N. B. For. Dep. 3812*. Sandakan, *Elmer 20115*. Kinabatangan, Lamag, 100 m, *SAN 35272*. Tawau, *Elmer 21688, 21802, SAN 29958, 30382, 34077, 35808, 35912, 37055, 41038*; Lahad Datu, *Harvey A 118, SAN 15006, 16164, 21624, 37163*; Semporna, 30 m, *SAN 63827, 63843*; Selangan I., *Keith A 1518*. Mapat R., *Timbun Mata F. R., Keith 7380*.

PALAWAN. Puerto Princesa, Mt Pulgar, *Elmer 12802* (BM, HBG, K, L; PNH, type of *S. fragrans*, †; W, Z).

CULT. Hort. Calcutta, *Roxburgh* (BM, type of *Ludia spinosa*, = *Roxb. Icon. 2266* at Kew), *Herb. Wallich 6678 A p.p.* (BR, FI, K). Hort. Bogor. IV—F—70, leg. *Boerlage* (BO, type of *S. spinosa* var. *ovata*; L); IV—F—103 & 104, leg. *Boerlage* (BO, type of *S. spinosa* var. *lamponga*).

Ecology. Both in mixed and secondary forest, and in teak- and other deciduous forest, often on calcareous soil, up to 1200 m.





Fig. 2. *Scolopia steenisiana*. — a: habit, with inflorescence,  $\times 2/3$ ; b: flower,  $\times 10$ ; c: anther,  $\times 18$ ; d: infructescence,  $\times 2/3$ . (a—c: FRI 5580, type; d: 'Unesco Limestone Exp. 1962' n. 127).

**Note.** Lam & Holthuis (Blumea 5, 1942, 215: Karakelong I., 75 m, Lam 3174, sterile, in BO & L) mention *S. spinosa* with a question mark; this specimen belongs to *Flacourtia zippelii* Sloot. *S. spinosa* thus does not occur in the Talaud Is., contrary to the statement in Fl. Males. I, 5 (1954) 11.

**2. *Scolopia steenisiana*** Sleum., *nov. spec.* — *S. kermodei* auct., *non* C. E. C. Fischer: Steen., Blumea 17 (1969) 270. — **Fig. 2.**

Arbor 10—15 m alta, trunco 20—40 cm Ø, cortice squamoso. Ramuli in sicco rubro-brunnei, glabri, dense lenticellis ellipticis pallidioribus obtecti. *Folia* persistentia, elliptico-ovata, apice breviter abrupte acuminata, ipso apice obtusa, basi rotundato-obtusata, haud raro paullo inaequilateralia et certe parte superiore in sicco complicata, ipsa basi vel in summo petiolo biglandulifera, supra lucida, subtus subopaca, glabra, integra, 6—9.5(—11) cm longa, 3—5 cm lata, costa cum nervis supra vix, subtus parum prominente, nervis lateralibus basalibus utroque latere 2—, superioribus 3—4-paribus, arcuatis, rete venarum venularumque denso supra minute impresso, subtus prominulo; petioli 7—9 mm longi, 1 mm crassi. *Racemi* interdum breviter ramosi, robusti, ex axillis superioribus 2 vel 3 orti, densiflori et 4—6 cm longi, alii ex axillis inferioribus interdum additi abbreviati et pauciflori; rhachis sub anthesi c. 2, sub fructu c. 3 mm crassa, glaberrima. Pedicelli sub anthesi robusti et puberuli, 3—5 mm longi, sub fructu paullo elongati saepius incrassati et glabrati. Sepala 5 vel 6, ovato-oblonga, subacuminata, ciliolata, dorso glabra, c. 4 mm longa, 2—2.5 mm lata. Petala sepalis simillima. Receptaculum subdense breviter pilosum. Discus nullus. Stamina 50—70(—100); filamenta 5—6 mm longa; antherae connectivo glabro subuliformi thecarum longitudine superatae. Ovarium glabrum; stylus crassus, c. 4 mm longus, apice subincrassatus vix 3-lobulatus. *Fructus* submaturus subglobosus, in sicco nigrescens et c. 1.5 cm Ø, pericarpio coriaceo 0.5 mm crasso, semina 8—10 varie angulata continens, sepalis petalisque usque ad 6 mm accrescentibus fultus.

MALAY PENINSULA. Kelantan. Ulu Kelantan, Gua Musang, summit of limestone hill, fl. white, 22-6-1967, FRI 5580 F. S. P. Ng (KEP; L, type); *ibid.*, Bertam, fr. submat., 29-7-1967, *Unesco Limestone Exp. no. 127* (K, L, SING).

**3. *Scolopia kermodei*** C. E. C. Fischer, Kew Bull. (1935) 574; Mukherjee, Thesis (1969) 53. — *Scolopia burmanica* Mukherjee, l.c. 52, t. 5, *nomen*.

Tree, up to 25 m; trunk armed with compound strong spines. Branchlets glabrous. *Leaves* persistent, ovate to elliptic- or oblong-lanceolate, acutely or obtusely acuminate, base cuneate to almost rounded, (sub)coriaceous, entire to remotely serrate-crenate, with a basal pair of thick glands, 7—20 by 3—6.5 cm; nerves (7 or) 8 or 9(—12) pairs, slightly prominent on both faces, as is the fine dense reticulation; petiole glabrous, 8—12(—18) mm. *Racemes* lax-flowered, glabrous, 4—10 cm. Pedicels rather slender, 7—14(—18) mm. *Flowers* white, (5- or) 6—8-merous. Sepals ovate-oblong, glabrous except the ciliolate margin, 2—3 mm. Petals broad-oblong, glabrous, 2—2.5 mm. Receptacle hairy. Disk glands c. 15, thick. Stamens 90—120; connective glabrous. Ovary glabrous; style c. 4 mm, stigma very shortly 4-lobed. *Berry* globose to ellipsoid or obovoid, 2—2.5 cm Ø; seeds 3 or 4.

ANDAMAN IS. S. Andaman I., *Parkinson* 419. Rutland I., *Parkinson* 874, 902.

BURMA. Myaungnya Dist. Lebzauk F. R., *Lace* 2987. — North Tounghoo Dist. Sa Mo F. R., *Maung Ba Pe* 9366 (BM). — Insein Dist. Prome Road, Rangoon, Clelland (K), *Dickason* 6949, *Maung Ba Pe* 13080 (DD), as *S. 'burmanica'*, n.v.; K, *Parker* 2778, *Parkinson* 14431 (DD, cit. Mukherjee, n.v.);

N. of Klaing, Yo Ma F. R., *Maung Ba Pe 11623*; Myaukhalaing Res., *Khaut 85* (DD, cit. Mukherjee, *n.v.*). — *Bassein Dist.* Kanyin Chaung (Kalayamg), sea shore, *Parkinson 8803* (DD, cit. Mukherjee, *n.v.*), *Maung Kan 7001* (K); Simma, 30 m, *Kermode 7128*; ridge top E. of Kanazogon village, W. coast, *c. 150 m*, *Kermode 7109* (CAL, *n.v.*; K, type).

**4. *Scolopia macrophylla*** (W. & A.) Clos, *Ann. Sc. Nat.* IV, 8 (1857) 253; Sleum., *Fl. Males.* I, 5 (1954) 8; Back. & Bakh. *f.*, *Fl. Java* I (1963) 284; Lescot, *Fl. Camb., Laos & Vietnam* n. II (1970) 29, t. 3, 1—5. — *Phoberos macrophylla* W. & A., *Prodr.* (1843) 30. — *Phoberos rhinantha* Benn. in Benn. & Br., *Pl. Jav. Rar.* (1840) 187, t. 39. — *Rhinanthera blumei* Steud., *Nom. ed.* 2, 2 (1841) 448 (based on *Rhinanthera* Bl. 1826). — *Phoberos maritima* Miq., *Fl. Ind. Bat. Suppl.* (1861) 388. — *Scolopia rhinantha* (Benn.) Clos, *Ann. Sc. Nat.* IV, 8 (1857) 252; Miq., *Fl. Ind. Bat.* I, 2 (1858) 107; Hook. *f.* & Th. in Hook. *f.*, *Fl. Br. Ind.* I (1872) 190; King, *J. As. Soc. Beng.* 59, ii (1890) 114; Warb. in E.-P., *Nat. Pffam. ed.* I, III, 6a (1893) 29; Briq., *Ann. Cons. Jard. Bot. Genève* 2 (1898) 46; K. & V., *Bijdr.* 5 (1900) 17; Back., *Fl. Bat.* I (1907) 64; Voorl. *Schoolfl. Java* (1908) 15; *Schoolfl. Java* (1911) 70; Gagnep., *Journ. de Bot.* II, 1 (1908) 167; *Fl. Gén. I.-C.* I (1909) 227; Koord., *Exk. Fl. Java* 2 (1912) 632; Sloom., *Bijdr. Flac. Ned. Ind.* (1919) 94; Merr., *En. Born.* (1921) 411; Ridl., *Fl. Mal. Pen.* I (1922) 155, f. 17; Craib, *Fl. Siam. En.* I (1925) 93; Sloom., *Bull. Jard. Bot. Btzg III*, 7 (1925) 336; Gilg in E.-P., *Nat. Pffam. ed.* 2, 21 (1925) 418; Doct. van Leeuwen, *Zoocetid. Ned. Ind.* (1926) 396 (galls); Burk., *Dict.* (1935) 1983; Gagnep., *Fl. Gén. I.-C. Suppl.* I (1939) 207; Back., *Bekn. Fl. Java (em. ed.)* 4 A (1942) *fam.* 84, p. 6; Corner, *Wayside Tr.* (1951) 309. — *Scolopia rhinantha* var. *siamensis* Craib, *Kew Bull.* (1922) 235; *Fl. Siam. En.* I (1925) 94; Gagnep., *Fl. Gén. I.-C. Suppl.* I (1939) 207. — *Scolopia crenata* auct., *non* (Wight) Clos; King, *J. As. Soc. Beng.* 59, ii (1890) 115. — *Rhamnicastrum rhinantha* (Benn.) O. Ktze, *Rev. Gen.* I (1891) 45. — *Scolopia maritima* (Miq.) Warb. in E.-P., *Nat. Pffam. ed.* I, III, 6a (1893) 29; Gilg, *l.c. ed.* 2, 21 (1925) 418. — *Rhinanthera odoratissima* Bl. *ex Ind. Kew.* 2 (1895) 708, *nom. nud.*

Shrub or small tree, 2—6(—12) m; trunk often contorted, up to 25 cm  $\varnothing$ , with spirally arranged simple spines, 2.5—7.5 cm; bark smooth, ferruginous or brown, becoming greyish. Young branches not rarely with axillary spines 1—3 cm; lenticels elliptic to roundish. *Leaves* persistent, ovate or ovate-elliptic to -lanceolate, tapering to the acute apex, base mostly rounded, often slightly unequal, thinly coriaceous, glabrous, shining above, shallowly to rather deeply crenate, (5—)6—12(—16) by (2.5—)4—6(—8) cm; nerves 6—8(—10) pairs, not or slightly prominent, reticulation dense, slightly though markedly raised on both faces; petiole reddish-pink, with 2 blackish glands at the top on the upper side, 6—10(—18) mm. *Racemes* axillary and subterminal, 3—10 cm, 15—20-flowered, coarsely ferruginous-tomentose. *Flowers* greenish-white, slightly fragrant, 4- or 5- (or 6-)merous. Pedicels 4—6(—10) mm. Sepals and petals equal to each other, ovate-lanceolate, the former ferruginous-tomentose, the latter ciliate but otherwise glabrous outside, 3(—4) mm. Receptacle hairy. Disk glands 8(—12). Stamens 40—70; connective elongate, glabrous. Ovary glabrous; style 4—5 mm, stigma trilobulate. *Berry* ovoid, orange to dark red, becoming blackish when dry, juicy, bitter, *c.* 2 by 0.8 cm, with (1 or) 2—6 seeds.

THAILAND. K r u n g t e p. Bangkok, canal bank, *Kerr 3751* (BM; K, type of *S. rhinantha* var. *siamensis*), 4294 (P), 7933, 9346, *Marcan 704*, *E. Smith 263*, 336. — P u k e t. Krabi, *Kerr 18869*. — N a k a w n S r i t a m a r a t. Patalung, 30 m, *SF 1824*, *Vanpruk 759*.

CAMBODIA. Kampot, *Poilane 406*.

VIETNAM (SOUTH). Binh Duong, *Poilane 829*. Bien Hoa, *Poilane 21511*. Phuoc Tuy, Cap St. Jacques, *Poilane 632*. Ding Tuong, *Pierre 390*.

MALAY PENINSULA. Kedah. Langkawi, Curtis 2132; P. Dayang Bunting, Robinson 6214. — Penang. Curtis 706, 991, For. Dep. F.M.S. 27797. — Wellesley. Burkill 9032. — Perak. Taiping, Matang For. Res., FRI 11660. — Pahang. Pekai, Ridley. — Selangor. Port Swettenham, SF 2429; Klang, For. Dep. F.M.S. 23197. — Trengganu. Bt. Kluang, SF 40814. — Negri Sembilan. Port Dickson, KEP 70443. — Malacca. Alvins 2057, Derry 311, Griffith K. D. 212. — Johore. Mawai Road, Teruya 1057. — Singapore. Changi, Ridley 1818, 3606a, 8903, SF 40022.

SUMATRA. East coast. Belawan near Deli, Jochems 5008, Loerzing 3466, 13169, 16925. Serdang, Loerzing 3368, 9283. Tandjungbalei, Yates 1831. Batubara, Yates 2192. Asahan, Yates 1124. — West coast. Korthals; Tiku, N. of Pariaman, Meijer & Vermeulen 5501, 7337; Pariaman, Diepenhorst H.B. 2200 (L; U, lectotype of *Phoberos maritima*), 2545 (L; U, syntype of *Phoberos maritima*); Telug Kabung, van Borssum-Waalkees 1620; Solok, Teysmann H.B. 770 (BO, L; U, syntype of *Phoberos maritima*). Tapanuli, S. of Lake Toba, 900 m, Loerzing 10072, Ouwehand 257. — Palembang. Rutten 17. — Bencoolen. F.R.I. bb. 17034. — Menta wei Is. Sipora I., Boden Kloss 14646, Iboet 519.

JAVA. Banta m. Serang, Rawa Danau, 100 m, Enderit 1172. — Djakarta. Depok, 90 m, Koorders 42559; Kapuk F. R., van Steenis 10584; Pegangan, 15 m, Backer 32212; Keréndang, Backer 32210; Batavia, Reinwardt 1166, Vorderman; Antjol, Zeylstra a. 1909; Marunda, Bakhuisen v. d. Brink 1185; Tandjungpriok, van Hasselt, Beumée A 791, van Steenis 526. — Semarang. Pruwoto, Horsfield a. 1809 (BM; K, part of type coll. of *Phoberos rhinantha*; L, U); Ngaringan, Beumée 5003, Koorders 35304. — Madiun. Patjitan, Horsfield a. 1809 (K, part of type coll. of *Phoberos rhinantha*).

BORNEO. S. Borneo. Banjarmasin, Korthals, Motley 1164; Martapura, Korthals. — S.E. Borneo. W. Kutai, 10 m, Enderit 1722. — N. Borneo. Sandakan, 900 m, SAN 32640; Jembongan I., B. N. B. For. Dep. 3761. Tawau, B. N. B. For. Dep. 4144; Semporna, Selangan F. R., SAN 44673. — Serawak. Loba Kubau, Rejang mangrove, S 29344.

CULT. Hort. Botan. Madras Dec. 1820, Wight Cat. 288 = Herb. Wallich 6673 G. & H. (BM; K, type of *Phoberos macrophylla*).

**Ecology.** On humid or marshy soil at the landward side of mangrove forests or on more inland river sides, by swampy creeks, at margins of pools, along marsh in teak-forest, mostly on temporarily inundated soils (tidal forest), at low to medium (—900 m) altitudes, scattered, sometimes locally frequent and even gregarious.

**5. *Scolopia chinensis* (Lour.) Clos, Ann. Sc. Nat. IV, 8 (1857) 249; Benth., Fl. Hongk. (1861) 19; Thw., En. Ceyl. Pl. (1864) 100; Oliv. in Bedd., Fl. Sylv. 3 (1870) XV; Baill., Adansonia 10 (1872) 253 (morph.); Warb. in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 29; Briq., Bull. Herb. Boiss. 6 (1898) 303 (anat. hydathod.); Ann. Cons. Jard. Bot. Genève 2 (1898) 42; Boerl., Cat. Hort. Bog. 1 (1899) 52; Moll & Jans., Mikr. 1 (1906) 202 (wood anat.); Back., Fl. Bat. 1 (1907) 65; Voorl. Schoolfl. Java (1908) 15; Gagnep., Journ. de Bot. II, 1 (1908) 167; Fl. Gén. I.-C. 1 (1909) 229; Back., Schoolfl. Java (1911) 70; Schmidt, Bot. Tidkr. 32 (1916) 334; Sloom., Bijdr. Flac. Ned. Ind. (1919) 99; Groff, Ding & Groff, Lingn. Agric. Rev. 2, 2 (1924) 116; Sloom., Bull. Jard. Bot. Btzg III, 7 (1925) 340; Craib, Fl. Siam. En. 1 (1925) 93; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 418; Merr., Lingn. J. Sc. 5 (1927) 132; Tanaka & Odashima, A Census of Hainan Pl., J. Soc. Trop. Agr. 10 (1928) 375; Merr., Comm. Lour. (1935) 272; Gagnep., Fl. Gén. I.-C. Suppl. 1 (1939) 209; Back., Bekn. Fl. Java (em. ed.) 4 A (1942) fam. 84, p. 6; Masam., Fl. Kainant. (1943) 215; Sleum., Fl. Males. I, 5 (1954) 10; Back. & Bakh. f., Fl. Java 1 (1963) 285; Chun, Chang & Chen, Fl. Hainan. 1 (1964) 452, f. 249; Lescot, Fl. Camb., Laos & Vietnam n. 11 (1970) 25. — *Phoberos chinensis* Lour., Fl. Cochinch. (1790) 318; ed. Willd. (1793) 389; W. & A., Prodr. (1834) 30, note; Voigt, Hort. Suburb. Calc. (1845) 84; Turcz., Bull. Soc. Nat. Moscou 27, ii (1854) 334; Ettingsh., Blatt-Skel. Dik. (1861) 129 (veg.). — *Phoberos cochinchinensis* Lour., Fl. Cochinch. (1790) 318. — *Roumea chinensis* Wall. ex Steud., Nom. ed. 2, 2 (1841) 475, nom. nud. — *Phoberos arnotianus* Thw., En. Ceyl. Pl. (1858) 16; l.c. (1864) 400. — *Scolopia cochinchinensis* (Lour.) Clos, Ann. Sc. Nat. IV, 8 (1857) 253. — *Scolopia germainii* Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 42; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 418. — *Scolopia siamensis* Warb. in Fedde, Rep. 16 (1919) 255.**

Shrub or tree, up to 5 m. Branches and branchlets usually with strong simple spines (1–6 cm), early glabrescent, bark grey to brownish, lenticles minute, round, reddish. *Leaves* persistent, elliptic to orbicular or oblong-elliptic, shortly obtusely acuminate to almost rounded, base widely cuneate to rounded, with 2 distinct basal glands, coriaceous, glabrous, shining above, entire to subserrate, 3–7(–10) by 2–5 cm; nerves 3–5(–7) pairs, slightly prominent beneath, reticulation dense and markedly though finely raised on both sides; petiole pubescent, 3–5(–8) mm. *Racemes* few-flowered, often ± paniced at the top of the branchlets, patently grey-tomentellous or -puberulous, 2–3(–6) cm. Pedicels 4–6(–10) mm. *Flowers* white-yellowish, (5- or 6- (or 7-)merous. Sepals ovate, dorsally tomentulose, 1.5–2 mm. Petals ovate, dorsally subglabrous, obscurely ciliolate, 2.5–3 mm. Receptacle hairy. Disk glands (5–)10. Stamens 40–60; connective elongate, hairy. Ovary glabrous; style slender, 2–3 mm, stigma very shortly 3- or 4-lobed. *Berry* ellipsoid to subglobular, (6–)8–10 mm  $\varnothing$ , containing 4 or 5 seeds.

