

FLORA OF THAILAND

**MELASTOMATACEAE**

Editors

Kai Larsen and Ivan Nielsen, Aarhus

## MELASTOMATACEAE

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Shrubs, trees, herbs or woody or herbaceous climbers, terrestrial or epiphytic. Leaves simple, opposite, rarely alternate or verticillate, usually with one or several pairs of lateral primary veins that originate at or near the blade base and extend all the way to the leaf apex (i.e., acrodromal venation), occasionally pinnately veined (*Sonerila*), usually exstipulate. Inflorescences terminal, axillary, or cauline, in compound or reduced cymes, rarely flowers solitary. Hypanthium campanulate or urceolate, with various emergences and/or hairs, or glabrous. Flowers bisexual, 3-, 4-, or 5-merous, usually with two stamen whorls, rarely with only one whorl, or the outer or inner whorl staminodial or lacking. Calyx lobes triangular and persistent to indistinct or absent, or calyx calyprate. Petals commonly obovate with a short claw, often showy. Anthers opening with 1 or 2 apical pore(s) or rarely with short longitudinal slits (in Thailand *Pternandra*), connective often prolonged below the anthers and dorsally and/or ventrally appendaged. Ovary more or less inferior, (3—)4—5(—6)-locular (in Thailand), ovules numerous. Fruit a woody or fleshy capsule or a more or less fleshy berry. Seeds numerous, small (0.5—2.5 mm long), cuneate, ovoid, or cochleate.

Melastomataceae Jussieu are pantropic and comprise 150—156 genera and ~4500 species of which 15 genera and 70 species occur in Thailand. Their closest relative are the Memecylaceae DC., which in Thailand are represented by 22 species of *Memecylon* and one species of *Lijndenia*. Memecylaceae are readily distinguished from Melastomataceae by usually pinnately veined leaves (except *Lijndenia*), gland-bearing anther connectives, few ovules and seeds (with a fibrous exotegmen), and large embryos with folded storage cotyledons. Based on DNA evidence, Memecylaceae and Melastomataceae are sister groups, and their ranking is therefore a matter of opinion. Of the Thai melastomes, five species (in *Sonerila*, *Phyllagathis*, and *Anerincleistus*) are endemic and one (*Clidemia hirta*) is introduced from the New World.

Thai melastomes belong to four tribes of which Kibessieae and Melastomeae are readily recognized by consistent morphological characters (below), while Dissochaeteae and Sonerileae are problematic in their morphological circumscription. Kibessieae (*Pternandra*) are distinguished by ovaries with dorsal-median placentas, a feature

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readily visible in a cross-sectioned ovary or fruit. Melastomeae can be recognized by basally prolonged anther connectives in combination with hairs on the ovary and strongly curved (cochleate) seeds. Sonerileae (including Oxysporeae; Renner, Nord. J. Bot. 13: 519-540. 1993) are identified by capsular fruits in combination with  $\pm$  straight or cuneate seeds and glabrous ovary apices that are either rounded or concave with conspicuous outgrowths (often greatly enlarged in fruit). Dissochaeteae, finally, can be recognized by more or less fleshy fruits with fleshy placentas in which the seeds are embedded. Molecular evidence, however, shows that Sonerileae are only a derived clade of Dissochaeteae, making the latter tribe paraphyletic.

The following new combinations are made in this treatment *Dissochaeta affinis* (Korth.) Clausen; *D. conica* (Bakh. f.) Clausen; *D. echinulata* (Naudin) Clausen; *D. stipularis* (Bl.) Clausen; and *D. viminalis* (Jack) Clausen. In the context of work on the Thai melastomes, we also described a new species of *Sonerila* and transferred both species of *Tylanthera* Hansen into *Phyllagathis* (Cellinese & Renner, Novon, 1997).

Notes on family-specific morphology: In Melastomataceae, the calyx lobes often are basally connate, forming a 1—3 mm long calyx rim, limb, or tube that may terminate in short lobes, cusps, or teeth, which are of taxonomic importance. Another character is whether the ovary is totally adnate to the hypanthium or only partly connected to it by septa separated by pockets of varying depths. In bud stage, these pockets (also called extra-ovarian chambers) house the downward-bent anthers, and the pockets' depth therefore reflects the length of the anthers. Melastome connectives often are prolonged between the anther base and the point where the filament attaches, and this elongate section below the pollen sacs is sometimes called pedoconnective.

#### KEY TO THE GENERA

1. Trees or treelets, rarely shrubs; anthers opening by (short) longitudinal slits, connective neither prolonged below the pollen sac nor appendaged; placentation dorsal-medial **1. Pternandra**
1. Herbs, shrubs, or woody or herbaceous climbers; anthers opening by 1 or 2 apical pore(s), connective often prolonged below the pollen sacs and/or appendaged, placentation axillary
  2. Flowers and capsules 3-merous, stamens 3 or 6 (*S. obliqua*), connective dorsally and ventrally unappendaged (dorso-basally minutely spurred in *S. obliqua*) **4. Sonerila**

2. Flowers and capsules 4-, 5- or 6-merous, stamens 4, 8, 10 or 12, connective dorsally at least somewhat spurred and/or ventrally lobed or appendaged (except in *Blastus*)
3. Seeds strongly curved (cochleate); plants terrestrial shrubs, rarely herbs (*O. cochinchinensis*), never epiphytic, climbing, or forming a rosette; leaves above usually strigose (the following two genera are difficult to distinguish; refer to species illustrations)
  4. Fruit a fleshy capsule, rupturing irregularly at maturity, or an indehiscent berry (*M. cyanooides*) **3. Melastoma**
  4. Fruit a dry capsule, opening apically at maturity
    5. Stamens equal in size (Figs. 2A, 3A), connective not or only slightly prolonged below the anthers **2. Osbeckia**
    5. Stamens unequal in size (Figs. 4A, 5A), connective prolonged below the anthers **3.6. Melastoma pellegrinianum**
3. Seeds ± straight, ovoid, or cuneate, but not cochleate; plants epiphytic, climbing, or herbs with leaves in rosettes, more rarely terrestrial shrubs; leaves above glabrous, more rarely with appressed simple hairs (*Phyllagathis*, *Oxyspora howellii*, *Clidemia*, *Anerinacleistus*)
  6. Fruit a capsule; plants terrestrial shrubs or herbs
    7. Herbs, sometimes with rhizomes or tubers
      8. Leaves (1.7—)3.5—9(—13.3) x 0.8—6 cm large; stamens 8; hypanthium winged; calyx lobes persistent in fruit and with conspicuous protruding fringes **5. Sarcopyramis**
      8. Leaves 10—45 x 8—20 cm large (except in *P. tuberosa* with leaves 2—5 x 1—3 cm and stamens 4); hypanthium not winged; calyx lobes often persistent in fruit but not fringed **6. Phyllagathis**
    7. Shrubs
      9. Stamens 4 **7. Blastus**
      9. Stamens 8 or 10
        10. Leaves up to 4 cm broad and with hardly discernible cross-veins **8. Ochthocharis**
        10. Leaves broader than 4 cm and with distinct cross-veins
          11. Flowers in terminal paniculate cymes **9. Oxyspora**
          11. Flowers (in Thailand) in sessile clusters on the stem **10. Anerinacleistus**
  6. Fruit a berry; plants stragglers, scramblers, or epiphytic shrubs, if terrestrial shrubs then *Clidemia* or *Pseudodissochaeta*
    12. Leaves above with persistent simple hairs; petals and stamens white

**15. Clidemia.**

12. Leaves above glabrous or glabrescent; petals pink or purple, rarely white, stamens yellow or pink, never white
13. Scrambling shrubs, nodes with distinct interpetiolar ridges, crests, or pockets; stamens strongly dimorphic, or the inner or outer whorl staminodial, or the inner whorl lacking **11. Dissochaeta**
13. Epiphytic shrubs, rarely terrestrial (*Pseudodissochaeta*); stamens isomorphic or only slightly dimorphic
14. Terrestrial; leaf margin at least apically serrulate **14. Pseudodissochaeta**
14. Epiphytic shrubs, rarely climbers (*M. radicans*); leaf margin entire
15. Stamen pockets (extra-ovarian chambers) present, ovary longer (more than 1/2 as long as the hypanthium), hypanthium not constricted above the ovary **12. Medinilla**
15. Stamen pockets (extra-ovarian chambers) absent, ovary short (less than 1/2 as long as the hypanthium), hypanthium constricted above the ovary (Figs. 21C & 22B). **13. Pachycentria**

1. PTERNANDRA

Jack, Mal. Misc. 2: 60. 1822; Ridl., Fl. Mal. Pen. 1: 807. 1922; Bakh. f., Rec. Trav. Bot. Néerl. 40: 323. 1943; Maxwell, Gard. Bull. (Singapore) 34: 1-90. 1981 (revision).—*Kibessia* DC., Prodr. 3: 196. 1828; Miq., Fl. Ind. Bat. 1: 569. 1856; Bakh. f., Rec. Trav. Bot. Néerl. 40: 311. 1943.—*Ewyckia* Bl., Flora 14: 524. 1831; Mus. Bot. 1: 5. 1849; Miq., Fl. Ind. Bat. 1: 568. 1856.—*Rectomitria* Bl., Mus. Bot. Lugd.-Bat. 1: 6. 1849.—*Macroplacis* Bl., Mus. Bot. Lugd.-Bat. 1: 7. 1849.

Treelets or trees, to 25 m tall, diameter to 90 cm, rarely shrubs, upper branches terete or angled, glabrous or pilose. *Leaves* oblong, ovate, or lanceolate, those of a pair isomorphic, base acute, rounded or cordate, apex acuminate, margin entire, lamina with 1—2 pairs of lateral primary veins, subcoriaceous, glabrous, petiolate. *Inflorescences* umbellate or paniculate cymes or fascicles with few or up to 20 flowers, axillary or terminal. *Flowers* 4-merous, with two stamen whorls, bracts and pedicels usually minute. *Hypanthium* campanulate, scaly, tuberculate, or rarely nearly smooth, calyx truncate, shortly 4-dentate, or calyptrate. *Petals* broadly ovate, acute or subtruncate, glabrous. *Stamens* isomorphic, anthers opening introrsely by 2 short slits, connective

not prolonged at the base and only slightly thickened dorsally. *Ovary* fully united with the hypanthium, 4-locular, apically concave and glabrous, placentae dorsal-medial. *Fruit* a fleshy capsule, opening apically by 4 valves, or a berry. *Seeds* straight and wedge-shaped.

A genus of 15 species from Southeast Asia. Three species occur in Thailand.

#### KEY TO THE SPECIES

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|--|----------------------------------|
| 1. Hypanthium and pericarp smooth; fruit a globose berry   | <b>1. <i>P. caerulescens</i></b> |
| 1. Hypanthium and pericarp verrucose, tuberculate or with flattened scales; fruit a fleshy capsule, opening apically at maturity |                                  |
| 2. Hypanthium and pericarp with flattened scales (Fig. 1D)   | <b>2. <i>P. echinata</i></b>     |
| 2. Hypanthium and pericarp verrucose or tuberculate  | <b>3. <i>P. tuberculata</i></b>  |

**1. *Pternandra caerulescens*** Jack, Mal. Misc. 2: 61. 1822; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 924. 1921; Ridl., Fl. Mal. Pen. 1: 808. 1922; Craib in Fl. Siam. En. 1: 701. 1931; Bakh. f., Rec. Trav. Bot. Néerl. 40: 324. 1943 (excl. syn. *Kibessia angustifolia* Bl. and *K. simplex* var. *oblonga* Bl. fide Maxwell, Gard. Bull. (Singapore) 34: 26. 1981 (q.v. for full synonymy); in Tree Fl. Mal. 4: 196. 1989.

Tree, 4—10(—20) m tall and reaching a diameter of 40—90 cm, or a shrub, bark smooth or scaly and grey. *Leaves* elliptic, (5—)8—18(—25) x 3—11(—15) cm, base and apex acute, lamina with 1 pair of lateral primary veins, chartaceous, subcoriaceous, or coriaceous, glabrous, petioles 0.5—1 cm long. *Inflorescences* glomerulate to paniculate cymes, in the leaf axils or on leafless nodes. *Flowers* 4-merous, pedicels 1—4 mm long, bracts minute. *Hypanthium* campanulate and smooth, 2.5—4 mm long, calyx truncate or shortly 4-dentate. *Petals* broadly ovate, 2—6 mm long, pale lilac to dark blue, apex acute to mucronate. *Stamens* 8, anthers 2—3 mm long, cream-coloured, opening by short slits. *Berry* globose, 4—6 mm in diam., dark blue.

**T h a i l a n d .** — NORTHERN: Sukhothai; SOUTH-EASTERN: Trat (Chang Is., Takum); PENINSULAR: Surat Thani, Phuket, Nakhon Si Thammarat, Phatthalung, Satun, Songkhla, Narathiwat.

**D i s t r i b u t i o n .** — Southern China (Hainan), Malay Peninsula (type: Penang), Lingga Archipelago, Riouw Archipelago, Sumatra, Borneo, Celebes, Moluccas, New Guinea, and Australia (Queensland).

**E c o l o g y .** — Collections: 19. In evergreen forest, on granitic bedrock, beside streams, more rarely in open savannas; from sea-level to 250 m alt.

**2. *Pternandra echinata*** Jack, Mal. Misc. 2: 61. 1822; Maxwell, Gard. Bull. (Singapore) 34: 42, Fig. 9 and Pl. 4 (photos). 1981 (q. v. for full synonymy); in Tree Fl. Mal. 4: 197, Fig. 3. 1989.— *Kibessia echinata* (Jack) Cogn. in Monogr. Phan. 7: 1108. 1891.— *K. pubescens* Decne., Ann. Sci. Nat. Bot. 3, 5: 318. 1846.— *Pternandra echinata* var. *pubescens* (Decne.) King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 70. 1900; Craib in Fl. Siam. En. 1: 702. 1931. Figure 1, Plate 1A.

Tree, 6—20 m tall and reaching a diameter of up to 60 cm, bark finely fissured, thin, smooth, grey to tan, branchlets distinctly quadrangular, becoming terete with age, nearly glabrous to densely covered with minute red-brown or light yellow hairs. *Leaves* lanceolate to elliptic, 7—12 x 2.5—4.5 cm, base broadly acute or rounded, apex acuminate, lamina thin, with 1 pair of lateral primary veins, glabrous above, usually with minute hairs below, petioles 0.3—0.6 cm long. *Inflorescences* consisting of 3—6 cm long axillary cymes of 3—9 flowers, or flowers solitary. *Flowers* 4-merous (Plate 1A), pedicels 4—8 mm long, floral bracts variable in size and shape, 5—20 mm long. *Hypanthium* campanulate, 6—7 mm long, covered with flattened scales (Fig. 1D), calyx calyptrate, deciduous upon flowering. *Petals* broadly ovate to oblong, 5—13 mm long, white, pink, or purplish-blue, apex broadly rounded to acuminate. *Stamens* 8, anthers ca. 3 mm long, yellow, opening by short slits. *Fleshy capsule* 7—10 mm long and covered with purple-brown tubercles up to 9 mm long.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat, Phatthalung, Trang, Satun, Songkhla, Yala.

**D i s t r i b u t i o n .** — Malay Peninsula (type: west coast of Sumatra at Kataun; neotype: Penang), Riouw Archipelago, and Borneo.

**E c o l o g y .** — Collections: 11. Common beside streams in primary and secondary evergreen forest, from sea-level to 400 m alt.

**V e r n a c u l a r .** — ..... (Chumphon), .... (Surat Thani).

**3. *Pternandra tuberculata*** (Korth.) Nayar, Bull. Bot. Surv. India 17: 53. 1975; Maxwell, Gard. Bull. (Singapore) 34: 73, pl. 7 (photo of holotype). 1981 (q.v. for full synonymy); in Tree Fl. Mal. 4: 198. 1989.— *Ewyckia tuberculata* Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 255. 1844.— *Rectomitria tuberculata* (Korth.) Bl., Mus. Bot. Lugd.-Bat. 1: 7. 1849.— *Kibessia tuberculata* (Korth.) C. B. Clarke in Hook. f., Fl. Br. Ind. 2: 553. 1879; Bakh. f., Rec. Trav. Bot. Néerl. 40: 322. 1943.— *Pternandra griffithii* King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 70. 1900.

Tree, 6(—20) m tall and reaching a diameter of up to 50 cm, or a scrambling shrub; bark shallowly fissured, smooth, grey to brown; branchlets terete and glabrous. *Leaves* broadly lanceolate to ovate, 6—12(—19) x 3—6(—9.5) cm, base rounded to cordate, apex acuminate, tip 6—10 mm long, lamina subcoriaceous, with 1(—2) pair(s) of lateral primary veins, on both surfaces glabrous, petioles about 0.5 cm long. *Inflorescences* axillary or terminal few- to many-flowered cymes, 1—2.5 cm long. *Flowers* 4-merous, pedicels 2—3 mm long, floral bracts 2—3 mm long. *Hypanthium* campanulate, 4—5 mm long, covered with minutely puberulous, often appressed tubercles to 2 mm long, calyx calyptrate, splitting into 4 triangular lobes upon flowering. *Petals* broadly ovate with an acute apex, 4—5 mm long, purplish or light blue. *Stamens* 8, anthers about 2 mm long, yellow, opening by short slits. *Fleshy capsule* 7—8 mm long and verruculose.

**T h a i l a n d .** — PENINSULAR: Trang (only collection: GEESINK 7281).

**D i s t r i b u t i o n .** — Malay Peninsula, Riouw Archipelago, Sumatra (type), Bangka Is., Borneo, and New Guinea.

**E c o l o g y .** — In evergreen rain forest often beside streams on granitic rock; in Thailand below 200 m alt.

**V e r n a c u l a r .** — ..... (Satun), .... (Nakhon Si Thammarat).

## 2. OSBECKIA

Linn., Sp. Pl. 1: 345. 1753; Bakh. f., Rec. Trav. Bot. Néerl. 40: 45. 1943; Hansen, Ginkgoana 4: 1-150, pl. 1-20. 1977 (partial revision).— *Ceramicalyx* Bl., Mus. Bot. Lugd.-Bat. 1: 50. 1849.

Shrubs, annual or perennial herbs, rarely treelets or creepers. *Leaves* lanceolate or ovate to elliptic, sometimes narrowly elliptic, those of a pair isomorphic, with 1—3(—4) pairs of lateral primary veins, base acute, rounded or cordate, apex typically acute,

margin entire, lamina with a scarce or dense indumentum of appressed hairs, usually petiolate. *Inflorescences* terminal paniculate cymes or axillary glomerulate few-flowered heads or rarely solitary flowers. *Flowers* 4- or 5-merous, with two stamen whorls, bracts ovate and variable in size, indumentum more or less as on the leaves.

*Hypanthium* campanulate or urceolate, calyx rim with persistent or caducous lobes, often with intersepalar emergences. *Petals* broadly obovate, more or less ciliate along the margin. *Stamens* typically isomorphic, opening by a single apical pore, connective basally not or only slightly prolonged and somewhat expanded around the filament insertion (Fig. 2C). *Ovary* adnate to the hypanthium by 8 or 10 septa for about 1/2—2/3 of its length (Fig. 2F), 4- or 5-locular, apically conical and often covered with bristles (emergences), placentae axillary. *Fruit* a dry capsule. *Seeds* minute (<1 mm), cochleate.

Fide C. Hansen's partial revision, a genus of 50 species; 30 in Asia, two in Australia, 13 in Madagascar, and five in Africa; seven species in Thailand.

#### KEY TO THE SPECIES

1. Flowers and capsules 5-merous
  2. Petioles 2.2—3.2 cm long **1. *O. aspericaulis***
  2. Leaves sessile or subsessile
    3. Leaves and stem tomentose to lanate; hypanthium 4—6.5 mm long, with a dense indumentum of simple hairs **7. *O. thorelii***
    3. Leaves and stem with stiff shaggy hairs; hypanthium 6—10 mm long, with few to several penicillate emergences (Fig. 2B, E), lacking simple hairs **4. *O. nepalensis***
1. Flowers and capsules 4-merous
  4. Annual herbs; hypanthium softly pilose with simple hairs, lacking emergences **3. *O. cochinchinensis***
  4. Shrubs or perennial herbs; hypanthium with emergences
    5. Hypanthium with 3 or 4 rings of bristles (emergences) that persist even in old fruits **5. *O. setoso-annulata***
    5. Hypanthium emergences not arranged in rings
      6. Herbs; hypanthium and capsule 3—7(—8) mm long **2. *O. chinensis***
      6. Shrubs; hypanthium and capsule, 14—20 mm long **6. *O. stellata***

**1. *Osbeckia aspericaulis*** Hook. f. ex Triana, Trans. Linn. Soc. London, Bot. 28: 55. 1871; Hansen, Ginkgoana 4: 112. 1977.

Shrub, 2 m tall, stems with shaggy, short and appressed, or long and patent bristles. *Leaves* ovate, 18—20 x 7—8.2 cm, base broadly acute to subcordate, apex attenuate, lamina with 3 pairs of lateral primary veins, above with ascending bristles, below with patent hairs, petioles 2.2—3.2 cm long. *Inflorescences* large terminal panicles with additional smaller panicles from the upper leaf axils. *Flowers* 5-merous. *Hypanthium* 8—8.5 mm long, with few much reduced emergences and hairs or almost glabrous, intersepalar emergences narrow tufts of hairs or bristles, the calyx lobes acute, 8—9 mm long, caducous. *Petals* 20—22 mm long, mauve. *Stamens* 10, isomorphic, anthers 8.5—10 mm long, yellow, attenuate with a short beak, the connective slightly prolonged below the anthers and with two conspicuous ventral spurs. *Ovary* as long as or slightly shorter than the hypanthium, apically with a dense cover of tightly appressed bristles. *Capsule* campanulate or ribbed, ca. 10 mm long.

**T h a i l a n d .** — NORTH-EASTERN: Nong Khai.

**D i s t r i b u t i o n .** — India and Burma (type: HELFER 2244).

**E c o l o g y .** — Collection: 1.

**N o t e s .** — *Osbeckia aspericaulis* is readily recognized by the long-petiolate leaves and ventrally appendaged stamen connectives.

**2. *Osbeckia chinensis*** Linn., Sp. Pl. 1: 345. 1753; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 874. 1921; Ridl., Fl. Mal. Pen. 1: 762. 1922; Craib in Fl. Siam. En. 1: 674. 1931; Bakh. f., Rec. Trav. Bot. Néerl. 40: 48. 1943; Hansen, Ginkgoana 4: 49. 1977 (cum syn.); Keng & Li in Fl. Taiwan 3: 859, pl. 842. 1977.— *O. angustifolia* D. Don, Prod. Fl. Nepal. 221. 1825.— *O. chinensis* var. *angustifolia* (D. Don), C.Y. Wu & C. Chen, Fl. Yunnan. 2: 80. 1979.— *O. parva* Geddes, Bull. Misc. Inform. Kew 1928: 70. 1928; Craib in Fl. Siam. En. 1: 676. 1931.— *O. watanae* Craib, Bull. Misc. Inform. Kew 1930: 171. 1930; in Fl. Siam. En. 1: 678. 1931. Color plate 1D.

Erect, basally branched, perennial herb, 0.3—1(—1.5) m tall, stems angular, more or less glabrous. *Leaves* narrowly oblong or lanceolate, (1—)3—5(—7) x 0.2—0.8(—1.8) cm, subsessile, base rounded, apex acute, lamina with 1—2(—3) pairs of lateral primary veins, on both sides densely pubescent with short ascending hairs. *Inflorescences* few-flowered axillary fascicles (Color plate 1D), or solitary flowers. *Flowers* 4-merous. *Hypanthium* (3—)4.5—7 mm long, glabrous or with scattered

hairs, normally with emergences at least between the calyx lobes, these triangular, (1—)6—7 mm long and ciliate along the margins. *Petals* 12—17 mm long, purple. *Stamens* 8, isomorphic, anthers 4—7 mm long, yellow, ovate to oblong and straight, narrowed into a short beak. *Ovary* as long as or shorter than the hypanthium, apically with a crown of bristles. *Capsule* campanulate or urceolate, 3—5(—8) mm long.

**T h a i l a n d .** — Found in almost all provinces. **NORTHERN:** Mae Hong Son, Chiang Mai (Doi Suthep, KERR 2719, BM, K, type of *O. parva*), Chiang Rai, Lamphun, Phitsanulok, Nakhon Sawan; **NORTH-EASTERN:** Phetchabun, Loei, Sakon Nakhon, Khon Kaen; **EASTERN:** Chaiyaphum, Nakhon Ratchasima, Buri Ram; **CENTRAL:** Saraburi, Nakhon Nayok; **SOUTH-EASTERN:** Prachin Buri (Watana, PUT 1909, BM, K, type of *O. watanae*), Chanthaburi; **PENINSULAR:** Chumphon, Ranong, Nakhon Si Thammarat, Phatthalung, Trang, Satun.

**D i s t r i b u t i o n .** — From China (type) throughout Southeast Asia, including Borneo, Sumatra, Java, the Philippines, New Guinea, and North Australia.

**E c o l o g y .** — Collections: 67. From sea-level to 1600 m alt; preferring open, moist sites, often in grassy areas but also in light deciduous or evergreen forest.

**N o t e s .** — *Osbeckia chinensis* is a variable species distinguished from its congeners by its 4-merous flowers with characteristic intersepalal emergences.