THAILAND. Chantaburi, plains of Lém Dan, *Schmidt 488* (B, type of *S. siamensis*, †; C).

LAOS. Entre le Mekong et Hué, *Harmand a. 1875/77*.

VIETNAM (NORTH). Bac Giang, *Chevalier 29567*. Quang Yen, *Balansa 1454, 1456, 1457, Chevalier 37577, Lecomte & Finet 833*; Ile Verte, *Balansa 1455*. Bac Ninh, Hanoi, *Balansa 4830, 4985, Pételot 4411*. Son Tay, Mt Bavi, *Balansa 3169*. Ha Dong, *Bon 4220*; Sept Pagodes, *Mouret 89*; Pagode de Balny, *Pételot 4031*. Ninh Binh, Khang Thuong, *Bon 24, 551, 879, 1103, 1159*; Bach Mat, *Bon 767*; Yen Doi, *Chevalier 29175*; Cho Ganh, *Pételot 1451, 1471*. Thanh Hoa, *Bon 660*. Song, *Duport 177*. Kau Nga Shan, Tien-yen, *Tsang 30531*. Tu thap, *d'Alleizette 178* (P).

VIETNAM (SOUTH). Quang Tri, *Pirey 12, 16*; Dongha, *Poilane 27913*. Thua Thien, Hué, *Pierre 1874, 2787 p.p., Poilane 978, 27864*. Quan Nam, Tourane, *Clemens 3833, 3918*; Lien Chieu, près de Tourane, *Poilane 7453*; col des Nuages, *Poilane 7776*. Khanh Hoa, *Poilane 8392, Chevalier 40732*. Phuoc Thuy, Mts Thi Wan, *Pierre 2787 p.p.* Soc Trang, P. Condor, *Pierre 2787 p.p., Germain 29 & 37* (G, syntypes of *S. germainii*), 71, *Harmand*. 'Cochinchina', *Loureiro* (BM, type of *Phoberos cochinchinensis*), D. Nelson (P).

CHINA. Hainan. *Chun 7110, 7111, McClure 7571, 8234*. — Kwangsi. Kiang Kow, 60 m, *Sin & Whang 46* (B, †); Lin Shan Shen, 150 m, *Sin & Whang 10* (B, †). — Kwangtung. *Rothé 121 & 138* (P); Wangli, *Krone 160* (P, S, W); Heung Shan, *Levine 3486, To Kang Peng 6288*; Lantau I., *Tsang W. T. 16598, 16684*; Canton (or Macao), D. Nelson on Cook's 3rd Voy., Dec. 1779 (BM). — Macao. *Gaudichaud 258, 269, 281, 282* (P). — Hongkong. *Bodinier 1010, Hance 1030, Lamont 29, S. Y. Hu 5007*. — Fukien. Taitao I., *Price 1219, 1270, 1334*; Amoy, H. H. Chung 103, *Fortune 134*. 'China', *Loureiro* (P, type of *Phoberos chinensis*), *Staunton* (BM, Herb. Banks; W).

NATURALIZED. Java, around Djakarta, *Kuhl & van Hasselt a. 1820/21, Vorderman a. 1886, Backer 32219, 32220, Hochreutiner 2083*.

CULT. Ceylon, Hort. Bot. Peradeniya, *Thwaites 3526* (BM, K, P; PDA, type of *Phoberos arnotianus*, n.v.; W). India, Hort. Bot. Calcutta, *Wallich 6681* (BM, BR, K, W, as '*Roumea chinensis*').

**E c o l o g y.** In shrubberies, at low altitudes.

**U s e s.** For hedges which are impenetrable because of the spines.

**6. *Scolopia pusilla*** (Gaertn.) Willd., Sp. Pl. 2, 2 (1799) 981; Moon, Cat. (1824) 39; Clos, Ann. Sc. Nat. IV, 8 (1857) 251; Warb. in E.-P., Nat. Pflfam. ed. I, III, 6a (1893) 30; Gilg, l.c. ed. 2, 21 (1925) 420; Mukherjee, Thesis (1969) 56. — *Limonia pusilla* Gaertn., Fruct. 1 (1788) 279, t. 58, f. 4. — *Scolopia schreberi* Gmel., Syst. (1791) 793 (based on *Scolopia Schreb., descr. gen.*); Bourd., For. Fl. Travancore (1908) 17; Alston in Trimen, Fl. Ceylon 6 (1931) 14. — *Phoberos gaertneri* Thwait., En. (1858) 17, incl. var. *oblongifolius* Thwait., *cordifolius* Thwait. & *lanceolatus* Thwait., l.c., nom. ill. (based on *Limonia pusilla*). — *Scolopia gaertneri* (Thwait.) Thwait., En. (1864) 400, incl. var.  $\alpha$  —  $\gamma$ ; Oliv. in Bedd., Fl. Sylv. 3 (1870) XV; Hook. f. & Th. in Hook. f., Fl. Br. Ind. 1 (1872) 191; Trimen, Fl. Ceylon 1 (1893) 71; Gagnep., Journ. de Bot. II, 1 (1908) 167; Gamble, Man. Ind. Timb. (1922) 39.

Medium-sized tree; trunk with formidable compound divaricate spines; bark greyish. Branches with or without simple slender spines up to 4 cm. *Leaves* persistent, rather variable, subovate- or generally oblong-elliptic, apex broadly acuminate, generally obtuse, base broadly attenuate to rounded, sometimes subcordate, (sub)coriaceous, glabrous, generally entire, sometimes faintly crenate, (2.5—)3—6(—7.5) by 1.5—2(—5) cm; nerves 4—6 pairs, slightly prominent beneath, reticulation dense and finely raised on both faces; petiole 2—3(—4) mm. *Racemes* laxly 4—8(—10)-flowered, patent-puberulous to subglabrous in all parts, 2—4 cm; rhachis slender. Pedicels 1—1.3 cm. Flowers white, 4- (or 5-)merous. Sepals ovate-oblong, 1.5—2 mm. Petals oblong, with a markedly thinner margin, ciliolate, 1.5—2 mm. Receptacle densely hairy. Disk absent. Stamens 40—60; connective glabrous. Ovary glabrous; style slender, 3—4 mm, stigma obsoletely 3- or 4-lobed. *Berry* ovoid, apiculate, bright scarlet when ripe, c. 1.3 cm Ø.

CEYLON. *Champion*, *Fraser 194*, *Graham 34*, *Koenig* (L, carp. coll. n. 856, type of *Limonia pusilla*; TUB ex L, n.v.), *Thwaites 1076* (BM; CAL, n.v.; FI, GOET, K, P; PDA, type of *Phoberos gaertneri* var. *cordifolius*, n.v.; W), 1848 (CAL, n.v.), *Walker*. Colombo, *Rottler a. 1796* (K), *Macrae 146*. Point de Galles. *Gardner 43*. Pierre. Balangoda, 450 m, *Thwaites 2497* (BR; CAL, n.v.; FI, K, P; PDA, type of *Phoberos gaertneri* var. *oblongifolius*, n.v.; W); *ibid*, 700 m, *Worthington 3215* (BM). Hort. Peradeniya, *Thompson*. Maragala, Uva, *Alston* (BM). Madugoda, 760 m, *Simpson 8818*, *Worthington 1572*. Bibile, 200 m, *Worthington 2976*. Kimbulapitiya, *Simpson 8592* (BM). Gatagama, *Thwaites 64*, 181 & 211 (BM; CAL, n.v.; FI, K, L, P; PDA, syntypes of *Phoberos gaertneri* var. *lanceolatus*, n.v.; W).

INDIA. Cited by Bourdillon from Travancore, Neman hills; no specimens seen.

**E c o l o g y.** In (secondary) scrub jungle, in low country both in moist and dry region, rarely up to 760 m.

**7. *Scolopia luzonensis*** (Presl) Warb. in E.-P., Nat. Pflfam. ed. 1, III, 6a (1893) 30, f. 11; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 45; Merr., Philip. J. Sc. 1 (1906) Suppl. 98; *ibid*. 10 (1915) Bot. 327; Sp. Blanc. (1918) 274; En. Philip. 3 (1923) 109; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420, f. 186; Sleum., Fl. Males. I, 5 (1954) 11. — *Dasianthera luzonensis* Presl, Rel. Haenk. 2 (1835) 90, t. 66, incl. var. *α ovatifolia*, *β intermedia* & *γ lancifolia* Presl, l.c. — *Banara racemosa* Blanco, Fl. Filip. (1837) 425. — *Banara brevifolia* Blanco, l.c. 426. — *Phoberos dasyanthera* Benn. in Benn. & Br., Pl. Jav. Rar. (1840) 192, nom. ill., based on *Dasianthera luzonensis* Presl. — *Flacourtia corollata* Blanco, Fl. Filip. ed. 2 (1845) 559; ed. 3, 3 (1879) 220, t. 367. — *Flacourtia parvifolia* Blanco, II. cc. 560 and 220 (= *F. 'parviflora'* Ind. Kew.). — *Scolopia lanceolata* (Wight) Clos, Ann. Sc. Nat. IV, 8 (1857) 225, *quoad specim. philippin.* *Cuming 1061*; Miq., Fl. Ind. Bat. 1, 2 (1858) 107, *quoad specim. philippin.*; Vidal, Phan. Cuming. Philip. (1885) 94; Rev. Pl. Vasc. Filip. (1886) 49. — *Scolopia crenata* (Wight) Clos, Ann. Sc. Nat. IV, 8 (1857) 250, *quoad specim. philippin.*; F.-Vill., Nov. App. (1880) 12; Vidal, Sin. Atl. (1883) 13, t. 7, f. B; Phan. Cuming. Philip. (1885) 94; Rev. Pl. Vasc. Filip. (1886) 48; Miq., Fl. Ind. Bat. 1, 2 (1858) 107, *quoad specim. philippin.*; Sloot., Bijdr. Flac. Ned. Ind. (1919) 100; Bull. Jard. Bot. Btzg III, 7 (1925) 341. — *Scolopia rhinanthera* auct., non (Benn.) Clos; Blanco, Fl. Filip. ed. 3, 3 (1879) t. 367, *pro syn. Flacourtia corollatae* Blanco; F.-Vill., Nov. App. (1880) 12. — *Scolopia dasyanthera* (Benn.) F.-Vill., Nov. App. (1880) 12; Gagnep., Journ. de Bot. II, 1 (1908) 167. — *Flacourtia lanceolata* Vidal, Rev. Pl. Vasc. Filip. (1886) 49, sphalm., *S. lanceolata* Clos intended. — *Scolopia saeva* auct., non (Hance) Hance; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 46, *quoad specim. philippin.* *Cuming 1061* etc.; Merr., Philip. J. Sc. 10 (1915) Bot. 328; En. Philip. 3 (1923) 109. — *Scolopia oldhami* auct., non Hance; Merr., En. Philip. 3 (1923) 109.

Shrub or tree, up to 6, rarely to 20 m; trunk occasionally with spines; bark smooth, grey. Young twigs with fine axillary spines. *Leaves* persistent, variable in size and shape, ovate to ovate-oblong or elliptic-lanceolate, mostly short-acuminate, tip blunt, base cuneate to almost rounded,  $\pm$  coriaceous, glabrous, generally distinctly serrate-crenate, 6—12.5 by 2.5—4(—5) cm; nerves *c.* 4 pairs, slightly prominent, reticulation fine and rather dense on both faces; petiole (4—)6—12 mm. *Racemes* axillary and terminal, simple or paniced, 10—14-flowered, initially grey-puberulous, glabrescent, (2—)3—5(—8) cm. Pedicels 4—6 mm. Flowers light yellowish or whitish, sweet-scented, 4 merous. Sepals and petals oblong, dorsally  $\pm$  glabrous, and ciliolate, 2.5 mm. Receptacle hairy. Disk glands absent. Stamens 50—70; connective elongate, subdensely to laxly hairy, at least in bud stage. Ovary glabrous; style *c.* 5 mm, stigma very shortly 4-lobed. *Berry* ovoid to subglobose, red, *c.* 6 mm  $\varnothing$ , with 3—8 semilunar seeds.

PHILIPPINES (selected specimens). Luzon. Ilocos Norte, B.S. 27292, 27354 & 32917 ('oldhamii'), F.B. 26818, Vidal 1128 (*foliis obtusis*). Ilocos Sur, F.B. 25490 ('saeva'), Mearns 2336 ('oldhamii'). Cagayan, F.B. 17114, 18506. Mountain Prov., Benguet, Elmer 6363, 6423, F.B. 10921, Loher 2000, 5067; Lepanto, Vidal 2084. La Unión, B.S. 21110, Elmer 5625. Pangasinan, B.S. 17793, Clemens 18157, F.B. 8376, 13486. Zambales, Clemens *a.* 1924, F.B. 27172, Merrill 2198, 2916, 2949, Warburg 13398. Pampanga, Elmer 22323, F.B. 17726, Merrill 3835. Bulacan, Vidal 31, 32 (FI). Tayabas, F.B. 14952. Bataan, B.S. 26936, F.B. 6364, 26740, Vidal 35, Warburg 13400; Mt Mariveles, F.B. 773, Warburg 12651, 13195, 13196, Whitford 1197, 1244. Rizal, B.S. 2680, 29266, Loher 12397, Vidal 33, Warburg 13404; Morong & Bosoboso, Loher 1996, Merrill 2701, Vidal 32, 1126, Warburg 13399; Antipolo, F.B. 428, Loher 1998, Merrill 1319, 1653, Spec. Blanc. 836, 911, Vidal 1127, Corregidor I., F.B. 28616. Quezon, Merrill 1018, PNH 97721, 98634. Manila, Cuming 1177, Haenke (BM, HBG; PR, type of *Dasianthera luzonensis*, *n.v.*; W); San Francisco del Monte, Loher 1997, 1999. 'Malinta & Angat', Blanco (types of *Banara racemosa* & *brevifolia* & *Flacourtia corollata* & *parvifolia*, not preserved). Cavite, B.S. 22497. Laguna, Mt Makiling, PNH 8534. Camarines Norte, F.B. 10339, 10769, 11339 (BR), Hallier *a.* 1903 (HBG). Batangas, Cuming 1510, 1599, F.B. 21523, 28043. Albay, Cuming 1061 ('lanceolata' & 'saeva'). Sorsogon, Mt Bulusan, Elmer 17405. — Polillo. B.S. 10376 (BR), PNH 3748. — Marinduque. Vidal 1125. — Masbate. F.B. 12658 (BR). — Mindoro (Oriental). Bartlett 13492, 13714, PNH 17089, 17469, 17643, 17695, 32823, 37903, Santos 5304. — Guimaras I. F.B. 242, 243, PNH 11750. — Panay: B.S. 35464, 35533, 35547, 35579, 35666. — Mindanao. Davao, Copeland 509, PNH 13701.

BORNEO. N. Borneo. Marabung, B. N. B. For. Dep. 2954 (K). Tawau, Lahad Datu, SAN 42217, 52815; Semporna, B. N. B. For. Dep. 9881 (K).

CELEBES. S. Celebes. Wawokaraeng, Warburg 16919; Pankadjene, Teysmann H.B. 12207, 12278, 12315; Bulubulu, Teysmann H.B. 11808, 12330. Kolaka, Elbert 3230. Rumbia, Elbert 3120. Kabaena I., Elbert 3315. — N. Celebes: Gorontalo, Riedel (K, W).

FLORES. W. Flores, Sesok, 50—900 m, Schmutz 1743, 1922.

**E c o l o g y.** In dry thickets and secondary forests, occasionally in tidal swamp, or along sandy beach, also on limestone rocks, often locally common.

**8. *Scopia crenata* (Wight) Clos, Ann. Sc. Nat. IV, 8 (1857) 250, excl. *specim. philippin.*; Bedd., Fl. Sylv. I (1871) 78, t. 78; Hook. f. & Th. in Hook. f., Fl. Br. Ind. I (1872) 191; Woodrow, J. Bombay Nat. II (1897) 124; Warb. in E.-P., Nat. Pflfam. ed. I, III, 6a (1893) 30; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 44; Cooke, Fl. Bombay Pres. I (1901) 54; Talbot, For. Fl. I (1909) 73, f. 47; Gamble, Fl. Madras Pres. I (1915) 52; Brandis, Ind. Tr. (1921) 39; Gamble, Man. Ind. Timb. (1922) 39, excl. *syn.*; Parkinson, For. Fl. Indam. (1923) 84; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420; Blatter, J. Bomb. Nat. Hist. Soc. 31 (1927) 910; Mukherjee, Thesis (1969) 59, incl. var. *brevifolia* Mukherjee, l.c. 62 *ex descr.* — [*Flacourtia crenata* Wall., Cat. (1832) n. 6679 *p.p.*, *nom. nud.*]. — *Phoberos crenatus* [Wight, Cat. (1833) n. 62, *nom. nud.*] W. & A., Prodr. (1834) 29; Dalz. & Gibson, Bombay Fl. (1861) II. — *Phoberos lanceolatus* [Wight, Cat. (1833) n. 63, *nom. nud.*] W. & A., Prodr. (1834) 30; Walp., Rep. I (1842) 203. — *Phoberos wightianus* [W. & A. in Wight,**

Cat. (1833) n. 64, *nom. nud.*] W. & A., Prodr. (1834) 30; Walp., Rep. 1 (1842) 203. — *Scolopia lanceolata* (Wight) Clos, Ann. Sc. Nat. IV, 8 (1857) 252, *excl. specimen philippin.* — *Scolopia wightiana* (W. & A.) Clos, l.c. 252; Oliv. in Bedd., Fl. Sylv. 3 (1870) XV; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420. — *Scolopia pseudocrenata* Clos, l.c. 250. — *Rhamnicistrum crenatum* ['W. & A.'] O. Ktze, Rev. Gen. 1 (1891) 45, based on *Phoberos crenatus*. — *Scolopia closii* Gagnep., Journ. de Bot. II, 1 (1908) 167, *nom. nov. pr. Phoberos crenatus* W. [ & A.], *S. crenata* 'Hook. f. & Thoms.' & *S. pseudocrenata* Clos, *nom. ill.*

Shrub or small tree, trunk with straight simple or rarely branched spines up to 2.5 cm; branches of older trees unarmed; bark smooth, grey, rough by raised lenticels. *Leaves* persistent, ovate to ovate-lanceolate or lanceolate-oblong, for 1—2 cm acutely or obtusely acuminate, base  $\pm$  broadly cuneate, rarely obtuse, slightly unequal, subcoriaceous to coriaceous, glabrous, subcrenate to more deeply or coarsely serrate-crenate, (4—)5—15 by (1.5—)2.5—7.5 cm; nerves 5—8(—9) pairs, a little prominent beneath, reticulation dense, finely raised on both faces; petiole 6—12 mm. *Racemes* simple or paniced distally, axillary and terminal, lax-flowered, puberulous, (3—)5—7.5 cm. Pedicels (2—)4—6(—9) mm. *Flowers* 5- (or 6-)merous, white. Sepals subovate-oblong, obtuse, ciliolate, otherwise subglabrous, 2.5 mm. Petals oblong, subglabrous, 2.5 mm. Receptacle laxly to densely short-hairy. Disk glands absent. Stamens 60—100; connective elongate, glabrous. Ovary glabrous; style 5—6 mm, stigma shortly 4-lobed or -notched. *Berry* subglobular, apiculate, 1.2(—1.5) cm  $\varnothing$ , with 3—8 semilunar seeds.

INDIA (selected specimens). Bombay Pres., Mt Abu, cit. Blatter. North Kanara, *Stock & Law*, Hooker f. & Thomson; Nilkund Ghat, *Talbot 1862*. Kanara, Bantwalla, *Hohenack. Pl. Ind. Or. 462* (FI, type of *S. pseudocrenata*; G, HBG, K, L, M, P, S, W). Coorg, *Wight K.D. 82 p.p.* (March 1852, K), Hooker f. & Thomson, Gough. Mysore, *Lobb. Shimoga, Raghavan 96937*. Malabar, *Wight K.D. 89* (K, as *Phoberos wightianus*). Nilgiris, *Wight Cat. 62 = Herb. Wight (leg. Bonner) in Herb. Wallich 6679 A p.p.* (K, type of *Phoberos crenatus*); *Wight Cat. 63 = Herb. Wight (leg. Bonner) in Herb. Wallich 6679 A p.p.* (K, type of *Phoberos lanceolatus*); *Wight Cat. 64 = Herb. Wight in Herb. Wallich 6672* (as *Flacourtia wightiana* Wall., FI, G; K, type of *Phoberos wightianus*); *Herb. Wallich 6679 B, leg. Noton*; *ibid.*, 1830 m, Dalzell, *Gamble 12124*, Hooker f. & Thomson, *Perottet 48, 65, Pierre a. 1878, Wight K.D. 82 p.p.* Melkunda, 1525 m, *Gamble 20673* (DD, cit. Mukherjee, n.v.). Sispara Ghat, 1525 m, *Hohenacker Pl. Ind. Or. 1571, Gamble 14469*. Coonoor, *Brandis 1482, Gamble 11352*. Coimbatore, *Lushington. Anamalais, Beddome 271, 273* (BM). Bababooden Hills, *Law. Travancore, Bourdillon 260, Meebold 13075*. Pulneys, 900 m, *Bourne a. 1899, Anglade 1218*. Madurai, *Meebold 13608*; Mahendragini, 1830 m, *Gamble 13191* (CAL, cit. Mukherjee, n.v.). Courtaloum, *Wight s.n.* (K, as *Phoberos crenatus*), *Sebastine 5881* (MH, cit. Mukherjee as var. '*brevifolia*', n.v.). Tinnevely Hills, *Beddome 272* (BM). Cuddahat, *Gamble 21320*. Sim's Park, 1830 m, *Gamble 13119*. Comon Ghat, 1525 m, *Gamble 13027*. Trichinopoly, *Subramanium 13031* (MH, cit. Mukherjee as var. '*brevifolia*', n.v.).

ANDAMAN IS. No specimens seen, all cited by Mukherjee: Middle Andaman I., *Parkinson 92* (DD). South Andaman I., Rongat Bay, Mt Baker, 215 m, *Parkinson 1174* (CAL). Rutland I., *Parkinson s.n.* (CAL).

**Ecology.** In rain forest and monsoon forest.

**Note.** *S. crenata* has been listed by Koorders for Celebes (Minah., 1898, 478; Minahasa, Pinamorong, *Koorders 16269*, sterile, in BO & L; cf. Sloom., Rev. Flac. Ned. Ind. 1919, 101, *nota*; Bull. Jard. Bot. Btzg III, 7, 1925, 341, *nota*). The 'Koorders' specimen, however, belongs to *Flacourtia zippelii* Sloom.

**9. *Scolopia braunii*** (Klotzsch) Sleum., *nov. comb.* — *Adenogyrus braunii* Klotzsch, App. Ind. Sem. Hort. Berol. (1854) 1, *descr.*; Walp., Ann. 4 (1857) 227. — *Scolopia brownii* F. v. Muell., *Fragm. 3* (1862) 11; Benth., Fl. Austral. 1 (1863) 107; F. v. Muell., *Fragm. 4* (1864) 174; l.c. 9 (1875) 61; First Census (1882) 6; F. M. Bailey, Syn. Qld. Fl. (1883) 18; Qld. Woods (1888) 10; F. v. Muell., Second Census (1889) 11; F. M. Bailey, Qld. Woods



(1889) 15; Cat. Pl. Qld. (1890) 3; Moore & Betche, Handb. Fl. N.S.W. (1893) 29; Warb. in E.-P., Nat. Pflfam. ed. I, III, 6a (1893) 30; F. M. Bailey, Qld. Flora I (1899) 66; Maiden, For. Fl. N.S.W. 2 (1904) 20, t. 44; l.c. 3 (1908) 166; F. M. Bailey, Compr. Cat. (1913) 42; Maiden & Betche, Census (1916) 141; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420; Domin, Bibl. Bot. 89 (1928) 985; Francis, Austr. Rain-forest Tr. (1929) 273; ed. 2 (1951) 295; Anderson, Tr. of N.S.W. ed. 3 (1956) 264; Sleum., Contr. N.S.W. Nat. Herb., Flora Ser. 136 (1963) 2. — *Phoberos* sp., Benn. in Benn. & Br., Pl. Jav. Rar. (1840) 192, nota. — *Phoberos brownii* F. v. Muell, Fragm. 3 (1862) 11, in syn. — *Rhamnicastrum brownii* (F. v. Muell.) O. Ktze, Rev. Gen. I (1891) 45.

Shrub or small, occasionally large, practically glabrous tree (—30 m), trunk up to 50 cm  $\varnothing$ , sometimes with low buttresses; bark whitish to brownish, smooth or slightly scaly. Young shoots may be armed with axillary spines. *Leaves* persistent, lanceolate to rhombic-ovate, narrowed at both ends, apex subacute to obtuse, glossy dark green above, (3.5—)5—8(—11) by (1.5—)1.8—3.5(—5) cm, entire to remotely undulate-crenate by impressed marginal glands, more sinuate-dented (holly-like) in coppice shoots; nerves 1 or 2 basal and 3—5 upper pairs, slightly raised on both faces, as is the dense reticulation; petiole 4—10 mm. *Racemes* few- to rather many-flowered, in foliate and defoliate axils, glabrous; rachis slender, 2—4(—6) cm. *Flowers* greenish to creamy, scented, 4-merous. Pedicels rather stoutish, 2—4(—6) mm. Sepals suborbicular-ovate, glabrous, ciliolate, c. 1.3 mm. Petals similar to the sepals, but slightly narrower and longer. Receptacle short-hairy. Disk glands 12—16, truncate. Stamens 50—60; connective elongate, glabrous. Ovary ovoid, gradually tapering to a stoutish style (2 mm); stigma subcapitate, slightly 3-lobed. *Berry* ovoid-globose, c. 1.2 cm  $\varnothing$ , dark red, turning black, with one or a few angular seeds imbedded in pulp.

AUSTRALIA. Queensland. Cape York Peninsula, *MacGillivray a. 1849*. Cook Dist., *Flecker*. Atherton Dist., *Mocatta*. N. Kennedy Dist., Cannonvale, *Jones a. 1962*. Dunk I., *Adams 20049*. Rockingham Bay, *Dallachy a. 1869*. Johnstone R., *Michael*. Palm Creek & Cannon Valley near Proserpine, *Michael*. Port Mackay, *Am. Dietrich 2553, 2601*. Dalrymple Heights, *Clemens a. 1947*. Fitzroy R., Capricorn, *Dallachy*. Russell R., *St. Johnson a. 1892*. Rosedale, *Dorey 207*. Tambourine Mts, *Meebold 7690, White 3572*. Moreton Dist., Moreton Bay, *Leichhard a. 1845* (P); Mt Glorious, *Clemens a. 1945*. *White 13118*. Kin-Kin, *White*. Blackall Ra., *White*. Mt Spurgeon, *Marrotsy*. Eungella Ra., *Francis*. — New South Wales. Macpherson Ra., *Tryon & White*. Acacia Creek via Killarney, *Dunn a. 1905*. Clarence R., *Wilcox*. Ballina, *Baker 907*. Dorrigo State Forest, *White 7554*. Ellenborough Falls, *Boorman a. 1904, Maiden a. 1902*. Hastings R., *Brown a. 1892*. Manning R., *Cheel a. 1899*. Forster, *Johnson a. 1953*. Upper Williams R., *Fraser & Vickery 1934*. Ravensworth, *Story 7146*. Ash I., Hunter R., *Maiden a. 1903*. Hunter's R., *R. Brown 5274* (BM, type of *S. brownii*; K, P), *A. W. Scott*. South Merewether, *Cabbage 749*. Gosford Dist., *Donaldson a. 1889*. Garawarra Res., *Jacobs a. 1937*. Broughton Vale, *King a. 1951*. Cumberland county, Foxground, *Halg a. 1906*, *Th. V. Alkin a. 1906* (Z). Illawarra, *Herb. F. v. Mueller*.

CULT. *Hort. Bot. Berol. a. 1854* (B, type of *Adenogyrus braunii*, †; HBG). Bot. Gard. Sydney, *Boorman a. 1902*.

**Ecology.** In rain forest, rain-forest edge or sub-rain-forest communities.

**Note.** Klotzsch described *Adenogyrus braunii* from a plant flowering in the Berlin Botanical Garden in 1854; apparently he named it in honour of Alexander Braun, then director of the Garden. In the generic description Klotzsch says 'Arbores capenses', but under *Adenogyrus braunii* 'Patria ignota'. The Kew Index reduced this species to *Phoberos mundii*, 'Africa Australis', apparently because by then the second species *Adenogyrus krebssii* Kl. had been recognized to belong to *Scolopia* (*Phoberos*) *mundii* from the Cape. When examining the holotype of *Adenogyrus braunii* in 1936, I found that this species did not fit into one of the African species of *Scolopia*, but I did not see its identity. A branchlet of the original Berlin material (destroyed in 1943) was picked by P. Magnus and later

came with his herbarium to the Hamburg herbarium, where it is still preserved. A close examination of this specimen revealed that *Adenogyrus braunii* Kl. is conspecific with *Scolopia brownii* F. v. M., named after Robert Brown, its first collector. The species is apparently in cultivation since long; in the Sydney Botanic Garden I saw an old tree during my visit in 1962.

**10. *Scolopia novoguineensis*** Warb., Bot. Jahrb. 13 (1891) 384; in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 30; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 47; Gilg, Bot. Jahrb. 55 (1918) 276, f. 2; Sloot., Bijdr. Flac. Ned. Ind. (1919) 101; Nova Guinea 14 (1924) 191; Bull. Jard. Bot. Btzg III, 7 (1925) 341; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420, f. 187; Sleum., Fl. Males. I, 5 (1954) 12. — *Scolopia nitida* C. T. White, J. Arn. Arb. 10 (1929) 243; Sleum., Fl. Males. I, 5 (1954) 12.

Much branched, sometimes sprawling shrub or treelet, 1—2 m, occasionally tree 4—7 (—10) m with sometimes spiny trunk up to 20 cm  $\varnothing$ ; bark grey to brownish, rough. Sterile young shoots with slender axillary spines. Branchlets puberulous at tips. *Leaves* persistent, ovate to oblong-ovate, or -obovate, or elliptic, rarely almost rounded, apex broadly attenuate, apiculate or obtuse, sometimes rounded or even emarginate, base broadly attenuate to obtuse, subcoriaceous, glabrous except the puberulous midrib on the upper side of the lamina, shining above, entire or remotely paucidentate or shallowly crenate, (1.5—)2.5—5(—7.5) by (0.9—)1.5—3.5(—4.5) cm, obscurely triplinerved from the base, upper nerves 3—5 pairs, slightly raised on both faces or above only, reticulation lax and hardly prominent; petiole 2—4(—7) mm. *Racemes* 2—3(—6)-flowered, or rarely reduced to a solitary (shortly peduncled) flower, patently puberulous; rachis slender, up to 1 cm. Pedicel 3—5 mm. *Flowers* 4- or 5- (or 6-)merous, white. Sepals oblong-ovate, puberulous to subglabrous, ciliolate, 2 mm. Petals similar to the sepals. Receptacle hairy. Disk glands (6—)8—10, truncate. Stamens 40—70; connective glabrous. Ovary glabrous; style 2—3 mm, stigma obscurely lobed. *Berry* subglobular, red, about 6 by 4 mm; seeds 3—6, flattened-ovoid, in an orange pulp.

NEW GUINEA. Western part. Maccluer Bay, Sigar (Sekar), Warburg 20058 (B, type of *S. novoguineensis*,  $\ddagger$ ; L). Isthmus of Cape Tanahmerah, W. of Hollandia, 20 m, van Royen & Sleumer 6517, 6526. Humboldt Bay, Beccari (FI); Hollandia, 20—180 m, BW 1184, Kostermans & Soegeng 561, van Royen & Sleumer 6303; *ibid.*, 500 m, van Royen & Sleumer *s.n.* (L). — Eastern part. Western Div., Wassi Kussa R., Tarara, Brass 8415. Centr. Div., Kairuku, near Vanuamai, Pullen 3668; along the coast East and West of Port Moresby, Brass 850 (A, *n.v.*; BRL, type of *S. nitida*; K, P), Jeswiet 92 (WAG), NGF 12852, 19105, 22153, 35611, Pullen 6800, Stauffer 5682.

NEW IRELAND. Uqana (on the coast NW. of Malao), Peekel 121 (BO, L). — Described and figured in Peekel, Ill. Fl. Bismarck-Arch. ms. Nachtrag p. 106.

**E c o l o g y.** In understorey of rather dry bushy (often coastal) primary or secondary forest, also on inner edge of mangrove swamp just above tide mark, generally bush on dry sandstone, coral limestone hills, or rocky shore; at low altitudes.

**11. *Scolopia lucida*** Wall. ex Kurz, For. Fl. Br. Burma 1 (1877) 73; Fischer, Kew Bull. (1935) 575, *nota*; Mukherjee, Thesis (1969) 55.

Shrub or tree, up to 8 m, trunk armed with branched spines. *Leaves* persistent, elliptic-lanceolate or lanceolate, acuminate, often a little falcate, tip blunt, base cuneate, slightly unequal, coriaceous, glabrous, shining on both faces,  $\pm$  thickly glandular-suberrate-crenulate all along the slightly revolute edge (but showing no proper basal glands),

(6—)9—12(—16) by 3—4.5(—6) cm; nerves 5 or 6(—8) pairs, slightly prominent on both faces, as is the rather dense reticulation; petiole initially faintly puberulous, 8—12 mm. *Racemes* axillary, laxly 2—5-flowered, minutely puberulous; rhachis c. 1 cm. Pedicels stoutish, 4—5 mm. *Flowers* 5-merous, puberulous. Sepals and petals ovate,  $\pm$  glabrous dorsally, ciliolate, 2.5—3 mm. Receptacle laxly hairy. Disk lobes 8—10. Stamens 50—60; connective glabrous. Ovary glabrous; style stoutish, 3 mm, stigma 3-lobulate. *Berry* ellipsoid-obovoid, apiculate, c. 1.2 cm long, pedicel stout, 6 mm.

BURMA. Tenasserim, Tavoy, *Herb. Wallich (leg. Gomez) 7245* (K, type, phot. neg. 7513).  
THAILAND. Puket. W. coast, Ranong, Nam Chut, *Kerr 11719* (K, L).

**E c o l o g y.** In bush or scrub near sea-level.

**12. *Scolopia buxifolia*** Gagnep., Bull. Soc. Bot. Fr. 55 (1908) 524; Journ. de Bot. II, 1 (1908) 168; Fl. Gén. I.-C. 1 (1909) 229, f. 22, 1—6; Tanaka & Odashima, J. Soc. Trop. Agr. 10 (1928) 375; Merr., Lingn. Sc. J. 14 (1935) 39; Gagnep., Fl. Gén. I.-C. Suppl. 1 (1939) 208; Masam., Fl. Kainant. (1943) 215; Lescot, Fl. Camb., Laos & Vietnam n. 11 (1970) 32, t. 3, f. 6—8. — *Scolopia nana* Gagnep., Fl. Gén. I.-C. Suppl. 1 (1939) 208. — *Scolopia hainanensis* Sleum. in Fedde, Rep. 41 (1936) 123; Merr. & Chun, Sunyatsenia 5 (1940) 137; Chun, Chang & Chen, Fl. Hainan. 1 (1964) 453, f. 250.

Shrub or tree, up to 8 m. Branchlets short, divaricate, with axillary spines up to 6 cm, lenticelled, tips puberulous. *Leaves* persistent, *Buxus*-like, elliptic to obovate, apex rounded or emarginate, base broadly obtusely cuneate to rounded, subcoriaceous, glabrous, entire, the edge often slightly revolute, 1.5—4(—5) by (0.5—)1—2 cm; nerves 2 or 3(—5) pairs, slightly raised on both faces as is the rather dense reticulation; petiole subglabrous, 1.5—3 mm. *Racemes* axillary, few-flowered, puberulous; rhachis slender, 1.5—2 cm. Pedicels glabrescent, 5—7(—11) mm. *Flowers* white, 4- or 5-merous. Sepals and petals ovate-oblong, subglabrous, ciliolate, 1.8—2 mm. Receptacle hairy. Disk glands 6—8 (wanting only in not yet fully developed flowers). Stamens 40—60; connective elongate, glabrous or practically so. Ovary glabrous; style slender, 3—5 mm, stigma very shortly 3-lobed. *Berry* ovoid, red, of a bitter taste, 0.5—1 cm  $\varnothing$ , with 3—6 seeds.

THAILAND. S u r a t. Kaw Samui near Nakhon Si Thammarat, near sea, *Kerr 15694*.

VIETNAM (SOUTH). Quang Tri, Lang Khai, *Poilane 1376*. Khanh Hoa, Nha Trang, *Chevalier 38992*, *Hayata 470*, *Krempf 1651*, *Poilane 4489* (P, syntype of *S. nana*), 4490; Ninh Hoa, *Poilane 6146* (P, lectotype of *S. nana*); Ninh Thuan, My Ca, presqu'île de Cam Ranh, *Barry 49*. Phuoc Tuy (Baria), Mt Thi Wan, *Pierre 2791 p.p.* (K; P, type of *S. buxifolia*).

CHINA. H a i n a n. *Fung 20330*, 20361, *Henry 8151* (B, type of *S. hainanensis*, †; K), *How 70894*, 73017, 73915, *Lau 300*, 3908, *Wang 33815*.

**E c o l o g y.** On hills close to sea shore, sandy soil.

**13. *Scolopia acuminata*** Clos, Ann. Sc. Nat. IV, 8 (1857) 251; Thwait., En. (1864) 400, *excl. specim. chin. Gaudichaud 280*; Oliv. in Bedd., Fl. Sylv. 3 (1870) XV; Trimen, Fl. Ceylon 1 (1893) 70; Gagnep., Journ. de Bot. II, 1 (1908) 167, *excl. Gaudichaud 280*; Mukherjee, Thesis (1969) 58. — *Phoberos acuminatus* Gardn. ex Thwait., En. (1858) 17. — *Scolopia crenata* auct., non (Wight) Clos: Hook. f. & Th. in Hook. f., Fl. Br. Ind. 1 (1872) 191, *quoad specim. ceylan.*

Small tree, said to be round-headed; bark smooth, rufous-grey. Branches with simple spines when young, afterwards unarmed; branchlets puberulous. *Leaves* persistent, ovate

to elliptic-lanceolate, apex in general subcaudate-acuminate, tip bluntish, base broadly cuneate to obtuse, slightly unequal, subcoriaceous, glabrous, subtenture to shallowly repand-dentate, 5—9(—12) by 2—3.5(—4) cm; nerves 4 or 5 (or 6) curved pairs, slightly raised mainly beneath, as is the fine and dense reticulation; petiole 3—4(—6) mm. *Racemes* simple or mostly paniced in the upper part, 6—12-flowered, greyish-yellowish puberulous; rhachis slender, 1.5—3(—5) cm. Pedicels rather stoutish, 5(—7) mm. *Flowers* 5- or 6-merous, pinkish white, strongly scented. Sepals and petals ovate, obtuse, laxly pubescent to glabrescent dorsally, ciliolate, 1.5—2 mm. Receptacle short-hairy. Disk consisting of few to rather numerous orange papillae, sometimes practically absent. Stamens 80—100; connective glabrous. Ovary glabrous; style slender, 3—4 mm, stigma obscurely 3-lobed. *Berry* ovoid-globose, apiculate, 1.2—1.8 cm  $\varnothing$ , said to be green when mature, on pedicel 1.3 cm by 1 mm.

CEYLON. Centr. Prov., 300—900 m, *Thwaites 1077* (BM, BR; CAL, *n.v.*; FI, K, P; PDA, type of *Phoberos acuminatus*, *n.v.*; W), *Macrae 334*. Hantane, 600—900 m, *Gardner 43 bis* (BM; FI-Webb, type of *S. acuminata*; K, P). Kalawewa, 150 m, *Worthington 4256*. Balangoda, *Holtermann* (B, †). Dambulla, *Holtermann* (B, †) Trinco Road, 35 M.P., 300 m, *Worthington 985, 1042* (BM). Rakwana, 900 m, *Worthington 2152* (BM). Mentioned by Trimen also from Alut-oya, Deltota, Hanguranketa and Nillemba.

**Ecology.** In low country both moist and dry, up to 900 m, rather common. Trimen states that specimens from the dry region have smaller and less acuminate leaves and smaller fruits.