**3. *Osbeckia cochinchinensis*** Cogn. in Monogr. Phan. 7: 331. 1891; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 877. 1921; Ridl., Fl. Mal. Pen. 1: 762. 1922; Craib in Fl. Siam. En. 1: 675. 1931; Hansen, Ginkgoana 4: 39, pls. 8 & 9. 1977.

Erect annual herb to 30 cm tall, stems more or less glabrous. *Leaves* narrowly lanceolate or oblong, 1—2 cm long, subsessile, base rounded, apex acute to obtuse, lamina with 1—2(—3) pairs of lateral primary veins, on both sides pubescent with simple hairs. *Inflorescences* few-flowered axillary fascicles, or solitary flowers. *Flowers* 4-merous. *Hypanthium* 3—4 mm long, softly pilose, calyx lobes up to 1 mm long. *Petals* ca. 6 mm long, purple. *Stamens* 8, isomorphic, purple, anthers 1.5—2 mm long, oblong and straight, without a terminal beak. *Ovary* shorter than the hypanthium, covered with thin hairs. *Capsule* campanulate, 4—5 mm long.

**T h a i l a n d .** — **NORTH-EASTERN:** Sakon Nakhon; **SOUTH-EASTERN:** Chanthaburi; **PENINSULAR:** Satun, Songkhla.

**D i s t r i b u t i o n .** — Laos, Cambodia, South Vietnam (type).

**E c o l o g y .** — Collections 7. In open grassy areas at altitudes below 500 m.

**U s e s .** — Leaves applied to snake bites to speed wound-healing (LAKSHNAKARA 465, BK).

**N o t e s .** — Similar to *O. chinensis* from which it can be distinguished by the lack of hypanthium emergences and the beakless stamens.

**4. *Osbeckia nepalensis*** Hook. f., Exot. Fl. 1, pl. 31. 1823; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 868. 1921; Craib in Fl. Siam. En. 1: 676. 1931; Hansen, Ginkgoana 4: 64, pl. 1A. 1977. Figure 2.

Small tree or shrub, up to 2 m tall, branchlets angular and covered with appressed shaggy hairs. *Leaves* ovate to lanceolate, 8—15 x 1.4—5 cm, subsessile, base rounded, apex acute, lamina with 2(—3) pairs of lateral primary veins, strigose above, subvillous below. *Inflorescences* clustered cymes of up to 10 flowers, terminal or in distal leaf axils. *Flowers* 5-merous. *Hypanthium* 6—8(—10) mm long, with few to several large, appressed emergences, each crowned by long bristles, ca. 5 mm long (Fig. 2B, E), calyx lobes triangular, 6—8 mm long, caducous. *Petals* 15—20 mm long, light pink. *Stamens* 10, isomorphic, anthers 6—9 mm long, yellow, oblong and narrowed into a beak (Fig. 2C). *Ovary* longer than the hypanthium (including the crown of apical bristles). *Capsule* urceolate, up to 10 mm long.

**T h a i l a n d .** — NORTHERN: Chiang Mai, Chiang Rai; NORTH-EASTERN: Phetchabun; EASTERN: Chaiyaphum.

**D i s t r i b u t i o n .** — Nepal (type), Bhutan, India, southern China, Burma, Laos, Vietnam, and Malay Peninsula.

**E c o l o g y .** — Collections: 11. Found on rocky ground or in heavy soils or bogs, apparently occasionally cultivated as an ornamental; at 300—1400 m alt.

**5. *Osbeckia setoso-annulata*** Geddes, Bull. Misc. Inform. Kew 1928: 71. 1928; Craib in Fl. Siam. En. 1: 677. 1931; Hansen, Ginkgoana 4: 45, pl. 7C. 1977.

Erect, much-branched perennial herb, 20—70 cm tall; stems more or less glabrous. *Leaves* elliptic to ovate, 1—6 x 0.3—3 cm, base acute to broadly acute, apex acute, lamina with 1—2 pairs of lateral primary veins, glabrous or slightly hairy, petioles 0.2—0.3 cm long. *Inflorescences* terminal cymes with up to 10 flowers. *Flowers* 4-merous. *Hypanthium* up to 5 mm long, apical emergences with bristles along the margin, calyx lobes oblong to ovate, 4—6 mm long. *Petals* 7—11 mm long, light

purple. *Stamens* 8, isomorphic, purplish, anthers 3—4 mm long, oblong and more or less straight, narrowed into a short beak. *Ovary* shorter than the hypanthium, crowned by bristles along the locule-margins. *Capsule* slightly urceolate, ca. 8 mm long.

**T h a i l a n d .** — SOUTH-WESTERN: Kanchanaburi (Khao Ri Yai, near Wangka, 200 m, KERR 10470, BK, K, type; same locality: WICHIAN 336, K).

**D i s t r i b u t i o n .** — Thai-Burmese border, extending to Laos.

**E c o l o g y .** — Collections: 2. On limestone rocks or in sandy soil at 200—300 m alt.

**6. *Osbeckia stellata*** Buch.-Ham. ex Ker-Gawler, Bot. Reg. 8, pl. 674. 1822; Hansen, Ginkgoana 4: 23, pl. 5. 1977 (q.v. for complete synonymy).— *Ceramicalyx stellatus* (Buch.-Ham. ex Ker-Gawler) Bl., Mus. Bot. Lugd.-Bat. 1: 50. 1849.— *Osbeckia marginulata* C. B. Clarke in Hook. f., Fl. Br. Ind. 2: 518. 1879.— *O. stellata* var. *marginulata* (C. B. Clarke) Hansen, op. cit.: 27.— *O. crinita* Benth. ex Naudin, Ann. Sci. Nat. Bot., Ser. 3, 14: 72. 1850.— *O. stellata* var. *crinita* (Benth. ex Naudin) Hansen, op. cit.: 31.— *O. cinerea* Cogn. in Monogr. Phan. 7: 1177. 1891; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 870. 1921; Craib in Fl. Siam. En. 1: 675. 1931.— *O. racemosa* Craib, Bull. Misc. Inform. Kew 1911: 51 and 86. 1911; in Fl. Siam. En. 1: 677. 1931; Guillaumin, op. cit.: 873.— *O. garrettii* Craib, Bull. Misc. Inform. Kew 1916: 262. 1916; in Fl. Siam. En. 1: 676. 1931; Guillaumin, op. cit.: 873.— *O. paludosa* Craib, Bull. Misc. Inform. Kew 1916: 262. 1916; in Fl. Siam. En. 1: 676. 1931; Guillaumin, op. cit.: 872.— *O. sikkimensis* Craib, Notes Roy. Gard. Edinburgh 10: 57. 1917.— *O. pulchra* Geddes, Bull. Misc. Inform. Kew 1930: 171. 1930; in Fl. Siam. En. 1: 677. 1931.— *O. pulchra* var. *rubra* Craib, Fl. Siam. En. 1: 677. 1931.

Shrub, 1—2(—3) m tall, sparsely branched, branches angular, more or less densely pubescent with simple hairs. *Leaves* ovate to elliptic or slightly lanceolate, 9—11 x 4—5 cm, base rounded, apex acute, lamina with 2—3 pairs of lateral primary veins, strigose on both sides, petioles 0.3—0.5 cm long. *Inflorescences* paniculate cymes of few to many flowers, in distal leaf axils or terminal. *Flowers* 4-merous. *Hypanthium* 14—18 mm long, with few to several 2—5 mm long emergences, each crowned by tan bristles, calyx lobes triangular, 3—5 mm long. *Petals* 16—28 mm long, pink. *Stamens* 8, isomorphic, anthers 10—15 mm long, yellow, long-beaked and S-shaped. *Ovary* shorter than the hypanthium, glabrous or apically with short appressed hairs. *Capsule* urceolate, 15—20 mm long.

**T h a i l a n d .** — NORTHERN: Mae Hong Son, Chiang Mai (Doi Suthep, KERR 836, K, type of *O. racemosa*; Payap/Paya, Doi Angka, GARRETT 51, BKF, K, type of *O. garrettii*; Doi Suthep, KERR 2740, BK, K, type of *O. paludosa*; Doi Suthep, 1600 m, KERR s.n., K, type of *O. pulchra*; Doi Suthep, KERR s.n., BK, type of var. *rubra*), Chiang Rai, Phitsanulok; NORTH-EASTERN: Phetchabun, Loei, Sakhon Nakhon, Khon Kaen; EASTERN: Nakhon Ratchasima, Surin; SOUTH-WESTERN: Kanchanaburi; CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Chon Buri; PENINSULAR: Satun.

**D i s t r i b u t i o n .** — Nepal (lectotype), Bhutan, India, Burma, southern China, Taiwan, Indochina; naturalized on Mauritius.

**E c o l o g y .** — Collections: 80. Common in open areas but also found in evergreen or deciduous forest, often on marshy ground; up to 2000 m alt.

**7. *Osbeckia thorelii*** Guillaumin, Notul. Syst. (Paris) 2: 301. 1913; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 867, Fig. 96 (on p. 919, due to a printer's error). 1921; Craib in Fl. Siam. En. 1: 678. 1931; Hansen, Ginkgoana 4: 118, pl. 20B. 1977.

Small shrub, 0.5—1 m tall, branches tomentose. *Leaves* oblong-lanceolate, 2—4 x 0.7—1.4 cm, subsessile, base acute or rounded, apex acute to obtuse, lamina with 1 pair of lateral primary veins, tomentose to lanate on both sides. *Inflorescences* many-flowered leafy panicles. *Flowers* 5-merous. *Hypanthium* about 5 mm long, covered with simple hairs and a few emergences, calyx lobes oblong to triangular, 5—7 mm long. *Petals* 20—25 mm long, purplish-red or mauve. *Stamens* 10, isomorphic but with filaments of unequal lengths, anthers ca. 8 mm long, yellow, dorsally curved and beaked. *Ovary* shorter than the hypanthium, densely covered with long hairs. *Capsule* campanulate or urceolate, up to 9 mm long.

**T h a i l a n d .** — NORTH-EASTERN: Loei, Nong Khai, Sakon Nakhon; EASTERN: Ubon Ratchathani.

**D i s t r i b u t i o n .** — Laos, Cambodia, Vietnam (type).

**E c o l o g y .** — Collections: 6. In open areas on sandy soil, beside streams, or in evergreen or deciduous forest; at altitudes below 400 m.

### 3. MELASTOMA

Linn., Sp. Pl. 1: 389. 1753; Bakh. f., Rec. Trav. Bot. Néerl. 40: 55. 1943; Meyer, Blumea 46: 351-398. 2001 (revision).—*Otanthera* Bl., Flora 14: 488. 1831.—*Lachnopus* Bl., Flora 14: 477. 1831.

Erect or procumbent shrubs or small trees up to 6 m high. *Leaves* lanceolate to ovate, base acute, rounded or cordate, apex typically acute or acuminate, lamina strigose or subvillous to villous, rarely almost glabrous, with 1—4 pairs of lateral primary veins (marginal pairs often inconspicuous), margin entire; petiolate. *Inflorescences* terminal or in distal leaf axils, cymose, rarely flowers solitary or in panicles. *Flowers* normally 5-merous (often varying in one individual from 5- to 8-merous), with two stamen whorls, bracts ovate, sometimes large and conspicuous, deciduous or persistent. *Hypanthium* campanulate, moderately to densely covered with scales, bristles or complex emergences; calyx lobes triangular to lanceolate, ciliate along the margin, deciduous. *Petals* obovate, ciliate at least along the apical margin. *Stamens* dimorphic, connective longer in the episepalous stamens than of the epipetalous ones, ventrally curved and with a bilobed appendage or with 2 ventral appendages (Figs. 4D, 5B) or stamens isomorphic and connectives of all stamens only slightly prolonged below the anthers and with upwards curved ventral appendages (Fig. 3D); anthers opening by a single pore, usually beaked. *Ovary* adnate to the hypanthium by 10 septa for about half its length, 5-locular and apically bristly. *Fruit* a campanulate dry capsule opening apically, a fleshy capsule splitting irregularly, or an indehiscent berry (*M. cyanoides*, *M. orientale*). *Seeds* minute (< 1 mm), cochleate, and embedded in pulp.

*Otanthera*, traditionally placed close to *Melastoma* (Hansen, Ginkgoana 4, 1977, Renner, Nord. J. Bot. 13, 1993), is here included in *Melastoma*, as *M. cyanoides*. *Melastoma* already includes species with dry capsules (*M. pellegrinianum*), species with fleshy dehiscent fruits (most species), and species with fleshy indehiscent fruits, that is, berries (*M. orientale*, *M. dodecandrum* [Vietnam, southern China]). The fruits of *Otanthera* are very similar to those of *Melastoma orientale*, and the genus can therefore not be separated from *Melastoma* on the basis of its fruits. As in *Otanthera*, the stamen dimorphism is not fixed in some species of *Melastoma*. Molecular data indicate an origin of *Otanthera* from within *Melastoma*, which would make the latter paraphyletic if *Otanthera* were maintained as a separate genus (Meyer, Blumea 46: 351-398. 2001).