**14. *Scolopia crassipes*** Clos, Ann. Sc. Nat. IV, 8 (1857) 251; Thwait., En. (1864) 400; Oliv. in Bedd., Fl. Sylv. 3 (1870) XV; Trimen, Fl. Ceylon 1 (1893) 71; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 44; Gagnep., Journ. de Bot. II, 1 (1908) 167; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420; Mukherjee, Thesis (1969) 57. — *Phoberos hookerianus* Wight ex Thwait., En. (1858) 17. — *Scolopia hookeriana* (Wight ex Thwait.) Lignier & Bey, Bull. Soc. Linn. Normandie V, 7 (1904) 166. — *Scolopia crenata* auct., non (Wight) Clos: Hook. f. & Th. in Hook. f., Fl. Br. Ind. 1 (1872) 191 p.p.

Large shrub or tree. Branches with spines when young, unarmed afterwards. *Leaves* persistent, elliptic or orbicular-elliptic, rarely elliptic-lanceolate, apex attenuate or broadly obtuse, sometimes slightly emarginate, base cuneate to almost rounded, (sub) coriaceous, glabrous, entire or slightly crenate or undulate, 3—5 by (1.5—)2—3 cm; nerves 4 (or 5) pairs, a little raised on both faces, as is the dense reticulation; petiole rather stoutish, 2—4 mm. *Racemes* axillary and terminal, rather few-flowered, grey-puberulous; rhachis  $\pm$  stoutish, (1.5—)2—3(—4) cm. Pedicels stoutish, 4—5 mm in flowering time. *Flowers* (4- or) 5- or 6-merous, whitish. Sepals ovate, glabrescent, ciliolate, 1.5 mm. Petals ovate-oblong, otherwise as the sepals. Receptacle laxly hairy. Disk lobes *c.* 10, thickish, rather small. Stamens 50—80; connective elongate, glabrous. Ovary glabrous; style *c.* 4 mm, stigma obscurely 3-lobed. *Berry* subglobose, apiculate, said to be green when ripe, *c.* 1.3 cm  $\varnothing$ , on stout pedicel.

CEYLON. Central Prov., *Wight* (FI, type of *S. crassipes*), *Thwaites 629* (BM; CAL, *n.v.*; FI, K, L, P; PDA, apparently type of *Phoberos hookerianus*, *n.v.*; P, W). Nuwara Eliya, 1900 m, *Champion* (K), *Worthington 2908* (BM). Dunally Galaha, 915 m, *Worthington 2500* (BM). Mentioned by Trimen also from Deltota, Dolosbagie, Galagama, and Maturata.

**Ecology.** In montane forest.

**Note.** According to Trimen possibly a montane form of *S. acuminata*. In both species the disk glands are very small, in *S. acuminata* sometimes practically absent.

**15. *Scolopia saeva*** (Hance) Hance, Ann. Sc. Nat. IV, 18 (1862) 217; Hook. f. & Th. in Hook. f., Fl. Br. Ind. I (1872) 191 in syn. *S. crenatae*; Briq., Ann. Cons. Jard. Bot. Genève 2 (1898) 46; Tanaka & Odashima, J. Soc. Trop. Agr. 10 (1928) 375; Merr., Lingn. Sc. J. 14 (1935) 39; Chun, Chang & Chen, Fl. Hainan. I (1964) 452; Lescot, Fl. Camb., Laos & Vietnam n. II (1970) 33, t. 3, 9—12. — *Phoberos saevus* Hance in Walp., Ann. 3 (1852) 825; Seem., Bot. Voy. Herald, Fl. Isl. Hongkong (1856) 357; Lc. (1857) 363, as syn. of *S. chinensis*. — *Scolopia acuminata* Clos, Ann. Sc. Nat. IV, 8 (1857) 251, p.p. *haud typica* = *Gaudichaud 280*; Hance, J. Linn. Soc. Bot. 13 (1873) 100. — *Scolopia chinensis* auct., non (Lour.) Clos: Benth., Fl. Hongk. (1861) 19. — *Scolopia crenata* auct., non (Wight) Clos: Crook, Flow. Pl. Hongkong (1930) 54. — *Scolopia henryi* Sleum. in Fedde, Rep. 41 (1936) 123; Merr. & Chun, Sunyatsenia 5 (1940) 137; Chun, Chang & Chen, Fl. Hainan. I (1964) 454. — *Scolopia cinnamomifolia* Gagnep., Fl. Gén. I. — C. Suppl. I (1939) 207, f. 20, 11 & 12, gallice.

Small tree, up to 10 m; trunk armed with robust simple or compound spines up to 11 cm. Branches unarmed, bark of a rusty colour, lenticels rounded. *Leaves* persistent, elliptic or subovate- or lanceolate-elliptic, subacuminate- to subcaudate-attenuate, tip blunt, base cuneate, (sub)coriaceous, glabrous, subentire or remotely repand-crenate, 6—10.5 by (2.5—)3—6 cm; 2 nerve pairs basal and slightly suprabasal, high ascending, the other upper and shorter nerves 2 or 3 pairs, not or obscurely raised above, and slightly though distinctly prominent beneath, as is the rather dense reticulation; petiole 3—8(—10) cm. *Racemes* axillary and subterminal, lax-flowered, (2—)3—4.5 cm, grey-puberulous, glabrescent; rhachis slender. Pedicels 4—6(—10) mm. *Flowers* whitish greenish, (4- or) 5-merous. Sepals ovate, subglabrous, ciliolate, 1.5—2 mm. Petals oblong, otherwise similar to the sepals. Receptacle hairy. Disk glands rather small, 4 or 5(—10?). Stamens 40—50; connective elongate, glabrous. Ovary glabrous; style filiform, 3—5 mm, stigma very shortly 3-lobed. *Berry* ovoid-ellipsoid, orange, finally red, 6—7 mm long, with 1 or 2 seeds.

VIETNAM (SOUTH). Quang Nam, Col des Nuages, près de Tourane, *Poilane 8041* (B; P, type of *S. cinnamomifolia*).

CHINA. Macao. *Gaudichaud 280* (P, as *S. acuminata*). — Hongkong. *Champion 305*, *Ford 26*, *Hance 728* (BM, type of *Phoberos saevus*; P, W), *Hillebrand, Naumann, Urqhart a. 1861*, *Weiss a. 1869* (P), *Wright 17*; Happy valley, *Seemann 2471*, *Wilford 317*; Wong Nei Chong Gap, *T. Ying 282*; Victoria, *S. Y. Hu 5038*; New Terr., *S. Y. Hu 5535*; Lantau I., *Tsang 16598*, *16684*. — Hainan. *Fung 20369*, *Henry 8346* (B, type of *S. henryi*, †; K, P), *8715*, *How 70955*, *71092*, *73090*, *73117*, *How & Chun 70125*, *Lau 380*, *Lei 739*, *926*, *Liang 62215*, *63014*, *63330*, *Tsang 15678*, *15914*, *Wang 33550*, *34098*, *34247*, *34956*. — Fukien. Changchow, *Chung 892*, *1155*. Amoy I., *Chang 410*. Foochow (Minhow), *Metcalf (Po) 12021*, *Metcalf, Chen & Chen 642*, *645*, *724*; Kushan Monastery, Gi-shan, *Tang 5861*.

**Ecology.** In mixed forests at low altitudes.

**16. *Scolopia oldhamii*** Hance, Ann. Sc. Nat. V, 5 (1866) 206; Sasaki, Cat. Gov. Herb. Taihoku (1930) 361; Kaneh., Formos. Tr. rev. ed. (1936) 477, f. 438; Liu, Ill. Nat. & Introd. Ligneous Pl. Taiwan I (1960) 219, f. 180; Li, Woody Pl. Taiwan (1963) 607, f. 240. — *Scolopia crenata* auct., non (Wight) Clos: Forb. & Hemsl., Ind. Fl. Sin. I (1896) 57, p. *specim. formos.*; Henry, List Pl. Formos. (1896) 18; Matsum. & Hayata, J. Coll. Sci. Univ. Tokyo 22 (1906) 156 = En. Pl. Formos. (1906) 31; Hayata, Ic. Pl. Formos. I (1911) 62; Matsum., Ind. Pl. Jap. (Phan.) 2 (1912) 382; Kaneh., Formos. Tr. (1917) 42; Yamamoto, Suppl. Ic. Pl. Formos. 3, 3 (1927) 41.

Small tree. Branches with spines up to 4 cm when young, unarmed when old, glabrous. *Leaves* persistent, elliptic-oblong or elliptic, apex broadly and gradually attenuate, obtuse to rounded, base broadly cuneate, (sub) coriaceous, glabrous, 3—10 by (1.5—)2—3(—4) cm, shallowly glandular-serrate-crenate to almost entire; nerves 4 or 5 pairs, slightly though distinctly raised on both faces, as is the rather dense reticulation; petiole 3—4(—6) mm. *Racemes* axillary and terminal, sometimes paniced distally, initially finely puberulous, glabrescent, few- and lax-flowered, (1.5—)2—3 cm; rhachis slender. Pedicels slender, 3—4 mm. *Flowers* pale yellow to white, 5- (or 6-) merous. Sepals ovate-oblong, ciliolate, glabrescent, *c.* 2 mm. Petals similar to the sepals, a little narrower. Receptacle hairy. Disk glands distinct, 10(—15). Stamens 40—60; connective glabrous. Ovary glabrous; style slender, 3—4 mm, stigma obscurely 3-lobed. *Berry* globose, *c.* 8 mm  $\varnothing$ , said to be green to blackish-green when ripe, with 4 or 5 seeds.

FORMOSA (selected specimens). Taipeh (Taihoku), *Tanaka 1772, Keng 1074; Tamsui, Faure 1124, Oldham 21 (A, n.v.; BM, type of S. oldhamii; K), 22 (BM, K, P, W), Warburg 9907, 9999; Sozan, Wilson 10781; Keelung, Faure 1262, 1263, Warburg 5520, Wilson 10216. Koshun, Wilson 11006. Kaoshiung, Playfair 25, 145, 327, 396. Shinten, Faure 296. Takao, Wilson 9855. South Cape, Henry 296, 976, 2059. Mokuto, Faure 62 (P). — For further collections cf. Li p. 607.*

RYU KYU Is. Cit. Yamamoto p. 41, *n.v.*

**E c o l o g y.** Scattered on slopes, common along the coast, at low altitudes.

### 17. *Scolopia meridionalis* Capuron & Sleumer, *nov. spec.*

Frutex vel arbuscula 3—6 m alta. Ramuli sat graciles apicibus glabri, deorsum cito cinereo-corticati minuteque verrucoso-lenticellati, spinis gracilibus axillaribus usque ad 1.5 cm longis armati. *Folia* persistentia, obovata, vel subrhombea, apice breviter obtuse attenuata, vel obtusa, basi latius vel angustius in petiolum cuneata, subcoriacea, glabra, imprimis superne nitidula, in sicco griseo-virescentia, omnino vel certe in superiore media parte obtuse crenata vel crenulata, 2—5 cm longa, (1—)1.5—2.5(—3) cm lata, nervis lateralibus angulo acuto a costa abeuntibus stricteque ascendentibus, cum rete venarum denso utrinque aequaliter prominulis; petioli graciles, in sicco flavescentes, 2—4 mm longi. *Racemi* ad flores axillares solitarios reducti, pedunculo 1 mm longo, pedicello sub anthesi 3—4 mm longo, glabro. Sepala 5 ovato-oblonga, glabra, 1.5—2 mm longa, persistentia. Petala 5, sepalis angustiora, interdum fere dentiformia, 1.5 mm longa, cito caduca. Receptaculum dense albo-pilosum. Discus subnullus, certe margine haud glanduloso-lobatus. Stamina 115—150; antherae connectivo brevius vel longius apiculatae. Ovarium albo-hirtum; stylus sursum glaber, stigmatate breviter 3—5-lobato. *Fructus* submaturus globosus, styli residuis apiculatus, *c.* 1 cm  $\varnothing$ , semina 2—4 continens.

MADAGASCAR. S u d (extrême limite orientale). Colline près d'Italy, baie de Ranofotsy, au Sud-Ouest de Fort-Dauphin, fl. 10-1-1963, *SF 22366 Capuron*; *ibid.*, fl. 10-1-1963, *SF 22372 Capuron* (L; P, type); *ibid.*, fr. 2-1955, *Humbert & Capuron 28989*. Pentes infér. orient. du massif granitique de Vohitsandriana, au Sud de Ranopiso, fl. 8-12-1968, *SF 28587 Capuron*; *ibid.*, 200—500 m, fr. 2-1955, *Humbert & Capuron 29134*.

The following specimen differs from the above description by its habit (tree 15—20 m), the leaves rounded at apex, the pedicels only 2—3 mm in fruit; immature fruit subglobose, pubescent, *c.* 1.2 cm  $\varnothing$ ; endocarp hard; seeds 2—3; testa bony. — A montane form?

MADAGASCAR. O u e s t (confins du Centre). Bassin de la Mananadabo dans le massif d'Analavelona, au Nord de Fiherenana, 1000—1300 m, fr. 13/15-12-1962, *SF 22196 Capuron*.

**18. *Scolopia septentrionalis* Capuron & Sleumer, *nov. spec.***

Frutex usque ad 5 m altus. Ramuli graciles, apicibus patenter puberuli, deorsum griseo-corticati minuteque lenticellati, spinis ex axillis foliatis defoliatisque enascentibus gracilibus usque ad 1 cm longis armati. *Folia* persistentia, anguste obovato-oblonga, apice obtusa ibique crenaturas 2 vel 3 gerentia, ceterum integra, basin versus longe attenuata, subcoriacea, glabra, in sicco margine paullo revoluta, 1.2—2.5 cm longa, (3—)4—6(—8) mm lata, nervis lateralibus strictis a costa sat obscura angulo acutissimo et paralleliter cum venis ascendentibus, utrinque aequaliter prominulis; petioli graciles, initio puberuli, 1—2 mm longi. *Racemi* ad flores axillares solitarios reducti, pedunculo puberulo 1—3, pedicello aequaliter gracili et puberulo (4—)5—7 mm longo. Sepala 5 obovata, obtusa, dorso puberula, ciliata, vix 2 mm longa. Petala 5 anguste spathulata, vel interdum ad dentes reducta, c. 1.5 mm longa. Receptaculum pilosum. Discus lobulis parvis 10—15 dissolutus. Stamina 40—50(—60); antherae connectivo thecis aequilongo superatae. Ovarium glabrum; stylus gracilis 2—3 mm longus, apice breviter bilobus, stigmatibus vix lobulatis. *Fructus* subglobosus, c. 1.5 cm Ø; endocarpium coriaceum. Semina 2(—3) semiglobosa; testa ossea.

MADAGASCAR. O u e s t (Nord). Diégo Suarez, Forêt de Sahafary (bassin de la Saharenana), sur sables, defl. 27-12-1963, SF 23053 *Capuron* (L; P, type); *ibid.*, fr. submat. 26-11-1964, SF 23312 *Capuron*.

**19. *Scolopia calcicola* Capuron & Sleumer, *nov. spec.***

Frutex elatus. Ramuli sat graciles, spinis ex axillis foliatis defoliatisque enascentibus gracilibus c. 1 cm longis hic inde armati. *Folia* persistentia, obovata, apice obtusata crenaturisque 3—4(—6) ± profundis incisa, ceterum certe per  $\frac{2}{3}$  inferiorem laminae partem integra, basi cuneata, subcoriacea, glabra, 1—1.8(—2.3) cm longa, 0.7—1.2 cm lata, nervis lateralibus numerosis strictis a costa angulo acuto abeuntibus inter sese et cum venis parallelis ascendentibus, utrinque aequaliter prominulis; petioli graciles, initio puberuli, 1—2 mm longi. *Racemi* ad flores axillares solitarios reducti, pedunculo 2—4 mm longo, pedicello aequaliter gracili et puberulo 6—8 mm longo. Sepala 5 obovata, dorso minute puberula, ciliolata, 1.5(—2) mm longa. Petala 5 anguste spathulata vel dentiformia, c. 1.5 mm longa. Receptaculum pilosum. Disci glandulae parvae 10—15. Stamina 80—100(—120); antherae connectivo thecis ± aequilongo superatae. Ovarium glabrum; stylus gracilis, apice breviter bifurcatus, c. 3 mm longus, stigmatibus vix lobulatis. *Fructus* ignotus.

MADAGASCAR. O u e s t (Nord). Diégo Suarez, Montagne de Français, vallon de l'Andavakoera, fl. 20-12-1963, SF 23006 *Capuron* (L; P, type).

**N o t e.** Close to *S. septentrionalis* from which it differs only by its obovate and much larger leaves and a larger number of stamens.

**20. *Scolopia heterophylla* (Lamk) Sleum., *comb. nov.* — *Ludia heterophylla* Lamk, Enc. 3, 2 (1792) 612; Tab. 3, 1 (1799) t. 466, 1 & 2; Willd., Sp. Pl. 2, 2 (1799) 1129 incl. var.  $\alpha$  &  $\beta$ ; Pers., Syn. 2 (1806) 72; Spr., Syst. 2 (1825) 608; DC., Prodr. 1 (1824) 261; Clos, Ann. Sc. Nat. IV, 8 (1857) 243, *in textu*. — *Ludia myrtifolia* Lamk, Enc. 3, 2 (1792) 613; Tab. 3, 1 (1799) 22, t. 466, 3; Willd., Sp. Pl. 2, 2 (1799) 1130; Pers., Syn. 2 (1806) 72; Spr., Syst. 2 (1825) 608; DC., Prodr. 1 (1824) 261; Clos, Ann. Sc. Nat. IV, 8 (1857) 243, *in textu*; Tul., l.c. V, 9 (1869) 335, *in textu*; Cordemoy, Fl. de l'Île de la Réunion (1895) 357; Perr., Mém. Mus. Nat. d'Hist. Natur. Paris n.s. 13 (1940) 281, *in textu*. — *Ludia sessiliflora***

auct., non Lamk: Bak., Fl. Maurit. (1877) 11, p.p.; Balfour, Bot. Rodriguez (1879) 26; Warb. in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 42 p.p., f. 16, E—F; Gilg, l.c. ed. 2, 21 (1925) 437 p.p., f. 199, E—F; Wiehe, Veget. of Rodriguez I., Bull. Mauritius Inst. 2 (1949) 288, 300. — *Scolopia borbonica* Warb. in E.—P., Nat. Pffam. ed. 1, III, 6a (1893) 29, nom. seminud.; Dur. & Schinz, Consp. Fl. Afr. 1 (1898) 220; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420.

Shrub or small tree, much branched, apparently unarmed. Branchlets puberulent at tips, older parts early covered with thin greyish-brownish cork, lenticels small, very numerous. *Leaves* persistent, rather variable in form even in the same branchlet, apparently dented and often much smaller (almost *Ilex*-like) in young specimens or suckers, normally ovate-oblong or -elliptic, sometimes obovate, broadly attenuate distally, apex obtuse to rounded, even a little emarginate, base  $\pm$  broadly cuneate, chartaceous to subcoriaceous, flexible, sordid- or olivaceous-green when dry, glabrous, shining above, entire, though with a few distant minute marginal glands impressed on either side of the lamina, slightly revolute, 2—4.5 by 1.5—2.5 cm; nerves 4 or 5 irregular pairs, a little raised on both faces, as is the rather lax and fine reticulation; petiole 2—4 by hardly 1 mm. *Flowers* solitary or 2 or 3 per axil; pedicel stoutish, thickened distally, glabrous, 2—5 mm at anthesis, with several lanceolate bracteoles at the basal articulation, and sometimes one larger one immediately below the sepals. Sepals slightly irregular in shape, (4 or) 5, ovate, subacuminate, glabrous dorsally, ciliate, finally reflexed, 1.5—1.8 mm. Petals 4 (or 5), lanceolate, 1.5 by 1 mm, caducous. Receptacle densely whitish-hairy. Disk consisting of c. 15 small almost glabrous glands. Stamens 50—60; anthers subreniform, surpassed by a small though distinct rather obtuse glabrous appendage. Ovary glabrous; style stoutish, slightly curved, c. 2 mm, with a subcapitate, finally shortly 3- or 4-lobed stigma. *Fruit* not known.

MAURITIUS. Commerson (P, P-Lamk; W, sub *L. sessiliflora*), *Herb. Petit-Thouars* (P). Crown Land Cabinet, Y. Duljeet a. 1950 (MAU).