22 species in Asia, one species introduced in Africa; eight species in Thailand.

KEY TO THE SPECIES

1. Hypanthium with stellate (Fig. 4B, E, F) or penicillate emergences; if covered with simple hairs (Fig. 3B), then mature fruit an indehiscent berry (*M. cyanoides*)
  2. Hypanthium with stellate bristles (emergences); mature fruit an irregularly dehiscent fleshy capsule **7. *M. saigonense***
  2. Hypanthium with penicillate emergences or simple hairs; mature fruit an indehiscent berry
    3. Stamen connectives elongated below the anthers at least in the outer stamens **5. *M. orientale***
    3. Stamen connectives not elongated below the anthers (Fig. 3) **1. *M. cyanoides***
1. Hypanthium with scales or bristles (Color plate 1B & C)
  4. Fruit an apically dehiscent dry capsule; inflorescence a many-flowered loose cyme **6. *M. pellegrinianum***
  4. Fruit a longitudinally or transversally dehiscent fleshy capsule (Color plate 1B); inflorescence a few-flowered cyme
    5. Hypanthium covered with spreading scales or bristles
      6. Leaves beneath tomentose **4. *M. minahassae***
      6. Leaves beneath strigose or pilose, but not tomentose **8. *M. sanguineum***
    5. Hypanthium with appressed scales
      7. Inflorescences on old wood, overtopped by subterminal shoots **2. *M. imbricatum***
      7. Inflorescences on young shoots **3. *M. malabathricum***

**1. *Melastoma cyanoides*** Sm., Rees' Cyclop. 23, no. 56-57. 1819; Meyer, Blumea 46: 359. 2001.— *Otanthera cyanoides* (Sm.) Triana, Trans. Linn. Soc. London, Bot. 28: 55. 1871.— *O. bracteata* Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 235, pl. 51. 1844; Craib in Fl. Siam. En. 1: 678. 1931; Bakh. f., Rec. Trav. Bot. Néerl. 40: 107. 1943; Whiffin in Fl. Australia 18: 249, Fig. 87A-B. 1990. Figure 3.

Upright shrub, 1—2 m tall, entire plant loosely covered with spreading bristles. *Leaves* ovate, 6—12(—15) x 2.5—6.5(—8.5) cm, base rounded, apex acute to acuminate, lamina with 3(—4) pairs of lateral primary veins, on both sides strigose, more conspicuously so above, petioles sometimes unequal, 0.5—2.8 cm long. *Inflorescences* terminal or axillary paniculate cymes of few to 10 flowers. *Flowers* 5-merous, bracts ovate acuminate, occasionally conspicuous, up to 5.5 mm long. *Hypanthium* 5—6 mm long, moderately to densely pubescent with simple hairs (Fig.

3B) or rarely emergences crowned by bristles ('penicillate emergences'); calyx lobes narrowly oblong to triangular, ca. 1 mm long. *Petals* 4—10 mm long, pale pink. *Stamens* 10, isomorphic, anthers linear, 2—3 mm long, white or yellow, the connective hardly prolonged below the anther. *Ovary* apically densely pubescent (Fig. 3C). *Berry* globose, 4—7 mm in diam.

**T h a i l a n d .** — PENINSULAR: Surat Thani, Nakhon Si Thammarat.

**D i s t r i b u t i o n .** — From Burma throughout Malesia and the Philippines to New Guinea and north-eastern Queensland

**E c o l o g y .** — Collections 5. In disturbed areas in evergreen forest or along roads; from 100 to 300 m alt.

**V e r n a c u l a r .** — Mung-rae.

**N o t e s .** — *Melastoma cyanoides* closely resembles *M. orientale* from which it can be distinguished by lacking a connective elongation below the anthers.

**2. *Melastoma imbricatum*** Wall. ex C. B. Clarke in Hook. f., Fl. Br. Ind. 2: 524. 1879; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 5. 1900; Meyer, Blumea 46: 363. 2001.— *Melastoma fasciculare* Naudin, Ann. Sci. Nat., Ser. 3, 13: 288. 1849.

Shrub, 1—3 m tall, branchlets quadrangular and densely covered with appressed scales. *Leaves* ovate to lanceolate, 11—18 x 5.8—8 cm, base acute or rounded, apex acute or acuminate, lamina with 2 pairs of lateral primary veins, strigose on both sides, petioles 1.3—3.5 cm long. *Inflorescences* compact cymes of usually 7—9 flowers, terminal, overtopped by young subterminal shoots. *Flowers* 5-merous, bracts early caducous. *Hypanthium* 5—9 mm long, densely covered with appressed scales, 1—2.5 mm long, calyx lobes ± lanceolate, 5—8 mm long, early caducous. *Petals* 25—35 mm long, purple. *Stamens* 10, dimorphic, outer anthers 7—9 mm long, lilac, connective prolongation (pedoconnective) 4—8 mm long, inner anthers 5—6 mm long, yellow, pedoconnective short. *Ovary* apically setose. *Capsule* 7—11 mm long, rupturing irregularly transversely at maturity, pulp soft, dark purple.

**T h a i l a n d .** — NORTH-EASTERN: Phetchabun; WESTERN: Kanchanaburi; SOUTH-EASTERN: Chanthaburi.

**D i s t r i b u t i o n .** — From India (syntypes) across Southeast Asia and Malesia to New Guinea, the Philippines, New Hebrides and North Australia.

**E c o l o g y .** — Collections: 3. In mixed deciduous and hill evergreen forests.

**3. *Melastoma malabathricum* Linn., Sp. Pl. 1: 390. 1753 ('*malabathrica*').**

1. Leaves strigose to slightly pilose below; branches covered with scales

**a. ssp. malabathricum**

1. Leaves pilose beneath; branches pilose

**b. ssp. normale**

**a. *Melastoma malabathricum* Linn. ssp. malabathricum** Linn., Sp. Pl. 1: 390. 1753 ('*malabathrica*'); Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 882. 1921; Ridl., Fl. Mal. Pen. 1: 764. 1922; Bakh. f., Rec. Trav. Bot. Néerl. 40: 79. 1943; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 6. 1900; Craib in Fl. Siam. En. 1: 680. 1931; Meyer, Blumea 46: 364. 2001. — *M. affine* D. Don, Mem. Wern. Nat. Hist. Soc. 4: 288. 1823; Keng in Fl. Taiwan 3: 854. 1977; Whiffin in Fl. Australia 18: 248. 1990.— *M. polyanthum* Bl., Flora 14: 480. 1831; Guillaumin, op. cit. 893; Ridl., op. cit. 765; Craib, op. cit. 682; Bakh. f., op. cit. 64.— *M. malabathricum* var. *polyanthum* (Bl.) Benth., Fl. Austral. 3: 292. 1867.— *M. scabrum* Ridl., J. Straits Branch Roy. Asiat. Soc. 79: 66. 1918; Ridl., Fl. Mal. Pen. 1: 766. 1922; Craib, op. cit. 683.— *M. malabathricum* var. *grandiflorum* Craib, op. cit. 681.— *M. imbricatum* var. *longipes* Craib, op. cit. 679.

Color plate 1B & C.

Shrub, 1—3(—6) m tall, branchlets quadrangular and densely covered with appressed scales. *Leaves* lanceolate, 4—14 x 1.7—5 cm, base acute or rounded, apex acute or acuminate, lamina with 1—2 pairs of lateral primary veins, strigose on both sides but more conspicuously so on the lower surface especially on the main nerves, petioles 0.5—1.9 cm long. *Inflorescences* compact or loose cymes of 3—7 flowers, terminal or in the upper leaf axils. *Flowers* 5-merous, rarely 4- or 6-merous, bracts sometimes large and conspicuous, to 20 mm long, outside and especially along the midrib densely covered with appressed whitish or reddish scales. *Hypanthium* 5—9 mm long, more or less densely covered with appressed scales (Color plate 1C), 1—3 mm long, calyx lobes ± lanceolate, 5—13 mm long. *Petals* 25—35(—40) mm long, purple. *Stamens* 10, rarely 8 or 12, dimorphic, outer anthers 7—9(—14) mm long, lilac, connective prolongation (pedoconnective) 4—8(—11) mm long, inner anthers 5—6(—11) mm long, yellow, pedoconnective short. *Ovary* apically setose. *Capsule* 5—12 mm long, rupturing irregularly transversely at maturity (Color plate 1B), pulp soft, dark purple.

**T h a i l a n d .** — Found in most provinces. **NORTHERN:** Chiang Mai, Chiang Rai, Nan, Phitsanulok; **NORTH-EASTERN:** Phetchabun; **CENTRAL:** Nakhon Nayok;

SOUTH-EASTERN: Chanthaburi (Baw Re, PUT 224, K, type of *M. imbricatum* var. *longipes*), Trat; PENINSULAR: Ranong, Surat Thani, Phangnga, Phuket, Nakhon Si Thammarat, Phatthalung (vic. of Khao Sung, 900 m, KERR 15235, BK, K, type of var. *grandiflorum*), Trang, Songkhla, Narathiwat.

**D i s t r i b u t i o n .** — Southeast Asia (type: "India orientalis") and across Malesia to New Guinea, the Philippines, New Hebrides and North Australia.

**E c o l o g y .** — Collections: 82. Common in open places and savannas but also in evergreen and deciduous forests; from sea-level to 1900 m alt. The "Straits Rhododendron" is an aggressive weed.

**V e r n a c u l a r .** — Aa-noi Ton, Klong kleng, Beng-ah, Mai grá.

**U s e s .** — Mature fruits are edible but tinge the mouth of the eater black (family name: mela - stoma, meaning 'black mouth'). As is true of many species of Melastomataceae worldwide, leaves of *M. malabathricum* are applied to burns to speed wound healing. In Thailand this is done by the Akha hilltribe (MAXWELL 119, CMU). Also, an extract of the roots boiled in water is used for post-childbirth problems by the Meo hilltribe (MAXWELL 165, CMU).

**N o t e s .** — *Melastoma malabathricum* is highly polymorphic but may be recognized by the stiff, lanceolate leaves and the hypanthium covered by appressed scales. Variable characters are the length of the bracts that sometimes envelop the flowers, the length and shape of the calyx lobes, and the size and density of the scales on the hypanthium. Bakhuizen f. (1943) separated the abundant material of *M. malabathricum* from the Malayan Archipelago into more than 20 species and varieties, while a recent revision recognizes 22 species in the genus altogether (Meyer, Blumea 46: 351-398. 2001).

**b. *Melastoma malabathricum* ssp. normale** (D. Don) K. Meyer, Blumea 46: 368. 2001.— *M. normale* D. Don, Prodr. Fl. Nep.: 220. 1825.— *M. wallichii* DC., Prodr. 3: 146. 1828.— *M. houtteanum* Naudin, Ann. Sci. Nat. Bot. 3, 13: 291. 1849.— *M. clarkeanum* Cogn., Monogr. Phan. 7: 346. 1891.— *M. normale* var. *divergens* Craib in Fl. Siam. En. 1: 682. 1931.

Shrub, 1—3 m tall, branchlets quadrangular, densely covered with ca. 2 mm long reddish-brown erect bristles. *Leaves* lanceolate to obovate, 6—20 x 2—8.5 cm, base and apex acute, lamina with 2—3 pairs of lateral primary veins, strigose above, pilose underneath, petioles 0.5—4 cm long. *Inflorescences* compact or loose cymes of 3—9 flowers. *Flowers* 5-merous, bracts to 15 mm long, outside especially along the midrib densely covered with bristles. *Hypanthium* 5—9 mm long, densely covered with 2—5

mm long, brownish, appressed to spreading bristles, calyx lobes narrowly triangular, 8—11 mm long. *Petals* 20—25 mm long, purple. *Stamens* 10, dimorph, outer anthers 6—8 mm long, lilac, connective prolongation (pedoconnective) 5—6 mm long, inner anthers 5—7 mm long, yellow, pedoconnective short. *Ovary* apically setose. *Capsule* 5—8 mm long, rupturing irregularly at maturity.

**T h a i l a n d .** — NORTHERN: Chiang Mai (Chiengdao, Muang Kawng, 1400 m, KERR 5540, BM, BK, K, type of *M. normale* var. *divergens*), Chiang Rai, Phrae, Tak; NORTH-EASTERN: Phetchabun, Loei.

**D i s t r i b u t i o n .** — India, Nepal, Burma, Vietnam, and southern China.

**E c o l o g y .** — Collections: 19. In Thailand in savannas and open evergreen forests at 800-1900 m alt.

**V e r n a c u l a r .** — En-ah, I deng, Khlong khlong, I si.

**N o t e s .** — Specimens from the Burmese border, sometimes annotated as *M. barbeyanum*, with scales instead of bristles on the branchlets and longer calyx lobes may represent a form of *M. malabathricum* var. *normale* (D. Don) King.