RÉUNION. Commerson (FI-Desfontaines; P, P-Lamk, P-Juss 12617—1 *pro parte maiore*, types of *Ludia myrtifolia*), Commerson (P, P-Juss 12617—2 'Ile de France et de Bourbon', types of *Ludia heterophylla*), Frappier 368. A la base de la montagne de St. Denis & Rivière des Pluies chez Mont Gillot, Boivin 1305 (B, type of *S. borbonica*, †; L, P). Brulé de St. Denis, Potier a. 1872 (P). Au sommet du chemin d'Oraire, Boivin s.n. (P).

RODRIGUEZ I. 'On coralline limestone of the SW. and E. ends of the island', Balfour a. 1874/75 (BM, P); Grande Montagne, cit. Wiehe (1949), n.v.; locality not indicated, R. Jauffret a. 1941 & 1942 (MAU).

**Ecology.** 'Bois des régions basses et moyennes' (Cordemoy).

**Note.** Cordemoy reports *S. heterophylla* on Réunion from the forests of 'Saint-Joseph, Cilaos, Saint-Benoît, et au bords des ravines Sèche et Saint-François'. I have not seen any recent collections from Réunion; Rivals (in Hedberg & Hedberg, Conservation of Vegetation in Africa South of the Sahara, 1968, p. 272 ff.) says, that *S. heterophylla* (here still named *Ludia heterophylla*) with other species of the lowland forest — practically extinguished as such — still exists in a special form of low altitudes as isolated individuals especially in the Montagne St. Denis near the mouth of the Grande Ravine. On Rodriguez Island, *S. heterophylla* might be extinguished by now.

## 21. *Scolopia spinescens* Sleumer, *nov. spec.*

Frutex 2—3 m altus, valde ramosus, vel arbor parva usque ad 7 m alta truncoque ad 10 cm  $\varnothing$ , cortice modo platani lamellato et caduco. Ramuli graciles fractiflexi, novelli



apicibus puberuli, deorsum cito rubescenti- vel cinereo-corticati minuteque lenticellati, spinis gracilibus axillaribus 0.5—2 cm longis armati. *Folia* persistencia, obovato-cuneiformia, interdum suborbiculata, subcoriacea, glabra et lucidula, in superiore medio sat grosse paucecrenata, (0.5—)1—1.5(—2.4) cm longa, 0.5—1(—1.8) cm lata, nervis lateralibus basalibus paulloque suprabaalibus utroque latere 2 alte ascendentibus, superioribus 2—3 a costa angulo latiore alte ascendentibus, utrinque imprimis subtus cum reticulatione venarum sat densa paullo elevatis; petioli graciles, initio puberuli, 1—2 mm longi. *Flores* axillares solitarii, pedunculo vix 1, pedicello gracili puberulo sub anthesi 4—5, sub fructu 4—6 mm longo. Sepala 5 vel 6(—8) subtriangulari-ovata, ciliata, 1—1.5 mm longa. Petala similia, sed paullo angustiora. Receptaculum pilosum. Disci glandulae parvae 10—12. Stamina 60—80; antherae connectivo brevi superatae. Ovarium glabrum; stylus c. 1.5 mm longus, stigmatibus subcapitato brevissime 3-lobulato. *Fructus* submaturus globosus, c. 7 mm Ø, semina 3 vel 4 rubra continens; testa ossea.

MADAGASCAR. O u e s t. Route Tuléar-Sakaraha vers les Pk 55—65, à l'Ouest d'Andranovory, fr. immat., SF 20726; ibid. Pk 45, SF 22281. Rebord N.E. du plateau de Vineta, dominant la région de Mahaboboka (moyen Fiherenana), SF 29088. Bassin de la Sahambano, au S.E. d'Ihosy, SF 22607 bis. — O u e s t (confins du Centre). Rocher d'Andrandohy, au S. d'Ambinda, route Ihosy—Ivohibe, 700—1000 m, SF 22608. — O u e s t (vers confins du Sud). Bekily-Tsivory, Ampandrandava, rochers de Piso-Piso, 800—1000 m, Nov. 1943, *Herb. Decary* 5374, leg. *Seyrig* 331 (P, type) & 331 B. 20 km au S. de Beraketa, SF 28515. Crête de Maroakoho, rive droite de la Menarandra, à l'Ouest de Tranoroa, 250 m, SF 20662 bis. Entre Antanimora et Ambovombe, SF 352, *Bosser* 13929. Forêt d'Analamatahitse (Analamatahotra), entre Bekily et la route Beraketa-Antanimora, SF 22524. Entre Isoanala et Antanimoro, Mont Eromo, 800—1000 m, *Humbert* 14174. — S u d. Entre Imonty et Ankoba, fr. immat., SF 22431.

*E c o l o g y.* Xerophilous bush, tropophyllous forest, and forest transitional to degraded bush, 200—1000 m.

22. *Scolopia inappendiculata* Perrier, *Mém. Mus. Hist. Nat. (Paris) n.s.* 13 (1940) 278; *Fl. Madag.*, Fam. 140 (1946) 49, fig. VIII, 1.

Shrub or small tree, much branched, bark flaking like *Platanus*. Branchlets glabrous at tips, slender, early covered with greyish cork and small lenticels; axillary spines few, c. 1 cm, sometimes absent. *Leaves* deciduous, subovate-elliptic, apex (shortly) acuminate, subacute, base cuneate, chartaceous, becoming dark brown to blackish when dried, glabrous, with 1—3 coarse crenations towards the apex, (2 or) 3—6(—8) by (—1) 1.5—2.5 (—3) cm; nerves in 4 or 5 pairs, rather obsolete, as is the coarse venation on both faces; petiole slender, glabrous, 4—8 mm. *Racemes* reduced to axillary, solitary flowers; peduncle 2—6 mm; pedicel slender, glabrous, 3—8 mm. Sepals and petals 5 or 6 (or 7), narrowly ovate, subacute, ciliate, c. 1 mm. Receptacle densely white-hairy. Disk glands 20—30, thickish, small. Stamens 80—100; anthers apiculate by a minute glabrous connective. Ovary glabrous; style rather deeply 3-furcate, stigmas hardly bilobed. Submature *berry* subglobular, c. 1 cm Ø, 4-seeded; seeds with bony testa.

MADAGASCAR. O u e s t. Env. de Majunga, *Perrier* 1612 bis (P, type); forêt de Marohogo, SF 24091 bis. Mitsinjo, Antsely, SF 5403; forêt de la Tsiombikibo, SF 24203. Vallons du plateau de Berivotra, au Sud de Majunga, 150 m, SF 18456, 24285.

*E c o l o g y.* In understorey of tropophyllous forest, on (sub)littoral sands, or even limestone, at low altitudes.

23. *Scolopia theifolia* Gilg, *Bot. Jahrb.* 30 (1901) 359, fig.; l.c. 40 (1908) 484; Engl.,

Pflanzenw. Afr. 3, 2 (1921) 577, f. 255; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420, f. 188 (sphalm. 'theiformis'); Brenan & Greenway, Check-Lists For. Tr. Shr. Brit. Emp. 5, 2 (1949) 236. — *Scolopia zavattarii* Chiov. in Miss. Biol. Borana, Racc. Bot. Angiosp.-Gymnosp. (1939) 140.

Much branched shrub or tree, with rounded crown, unarmed, up to 15 m, trunk up to 25 cm  $\varnothing$ . Bark smooth, greyish-white. Branchlets slender, tips glabrous or puberulous, older parts early greyish-corticate and covered with numerous small lenticels. *Leaves* persistent, elliptic to ovate-, oblong- or obovate-elliptic, apex broadly attenuate and obtuse, sometimes rounded, base cuneate, subcoriaceous, glabrous, shining above, margin regularly rather shallowly subserrate-crenate, (2.5—)3.5—6.5(—8) by (1.2—)1.7—2.7(—4) cm; nerves in 4—7 pairs, lower 1 or 2 ones steeply ascending, upper ones curved and more spreading, slightly though distinctly raised on both faces as in the rather dense reticulation; petiole initially puberulous, (2—)3—4(—5) mm. *Flowers* in the upper axils, generally 2 or 3 (or 4) in a fascicle, sometimes (partly) solitary, (sub)sessile, (3 or)4 or 5-merous. Sepals ovate to suborbicular, ciliate, c. 2 mm. Petals similar to, though slightly smaller and thinner than the sepals, sometimes minute, mostly caducous. Receptacle glabrous or practically so. Disk glands numerous, subglobular. Stamens 30(—40); anthers hardly apiculate by the glabrous connective. Ovary glabrous; style 1—2 mm, stoutish, abruptly marked against the developed ovary and/or fruit, stigma minute, subcapitate, obscurely 2- or 3-lobulate. *Berry* oblongoid-ovoid, c. 1 by 0.7 cm, red at full maturity, on pedicel 1—2 mm; seeds 1 or 2.

SUDAN. Equatoria. Mt Lotuke, Didinga Mts, 1980 m, Myers 10960 (K).

ETHIOPIA. Shoa. Pendici di Entotto sopra Addis Ababa, fl. 1 arbusto (culto?), Senni 388 (Fl); ibid., 2700 m, fr., Giordano 2178 (Fl). — Borana. Javello (Yabello), Pozzi Acacie, 1600 m, Cufodontis 407 (Fl, type of *S. zavattarii*; W).

UGANDA. Northern Prov. Napak, Karamoja, 2225—2315 m, Eggeling 5979 (K).

KENYA. Rift valley Prov. Rongai, 2135 m, Dale 2753 (K); Nakuru, Eastern Mau For. Res., 2300 m, Maas Geesteranus 6208. — Nyanza Prov. Londiani. Tinderet For. Res. E. of Kisumu, 2260 m, Maas Geesteranus 4918.

TANZANIA. Northern Prov. Loliondo, 2195 m, Bally 3873; Lo-olpiri Mt, 2135 m, Richmond 8. Longido Mts, 2440 m, Greenway 4391. Mbulu, W. slopes of Mt Hanang, 2285 m, Greenway 7684. — Tanganyika Prov. W. Usambara, Gologolo-Viti road, Parry 106. — Southern Highlands. Mbeya Ra. For. Res. and Mbeya Peak, Kerfoot 3212, 3702, 4232. Kinga (Livingstone) Mts, Ussango, crest of Pikurugwe Volcano, 2500 m, Goetze 1249 (B, type of *S. theifolia*, †; BM, BR, Z).

Ecology. Canopy tree in montane forest or forest savannah transition, scattered or rarely in pure stands, 1600—2700 m.

24. *Scolopia flanaganii* (Bolus) Sim, For. Fl. Cape Colony (1907) 127, t. 3; Gilg, Bot. Jahrb. 40 (1908) 484, comb. *superfl.*; Engl., Pflanzenw. Afr. 3, 2 (1921) 576; Phillips, Bothalia 1 (1922) 84; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 418; Moll, For. Tr. Natal (1967) 112, f. 495. — *Xylosma flanaganii* Bolus, J. Bot. 34 (1896) 17 ('*Flanaganii*').

#### var. *flanaganii*

Compact erect shrub 2—3 m, rarely tree up to 8 m, with trunk up to 30 cm  $\varnothing$ ; spines 1—1.5(—2.5) cm, mainly on coppice shoots, few or absent on older growth. Branchlets glabrous or puberulous on tips, early covered with greyish cork. *Leaves* persistent, ovate-, elliptic-, or obovate-lanceolate (ovate with rounded base in coppice shoots), apex shortly attenuate, bluntish, base cuneate, subcoriaceous, glabrous, shining above, with (3—)5—9 glandular serrate rather fine crenations ( $\pm$  0.5 mm, but coarser in coppice shoots) mainly in the upper  $\frac{1}{2}$ — $\frac{3}{4}$  of the thickened slightly revolute margin, 2—3(—3.5) by (0.6—)0.8—1.6

(up to 3.5 in coppice shoots) cm; nerves 5 or 6 pairs, rather straight and steep-ascending, the upper ones more vein-like, slightly though markedly raised especially above, as is the dense reticulation of veins and veinlets; petiole (1—)1.5 mm. *Flowers* ♂ (or sometimes ♂ only in the same specimen) 2—5 in a fascicle, sometimes (partly) solitary in the upper axils. Pedicel 1 mm. Flowers 3-merous. Sepals ovate, obtuse, thin, glabrous dorsally, ciliate, *c.* 1.5 mm. Petals similar, but a little smaller or narrower than the sepals. Receptacle glabrous. Disk glands *c.* 6. Stamens 12(—20); anthers exappendiculate. Ovary short-pubescent or glabrous; style glabrous, 1—1.5 mm, stigma flattish-subcapitate, obscurely 2—4-lobed. *Berry* subglobose, pubescent, *c.* 6 mm Ø, red, with 1 or 2 seeds.

SOUTH AFRICA. N a t a l. Eastcourt Giants Game Res., in shrub on banks of Bushmans R., 1280 m, *Edwards 2164* (PRE), *Killick 4056*. — C a p e P r o v. Keiskamma, Toise R., Dohne, Tamacha, cit. Sim, no material seen. King Williamstown, *Sim 2571*, & Natal Govt. Herb. cit. Phillips, *n.v.*; *ibid.*, near Kei road, *Ranger 175* (K). Komgha, 600 m, *Flanagan 682* (K, type of *Xylosma flanaganii*). Engkobo, All Saints Nek, *Marais 502*.

**E c o l o g y.** Occasional canopy tree in (dry) forest, according to Sim up to 1065 m alt.

**N o t e.** The description of the flowers given above is based on the rather scarce material at hand.

**var. oreophila** Sleum., *var. nov.*

Frutec vel arbor parva, interdum usque ad 12 m alta. Ramuli apicibus puberuli. *Folia* persistentia, ovata usque ovato-elliptica, vel -oblonga, interdum fere rhombea, coriacea, glabra, nitidula, sat irregulariter grosseque ( $\pm$  1 mm) subserrato-crenata, 1.5—2.5 cm longa, 1—2 cm lata, nervis lateralibus irregularibus angulo acuto ascendentibus 5- vel 6-paribus supra vix, subtus distincte prominulis, reticulatione venarum densa supra parum, subtus magis visibili; petioli 1—2 mm longi. *Flores* axillares, solitarii, sessiles, ima basi bibracteolati, glabri, 3- vel 4-meri. Sepala lanceolata, *c.* 1.5 mm longa, vix 1 mm lata, saepius cito dissoluta. Petala ovata, tenuia, concava, quam sepala diutius persistentia, 2—2.5 mm longa, 1.5—2 mm lata. Receptaculum glabrum. Disci glandulae 10—12, parvae. Stamina 15—18; antherae exappendiculate. Ovarium glabrum; stylus 1.5—2 mm longus, stigmatate brevissime 3-lobo. *Fructus* deset.

SOUTH AFRICA. N a t a l. Utrecht, 1675 m, fl. 2-3-1966, *N. J. Devenich 1319* (K, type; PRE, *n.v.*; S); *ibid.*, Donkershoek, 1770 m, fl. 21-1-1961, *Devenich 528* (K; PRE, *n.v.*); *ibid.*, Naauwhoek, 1675 m, sterile, 10-8-1964, *Devenich 1141* (K; PRE, *n.v.*). Vrijheid, Farm Retirement, 1700 m, *Killick 2730*.

**E c o l o g y.** In edge of *Podocarpus latifolius* forest, 1675—1770 m.

**25. Scolopia stolzii** Gilg in Engl., Pflanzenw. Afr. 3, 2 (1921) 577, *in clavi*; in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420; Sleum., Notizbl. Berl.-Dahl. 12 (1936) 142, *descr. compl.*; Brenan, Check-Lists For. Tr. Shr. Br. Emp. 5, 2 (1949) 236; Wild, Fl. Zambes. 1 (1960) 278, t. 47 A; White, For. Fl. N. Rhodes. (1962) 267; Bamps, Fl. Congo, Rwanda & Burundi, Sperm. Flacourt. pt. 1 (1968) 39.

**var. stolzii.**

Much branched tree, 6—10(—15) m tall, unarmed; trunk up to 15 cm Ø; bark pale brown, rather smooth, flaking. Branchlets glabrous or puberulous at tips, otherwise early greyish-corticate, lenticels small, numerous. *Leaves* persistent, elliptic, or elliptic- or ovate-oblong, apex bluntly acuminate, or rather obtuse, base cuneate,  $\pm$  coriaceous,

glabrous, somewhat shining above, entire or mostly irregularly and remotely undulate-crenate, sometimes more regularly subserrate-crenate to -crenulate, (5—)7—10(—13) by (2—)3.5—5.5 cm; nerves 4 or 5 (or 6) pairs, the lower 2 (or 3) ones from and from above the base, curved-ascending, slightly raised on both faces as is the  $\pm$  dense reticulation; petiole initially puberulous, 4—5(—7) by 1—1.5 mm. *Flowers* always solitary in the upper axils, sessile or practically so, with a few bracts at the very base, (4—)5(—7)-merous. Sepals ovate, sparsely puberulous outside, ciliate, *c.* 1.5 mm. Petals similar, more membranous and slightly narrower than the sepals, early dissolute or caducous. Receptacle glabrous to laxly hairy. Disk glands numerous, subquadrate. Stamens 50—60; anthers shortly appendiculate. Ovary glabrous, or sometimes (very) laxly hairy; style 2—3 mm, shortly 3—5-partite distally. *Berry* subglobose, fleshy, red, 2(—2.5) cm  $\varnothing$ , glabrous or sparsely subappressedly hairy, on stoutish pedicel, 1—1.5 mm; seeds 10—12, with a thin hard testa.

CAMEROON. Bafoussam, Lac de Baleng, 1300 m, *W. de Wilde c.s. 2563* (WAG).

ZAIRE. Dist. Haut-Katanga, Keyberg, 8 km SE. Elisabethville, gallery forest of the Kisanga R., *Schmitz 2550* (BR).

ZAMBIA. Northern Prov. Mpika, *Fanshawe 2054*. — Western Prov. Mwinilunga to Solwezi, Kabompo R., *White 3285*; Mufulira, *Fanshawe 1534, 1696, 4273, 4274*.

RHODESIA. Inyanga, bank of the Mtarazi R., 780 m, *Chase 8399*. Umtali, Vuruka Mts, 1370 m, *Chase 7027*; Stapleford, Nyamakwarara valley, *Mavi 461 A*.

MALAWI. Central Prov., N'Chisi Mts, *Burt-Davy 21379* (FHO).

TANZANIA. Pemba I. Jombangome-Misufini, *Greenway 2751*. — South. Highl. Prov. Iringa, Itaka, 1500 m, *Greenway 2656*; Kiyimbila, Kiwira ('Kibila') R., 900 m, *Stolz 1742* (B, type of *S. stolzii*,  $\ddagger$ ; BM, FHO, HBG, K, M, P); *ibid.*, Rungwe, Mulinda forest, 800—900 m, *Stolz 1874* (B, HBG, K, L, S, W, WAG, Z).

MOZAMBIQUE. Manica e Sofala. Zambezi R., 790 m, *Chase 3074*. Beira, Cheringoma-Dondo, *Mendonça 2490*; Chimizua, *Gomes & Sousa 4345, 4367*.

**Ecology.** In forest, fringing or gallery forest, often on sandy soil, up to 1500 m alt.

**var. riparia** (Mildbr. & Sleum.) Sleum., *stat. nov.* — *Scolopia riparia* Mildbr. & Sleum., *Notizbl. Berl.-Dahl.* 11 (1934) 1077; Brenan & Greenway, *Check-Lists For. Tr. Shr. Br. Emp.* 5, 2 (1949) 235.

Shrub or small tree, 2—6 m, unarmed as far as known. Branchlets patent-puberulous at tips, older parts (2—3 mm  $\varnothing$ ) early covered with pale brownish cork and small roundish lenticels. *Leaves* persistent, subovate- to obovate-elliptic, apex broadly attenuate to rounded, base broadly cuneate to almost rounded,  $\pm$  subcoriaceous, glabrous, a little glossy on both faces, generally regularly and shallowly glandular-subserate-crenate, 3—5(—7) by 2—3(—4) cm; nerves 2 basal curved-ascending and 3 upper shorter pairs, raised mainly beneath, reticulation of veins and veinlets dense, finely prominent on both faces; petiole initially puberulous, 2—3 mm. *Flowers* axillary, solitary, subsessile, 5-merous; pedicel robust, up to 1 mm. Sepals ovate, ciliate, *c.* 1.5 mm. Petals similar to the sepals, though more narrowly deltoid. Receptacle densely hairy. Disk glands small, numerous. Stamens 40—50; anthers hardly apiculate by the protruding connective. Ovary hairy; style *c.* 2 mm, trifurcate distally. *Fruit* as in var. *stolzii*.

MALAWI. Northern Dist. Matipa Forest, *Chapman 236* (FHO). — Southern Dist. Zomba, *Clements 195, 582, 592* (all FHO).

TANZANIA. South. Highl. Prov. Iringa, Irundi, 1920 m, *Benedicto 84*; Ihanyara Forest, *Pitt-Schenkel 571*; Dabaga, *Lynes 65*; Mufindi, 1830—1950 m, *St. Clair-Thompson 441*; Uhehe, Utschungwe Mts, 1600 m, *Prince a. 1889* (B,  $\ddagger$ ). Njombe, *Lynes 62 & 90* (K). Lupembe, Upper Ruhudji R., 1600 m, *Schlieben 1092 A*. Tandala, Kinga Mts, Iletile R., 2100 m, *Stolz 2200* (B, type of *S. riparia*,  $\ddagger$ ; L, M, W, Z).

**Ecology.** In riverine forest, up to 2100 m alt.

26. *Scolopia manongarivae* Perrier, Mém. Mus. Nat. Hist. Nat. (Paris) n.s. 13 (1940) 281; Fl. Madag., Fam. 140 (1946) 58, fig. IX, 9—11.

Treelet or tree, sometimes up to 15 m, unarmed. Branchlets slender, tips glabrous, lower parts brownish-corticate, the thin bark often early papery-dissolute, lenticels very small. *Leaves* persistent, elliptic to oblong-elliptic, shortly (0.5—1 cm) and  $\pm$  abruptly obtusely acuminate, or rarely almost rounded, base broadly attenuate, rarely obtuse or rounded,  $\pm$  coriaceous, glabrous, shining on both faces especially above, entire, edge slightly revolute, 5.5—9.5 by (2.5—)3.5—5 cm; nerves 3—5 basal pairs, the inner pair more markedly raised beneath, other nerves or mere veins numerous,  $\pm$  perpendicular to the midrib (as found in 34. *S. madagascariensis*), nerves and the rather coarse reticulation finely raised on both faces, though more distinctly so beneath; petiole 4—7 by 1 mm. *Racemes* simple, 1 (or rarely 2) per axil, 3—7-flowered, almost glabrous, 1—1.5 cm; pedicels stoutish, 5—7 mm. *Flowers* 4- or 5-merous. Sepals deltoid-obtuse, coarsely ciliate, slightly hairy dorsally especially distally, densely appressedly hairy inside till the fruiting stage, 1.5—2(—2.5) mm. Petals similar to and as large as, rarely a little larger than the sepals, also permanently hairy inside. Receptacle densely hairy. Disk glands 8—10, subglobular. Stamens c. 60; anthers elongate-appendiculate. Ovary glabrous; style 3—4 mm, stigma 3- or 4-lobulate. Mature *fruit* not known, probably smaller than in *S. madagascariensis*.

MADAGASCAR. Centre (Nord). Massif du Tsaratanana, SF 27017. Ambevale, (Marovato-) Ambanja, RN 2247. Sommet de Marojezy, 1000 m, Cours 3564. Massif du Manongarivo, 1900 m, Perrier 4608 (P, type). Bassin de la Lokoho, à l'Ouest d'Andapa, massif de l'Anjanaharibe, 1600—1800 m, Humbert, Capuron & Cours 24785.

**Ecology.** In montane rain forest, 1000—1900 m.

27. *Scolopia erythrocarpa* Perrier, Mém. Mus. Nat. Hist. Nat. (Paris) n.s. 13 (1940) 277; Fl. Madag., Fam. 140 (1946) 56, f. IX, 1—4. — *S. louvelii* Perrier, l.c. 279, resp. 54, f. VIII, 7—8 ('*louveli*'). — *Richeopsis perrierii* Arènes, Not. Syst. 15 (1954) 3; Fl. Madag., Fam. 150 (1954) f. I, 5—7; cf. Capuron, Essai Intr. Fl. For. Madag. (1957) 123.

Large shrub or small tree, 5—8 (rarely —15) m, unarmed; bark whitish, smooth. Branchlets slender, tips puberulous, otherwise early covered with reddish cork, in older parts greyish-corticate. *Leaves* persistent, obovate to oblong-obovate, apex broadly attenuate, obtuse or rounded, rarely a little emarginate, base broadly cuneate, subcoriaceous, glabrous, generally shining above, entire, the edge a little recurved, (1.7—)2—6 by (0.9—)1.5—2.5(—3.2) cm; nerves in 2 or 3  $\pm$  basal high-ascending, and 2—4 shorter upper pairs, slightly raised above, generally still less so beneath; reticulation rather coarse, very slightly prominent on both faces; petiole slender, 4—9 mm. *Racemes* axillary, solitary or in twos (rachis rarely up to 1 cm), glabrous, few-flowered; pedicels rarely up to 2 mm. *Flowers* 4- or 5-merous. Sepals ovate-deltoid, ciliate, 1.5—2 mm. Petals similar to though narrower than the sepals. Receptacle sparsely to subdensely hairy, rarely almost glabrous. Disk glands 8—10, small, sometimes less in number or inconspicuous. Stamens (20—)30—40; anthers shortly appendiculate. Ovary glabrous; style slender, 3—4 mm, stigma very shortly 3- or 4-lobulate. *Berry* subglobular-ovoid, red, 1—1.3 cm  $\varnothing$ ; seeds 4 or 5, testa crustaceous.

MADAGASCAR. E s t. Maroantsetra, forêt littorale, *Perrier 2023* (P, type of *Richeopsis perrierii*); env. de Varingotra, *SF 22877*; bai d'Antongil, *SF 18267*. Ile Ste.-Marie, forêt de Kalalao, *SF 28824 bis*. Fénérive, Tampolo, *SF 17806, 18156*. Brickaville, Ambila-Lemaitso, *SF 5865, 28021*. Moramanga, Analamazaotra, *Louvel 204* (P, type of *S. louvelii*), *213* (P, lectotype of *S. erythrocarpa*), *Perrier 5976* (P, syntype of *S. erythrocarpa*). Nosy Varika, Triazondrano, *SF 15488*. Mananjary, Ambalavotraka, *SF 15456*. Farafangana, *SF 23572*; Pangalane, *SF 9899*; Nosiala, *SF 16204*.

**E c o l o g y.** Littoral and sublittoral forest, on sandy soil, up to 800 m alt.

## 28. *Scolopia orientalis* Sleum., *nov. spec.*

Arbor (6—)10—15 m alta, inermis, cortice laevi brunneo vel atrescente. Ramuli graciles, apicibus glabri, deorsum cito corticati laxaque minute lenticellati. *Folia* persistentia, obovato-oblonga, apice late attenuata et obtusa vel plerumque rotundata, basi late cuneata, subcoriacea, glabra, integra, margine brevissime revoluta, 5—11.5 cm longa, (2.5—)3—5 cm lata, e basi 3—5-nervia, nervis alte ascendentibus  $\pm$  medio laminae cum nervis superioribus pinnatis a costa angulo magno abeuntibus pluribus curvato-conjunctis, omnibus supra parum, subtus distinctius prominulis, rete venarum sat laxo subtus tantum conspicuo; petioli 7—10 mm longi, c. 1 mm crassi. *Racemi*  $\pm$  paniculati axillares laxe 5—12-flori, sub anthesi 2—3 cm longi, interdum denique paullo elongati, primo visu glabri, re vera minute puberuli. Pedicelli subgraciles, anthesi (3—)4—5 mm. *Flores* 5-meri. Sepala ovato-acuminata, dorso subglabra, ciliolata, 1.5 mm longa. Petala sepalis similia, paullo angustiora. Receptaculum breviter pilosum. Disci glandulae parvae c. 8. Stamina 80—100; antherae breviter appendiculatae. Ovarium glabrum; stylus apice incrassatus minute 3- vel 4-lobus. *Fructus* immaturus tantum cognitus, pedicello 8—13 mm longo et c. 1 mm crasso.

MADAGASCAR. E s t. Fénérive, forêt de Tampolo, *SF 9194, 13101, 16498, 16617*. Tamatave, Analamantsina, *SF 10549*. Brickaville, Ambila-Lemaitso, fl. 8-5-1954, *SF 9527* (P, type).

Different by smaller leaves (3.5—6 by 1.3—2.8 cm):

MADAGASCAR. E s t (Sud). Fort-Dauphin, *SF 3360* (P); forêt de Mandena, *SF 2850* (P).

**E c o l o g y.** Littoral forest, on sandy soil.

**U s e s.** Timber used for constructions.

## 29. *Scolopia taimbarina* Perrier, *Mém. Mus. Nat. Hist. Nat. (Paris) n.s. 13* (1940) 279; *Fl. Madag., Fam. 140* (1946) 54, f. VIII, 10—12.

Tree, unarmed. Branchlets reddish, glabrous, without visible lenticels. *Leaves* persistent, elliptic-ovate, apex slightly obtuse to rounded, sometimes a little emarginate, base very broadly attenuate to almost rounded, subcoriaceous, glabrous, entire, 2—3.5 by 1.2—1.8 cm; 2 basal pairs of high-ascending nerves, and 3—5 pairs of upper nerves or veins  $\pm$  perpendicular to the midrib, all slightly prominent on both faces, as is the rather lax reticulation; petiole 4—6 mm. *Racemes*  $\pm$  paniced, axillary, (3—)5—7-flowered, practically glabrous, 0.5—1 cm; pedicels rather slender, 2—3 mm. *Flowers* 5-merous. Sepals ovate-deltoid, obtuse, ciliate, 1—1.2 mm. Petals similar to, though much narrower than the sepals. Receptacle hairy. Disk glands numerous, small. Stamens  $\pm$  40; anthers surpassed by a curved connective equalling the thecae in length. Ovary glabrous; style obscurely 3- or 4-lobulate. *Fruit* not known.

MADAGASCAR. E s t. Moramanga, Analamazaotra, 900 m, *Louvel 117* (P, type).

**E c o l o g y.** In rain forest.

**Note.** Not matched by any of the numerous specimens of *Scolopia* collected in or around the type-locality. There are doubts whether the type specimen really came from the place indicated by Louvel.

**30. *Scolopia thouvenotii*** Perrier, *Mém. Mus. Nat. Hist. Nat. (Paris) n.s. 13* (1940) 280; *Fl. Madag., Fam. 140* (1946) 56, f. IX, 5—8.

Tree, 20—25 m, unarmed. Branchlets glabrous. *Leaves* persistent, ovate to lanceolate-ovate, rather abruptly acuminate, tip blunt, base broadly attenuate to almost rounded, subcoriaceous, glabrous, entire, edge slightly revolute, 1.5—3.6 by 0.8—1.9 cm; 2 basal high-ascending pairs of nerves and several upper pairs of nerves perpendicular to the midrib, all hardly raised or practically obscure especially beneath, as is the reticulation; petiole 4—6 mm. *Racemes* axillary, 5—12-flowered, *c.* 1 cm long; rhachis and pedicels (hardly 1 mm) puberulous. *Flowers* 4- or 5-merous. Sepals narrow-ovate, blunt, obscurely ciliate, 1—1.5 mm. Petals similar to, and slightly narrower than the sepals. Receptacle hairy. Disk glands *c.* 10, small. Stamens 30—40; anthers surpassed by the elongate connective. Ovary glabrous; style obscurely 3- or 4-lobulate. *Berry* ovoid-subglobular, *c.* 1 cm, containing 3 or 4 compressed seeds.

MADAGASCAR. E s t. S. of Tamatave, *Ursch 19*. Périnet, forêt d'Analamazaotra, 800 m, *Louvel 119 & 190* (P, syntypes), *Perrier 4661* (P, syntype), *Thouvenot 84* (P, lectotype).

**E c o l o g y.** In rain forest, up to *c.* 800 m.

**31. *Scolopia hazomby*** Perrier, *Mém. Mus. Nat. Hist. Nat. (Paris) n.s. 13* (1940) 280; *Fl. Madag., Fam. 140* (1946) 55, f. VIII, 13—15.

Tree, 8—20 m tall, trunk up to 40 cm, unarmed. Branchlets slender, brownish-reddish when dry, tips glabrous, striate, bark of older parts thin and peeling. *Leaves* persistent, ovate-elliptic or -oblong, apex subcaudate-acuminate for 1—1.5 cm, tip bluntish, base broadly cuneate, subcoriaceous, glabrous, sometimes shining when dry, entire, (4—)5—7.5 by (1.5—)2.5—3.5 cm; nerves 1 or 2 basal pairs, ascending to  $\pm$  halfway the length of the blade and close to the edge, upper shorter nerves 5—7 pairs spreading in a rather wide angle from the midrib, with several less distinct subparallel pairs between, reticulation rather dense and generally slightly prominent, rarely obscure on both faces; petiole slender to more thickish, 5—10(—12) mm. *Racemes* 1—3(—4) per axil, compound, 5—10-flowered, puberulous or subglabrous as are the flowers, 0.5—1 cm. Pedicels stoutish, 0.5—1.5(—3) mm. *Flowers* 4- or 5-merous. Sepals subovate-deltoid, ciliate, *c.* 1.5 mm. Petals similar to and sometimes slightly larger, but generally narrower, than the sepals. Receptacle subglabrous. Disk glands 5(—10), small. Stamens 25—40; anthers with elongate appendices. Ovary glabrous; style 2—4 mm, stigma hardly 3- or 4-lobed. Only immature *fruit* known, pedicel 2—4 mm.

MADAGASCAR. E s t. Maroantsetra, massif de Farankaraina, entre Navana et Andranofotsy, 0—150 m, *SF 18310*; env. de Sahamalaza, bassin de la Rantabe, 700 m, *SF 9123*; Anandrovola, env. de la baie d'Anton-gil, 100—150 m, *SF 18235*. Tamatave, Res. Nat. I Betampona, 400 m, *SF 8594*. Moramanga, Périnet-Analamazaotra, *Louvel 51* (P, type).

**Ecology.** In rain forest, from sealevel up to 700 m.

**Uses.** Timber used for constructions.

**Note.** All specimens except the type (indicated as such) cited by Perrier de la Bâthie under *S. hazomy*, belong to *S. madagascariensis*, i.e. the original description of *S. hazomy* was based on two different species.

### 32. *Scolopia montana* Sleum., *nov. spec.*

Arbor mediocris inermis. Ramuli graciles rubro-brunnei, apicibus glabri, deorsum citissime cortice exfoliato praediti. *Folia* persistentia, generaliter oblonga, apicem versus sensim — latius vel angustius — attenuata, raro obtusata, ipso apice obtusiuscula, basi  $\pm$  late attenuata, subcoriacea, glabra, integra, margine paullo revoluta, 4—5.5 cm longa, 1.5—2 cm lata, utroque latere nervis 1 (vel 2) basalibus alte praeter laminae marginem ascendentibus, ceterum nervis (vel venis) a costa angulo latiore abeuntibus saepius rectiusculis numerosis obsita, nervis omnibus utrinque cum rete venarum venularumque sat denso leviter prominulis; petioli 5—7 mm longi, vix 1 mm crassi. *Racemi* axillares interdum compositi, subdensiflori, sicut flores glabri, 1—1.5 cm longi. Pedicelli subgraciles 1(—2) mm longi. *Flores* 4-meri. Sepala ovato-oblonga, obtusa, vix ciliolata, c. 1.5 mm longa. Petala late oblonga, ceterum sepalis similia. Receptaculum glabrum. Disci glandulae parvae 8. Stamina 50—60; antherae connectivo superatae. Ovarium glabrum; stylus 3—4 mm longus, brevissime 3- vel 4-lobatus. *Fructus* deest.

MADAGASCAR. **E s t.** Forêt orientale des cimes, massif du Beanjada, N. de la prèsqu'île Masoala, 1000 m, fl. 12—1953, *SF 8824 Capuron* (P, type).

**Ecology.** Rain forest, c. 1000 m.

33. *Scolopia coriacea* Tul., *Ann. Sc. Nat.* V, 9 (1869) 336; Baill., *Bull. Soc. Linn. Paris* 1 (1886) 567; Warb. in E.-P., *Nat. Pffam. ed. 1, III*, 6a (1893) 29; Dur. & Schinz, *Consp. Fl. Afr.* 1 (1898) 220; Gilg. in E.-P., *Nat. Pffam. ed. 2*, 21 (1925) 420; Perr., *Mém. Mus. Nat. Hist. Nat. (Paris)* n.s. 13 (1940) 279; *Fl. Madag., Fam.* 140 (1946) 53, f. VIII, 5—6.

Medium sized, unarmed tree; bark greyish. Branchlets glabrous even at tips, lenticels numerous. *Leaves* persistent, subovate- or lanceolate-oblong, apex acuminate, tip bluntish, base rather narrowly cuneate, subcoriaceous, glabrous, glossy above, entire, (5—)6—10 (—12) by 2.5—3.6(—4.5) cm; 2 pairs of basal nerves ascendent  $\pm$  to the top of the lamina and rather distinctly raised on both faces, numerous upper shorter and less conspicuous nerves or veins  $\pm$  perpendicular to the midrib, reticulation dense, rather faintly visible; petiole (4—)6—10 by 1 mm. *Racemes* 1 or 2 (rarely —4) per axil, 5—12-flowered, 2—5 (—7.5) cm, minutely puberulous as are the 6(—10)-merous flowers; pedicels 6—10 mm. Sepals ovate-oblong, obtuse, ciliolate, glabrous outside and inside, 1—1.5 mm. Petals similar to the sepals though slightly narrower. Receptacle short-hairy. Disk glands small, 7 or 8. Stamens  $\pm$  80; anthers apiculate by the slightly protruding connective. Ovary glabrous; style 2—3 mm, stigma 3- or 4-lobulate. Mature *fruit* not known.

COMORES. **M a y o t t e.** *Boivin 3300* (P, type); forêt de Choungui, *SF 17992* — *Grande Comore*, *SF 21755*.

34. *Scolopia madagascariensis* Sleum. in Fedde, *Rep.* 45 (1938) 14.



Tree, 8—25 m tall, unarmed, trunk up to 45 cm  $\varnothing$ ; bark scaly, greyish. Branchlets glabrous even at tips, early covered with thin greyish or brownish cork, and with minute lenticles. *Leaves* persistent, oblong-elliptic or elliptic, apex generally rather abruptly obtusely 1—2 cm acuminate, rarely obtuse, base broadly cuneate, rarely rounded,  $\pm$  coriaceous, glabrous, entire, the edge sometimes slightly revolute, (6—)7—11(—14) by (2.5—)3.5—7(—8, rarely, —9) cm; 2 basal or slightly suprabaasal nerves on either side, *Strychnos*-like ascending to the upper third of the lamina, other numerous nerves or veins parting in a wide angle from the midrib, reticulation between rather dense, all nerves and veins slightly or hardly prominent above,  $\pm$  markedly so beneath; petiole 6—12 by 1—1.5 mm. *Racemes* (partly composed) solitary or often 2 or 3 from the same axil, few- to rather many-flowered, (0.5—)1—2.5 (rarely —5) cm; rhachis and pedicels (3—5 mm) rather slender, minutely puberulous. *Flowers* 4- or 5-merous. Sepals ovate, slightly thickened below, obtuse, ciliate, subglabrous dorsally, glabrous internally, 1.5(—2) mm. Petals similar to though slightly narrower than the sepals. Receptacle sparsely to subdensely hairy. Disk lobes 8—10, small. Stamens 80—100; anthers surpassed by a connective as long as the thecae. Ovary glabrous; style slender, 3—4 mm; stigma minutely 3- or 4-lobed. *Berry* subglobular-ellipsoid, apiculate, 1—1.3(—1.5)  $\varnothing$ , on pedicel 0.8—1.5 cm by 1—1.5(—2) mm, containing 2—5 seeds.