**4. *Melastoma minahassae*** Koord. ex K. Meyer, Blumea 46: 369. 2001.— *M. sumatranum* var. *lanatum* Bakh. f., Meded. Bot. Mus. Rijks Univ. Utrecht 91: 93. 1943.

Shrub, 0.8—2 m tall, branchlets quadrangular, densely covered with 2—5 mm long reddish-brown spreading bristles, glabrescent. *Leaves* ovate-elliptic, 5—8(—10) x 3—4(—4.5) cm, base acute or rounded, apex acuminate, lamina with 2—3 pairs of lateral primary veins, on both sides densely bristly, brown, petioles 0.6—0.8(—1.2) cm long. *Inflorescences* few flowered cymes or flowers solitary. *Flowers* 5-merous, bracts lanceolate, 8—12 mm long, densely bristly. *Hypanthium* campanulate, 7—9(—11) mm long, densely covered with spreading reddish-brown bristles 2—4 mm long, calyx-lobes ± lanceolate, 7—8 mm long. *Petals* obovate-rounded, 37—42 x 32—35 mm, purple. *Stamens* 10, dimorphic, outer anthers 9 mm long, connective prolongation (pedoconnective) 8 mm long, inner anthers 8 mm long, connective not prolonged. *Ovary* apically setose. *Capsule* 9—13 mm long, rupturing irregularly longitudinally at maturity.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat.

**D i s t r i b u t i o n .** — Borneo, Sulawesi.

**E c o l o g y .** — Collection: 1. In evergreen forest at 1700 m alt.

**Notes.** — A montane species occurring between 1500 and 2800 m altitude. Often all parts of the plant are tinged pink.

**5. *Melastoma orientale*** Guillaumin, Bull. Soc. Bot. France 60: 366, 402. 1913; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 888. 1921; Craib in Fl. Siam. En. 1: 682. 1931; Meyer, Blumea 46: 373. 2001.— *Otanthera confusa* Craib, Bull. Misc. Inform. Kew 1930: 172. 1930; in Fl. Siam. En. 1: 679. 1931.

Shrub, 0.3—1.5(—5) m tall, branchlets quadrangular, covered with appressed, 1—1.5 mm long bristles, at the nodes with spreading bristles up to 5 mm. *Leaves* lanceolate, 4—9.3 x 1—3.5 cm, base acute or rounded, apex acute, lamina thin and with 1—2 pairs of lateral primary veins, strigose on both sides, petioles 0.3—1.5 cm long. *Inflorescences* few-flowered cymes, terminal or in distal leaf axils, or solitary flowers. *Flowers* 5-merous, bracts lanceolate to obovate, 2—7 mm long, sparingly hairy outside. *Hypanthium* 3—6 mm long, sparingly covered with 2—3.5 mm long erect bristles and emergences crowned by bristles, calyx lobes narrowly triangular to linear, 3—5 mm long. *Petals* 6—8 mm long, purple. *Stamens* 10, dimorphic or isomorphic, purplish, longer anthers 4—5 mm long, the connective prolonged below the anthers for ca. 5 mm, if dimorphic then only the longer (outer) stamens prolonged below the anthers for 1—2 mm. *Ovary* apically setose. *Berry* globoes, 6—8 mm in diam., dark blue at maturity.

**Thailand.** — NORTHERN: Lampang, Phitsanulok; NORTH-EASTERN: Phetchabun, Nong Khai; EASTERN: Nakhon Ratchasima, Buri Ram; SOUTH-WESTERN: Kanchanaburi; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Chon Buri, Chanthaburi, Trat; PENINSULAR: Chumphon, Ranong (Khao Patwa Chondong, 12 km N Kapoe, 800 m, KERR 16763, BK, K, type of *Otanthera confusa*), Surat Thani, Phangnga, Krabi, Phatthalung, Trang, Satun.

**Distribution.** — Burma, Laos, South Vietnam (type).

**Ecology.** — Collections: 50. In open places but also in evergreen or deciduous forests or beside streams; from sea-level to 800 m alt.

**Vernacular.** — Khlong khleung tug pu.

**Notes.** — *Melastoma orientale* resembles *Melastoma cyanoides* from which it differs in the elongated stamen connectives (at least in the outer stamens), while *M. cyanoides* lacks elongated connectives. Most individuals have dimorphic stamens, but some have isomorphic stamens (K. Meyer, pers. obs. at Koh Chang).

**6. *Melastoma pellegrinianum*** (H. Boissieu) K. Meyer, *Blumea* 46: 374. 2001.—  
*Dissotis pellegriniana* H. Boissieu, *Bull. Soc. Bot. France* 59: 331. 1912; Guillaumin in  
Lecomte, *Fl. Gén. I.-C.* 2: 894. 1921. — *M. acutisepalum* Geddes, *Bull. Misc. Inform.*  
*Kew* 1930: 313. 1930; Craib in *Fl. Siam. En.* 1: 679. 1931.

Shrub, 1—1.5(—2.5) m tall, branchlets quadrangular and covered with appressed brown hairs. *Leaves* lanceolate, 8—10(—12) x 2.5—5 cm, base cuneate to subacute, apex acute, lamina with 2—3 pairs of lateral primary veins, strigose on both sides, petioles ca. 1 cm long. *Inflorescences* terminal many-flowered leafy paniculate cymes. *Flowers* 5-merous, bracts ca. 8 mm long, externally villous. *Hypanthium* 5—7 mm long, covered with sparse, simple, short appressed bristles, calyx lobes lanceolate, 5—7 mm long. *Petals* 10—14 mm long, pinkish-purple. *Stamens* 10, dimorphic, purple or dark blue, outer anthers about 9 mm long, connective prolongation 8—10 mm long, inner anthers about 8 mm long, connective not prolonged. *Ovary* apically setose. *Dry capsule* 6—9 mm long.

**T h a i l a n d .** — EASTERN: Si Sa Ket, Ubon Rachathani; CENTRAL: Saraburi, Nakhon Nayok; SOUTH-EASTERN: Trat (Ko Chang, Klawng Kloi, 50 m, KERR 9244, BK, type of *M. acutisepalum*).

**D i s t r i b u t i o n .** — Laos, Cambodia, and Vietnam (type).

**E c o l o g y .** — Collections 7. On rocky ground or cliffs in mixed evergreen and deciduous forests, also in open thickets on sandy soil or in savannas; at elevations of up to 600 m.

**V e r n a c u l a r .** — None.

**N o t e s .** — *Dissotis* as presently circumscribed is endemic to Africa, and the Asiatic '*Dissotis*' *pellegriniana* is better placed in *Melastoma*, which is also indicated by molecular data (Renner and Meyer, *Evolution* 55: 1315-1324. 2001). The species can be identified by the terminal, many-flowered inflorescences unusual among its congeners and dry capsular fruits.

**7. *Melastoma saigonense*** (Kuntze) Merr., *J. Arn. Arbor.* 29: 212. 1948. *Osbeckia saigonense* Kuntze, *Rev. Gen. Pl.* 1: 247. 1891; Meyer, *Blumea* 46: 377. 2001.— *M. villosum* Sims [non Aublet], *Bot. Mag.* 53: pl. 2630. 1824; Guillaumin in Lecomte, *Fl. Gén. I.-C.* 2: 887. 1921; Craib in *Fl. Siam. En.* 1: 684. 1931. Figure 4.

Shrub, up to 3 m tall, branchlets quadrangular, densely covered with reddish-brown bristles. *Leaves* elliptical to lanceolate, 3—9 x 1.3—2.5 cm, base rounded, apex

shortly acuminate, lamina with (1—)2 pairs of lateral primary veins, on both sides villous, petioles 0.6—2 cm long. *Inflorescences* 3—5-flowered cymes or solitary axillary flowers. *Flowers* 4- or 5-merous, bracts ca. 5 mm long, villous outside. *Hypanthium* 9—13 mm long, densely covered with stellate bristles (emergences; Figs. 4B, E, F), calyx lobes triangular, ca. 7 mm long. *Petals* 15—20 mm long, purple. *Stamens* 10, rarely 8, dimorphic (Fig. 4D), outer anthers 9—10 mm long, purple, connective prolongation 9—10 mm long, inner anthers about 9 mm long, yellow, connective not prolonged. *Ovary* crowned by tan or brown bristles. *Capsule* 12—14 mm long.

**T h a i l a n d .** — NORTH-EASTERN: Kalasin; EASTERN: Chaiyaphum, Buri Ram, Surin, Roi Et, Si Sa Ket; CENTRAL: Nakhon Nayok; SOUTHEASTERN: Prachin Buri, Chon Buri, Rayong, Chanthaburi, Trat.

**D i s t r i b u t i o n .** — Burma, Laos (type: described from cultivated plants of unknown origin), South Vietnam, Cambodia.

**E c o l o g y .** — Collections 49. Common in scrubby vegetation in wet places but also in evergreen or deciduous forests below 200 m alt.

**V e r n a c u l a r .** — .... (Prachin Buri), .... (Eastern), .... (Ubol Ratchathani), .... (Chong-Trat), Klong kleng, Eng-Aai, Ti Tang (Moi language).

**N o t e s .** — Recognizable by the villous leaves and the stellate bristles (emergences) on the hypanthium.

**8. *Melastoma sanguineum*** Sims, Bot. Mag. 48: pl. 2241. 1821; Craib in Fl. Siam. En. 1: 683. 1931, Bakh. f., Rec. Trav. Bot. Néerl. 40: 100. 1943; Meyer, Blumea 46: 379. 2001.— *M. decemfidum* Roxb. [Hort. Bengal. 90. 1814, nomen nudum] ex Jack, Trans. Linn. Soc. London, Bot. 14: 6. 1823; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 4. 1900.— *M. dendrisetosum* C. Chen, J. S. China Agric. Univ. 4: 35, Fig. 10-12. 1983.— *M. sanguineum* var. *latisepalum* C. Chen, J. S. China Agric. Univ. 4: 36, Fig. 13-15. 1983.

Figure 5.

Shrub, 1—3(—5) m tall, branchlets quadrangular and covered with stiff bristles up to 8 mm long. *Leaves* lanceolate, 8—20 x 2.5—4.5 cm, base rounded or acute, apex acuminate, lamina with 2—3 pairs of lateral primary veins, above strigose, below strigose or pilose, rarely almost glabrous, petioles 0.8—2 cm long. *Inflorescences* solitary axillary flowers or few-flowered cymes. *Flowers* 5-merous, rarely 4- or 6-merous, bracts to 10 mm long, scaly outside. *Hypanthium* 9—15 mm long, densely

covered with spreading red bristles, 6—10 mm long (Fig. 5 D-F), calyx lobes narrowly triangular to linear, 6—10 mm long. *Petals* 20—45 mm long, purple. *Stamens* 10, rarely 8 or 12, dimorphic (Fig. 5B), outer anthers 12—15 mm long, purple, connective prolongation (pedoconnective) 16—18 mm long, inner anthers about 11 mm long, purplish or yellow, pedoconnective short. *Ovary* crowned by golden bristles. *Capsule* 15—25 mm long, rupturing irregularly longitudinally at maturity, pulp solid, yellow.

**T h a i l a n d .** — NORTH-EASTERN: Phetchabun, Loei, Udon Thani; EASTERN: Chaiyaphum, Nakhon Ratchasima; CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Prachin Buri, Trat; PENINSULAR: Chumphon, Narathiwat, Phangnga, Krabi, Ranong, Satun, Songkhla, Surat Thani, Trang, Yala.

**D i s t r i b u t i o n .** — Tropical China southward to Burma, Malay Peninsula (type: Penang), Sumatra, Borneo, Java and the Philippines; naturalised on Hawaii.

**E c o l o g y .** — Collections: 63. Common beside streams or on rocky places; also in open or sandy places, and in evergreen forests; from sea-level to 1500 m alt.

**V e r n a c u l a r .** — None.

**N o t e s .** — Sterile specimens of *M. sanguineum* cannot always be distinguished from *M. malabathricum* while fertile specimens can easily be identified by the long, spreading hypanthium bristles. All specimens of *M. sanguineum* in Thailand belong to var. *sanguineum*, the other two varieties are restricted to Borneo and the Lesser Sunda Islands (Indonesia).

#### 4. SONERILA

Roxb. [Hort. Beng. 5. 1814, nomen nudum], Fl. Ind. ed. Carey & Wall. 1: 180. 1820; Fl. Ind. ed. Carey 1: 176. 1832.