MADAGASCAR. N o r d. Diégo Suarez, Massif de la montagne d'Ambre, 600—800 m, SF 29188 (P, form with smaller leaves). — E s t (Nord). Vohémar, Antsahabe, SF 14057. Antalaha, RN 7549, 9117. — E s t. Sambava, Ambohimitsinjo, RN 12893. Maroantsetra, SF 6155, 7241; env. de Rantabe, SF 9170; Farankaraina, SF 12083. Fénérive, Ambolaharongana, 600 m, SF 21782. Tamatave, Ambodiriana, R. N. I, RN 5890, 6269; Antetezana, SF 5542, 14498; forêt d'Analava, à l'Ouest de Foulpointe, SF 28882 (P, form with leaves up to 14 by 10 cm, petioles 15 by 2—3 mm, and larger flowers). Brickaville, Ambila-Lemaitso, SF 9748, 16864, 18069. Moramanga, Périnet-Analamazaotra, 900 m, Herb. Gouv. de Madag. 30, Louvel 112, SF 10375, 12182, 25727, 25728, 25729, 25769, 25777, 25934; Belahindolo, près Toby, 900 m, SF 26659. Nosy Varika, Ampasinambo, SF 14737, 14740, 14753 (fruit up to 2.3 by 2 cm). Mananjary, Amboniharana, SF 14477. Ifanadiana, Andorangavola, SF 14549. Farafangana, Manombo, SF 16274. Fort-Dauphin, Manantenina, SF 9667. — C e n t r e. Fianarantsoa, Ampamaherana, SF 2043, 2065, 2067. Env. de Sandrangato, au S. de Moramanga, SF 24001. Fort Carnot, Andrambovato-Tolongoina, SF 9551, 10097, 14453, 14677, 15394; Ambodinifaka, SF 9678; Ambatoharanana, près d'Antsevabe, 1000 m, Cours 4049. — No locality given: Gerrard 34 (K, type of *S. madagascariensis*).

E c o l o g y. Rain forest, both littoral and sublittoral, rarely up to 1000 m alt., on lateritic soil.

35. *Scolopia rhamniphylla* Gilg, Bot. Jahrb. 40 (1908) 484; Gilg in Mildbr., Deutsch. Zentr.-Afr. Exp. 1907—08, 2 (1913) 568; R. E. Fries, Schwed. Rhodes.-Kongo-Exp. 1 (1914) 157; Engl., Pflanzenw. Afr. 3, 2 (1921) 577; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420; Lebrun, Ess. For. Rég. Mont. Congo Orient. (1935) 167; Robyns, Fl. Sperm. Parc Nat. Albert 1 (1948) 636, t. 64; Eggeling & Dale, Indig. Tr. Uganda Prot. (1952) 150; Dale & Greenway, Kenya Tr. & Shr. (1961) 229 (*'rhamnophylla'*); Bamps, Fl. Congo, Rwanda & Burundi, Sperm. Flacourt. pt. 1 (1968) 42, pl. 5. — *Scolopia guerkeana* Volkens in Gilg, Bot. Jahrb. 40 (1908) 483; Engl., Pflanzenw. Afr. 3, 2 (1921) 577; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420; Brenan & Greenway, Check-Lists For. Tr. Shr. Br. Emp. 5, 2 (1949) 235. — *Scolopia ledermannii* Gilg in Engl., Pflanzenw. Afr. 3, 2 (1921) 577, *nom. subnud.*; in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420, *nom. nud.*; ex Sleum., Notizbl. Berl.-Dahl. 12 (1934) 142, *descr.*; Exell, J. Bot. 74 (1936) Suppl. Polyp. Add. 16; Sleum. in Carisso, Consp. Fl. Angol. 1 (1937) 84. — *Scolopia stuhlmannii* auct., *non* Warb. & Gilg: Dale & Greenway, Kenya Tr. Shr. (1961) 229; Brenan & Greenway, Check-Lists For. Tr. Shr. Br. Emp. 5, 2 (1949) 236, *p.p.* — *Flacourtia indica* auct., *non* (Burm. f.) Merr.:

Gilli, Ann. Naturhist. Mus. Wien 74 (1970) 451. — *Oncoba spinosa* auct., non Forsk.: Gilli, l.c.

Much branched shrub or tree up to 12 m, with rounded bushy crown, trunk sometimes armed with spines up to 15 cm; bark pale brown or grey, smooth to rough. Branches and branchlets with axillary straight spines 0.5–6 cm, tips puberulous, lenticels dense; sterile coppice shoots virgate, very spiny. *Leaves* persistent, ovate-oblong or -lanceolate, oblong, elliptic or obovate, shortly acuminate, tip bluntish, base cuneate, subcoriaceous, initially puberulous at midrib and nerves, early glabrescent, 5–8(–12) by 2.5–4.5(–6) cm, regularly subglandular-serrate-crenate; nerves (4–)5 or 6(–8) pairs, slightly raised on both faces, as is the dense reticulation; petiole (3–)5–10 mm. *Racemes* from foliate and defoliate axils, solitary or rarely in twos, rather few- and lax-flowered, sometimes reduced to fascicles, short-pubescent, sometimes almost glabrous, 1–2(–4) cm; rhachis slender. *Flowers* white to yellow-greenish, 4–6-merous. Pedicels slender, 5(–15) mm. Sepals ovate, puberulous outside, ciliolate, c. 2 by 1 mm. Petals linear, c. 2.5 by 0.5 mm, sometimes fugacious. Receptacle glabrous or moderately short-hairy. Disk glands absent. Stamens 20–30; anthers hardly apiculate. Ovary glabrous; style 4–6 mm, stigma very shortly 3- or 4-lobed. *Berry* ovoid-subglobular, finally red, 6–7 mm  $\varnothing$ ; seeds few, angular, 3–4 by 2–2.5 mm.

CAMEROUN. M a m f é. Fossong-Wendchen, 1320–1400 m, *Ledermann* 6012 & 6025 (B,  $\dagger$ ). Dschang, base of Bambuttu Mts, 1320 m, *Ledermann* 1571 (B, type of *S. ledermannii*,  $\dagger$ ); *ibid.*, Bangan, *Jacques-Félix* 2836.

ANGOLA. C u a n z a N o r t e. Camabatela, *Gossweiler* 7432 (BM, isoparatype of *S. ledermannii*). — C u a n z a S u l. Amboim, Assango, *Exell & Mendonça* 3131, *Gossweiler* 10603; Gabela, *Gossweiler* 4459 (BM & K, isoparatype of *S. ledermannii*).

ZAIRE. D i s t. B a s - Z a i r e. Kipasa, près de Lemfu, *Vanderyst a. 1933* (BR). — D i s t. L a c A l b e r t. Lake Albert Edward, *Scott Elliot* 8057 (B, type of *S. rhamniphylla*,  $\dagger$ ; BM). Nioka, *Taton* 280. Djugu, *Lebrun* 3978. Plaine d'Isawa, *Boutique* 314. — D i s t. L a c s E d o u a r d e t K i v u. Parc Nat. Albert, *Donis* 3910, 3944, 4227, *Germain* 3659. Lac Kivu, *Babault* (P), *Van der Ben* 616. Ile Idjwi, *Humbert* 8334. Chutes de la Rutshuru, 200 m, *Ghesquière* 3800, 5765, *Lebrun* 9425, *A. Léonard* 5271, *Spitaels* 460; Lulenga, *Lebrun* 5048. Lacs Mokoto, *Ghesquière* 3258. Semliki plain, Kasindi, 1000 m, *R. E. Fries* 1823. Volcan Rumoka, *Germain* 3258. Goma, 1470 m, *Crispiels-Thonon* 150, *Pierlot* 2938, *Stauffer* 1004. Virunga Vulkane, Kikomeru, 1770 m, *Stauffer* 362. Mulungu, *Hendrickx* 6980. Biralu, Mwenga, 1900 m, *A. Léonard* 4263. Masisi, Sake, *Devred* 3805, 3843, *Louis* 4898. Kalehe, 1300–1460 m, *A. Léonard* 3294, 4599. Terr. Kabare, 1600–1700 m, *Christiaensen* 1234, 1268, *A. Léonard* 3361, *Pierlot* 342, 3200. Bwito, 1500 m, *Deru* 335. Lwiwo, terr. Kalehe, 1600–1700 m, *Troupin* 5558, 5566. — D i s t. H a u t - K a t a n g a. Mont Zawa, Mbala, *Delvaux* 560.

RWANDA. Mugarura I., 1450 m, *Mildbraed* 1136 (B,  $\dagger$ ); Wau (Wahu) I., 1450 m, *Mildbraed* 1153 (B,  $\dagger$ ).

UGANDA. W e s t e r n P r o v. N. Kigezi, Mitano Gorge, 1250 m, *Purselove* 3499. Lake Lutoto, 1770 m, *St. Clair-Thompson* 1782, *Thomas* 3972. Kalinzu For., Ankole, *Eggeling* 3637. — E a s t e r n P r o v. Mabera Forest, 1220 m, *Maitland* 662. — B u g a n d a P r o v. Masaka road, 1190 m, *Chandler-Hancock* 1714; Lake Nabugabo, 1140 m, *Drummond & Hemsley* 4729; Buddu For., *Fyffe* 46. Mengo, Kasa For., 1190 m, *Dawkins* 463; Mt Mulange, 1220 m, *Dümmer* 4361. Entebbe, *Bagshawe* 745; Nambigiruwa, 1170 m, *Maitland* 556. Kiruru, 1220 m, *Dümmer* 2703.

KENYA. N y a n z a P r o v. Kabras, Malaba For., *Tweedie* 3093. Kericho, *Bally* 7462 (cit. *Dale & Greenway, n.v.*); Cheptuiyet For. Res., S. Belgut, *Kerfoot* 4859. — C o a s t P r o v. Kwale, 400 m, *Dale* 3866; Mrima Hill, *Verdcourt* 1896; Makadara, *Graham* 2041.

TANZANIA. L a k e P r o v. Ukerewe I., *Conrads* 5230, 5975. Rusomo, Ngara, 1370 m, *Tanner* 5007, 5059. Bukoba, Ruiga River For. Res., 1160 m, *Procter* 901. — N o r t h e r n P r o v. Kilimandjaro, Quare Fluss unterhalb Madschume, 1000–1100 m, *Volkens* 2046 (B, type of *S. guerkeana*,  $\dagger$ ; BR). Ngurdoto crater Nat. Park, 1465 m, *Greenway & Kanuri* 12384. Mt Meru, *Swynnerton a. 1920* (BM). — T a n g a P r o v. Tanga, *Gilchrist* 44 (FHO). Pangani, Bushiri, *Faulkner* 673. Lushoto, Usambara Hills, 1300 m, *Ross* 595 (cit. *S. 'stuhlmannii'*), *Peter* 16412 (B); Gologolo, *Mgaza* 451; Kitivo For. Res., *Semsei* 2238; Viti Hambalawe, 1980 m, *Parry* 212; Shagai For. Res., 1830 m, *Eggeling* 6158, *Parry* 176; Magamba-Mkuzi-Shume For. Res., (1370–)1525–1830 m, *Carmichael* 676, *Borota* 23, *Drummond & Hemsley* 2142, *Greenway*

4611, *Mgaza* 234, 237, *Pitt-Schenkel* 396 (cit. *S. 'sthumannii'*), *Sangiwa* 24, *Semsei* 2162, 3627, *Williams* 502. — Eastern Prov. Morogoro, *Semsei* 762; Uluguru Mts, 1500—2250 m, *Gilli* 359 (L; W, as '*Flacourtia indica*'), 360 (W, as '*Oncoba spinosa*'); Uluguru Stüd, *Brandenburg* 90 (K); East Uluguru For. Res., *Mgaza* 306. — Southern Highlands. Dabaga, *Wigg* 2025 (FHO). Iringa, W. Mufindi, *Brenan & Greenway* 8262. — Southern Prov. Matengo-Songea, Lupembe, 2000 m, *Zimmer* a. 1936 (K).

**Ecology.** Rain forest, gallery forest, sclerophyllous forest, open thickets, locally frequent, (400—)1000—1980(—2200?) m.

**36. *Scolopia mundii*** (Nees) Warb. in E.-P., *Nat. Pffam.* ed. 1, III, 6a (1893) 29, as '*mundtii* (Arn.)'; Dur. & Schinz, *Consp. Fl. Afr.* 1 (1898) 220; *Sim. For. Fl. Cape Col.* (1907) 126, t. 1; *Gilg. Bot. Jahrb.* 40 (1908) 481 ('*mundtii*'); *Engl., Pflanzenw. Afr.* 3, 2 (1921) 576; *Phillips, Bothalia* 1 (1922) 85; *Gilg. in E.-P., Nat. Pffam.* ed. 2, 21 (1925) 418; *Burt Davy, Man. Fl. Pl. Transvaal* 1 (1926) 215; *Henkel, Woody Pl. Natal & Zululand* (1934) 73, 79; *Adamson & Salter, Fl. Cape Penins.* (1950) 591; *Palmer & Pitman, Tr. S. Afr.* (1961) 212, phot. 74; *Moll, For. Tr. Natal* (1967) 113, f. 496. — *Eriudaphus mundii* Nees in *Eckl. & Zeyh., En. Pl. Afr. Austr. Extratrop.* (1836) 272; *Steud., Nom. Bot.* ed. 2 (1840) 589; *Walp., Rep.* 1 (1842) 548; *Baill., Adansonia* 1 (1860) 122, *nota.* — *Eriudaphus serratus* Harvey, *Gen. S. Afr. Pl.* 1 (1838) 417; *Dur. & Schinz, Consp. Fl. Afr.* 1 (1898) 220. — *Phoberos mundii* (Nees) *Presl, Bot. Bem.* (1844) 70; *Harvey in Harv. & Sond., Fl. Cap.* 1 (1860) 68 ('*mundtii* Arn. in *Hook. J.* 3, p. 150'). — *Adenogyrus krebsii* Kl., *App. Gen. & Spec. nov. et minus cogn. Ind. Sem. Hort. Berol.* (1854) 1, *descr.*; *Walp., Ann.* 4 (1857) 227. — *Rhamnicastrum mundii* (Nees) O. Ktze, *Rev. Gen. Pl.* 1 (1891) 45 ('*mundtii*').

Shrub or usually tree, 6—12(—25) m, glabrous except the receptacle, trunk unarmed, up to 1 m  $\varnothing$ ; coppice shoots usually with slender simple spines up to 2 cm; bark thin, smooth and grey on young, flaky and yellowish on old trees. *Leaves* persistent, rhombic-elliptic to subovate-lanceolate, gradually to rather abruptly acuminate, tip acute, rarely bluntish or even obtuse, base cuneate, subcoriaceous, shining above, regularly sharply callose-serrate-dentate, (2.5—)4—6(—7.5) by (0.7—)1.5—2(—4) cm; nerves 5—7(—8) pairs, lower 2 (or 3) ones ascending, upper ones more spreading, a little raised on both faces as is the dense reticulation; petiole 0.5—1(—1.5) cm. *Racemes* laxly 4—8(—10)-flowered, (1.5—)2—3 cm; pedicels slender, 4—6 mm. *Flowers* 3- or 4-merous. Sepals ovate, subacuminate, 1.5—2 mm. Petals as long as though (much) narrower than sepals. Receptacle densely white-hairy. Disk glands subquadrate, fleshy, subglabrous, forming a crenate ring. Stamens 20—30; anthers apiculate. Ovary glabrous; style 2—3 mm, stigma minutely 2- or 3-lobed. *Berry* globular, yellow *c.* 1 cm  $\varnothing$ , with 3 or 4 angular yellowish seeds, on pedicel up to 1.2 cm.

NGWANE (Swaziland). E. of Mbabane, 1280 m, *Miller A* 20/40 (FHO).

LESOTHO (Basutoland). Berea, Cannibal Caves, *Marais* 1084. Gorge de Korokoro, Mohale R., *Jacottet* (Herb. *Dieterlen* 1062, P). Matukang, Queme Mountain, *Dieterlen* 852, cit. *Phillips, n.v.*

SOUTH AFRICA. T r a n s v a a l. Ermelo, Nooitgedacht, *Pott* 5097, cit. *Phillips, n.v.* Piet Retief, Mooihoek, 1340 m, *Devenish* 1024. — N a t a l. Zululand, Qudeni For., 1830 m, *Davies* (Herb. *Wood* 8212, BM). Utrecht, Donkerhoek, 1675 m, *Devenish* 1311. Bergville, Nat. Park, Broome Hill, 1615 m, *Galpin* 9514. National Park, *Hutchinson* 4497. Estcourt, Kamberg Nat. Res., 1675 m, *Wright* a. 1964. Lions River, Dargle For., 1370 m, *Moll* 864. Pietermaritzburg, Zwartkop, *Moll* 947. Polela, 1830—2135 m, *Evans* 624, cit. *Phillips, n.v.*, *Marais & Killick* 2103. — C a p e P r o v. Umtata, Baziya For., *Marais* 497. Tembuland, Engcobo, Manina For., *Zahn*, cit. *Phillips, n.v.*; Cala, *Royffe* 204, cit. *Phillips, n.v.* Transkei, Amamzami-nyama For., Mt Frere Dist., *Miller*, cit. *Phillips, n.v.* Queenstown, Lesseyton Nek, 1220 m, *Galpin* 2146; Gwatyn Farm, 1645 m, *Galpin* 8295, cit. *Phillips, n.v.* Komgha, 610 m, *Flanagan* 62. Grahamstown, 600 m, *MacOwan* 957. Port Elizabeth, Uitenhage, Van Staden Mts, 1200 m, *MacOwan* a. 1872, *Zeyher* 788 & 3785 (BM; *Fl ex* TCD; K, P, S; TCD, apparently syntypes of *Eriudaphus serratus, n.v.*); Zuurberg, 700 m, *Long*

1251. Knysna, *McVaughton a. 1890* (BR); Grootkops R., *Keet*, cit. Phillips, *n.v. Plettenberg Baai, Mund & Maire 1821* (B, †). Albany, *Barber* (K). 'In sylvis Sitsikamma' = *Tsitsikamma, Mund* (B, type of *Eriudaphus mundii*, †; K; S, *n.v.*, = *Eckl. & Zeyher Pl. cap. 1755*). Orange Kloof, *Gamble 22157* (K). Kirstenbosch, *Zeyher* (B, †); Newlands Cape, *Garside 1426* (K). — Locality not given: *Burchell 5268, 5399, Drège 3576, 5785* (P, W, Z).

CULT. In Horto Bot. Berol. ex 'Caput Bonae Spei', leg *Krebs* (B, type of *Adenogyrus krebsii*, †).

E c o l o g y. Canopy tree mainly in forests of the 'mist-belt', from the coast up to c. 2135 m.

U s e s. Mountain Saffron, known as a good timber.