Terrestrial or low epiphytic or epilithic herbs, or semi-woody to woody subshrubs, erect or creeping and rhizomatous, occasionally acaulescent. *Leaves* opposite or internodes short and leaves then appearing verticillate, those of a pair often dimorphic, with 1—4 pairs of lateral primary veins or plinerved or pinnately veined, usually membranous (thick and *Osbeckia*-like in *S. helferi*), glabrous or hairy, petiolate or sessile. *Inflorescences* scorpioid cymes, or umbels. *Flowers* 3-merous, with a single whorl of stamens, rarely with two whorls (*S. obliqua*). *Hypanthium* campanulate, cylindrical, or ovoid (*S. obliqua*, *S. integrifolia*), calyx lobes triangular or dorsally cusped. *Petals* elliptic, ovate, or obovate, thin, glabrous, pink or purple. *Stamens* 3 or 6, isomorphic (except in *S. obliqua*), anthers opening by 1 or 2 pores, connective not

prolonged below the pollen sacs and usually unappendaged. *Ovary* 3-locular, adnate to the hypanthium by 3 or 6 (in *S. obliqua*) septa, often crowned by scales surrounding the style base, stamen pockets rather deep, placentae axillary. *Fruit* a ribbed or smooth triquetrous or subtriquetrous capsule (urceolate in *S. urceolata*). *Seeds* oblong, clavate, or wedge-shaped (never cochleate).

A tropical Asian genus of about 240 described species, most of them synonyms; 13 species in Thailand. The author responsible for the treatment below (SSR) was unable to ascertain the identity of *Sonerila fusca* Craib (Gard. Chron. 83: 140. 1928 and Fl. Siam. En. 1: 690. 1931; PENINSULAR: Chumphon, Ta Ngaw, KERR s.n., type) and *S. succosa* Ridl. (J. Fed. Malay. States Mus. 5: 161. 1915; PENINSULAR: Surat Thani, Kaw Pangan, ROBINSON s.n., type).

#### KEY TO THE SPECIES

1. Stamens 6 (stamen scars visible also in capsules); leaves 3—6 cm broad and with 2—3 pairs of lateral primary veins arising at or near the blade base, the numerous pairs of transversal secondary veins in regularly spaced parallel rows and clearly visible; Peninsular Thailand **8. *S. obliqua***
1. Stamens 3; leaves usually narrower than the above and (sub)pinnately veined, the transversal veins not in regularly spaced parallel rows, usually barely visible
2. Leaf base symmetrically emarginate or deeply cordate, lamina 8—18 cm long, petioles 4—10 cm long, succulent and winged, the wings drying transparent, leaves crowded at the end of a thickly succulent terete creeping stem **9. *S. plagiocardia***
2. Leaf base generally obtuse or cuneate, not emarginate or deeply cordate, lamina generally smaller and petioles shorter (except in *S. rheedii*), not winged, if stems creeping then not terete and glabrous
3. Leaves of a pair strongly dimorphic and with an asymmetric lamina base; hypanthium and capsules muricate with pustules or tubercles
  4. Leaves densely long-pilose, the margin densely ciliate (Fig. 8); Peninsular Thailand **7. *S. moluccana***
  4. Leaves glabrous except for minute hairs on the veins below, the margin glabrous except for widely-spaced minute setae; Peninsular Thailand **5. *S. integrifolia***
3. Leaves of a pair essentially isomorphic, the base not asymmetric; hypanthium and capsules lacking pustules or tubercles

5. Lamina to 3.5 cm long and densely reddish pilose with stiff hairs 1—2 mm long; Peninsular Thailand **4. S. helferi**
5. Lamina usually longer than 3.5 cm and glabrous or sparsely setose to glabrescent
6. Plants semi-woody with short internodes (1—1.5 cm long), each node adorned by bristles; petals at least 1.5 cm long **11. S. spectabilis**
6. Plants herbaceous, sometimes drying semi-woody (*S. maculata*), internodes usually longer than 1.5 cm, the nodes glabrous (except *S. violaefolia*); petals shorter than 1.5 cm
7. Leaves linear or elliptic-oblong, 0.6—2.5 x 0.4—2 cm, hypanthium and capsules narrowly cylindrical, typically < 2.3 mm in diam. (Fig. 6) **2. S. erecta**
7. Leaves broader than the above, hypanthium and capsules >2.5 mm in diam.
8. Capsules 8—9 mm long and distinctly urceolate (Fig. 10) **12. S. urceolata**
8. Capsules usually shorter (except in *S. maculata*), not urceolate
9. Plants acaulescent and with a bulbous rhizome (Fig. 9), petioles to 12 cm long **10. S. rheedii**
9. Plants caulescent or acaulescent, lacking a bulbous rhizome, the petioles usually shorter than the above
10. Stems with conspicuous persistent 5—6 mm long setae at each node **13. S. violaefolia**
10. Nodes lacking long setae
11. Stems glabrous and with 2—6 cm long internodes; Peninsular Thailand **1. S. calophylla**
11. Stems sparsely minute-setose or furfuraceous, the internodes usually shorter than the above
12. Lamina often with white spots or patches along the midrib and veins; capsules 7—11 mm long (including the tapering stalk, Fig. 7) **6. S. maculata**
12. Lamina lacking white spots or patches, often drying purplish; capsules 5—6 mm long, lacking a tapering stalk **3. S. griffithii**

**1. *Sonerila calophylla* Ridl., Journ. As. Soc. Straits 61: 5. 1912.**

Slender herb, 20—30 cm tall, the stem subangular, glabrous and tinged purplish-tan, the internodes to 6 cm long. *Leaves* mostly clustered at nodes, those of a pair isomorphic, obovate or broadly rounded, (1.2—)3—5 x 1.5—2(—4) cm, sessile or

petiolate, the petiole to 2 cm long, base rounded or attenuate, apex acute, margin denticulate and ciliate, lamina pinnately veined with 2—4 pairs of lateral primary veins departing above the blade base, above sparsely fine pilose, the hairs 1—2 mm long (as also along the leaf margin), often with white stripes along the midrib and veins, below glabrous and reddish-purple or green. *Inflorescence* a terminal scorpioid cyme with 3—9 flowers, peduncle 3—5.5 cm long, glabrous. *Hypanthium* campanulate, 4—5 mm long and 2—2.2 mm in diam., glabrous, calyx lobes broadly triangular, about 1 mm long; pedicels 2—3 mm long. *Petals* elliptic and shortly acuminate, 1—1.3 cm long, purple. *Stamens* 3, 4.5—5 mm long, cordate or bilobed at the base, yellow. *Capsule* cylindrical or with six inconspicuous longitudinal ribs, 5—6 mm long, crowned by the persistent calyx lobes, smooth and glabrous.

**T h a i l a n d .** — PENINSULAR: Ranong (Ngao waterfall S of Ranong, 100–220 m; LARSEN et al. 43221, AAU, BK, BKF, MO; Khao Phra Mi, 600 m, LARSEN et al. 30711, AAU, BK, BKF).

**D i s t r i b u t i o n .** — Malay Peninsula (Kedah, type).

**E c o l o g y .** — Collections: 2. On rocks or in sand by waterfalls; 100—600 m alt.

**N o t e s .** — Distinct by the long unbranched internodes and usually obovate leaves. Roger Lundin (Museum of Natural History, Stockholm; pers. comm.) has collected *S. calophylla* on Kedah Peak, Malaysia, where it forms basal rosettes in the wild. However, in cultivation plants sometimes produce elongated stems with the leaves distributed along the stems. Type material at Kew shows a habit similar to that seen in the Thai collections.

**2. *Sonerila erecta*** Jack, Mal. Misc. 1: 7. 1820; Stapf in King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 23. 1900; Ridl., Fl. Mal. Pen. 1: 780. 1922.— *S. tenera* Royle, Illustr. Bot. Himalaya 215, Pl. 45, Fig. 2. 1839; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 915, Fig. 99 (capsule). 1921; Ridl., op. cit.: 781; Craib in Fl. Siam. En. 1: 695. 1931.— *S. tenera* var. *robustior* Guillaumin, Notul. Syst. (Paris) 2: 329. 1913.— *S. epilobioides* Stapf & King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 22. 1900; Craib in Fl. Siam. En. 1: 690. 1931.— *S. erecta* var. *discolor* Stapf & King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 24. 1900.— *S. erecta* var. *flexuosa* Stapf & King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 24. 1900.— *S. nisbetiana* Craib, Bull. Misc. Inform. Kew 1915: 429. 1915; in Fl. Siam. En. 1: 693. 1931; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 916.

Figure 6.

An erect, usually much-branched herb, 5—50 cm tall, branchlets more or less quadrangular, glandular-pilose or puberulous. *Leaves* distributed along the branchlets, those of a pair isomorphic, thinly membranous, elliptic-oblong, lanceolate, or linear, 0.6—3 x 0.4—2 cm, base acute, cuneate, or attenuate, apex acute or rounded, margin finely serrate or remotely coarsely ciliate, with 1(—2) pair(s) of lateral primary veins departing from the blade base, sparsely setose on the upper surface, more densely so below, or glabrous, petioles 0.2—0.4 cm long. *Inflorescence* a terminal cincinnus to 11 cm long, 3—7-flowered with the flowers arranged in two rows, peduncle 0.5—1.5 cm long, hairy. *Hypanthium* very slender, cylindrical, 3.5—6 mm long, sparsely glandular-setose, calyx lobes ovate-triangular, 1—1.5 mm long; pedicels 1—3 mm long. *Petals* ovate, 4—5(—7) mm long, pink. *Stamens* 3, anthers c. 2.5 mm long, yellow. *Capsule* cylindrical and slender, 6—11 mm long and c. 2.3 mm wide, obtusely ribbed, smooth, sometimes sparsely pilose.

**T h a i l a n d .** — NORTHERN: Chiang Mai (Doi Suthep, 330 m, KERR 1549 B, BK, K, type of *S. nisbetiana*), Nan, Lampang, Phitsanulok; NORTH-EASTERN: Loei; EASTERN: Chaiyaphum, Buri Ram; CENTRAL: Saraburi; SOUTH-WESTERN: Kanchanaburi; PENINSULAR: Ranong, Satun (Terutao, CURTIS 2114, K, type of *S. epilobioides*).

**D i s t r i b u t i o n .** — India, southern China, Burma, Malay Peninsula (type: Penang) and Archipelago.

**E c o l o g y .** — Collections: 24. Understory of deciduous or evergreen forest; locally abundant; from 100—1300 m alt.

**N o t e s .** — A fragile or wiry herb, variable in size and hairiness, but easily recognized by its slender cylindrical hypanthia and capsules.

**3. *Sonerila griffithii*** C. B. Clarke in Hook. f., Fl. Br. India 2: 539. 1879; Ridl., Fl. Mal. Pen. 1: 786. 1922.— *Sonerila muscicola* Stapf & King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 31. 1900; Craib in Fl. Siam. En. 1: 693. 1931; Ridl., Fl. Mal. Pen. 1: 785. 1922.— *Sonerila congesta* Stapf & King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 32. 1900; Ridl., Fl. Mal. Pen. 1: 785. 1922; Craib in Fl. Siam. En. 1: 690. 1931.— *S. cyclaminella* Stapf & King, Journ. As. Soc. Beng. 69: 33. 1900.— *Sonerila kerrii* Craib & Stapf, Bull. Misc. Inform. Kew 1910: 22. 1910; in Fl. Siam. En. 1: 692. 1931; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 916. 1921.— *S. gracilis* Geddes, Bull. Misc. Inform. Kew 1928: 71. 1928; Craib in Fl. Siam. En. 1: 691. 1931.— *S. parva* Geddes, Bull. Misc. Inform. Kew 1928: 72. 1928; Craib in Fl. Siam. En. 1: 693. 1931.— *S.*

*deflexa* Craib, Gard. Chron., ser. 3, 83: 140. 1928.— *S. insularis* Craib, Bull. Misc. Inform. Kew 1930: 319. 1930 and Fl. Siam. En. 1: 692. 1931.

A slender acaulescent herb or with a short succulent or rhizomatous stem, 4—10(—15) cm tall, the stem sparsely minute-setose, sometimes winged, the wings drying transparently. *Leaves* often forming a basal rosette, sometimes opposite, membranous, those of a pair subisomorphic, ovate or elliptic, 2.5—8 x 2—4.5 cm, base usually rounded, apex acute or obtuse, margin denticulate and finely ciliate, more or less distinctly pinnately veined, with 2—4 pairs of lateral primary veins departing from near the base and up to half way up the blade, with scattered bristly hairs above, subglabrous beneath, often purplish red, petioles 0.8—2.5 cm long, sparsely pilose. *Inflorescence* a terminal 3—6-flowered umbelliform cyme, the peduncle 4—7 cm long. *Hypanthium* campanulate-oblong, 4—7 mm long, sparsely setose, calyx lobes broadly triangular, about 1 mm long; pedicels c. 3 mm long. *Petals* elliptic, acute, about 7—17 mm long, pink or lavender. *Stamens* 3, anthers 6—9 mm long, long attenuate and basally deeply cordate, yellow. *Capsule* ovoid to cylindrical, obtusely or distinctly ribbed, 4—6 mm long, smooth.

**T h a i l a n d .** — NORTHERN: Chiang Mai (Doi Suthep, 1350—1500 m, KERR 705, BK, K, type of *S. kerrii*); Sukhothai (Khao Luang, KERR 5919, BK, K, type of *S. parva*); NORTH-EASTERN: Loei; CENTRAL: Nakhon Nayok; SOUTH-EASTERN: Chanthaburi (Khao Soi Dao Range, 1400 m, KERR 9669, K, type of *S. deflexa*), Trat; PENINSULAR: Surat Thani (Khao Nawng, KERR 13268, BK, K, type of *S. sylvicola*; Kaw Pangan, PUT 1166, BK, K, type of *S. insularis*), Nakhon Si Thammarat (Khao Luang, SMITH 759, BK, K, type of *S. gracilis*), Satun (Langkawi, Gunong Raya, CURTIS 2573, type of *S. muscicola*; Gunong Chinchang, CURTIS 2572, K, type of *S. congesta*).

**D i s t r i b u t i o n .** — Burma and Malay Peninsula (syntypes of *S. griffithii*: Malacca).

**E c o l o g y .** — Collections: 30. Damp localities in evergreen forest, often on rocks near streams; from 300-1700 m alt.

**N o t e s .** — *Sonerila griffithii* is readily recognized by its acaulescent habit and the usually purplish-drying small leaves.

**4. *Sonerila helferi*** C. B. Clarke in Hook. f., Fl. Br. India 2: 540. 1879; Craib in Fl. Siam. En. 1: 691. 1931, descr. ampl.

Branched woody subshrub, to 30 cm tall, stem terete, densely reddish pilose. *Leaves* distributed along the stem or crowded at the tips of branchlets, isomorphic and rather thick (for the genus), ovate, 1—3.5 x 0.6—2.5 cm, base acute or obtuse, apex acute, margin minutely serrulate, lamina with 1(—2) pair(s) of lateral primary veins arising at the blade base, on both surfaces reddish-pilose, especially on the nerves below, petioles 0.5—2 cm long, densely pubescent. *Inflorescence* an axillary 6—8-flowered cyme, peduncle 1.2—2.5 cm long, densely pubescent. *Hypanthium* cylindrical, 4—6 mm long and 3—4 mm in diam., covered by minute hairs, calyx lobes triangular, c. 1.2 mm long; pedicels 1.5—4 mm long. *Petals* elliptic, 9.5—11 mm long, pink. *Stamens* 3, anthers 7—8 mm long, basally deeply cordate, yellow. *Capsule* funnel-shaped, 6—9 mm long, smooth and reddish-pilose.

**T h a i l a n d .** — PENINSULAR: Ranong (KERR 16939, BK, C, E, K), Phangnga.

**D i s t r i b u t i o n .** — Burma (Tenasserim or Andamans, HELFER 2295, type).

**E c o l o g y .** — Collections: 4. In open vegetation on rocks; from 1200—1300 m alt.

**N o t e s .** — Easily recognized by the woody habit and rusty pubescence, which gives the leaves an almost *Osbeckia*-like appearance. (The species is sometimes misidentified as belonging to that genus.) *Sonerila helferi* appears closest to *S. hirsutula* Arn. from Sri Lanka, but that species has sessile inflorescences.

**5. *Sonerila integrifolia*** Stapf, Ann. Bot. 6: 312. 1892; Stapf in King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 34. 1900

Branched semi-woody subshrub, to 40 cm tall, stem angular, densely brown-pilose. *Leaves* distributed along the stem, chartaceous, those of a pair strongly anisomorphic, plants sometimes appearing as alternate-leaved, large leaves lanceolate, 12—20 x 4—8 cm, base slightly asymmetric, apex acute or acuminate, small leaves ovate, 0.5—1 x 0.5—1 cm, the margin entire, sometimes with widely spaced minute setae, the lamina with 2 pairs of lateral primary veins arising at the blade base, the outer (submarginal) pair very faint, lamina on both surfaces glabrous except for the minutely strigulose nerves below, petioles 2.5—3.5 cm long, brown pubescent, the hairs sometimes to 5 mm long and curled. *Inflorescence* an axillary unilateral cyme with 16—20 sessile flowers in two rows, the peduncle 1—2 cm long, sparsely pubescent. *Hypanthium* broadly campanulate or ovoid, 3—4 mm long and 4—6 mm in diam., glabrescent, calyx lobes triangular, 1 mm long; pedicels 3—4 mm long, with sparse

spreading glandular hairs. *Petals* elliptic or oblong, about 6 mm long, pink. *Stamens* 3, anthers 2.3—3 mm long, basally deeply cordate, yellow. *Capsule* broadly campanulate or semiglobose, 3.5—4.8 mm long, glabrous, with minute pustules.

**T h a i l a n d .** — PENINSULAR: Narathiwat (LARSEN et al. 45646).

**D i s t r i b u t i o n .** — Malay Peninsula (Perak, syntypes).

**E c o l o g y .** — Collections: 1. In undisturbed evergreen rainforest on sandy soil at 200 m alt.

**N o t e s .** — Easily recognized by the strongly dimorphic glabrous leaves, with one member of each pair reduced to a small auricle, the other 12—20 cm long. *Sonerila integrifolia* is part of a complex of species around *S. beccariana* Cogn. that is much in need of critical revision.

**6. *Sonerila maculata*** Roxb., Fl. Ind. ed. Carey & Wall. 1: 180. 1820 and Fl. Ind. ed. Carey 1: 177. 1832 [Hort. Beng. 5. 1814, nomen nudum].— *S. maculata* var. *emaculata* Benn., Pl. Javanicae Rar.: 215. 1844.— *S. picta* Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 249, pl. 52. 1844; Ridl., Fl. Mal. Pen. 1: 785. 1922; Bakh. f., Rec. Trav. Bot. Néerl. 40: 261. 1943.— *S. maculata* var. *angustifolia* Kurz, J. Asiat. Soc. Bengal, Pt. 2 Nat. Hist. 46: 78. 1877.— *S. rivularis* Cogn. in DC., Monogr. Phan. 7: 1183. 1891; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 913. 1921.— *S. cantonensis* Stapf, Ann. Bot. 2: 302. 1892.— *S. maculata* var. *glabrata* Stapf, Trans. Linn. Soc. London sér. 2, 4: 157. 1894.— *S. flaccida* Stapf & King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 25. 1900.— *S. picta* var. *pusilla* Ridl., J. Fed. Malay. States Mus. 4: 17. 1909.— *S. picta* var. *concolor* Ridl., J. Fed. Malay. States Mus. 4: 17. 1909.— *S. quadrangularis* Guillaumin, Notul. Syst. (Paris) 2: 328. 1913; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 912, Fig. 99 (infl. & capsule). 1921; Craib in Fl. Siam. En. 1: 694. 1931.— *S. ciliata* [‘*alata*’] Ridl., J. Fed. Malay. States Mus. 10: 92. 1920; Craib in Fl. Siam. En. 1: 689. 1931 [non *S. alata* Chun & How ex C. Chen, a younger homonym from China].— *S. picta* var. *maculata* Ridl., Fl. Mal. Pen. 1: 785. 1922.— *S. angulata* Craib, Bull. Misc. Inform. Kew 1930: 318. 1930; in Fl. Siam. En. 1: 689. 1931.— *S. notata* Craib, Bull. Misc. Inform. Kew 1930: 319. 1930.— *S. sylvicola* Craib, Bull. Misc. Inform. Kew 1930: 320. 1930; in Fl. Siam. En. 1: 695. 1931.— *S. picta* var. *clarkeana* Craib in Fl. Siam. En. 1: 693. 1931.— *S. collina* R. N. Parker, Kew Bull. 1931: 42. 1931.— *S. gibbsiae* Ridl., Kew Bull. 1933: 494. 1933. Figure 7.

Erect branched or unbranched herb (sometimes drying somewhat woody), 20—60 cm tall, rarely appearing creeping due to vegetative reproduction, stem

quadrangular, often more or less winged, covered with 2—3 mm long whitish hairs or furfuraceous-puberulous, often reddish. *Leaves* crowded and in a rosette or distributed along the stem, those of a pair subequal, membranous, elliptic, oblong or lanceolate, 2.5—11 x 2—5.5 cm, base cuneate, acute, or slightly rounded, sometimes asymmetrically attenuate, apex acute or acuminate, margin coarsely serrate or serrulate, minutely ciliate, lamina with 2—3 pairs of lateral primary veins, the innermost pair departing 1—2.5 cm above the blade base, the cross-veins inconspicuous, glabrous or with some hairs on the veins, often with white spots on the lamina or with white streaks along the midrib, petioles 1—5(—9) cm long, minutely pilose or subglabrous. *Inflorescence* a terminal or axillary scorpioid cyme with up to 15 flowers, peduncle 3—9 cm long, with scattered short hairs. *Hypanthium* obconical, 4—7 mm long, covered with minute glands, calyx lobes triangular, 1—1.5 mm long; pedicels 3—4 mm long. *Petals* ovate or oblong, 8—10 mm long, pink. *Stamens* 3, anthers 5—10 mm long, bilobed at the base, yellow. *Capsule* obpyramidal or funnel-shaped, obtusely 6-ribbed, 4—7 mm long, on a 3—4 mm long tapering stalk, glabrous or rarely setose.

**T h a i l a n d .** — NORTHERN: Mae Hong Son, Chiang Mai, Nan, Tak; NORTH-EASTERN: Loei, Sakon Nakhon; EASTERN: Nakhon Ratchasima; SOUTH-WESTERN: Kanchanaburi (Sai Yok, Kanburi, PUT 1844, BK, K, type of *S. notata*), Phetchaburi; SOUTH-EASTERN: Chachoengsao, Chanthaburi, Trat, Sa Kaeow; PENINSULAR: Chumphon (Tasan/Tha Sae, KLOSS 6982=6582, K, type of *S. ciliata*, Ranong, Surat Thani, Phangnga (Takuapa, Bangwan, KERR 17547, K, type of var. *clarkeana*), Nakhon Si Thammarat, Songkhla, Yala (vicinity of Betong, KERR 7473 and KERR 7473a, BK, E, K, syntypes of *S. angulata*), Narathiwat.

**D i s t r i b u t i o n .** — India (type), Burma (type of *S. collina*: Mergui), China and Indochina (type of *S. rivularis*: Tonkin; syntypes of *S. quadrangularis*: Cambodia), Malay Peninsula, Sumatra, Java, and Borneo.

**E c o l o g y .** — Collections: 60. Common in damp evergreen forest, often scattered on mossy rocks in shady places; lowlands to 2400 m alt.

**V e r n a c u l a r .** — ..... (Chanthaburi).

**N o t e s .** — Often recognizable by white spots on the leaves, but very variable in leaf size and color.

**7. *Sonerila moluccana*** Roxb., Fl. Ind. ed. Carey & Wall. 1: 182. 1820; Fl. Ind. ed. Carey 1: 178 (1832); Jack, Mal. Misc. 1: 7. 1820; Bakh. f. in Backer & Bakh.f., Fl. Java 1: 361. 1963.— *S. moluccana* var. *caulescens* Miq., Fl. Ind. Bat. 1: 562. 1856.— *S. begoniifolia* Bl., Flora 14: 490. 1831; Stapf in King, J. Asiat. Soc. Bengal, Pt. 2, Nat.

Hist. 69: 41. 1900; Ridl., Fl. Mal. Pen. 1: 790. 1922; Bakh. f., Rec. Trav. Bot. Néerl. 40: 254. 1943.— *S. paradoxa* Naudin, Ann. Sci. Nat. Bot. 3, 15: 321. 1851; Stapf in King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 40. 1900.— *S. capitata* Stapf & King, Journ. As. Soc. Beng. 69: 35. 1900.— *S. caesia* Stapf & King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 36. 1900; Ridl., Fl. Mal. Pen. 1: 788. 1922; Craib in Fl. Siam. En. 1: 689. 1931.— *S. brachyantha* Stapf & King, Journ. As. Soc. Beng. 69: 37. 1900.— *S. macrophylla* Stapf & King, Journ. As. Soc. Beng. 69: 39. 1900.— *S. setosa* Ridl., Journ. As. Soc. Straits 79: 71. 1918.— *S. matangensis* Ridl., Kew Bull. 35. 1946.

Figure 8.