37. *Scolopia zeyheri* (Nees) Harvey in Harv. & Sond., Fl. Cap. 2 (1862) 584, *in textu*; Szyszyl., Polyp. Thalam. Rehm. (1887) 111; Warb. in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 29, as *S. zeyheri* '(Arn.) Warb.'; Dur. & Schinz, Consp. Fl. Afr. 1 (1898) 220; Sim, For. Fl. Cape Col. (1907) 126, t. 2; Gilg, Bot. Jahrb. 40 (1908) 481; Sim, For. Fl. Port. East Afr. (1909) 13, t. 1 B; Engl., Pflanzenw. Afr. 3, 2 (1921) 575; Phillips, Bothalia 1 (1922) 84; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 418; Henkel, Woody Pl. Natal & Zululand (1934) 73, 90; Wild, Fl. Zamb. 1 (1960) 276; Dale & Greenway, Kenya Tr. & Shr. (1961) 229; Palmer & Pitman, Tr. S. Afr. (1961) 213, fig.; White, For. Fl. N. Rhodes. (1962) 267; Moll, For. Tr. Natal (1967) 113, f. 498; Bamps, Fl. Congo, Rwanda & Burundi, Sperm. Flacourt. pt. 1 (1968) 40; Exell, Fl. Zambes. 3 (1970) 141. — *Eriudaphus ecklonii* Nees in Eckl. & Zeyh., En. Pl. Afr. Austr. Extratrop. 2 (1836) 272. — *Eriudaphus ecklonii* Nees in Eckl. & Zeyh., En. Pl. Afr. Austr. Extratrop. 2 (1836) 271; Arn. in Hook., J. Bot. 3 (1840) 150. — *Phoberos zeyheri* (Nees) Arn. in Hook., J. Bot. 3 (1840) 150; Presl; Bot. Bem. (1844) 70; Harvey in Harv. & Sond., Fl. Cap. 1 (1860) 68. — *Phoberos ecklonii* (Nees) Arn. ex Presl, Bot. Bem. (1844) 70; Harvey & Sond., Fl. Cap. 1 (1860) 68. — *Eriudaphus clossianus* Baill., *Adansonia* 1 (1860) 121. — *Scolopia gerrardii* Harv., Fl. Cap. 2 (1862) 584; Gilg, Bot. Jahrb. 40 (1908) 481; Engl., Pflanzenw. Afr. 3, 2 (1921) 576; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 418. — *Scolopia ecklonii* (Nees) Harvey in Harv. & Sond., Fl. Cap. 2 (1862) 584, *in textu*; Szyszyl., Polyp. Thalam. Rehm. (1887) 111; Warb. in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 29, as *S. ecklonii* '(Arn.) Warb.'; Dur. & Schinz, Consp. Fl. Afr. 1 (1898) 220; Sim, For. Fl. Cape Col. (1907) 127, *in textu*; Gilg, Bot. Jahrb. 40 (1908) 481; Engl., Pflanzenw. Afr. 3, 2 (1921) 576; Phillips, Bothalia 1 (1922) 86; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420; Burt Davy, Man. Fl. Pl. Transvaal 1 (1926) 215; Henkel, Woody Pl. Natal & Zululand (1934) 58, 73, 80. — *Rhamnicastrum zeyheri* (Nees) O. Ktze, Rev. Gen. 1 (1891) 45. — *Rhamnicastrum ecklonii* (Nees) O. Ktze, l.c. 45. — *Scolopia clossiana* (Baill.) Warb. in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 30 ('*Clossiana*'); Gilg, *ibid.* ed. 2, 21 (1925) 420. — *Scolopia cuneata* Warb. in E.-P., Nat. Pffam. ed. 1, III, 6a (1893) 29, *nom. nud.*; in Engl., Pflanzenw. Ostaftr. C (1895) 278, *descr.*; Gilg, Bot. Jahrb. 40 (1908) 481; Engl., Pflanzenw. Afr. 3, 2 (1921) 577; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420. — *Scolopia dekindtiana* Gilg, Bot. Jahrb. 40 (1908) 482; Engl., Pflanzenw. Afr. 3, 2 (1921) 577; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420. — *Scolopia engleri* Gilg, Bot. Jahrb. 40 (1908) 481; Engl., Pflanzenw. Afr. 3, 2 (1921) 577; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420. — *Scolopia stuhlmannii* Warb. in Engler, Bot. Jahrb. 28 (1900) 438, *nom. nud.*; Warb. & Gilg, Bot. Jahrb. 40 (1908) 482; Engl., Pflanzenw. Afr. 3, 2 (1921) 577; Gilg in E.-P., Nat. Pffam. ed. 2, 21 (1925) 420; Brenan & Greenway, Check-Lists For. Tr. Shr. Br. Emp. 5, 2 (1949) 236, *p.p.* — *Scolopia ecklonii* var. *gerrardii* (Harv.) Phillips, Bothalia 1 (1922) 86. — *Scolopia ecklonii* var. *engleri* (Gilg) Phillips, l.c. 86. — *Scolopia thorncroftii* Phillips, l.c. 84; Burt Davy, Man. Fl. Pl. Transvaal 1 (1926) 215. — *Scolopia rigida* R. E. Fries, Notizbl. Berl.-Dahl. 9 (1925) 324; Gardner, Tr. Shr. Kenya

Col. (1936) 22; Egging & Dale, Ind. Tr. Uganda Prot. (1952) 150. — *Scolopia gossweileri* Sleum., Notizbl. Berl.-Dahl. 12 (1934) 141; in Carisso, Consp. Fl. Angol. 1 (1937) 85; Exell, J. Bot. 74 (1936) Suppl. Polyp. Add. 16. — *Scolopia mundii* auct., non (Nees) Warb.: Miller, J. S. Afr. Bot. 18 (1952) 59.

Much branched shrub, or medium sized tree, occasionally up to 25 m, often branching fairly low down, glabrous; trunk up to 60 cm  $\varnothing$ , whether or not armed with branched spines; bark dark grey to brownish, rather thin. Younger plants with scandent habit, elongate branches, and broader leaves. Branches and branchlets either unarmed, or often with strong axillary simple rather straight spines up to 20 cm, which sometimes bear leaflets and flowers. *Leaves* persistent, variable in shape and size, (ob)ovate to oblanceolate, or rhomboid to elliptic, apex obtuse or rounded, rarely subacute, base cuneate, rarely obtuse or even cordate in coppice shoots, (sub)coriaceous, dark green above, generally bright pink when young, entire, or repand, or bluntly crenate, 2—8 by 1—3.5(—5) cm; nerves 4—6 pairs at a rather narrow angle with the midrib, slightly raised on both faces, as is the lax reticulation; petiole up to 1.5 cm. *Racemes* axillary, solitary, or rarely 2 or 3, few- to rather many-flowered, lax- to dense-flowered, sometimes almost spike-like, short-pubescent, sometimes partially glabrescent, even quite glabrous from the beginning; rhachis rather slender, 1—3(—6) cm. Pedicels rather slender to stoutish, (1—)2—5(—10) mm. *Flowers* cream or yellowish, scented, pubescent or glabrous, (3—)4- or 5(—6)-merous. Sepals ovate, subacute, ciliate, 1—1.5 by 1 mm. Petals narrower, sometimes lanceolate. Receptacle densely white-hairy. Disk glands 10—15, small, sometimes densely short-pubescent. Stamens (20—)30—40; anthers with a short triangular apiculus formed by the protruding connective. Ovary glabrous; style stoutish, 1.5—2.5 mm, stigma obscurely 2- or 3-lobed. *Berry* subglobular, fleshy, 7—8 mm  $\varnothing$ , finally purple-red, with 2 or 3 angular seeds *c.* 3 by 1.5—2 mm.

CAMEROON. Adamaoua or., Hosséré Sillé, 1650—1700 m, *Jacques-Félix* 8765 (L, P).

ANGOLA. Benguela. Caconda, Rio Cababa, *Gossweiler* 4295 (BM; type of *S. gossweileri*; BR, COI; EA, n.v.). — Bié. Between rivers Cutato and Cubango, *Gossweiler* 3821 (BM). — Huila. Huila, 1700—1800 m, *Antunes* 3130 (P), *Dekindt* 1148 (B, type of *S. dekindtiana*, †), *Henriques & Brites* 1084 (BM); Monynino, 1760 m, *Antunes* 3197 (P). Alto Cunene, Mulando, *de Menezes* 744 & 756 (K, P).

RWANDA. Parc Nat. Kagera, 1350 m, *Robyns* 3512, 3539. Région du Mutara, 1350—1450 m, *Christiaensen* 335, *Troupin* 6181, 8202.

UGANDA. Western Prov. Ankole, *Egging* 653, cit. by Egging & Dale, n.v.; Lake Nakivali, 1370—1430 m, *Kennedy* 1984, 2023; Mpororo Hill, Ruampara, 1500 m, *Egging* 1027; Ruizi R., 1300 m, *Jarrett* 314.

KENYA. Northern Frontier Prov. Marsabit Mts, *Adamson* 1. Mathews Ra., Dunyus, 2135 m, *Bally* 3618. — Central Prov. Plains near Nairobi, 1600—1800 m, *Theophilo* (Herb. *Bally* 9152), *Bogdan* 2471, *Dale* 2860, *Napier* 823, *Rammell* 1060, *van Someren* 6223; Kiambu, 2070 m, *Verdcourt* 3131, 3132; Mt Margaret Estate, Kedong, 1920 m, *Bally* 962; Kilimani, 1700 m, *Bally* 7731; Embakasi, 1615 m, *van Someren* (Herb. *Bally* 1113); Karura, 1740 m, *Rammell* 3062. Mt Kenia, W. side, *c.* 2000 m, *R. E. & Th. C. E. Fries* 1117 (BR, K, S; UPS, type of *S. rigida*). — Masai Prov. Ngong, *van Someren* AH 9488. Narok Dist., 1890—2440 m, *Glover* *c.s.* 1276, 1503, 2403, 2467, 2515. — Coast Prov. Mombasa, *Wakefield* *a.* 1884 (B, type of *S. cuneata*, †; K).

TANZANIA. Lake Prov. Bukoba, Nshamba, *Gillman* 558; Kisloju, 1370 m, *Ford* 733. Victoria Lake. Ukerewe I., *Conrads* EAH 13301. — Northern Prov. Lobendo, 1830—1850 m, *Tanner* 1814, 1822. — Tanganyika Prov. Usambara, Kwai-Mkusu road, 1675 m, *Willan* 638; Shume For. Res., 1700—2300 m, *Drummond & Hemsley* 2693, *Holtz* 1861 & 2772 (B, †), *Peter* 3993 (B, †); Kwai valley, 1600 m, *Drummond & Hemsley* 2233; Kwai-Gare, 1500—1700 m, *Engler* 1202 (B, syntype of *S. stuhlmannii*, †). Machui, coastal savannah, *Faulkner* 1570, 1846, 1866, 1947; Kivindani, *Faulkner* 3497. — Eastern Prov. Kibungo, Uluguru Mts, 1400 m, *Stuhlmann* 8911 (B, syntype of *S. stuhlmannii*, †). — Southern Prov. Lupembe, Matongo-Songea, *Zimmer* 42 (K).

MOZAMBIQUE. Lourenço Marques. Inhaca I., 0—200 m, *Barbosa* 7686 (LMJ, n.v.), *Mogg* 26961,

27274, 28405, 29453; Maputo R., *Gomes e Sousa* 3750; Polana, 60 m, *Miller* 6026. — Sul do Save. Muchopes, *Torre* 7509.

ZAMBIA. Western Prov. Kitwe, *Fanshawe* 7694. — Southern Prov. Pemba, *Fanshawe* 6579. Kafue Hook, *Fanshawe* 8046. Mazabuka, Siamambo For. Res., *White* 3864, 3865, 3866, 6172, 6873; Choma, Kalomo, *Fanshawe* 6563, 6735, *White* 7797. Siasikabole area, Singani, 1280 m, *Bainbridge* 542.

RHODESIA. Western Prov. Bulawayo, *Bullock* a. 1968. — Central Prov. Salisbury, *Eyles* 6326, 6327; Gwelo, *Loweridge* 164, 1717. — Eastern Prov. Umtali, Inyamatsira Mt. Ra., 1370—1625 m, *Chase* 3938, 7473. Inyanga, Troutbeck, 2135 m, *Miller* B/1237. Chipinga, 915 m, *Goldsmith* 158/62.

BOTSWANA (Betchuanaland). Kanye, *Miller* 338 (PRE, cit. as *S. mundii*, n.v.).

NGWANE (Swaziland). Manzini, Mafuteni Hill, 450 m, *Compton* 31664. Tungula Mts., Maukaiana, 1220 m, *Miller* S/266 (K). Hlatikulu, 1065 m, *Compton* 31337 (K, M). Hills E. of Mbabane, 1370 m, *Dlamini* (K). SOUTH AFRICA. Transvaal. Kruger Nat. Park, v. d. *Schyff* & *Marais* 3748. Houtbosch, *Rehmann* 6464. Piet Retief, Mooihoek, 1340 m, *Devenish* 881. Groblersdal, Maleeuwkop, 975 m, *Acocks* 23351. Waterberg, Roodepoort, *Galpin* M 690 (BR), M 691. Barberton, 855—885 m, *Mathews* 12, 70, 80, *Rogers* 29972, *Thorncroft* 811 (BM; PRE, type of *S. thorncroftii*, n.v., = Phot. Kew), 2121 (maybe from type tree of *S. thorncroftii*; FHO, K); *ibid.*, Breakfast creek, 1220 m, *Thorncroft* 2136 (FHO). Pietersburg, Potatobosch, *Botha* & *O'Connor*, cit. *Phillips*, n.v. Morico, Enselberg Camp, *Pole Evans* 2225. Pretoria, *Preptor* 675; Johannesburg road, *Pole Evans* 4649; Betfontein, *Theiler*, cit. *Phillips*, n.v. Kaalplaats, *Mogg*, cit. *Phillips*, n.v. Rustenburg, *Leenderitz* 9773, cit. *Phillips*, n.v.; Zwarttruggens, 1250 m, *Sutton* 914. Wonderfontein, *Engler* 2882 a (B, type of *S. engleri*, †); *ibid.*, 1095 m, *Burt Davy* 7564 (K). Bon Accord, *Meebold* 12068 (BR, HBG, M). Westfalia Estate, Duivelskloof, Letaba, 1400 m, *Scheepers* 1069. Heidelberg, Lagerspoort, *Prosser* 1551. Modderfontein, *Conrath* 737. Bavianaaport, *Meebold* 13236 (M). Johannesburg, Klipriviersberg, *Rand* 685. — Natal. Zululand, *Gerrard* 1139, 1140, 1141, 1142; Ngoye, 300—600 m, *Wylie* (*Wood* 19364: Z). Umlhlatuzi For., *Ballenden*, cit. *Phillips*, n.v.; Qudeni For., 1830 m, *Davis* 99, cit. *Phillips*, n.v.; Hlabisa, 425 m, *Gerstner* 5069, *Ward* 2270; *ibid.*, Hluhluwe Game Res., 200—360 m, *Guy* 123, *Ward* 2635. Ingwawuma, W. of Maputa, *Timley* 338. St. Lucia, Lower Umfolozi, *Schlieben* 10209 (M). Durban (Port Natal), *Cooper* 2164, *Gueinzins* 461 (W); Westville, 275 m, *Wood* 8597. Pinetown, Krantz kloof Nat. Res., 300—450 m, *Moll* 3023, 3303. Nototi R., *Gerrard* 231 (BM, K, W), *Gerrard* & *McKen* 26 (TCD, type of *S. gerrardii*, n.v.). Lions R., 1430—1525 m, *Moll* 825, 904 B. Mtunzini, Twinstreams, 15 m, *Garland* (K); Ngoya For., *Wells* & *Edwards* 66. Lower Tugela, 100 m, *Galpin* 12163, *Wood* 3951, *Moll* 2531. Sydenham, 100—200 m, *Wood* 11402 (Z). Lundie's Hill, near Sinkwasi R., 150 m, *Wood* 10170, cit. *Phillips*, n.v. Weenen, 450 m, *Moll* 3242; Umlhumba Mt, *Acocks* 10522. Pondoland, Engcobo, Manina For., *Zahn*, cit. *Phillips*, n.v. Umzinto, Ifafa R. Lagoon, 120 m, *Moll* 3587. Port Shepstone, *Strey* 5865. — Cape Prov. East Griqualand, Pot River Berg, 1675 m, *Galpin* 6830. Kentani, Black Rock Cave, *Pegler* 2129. Komgha, 600 m, *Flanagan* 863 (Z). Stutterheim, Katberg, *MacOwan*, cit. *Phillips*, n.v.; 'Ad fontes flum. Katrivier', *Ecklon* & *Zeyher* 1754 (B, type of *Eriudaphus ecklonii*, †; GOET, K, L, M, P, S, W). East London, *Galpin* in Herb. *Wood* 2828, cit. *Phillips*, n.v. King Williams Town, *Ranger* 173, *de Winter* 8368. Queenstown, Finchham's Nek, 1220 m, *Galpin* 1822. Somerset East, Boschberg, 900 m, *MacOwan* 1324; Klein Visch River, *MacOwan* 808, cit. *Phillips*, n.v.; Zuurberg, *Holland* 279, cit. *Phillips*, n.v. Port Alfred, 50 m, *Schlechter* 2733. Alexandria, Bushman's R., 60 m, *Wells* 2657; N. of Zuurberg Inn, 640 m, *Johnson* 738; Kolsrand near Karl Landman Memorial, 365 m, *Johnson* 1094. Grahamstown, 600—800 m, *Humbert* 10346, *Marais* 891, *MacOwan* 808; between Sidbury and Bushman's R., *Burchell* 4182; Keiskamma Hoek, 915 m, *Killick* 883, *Stayner* 96. Uitenhage, Van Staden Mts, *Zeyher* 782; *ibid.*, Adow, *Zeyher* 858; Olifantshoek & Adow, *Ecklon* & *Zeyher* 1756 (B, type of *Eriudaphus zeyheri*, †; L, P). Port Elisabeth, Bruintjes Hoogte, *Burchell* 3069. Uniondale, Hill S. of De Vlugt, 335 m, *Fourcade* 3774. Plettenberg Bay, Knysna Forests, *Bowie* (BM). 'Hangklipp', *Mundt* & *Maire* (B, †). Mossel Bay, *Al. Prior* (K, Z). — Locality not indicated: *Burchell* 5300, 5343, 5382, 5540, *Drège* 3783, 3784.

CULT. Hort. Bot. Paris., fl. a. 1866, leg. *Anon.* (MPU; P, type of *Eriudaphus closianus*).

**Ecology.** Canopy tree in submontane (also degraded) evergreen forest, also in gallery forest, in open xerophyllous woodland or bush, edges of riverine thickets, in semi-carroid scrub, open rocky hillside, coastal savannahs or dunes (shrubby and often thornless there), on termite mounds, from sealevel to 1800(—2440) m.

**Uses.** 'Thornpear' in South Africa. Wood very hard, difficult to work, locally used as timber.

**Note.** Comprises numerous local forms (ecotypes?) formerly described as proper species or varieties which, however, cannot be maintained as such due to intermediates in vegetative and floral characters.

## EXCLUDED SPECIES

- Scolopia austro-caledonica* Schltr, Bot. Jahrb. 39 (1906) 197; Gilg in E.-P., Nat. Pflfam. ed. 2, 21 (1925) 420 = *Lasiochlamys reticulata* (Schltr) Pax & Hoffm. in Engl., Pflanzenz. IV, 147, XV (1922) 17.  
*Scolopia japonica* Max. var. *parviflora* Dunn, Kew Bull. (1902) 108 = *Scopolia* (sphalm.).  
*Scolopia mairei* Lévl., Bull. Géogr. Bot. 25 (1915) 41 = *Scopolia* (sphalm.).  
*Scolopia minutiflora* Sleum., Notizbl. Berl.-Dahl. 12 (1935) 716 = *Ludia mauritiana* Gmel., Syst. ed. 13, 1 (1791) 839.  
*Scolopia mutiensis* Gilg in Engl., Pflanzenw. Afr. 3, 2 (1921) 577, in clavi, = *Gymnosporia buchananii* Loesen. 'var. *longistyla* Loesen.' = *Maytenus buchananii* (Loesen.) R. Wilczek, Fl. Congo Belg. & Ruanda-Urundi 9 (1960) 125.  
*Scolopia platyphylla* Chiov., Webbia 8 (1951) 236; Cufod., En. Pl. Aethiop. Sperm., Bull. Jard. Bot. Bruxelles 29 (1959) Suppl. 597 = *Maytenus undata* (Thunb.) Blakelock, Kew Bull. (1956) 237.  
*Scolopia trimera* Boerl., Cat. Hort. Bog. 1 (1899) 53 = *Hemiscolopia trimera* (Boerl.) Sloot., Bull. Jard. Bot. Btzg III, 7 (1925) 343, f. 9.

## INDEX TO SPECIES AND INFRASPECIFIC TAXA

Accepted names are in plain type, synonyms in *italics*, new names and combinations in **bold type**. Numbers refer to the number of the accepted species. Excl. = cf. Excluded species.

- |  |                                  |
|--|----------------------------------|
| <i>Adenogyrus braunii</i> : 9          | <i>Phoberos lanceolatus</i> : 8  |
| <i>krebsii</i> : 36                    | <i>macrophylla</i> : 4           |
| <i>Banara brevifolia</i> : 7           | <i>maritima</i> : 4              |
| <i>racemosa</i> : 7                    | <i>mundii</i> : 36               |
| <i>Dasianthera luzonensis</i> : 7      | <i>rhinantha</i> : 4             |
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| var. <i>ovatifolia</i> : 7             | <i>wightianus</i> : 8            |
| <i>Eriudaphus clossianus</i> : 37      | <i>zeyheri</i> : 37              |
| <i>ecklonii</i> : 37                   | <i>Rhamnicastrum brownii</i> : 9 |
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| <i>chinensis</i> : 5                   | <i>cinnamomifolia</i> : 15       |
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