Low rhizomatous herb, to 20 cm tall, stem quadrangular, entire plant softly reddish long-pilose, except for the upper leaf surfaces. *Leaves* crowded at stem apices, those of a pair dimorphic and asymmetric, obliquely oblong or ovate, 6—14 x 3—7.5 cm, base asymmetric, auriculate on one side, apex acuminate, margin serrulate and ciliate, lamina with 2—3 pairs of lateral primary veins departing above the blade base, above sparsely pilose or glabrous, below on the nerves densely appressed pilose with reddish hairs, petioles 1.5—4 cm long, setose. *Inflorescence* a terminal or axillary cincinnus to 11 cm long, with few to many flowers in two rows, peduncle 0.5—6 cm long, with two small bracts at the base. *Hypanthium* cylindrical to campanulate, 3—4 mm long, muricate, calyx lobes ovate-triangular, 1 mm long; pedicel 1—4 mm long, glabrous. *Petals* ovate to oblong, 6—7 mm long, white or pink. *Stamens* 3, anthers 2.5—3 mm long, yellow. *Capsule* broadly campanulate or ovoid, 4—6 mm long (excluding the 2—4 mm long stalk), muricate with whitish pustules or tubercles.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat, Songkhla, Yala, Narathiwat.

**D i s t r i b u t i o n .** — Malay Peninsula (type), Sumatra, Java, and Borneo.

**E c o l o g y .** — Collections: 15. Common on rocks by streams or in shaded areas in primary evergreen forest beside small streams; 50—1000 m alt.

**N o t e .** — Easily recognized by the *Begonia*-like leaves. Jack's statement that the species is a native of the Moluccas, islands between Celebes and New Guinea, has given rise to some confusion. Roxburgh apparently used the term "Moluccas" to cover other parts of the Malayan Archipelago, and it is almost certain that the type of *S. moluccana* actually came from Penang (Merrill, 1952). Craib's citation (in Fl. Siam. En. 1: 689. 1931) of *Sonerila bicolor* Stapf & King for Thailand was based on the misidentified collection SMITH 392 (BK) which is *S. moluccana* Roxb.

**8. *Sonerila obliqua*** Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 250. 1844; Bakh. f., Rec. Trav. Bot. Néerl. 40: 250. 1943.— *S. heterostemon* Naudin, Ann. Sci. Nat. Bot. 3, 15: 326. 1851 and op. cit.: 3, 16, pl. 18, Fig. 4. 1851; Stapf in King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 33. 1900; Ridl., Fl. Mal. Pen. 1: 787. 1922; Craib in Fl. Siam. En. 1: 692. 1931.— *S. teysmanniana* Miq., Sum. 2: 320. 1861.

Succulent herb, 15—45 cm tall, stem subquadrangular, glabrous. *Leaves* distributed along the stem, those of a pair somewhat dimorphic, thinly membranous, ovate to oblong, 4—10 x 3—6 cm, base asymmetrically cuneate, apex acuminate, margin entire or minutely serrulate, lamina with 2—3 pairs of lateral primary veins arising at or near the blade base, the numerous pairs of transversal secondary veins in regularly spaced parallel rows and distinctly visible on both surfaces, subglabrous and often drying dark green with white spots on the upper side and pale green with purplish veins on the lower, petioles 2—3 cm long. *Inflorescence* an axillary or pseudoterminal scorpioid cyme, 2—5.5 cm long and with up to 20 flowers in two rows, peduncle 1—1.5 cm long, glabrous or furfuraceous. *Hypanthium* ovoid to broadly campanulate, 4—5 mm long, calyx lobes broadly triangular; pedicels < 1 mm long. *Petals* obovate, 6—8 mm long, pale violet to pink. *Stamens* 6, anthers 3.5—4 mm long, outer stamens straight and purple, base unappendaged, inner stamens curved and yellow, bilobed at the base, connective dorso-basally minutely spurred. *Capsule* obpyramidal, 4—7 mm long, smooth.

**T h a i l a n d .** — PENINSULAR: Songkhla, Yala, Narathiwat.

**D i s t r i b u t i o n .** — Malay Peninsula, Sumatra (type), Borneo, and the Philippines.

**E c o l o g y .** — Collections: 10. On rocks by streams in wet evergreen forests but also in somewhat disturbed habitats; at low altitudes up to 400 m.

**N o t e s .** — The only *Sonerila* species in Thailand with six stamens.

**9. *Sonerila plagiocardia*** Diels, Bot. Jahrb. 65: 117. 1932.

Succulent herb, to 40 cm tall, sometimes creeping, thick-succulent stem (to 9 mm in diam.) elongate and early-defoliate, terete, glabrous. *Leaves* usually crowded at the end of the stem, those of a pair subisomorphic or dimorphic in size, thinly-membranous, rotundate, 8—18 x 5—10 cm, base symmetrically deeply cordate or emarginate, apex acuminate, margin setose-serrulate, lamina with 2—4 pairs of lateral primary veins departing near and slightly above the blade base, cross-veins

inconspicuous, glabrous, petioles 4—10 cm long, distinctly winged, glabrous.

*Inflorescence* a terminal scorpioid cyme with up 5—8 flowers, peduncle 3—9 cm long, with scattered short hairs. *Hypanthium* cylindrical, 6—7 mm long, calyx lobes triangular, c. 1 mm long; pedicels 3—4 mm long. *Petals* ovate or oblong, 10—11 mm long, pink. *Stamens* 3, anthers 7—8 mm long, apically long attenuate, basally deeply cordate, yellow. *Capsule* ovoid or cylindrical, obtusely ribbed, 7—8 mm long and apically 5 mm wide, glabrous.

**T h a i l a n d .** — SOUTH-EASTERN: Chanthaburi.

**D i s t r i b u t i o n .** — China (Yunnan, type: HENRY 13152, MO), Laos, Cambodia.

**E c o l o g y .** — Collections: 2. In damp places at 1200 m alt. (outside Thailand to 1800 m).

**N o t e s .** — Easily recognizable by the large, thin-membranous, basally cordate and therefore somewhat *Nymphaea*-like leaves. *Sonerila repens* Stapf & King (Journ. As. Soc. Beng. 69: 30. 1900) from the Malayan Peninsula likely represents the same species.

**10. *Sonerila rheedii* Wall. ex Wight & Arn., Prod. 321. 1834. — *S. loeiensis***

Cellinese & Renner, Novon 7(2): 111, Fig. 5. 1997.

Figure 9.

Acaulescent glabrous herb, ca. 22 cm tall, with a short bulbous rhizome. *Leaves* usually few, membranaceous, ovate, 2.8—8.3 x 1.6—4.5 cm, base obliquely truncate to subcordate, apex acute, margin denticulate, lamina with 3—5 pairs of lateral primary veins departing at the blade base, glabrous, nerves reddish, upper surface dark green, lower surface pale green, petioles subquadrangular, 6—12.3 cm long. *Inflorescence* a 3—9-flowered umbel, the peduncle 5—10 cm long. *Hypanthium* cylindric, 3—4 long and 2 mm in diam., calyx lobes triangular, less than 1 mm long; pedicels ca. 3 mm long, with few stiff bristly hairs, glabrescent. *Petals* elliptic with an acuminate tip, 0.8—1.2 x 0.5—0.6 cm, pink. *Stamens* 3, anthers 5—8 mm long, pale yellow, slender and attenuate, pollen sacs prolonged and free at the base. *Capsule* globose, about 4 x 3 mm large.

**T h a i l a n d .** — NORTH-EASTERN: Loei (Phu Rua National Park, summit road, vicinity of Turtle Rock (Hin Tao), ca. 1250 m, CHANTARANOTHAI et al. 482, TCD, type).

**D i s t r i b u t i o n .** — India, Western Ghats (type: WALLICH cat. n. 4096, Kew), expected in Burma.

**E c o l o g y .** — Collection: 1. On rocks in open areas.

**N o t e s .** — Recognized by the long-petiolate, glabrous, sometimes dotted and sparsely pilose leaves and the bulbous rhizome.

**11. *Sonerila spectabilis*** Nayar, Dansk Botanisk Arkiv 27(1): 63, Fig. 1. 1969.

Woody, coarsely setose subshrubs, to 50 cm tall, stem subquadrangular, reddish, and densely setose with 2—3 mm long thin hairs. *Leaves* distributed along the stem, those of a pair isomorphic, membranous, elliptic to lanceolate, 1.8—3 x 0.5—1.5 cm, subsessile, base cuneate, apex acute, margin serrulate, lamina with 1 pair of inconspicuous lateral primary veins departing at the blade base, transverse veins inconspicuous, glabrous, the lower surface drying much paler than the upper surface. *Inflorescence* a 2—3-flowered raceme, 2—5 cm long, the peduncle 1—2 cm long, glabrous. *Hypanthium* campanulate, 0.8—1 cm long, glabrous, calyx lobes broadly triangular, 1.5—2 mm long; pedicels 0.5—1 mm long. *Petals* obovate, ca. 1.5 cm long. *Stamens* 3, anthers 1.8—2 cm long, bilobed at the base, yellow. *Capsule* unknown.

**T h a i l a n d .** — SOUTH-WESTERN: Prachuap Khiri Khan (Huay Yang PUT 3255, BM, BK, K, type)

**D i s t r i b u t i o n .** — Endemic.

**E c o l o g y .** — Collection: 1.

**N o t e s .** — Recognizable by the large showy flowers and stems with very short internodes adorned by bristles. The species is close to *S. grandiflora* R. Br. from South India, which however has a totally glabrous habit.

**12. *Sonerila urceolata*** Cellinese & Renner, Novon 7(2):109, Fig. 4. 1997.

Figure 10.

Erect, branched herb, to 50 cm tall, basally slightly woody, stem subterete, glandular-pilose mainly along two opposite longitudinal lines. *Leaves* distributed along the stem, those of a pair subisomorphic, membranous, lanceolate, 1.2—4.3 x 0.6—1.5 cm, base acute or attenuate, apex acute to acuminate, margin serrulate and ciliate, lamina with 1 pair of lateral primary veins departing at the blade base, transverse veins inconspicuous, sparsely covered by minute glands, petioles 0.2—0.9 cm long, with

sparse glandular hairs. *Inflorescence* a terminal 2—7-flowered scorpioid cyme, about 3 cm long, the peduncle 2.5—5.3 cm long, subtended by two asymmetrical bracteoles. *Hypanthium* suburceolate, about 6.5 mm long and 3 mm in diam., calyx lobes triangular, ca. 1 mm long; pedicels 2—3 mm long. *Petals* ovate with an acuminate tip, about 1.3 x 0.6 cm, purple. *Stamens* 3, anthers 10—13 mm long, yellow, pollen sacs with a distinct apical constriction, slightly prolonged and free at their base. *Capsule* urceolate, 8—9 mm long, crowned by the persistent calyx lobes, smooth.

**T h a i l a n d .** — SOUTH-EASTERN: Chanthaburi (Khao Soi Dao North, Khao Soi Dao Wildlife Sanctuary, Pong Namron District; SHIMIZU et al. 23595, AAU, BKF, KYO, L, type).

**D i s t r i b u t i o n .** — Endemic.

**E c o l o g y .** — Collection: 1. Dry evergreen forest in a ravine; between 300 and 800 m alt.

**N o t e s .** — *Sonerila urceolata* is readily recognized among Thai species by the unique urceolate capsules. Another species with urceolate capsules is *S. gardneri* Thw. from Ceylon, which however has hairy capsules.

**13. *Sonerila violaefolia*** Hook. f. ex Triana, Trans. Linn. Soc. London, Bot. 28: 77. 1871.— *Sonerila siamensis* Nayar, Dansk Botanisk Arkiv 27(1): 63, Fig. 2. 1969.

Somewhat succulent rhizomatous herb, 10—18 cm tall, the stem thick and covered with conspicuous 4—6 mm long reddish-brown setae, especially at the nodes. *Leaves* crowded near the ends of branches, thin-chartaceous, those of a pair isomorphic, ovate or elliptic-ovate, 3—8(—11) x 1.5—4(—7) cm, base obtuse or cuneate, apex acute or obtuse, margin finely serrate, lamina in small leaves pinnately veined, in large leaves with 2—3 pairs of lateral primary veins arising at or above the blade base, above with sparse minute bristly hairs, below more or less glabrous and often drying reddish or purplish, petioles 1—7 cm long. *Inflorescences* scorpioid cymes borne in the upper leaf axils, 1—9-flowered, peduncle 2—9 cm long. *Hypanthium* campanulate, 5—6 mm long, calyx lobes triangular, about 1 mm long; pedicels 2—3 mm long. *Petals* oblong or ovate, acuminate, 0.8—1 cm long, purple. *Stamens* 3, anthers 3.5—6 mm long, cordate at the base, yellow. *Capsule* narrowly funnel-shaped, 6—7 mm long, smooth.

**T h a i l a n d .** — NORTHERN: Chiang Mai (Doi Pa Khao, GARRETT 736, BK, K, L, type of *S. siamensis*); NORTH-EASTERN: Phetchabun, Loei.

**D i s t r i b u t i o n .** — Burma (type: Moulmein, LOBB 356).

**E c o l o g y .** — Collections: 11. Wet rock faces or mossy tree boles between 100—1700 m alt.

**N o t e s .** — *Sonerila violaefolia* is distinct by the long-setose nodes and often purplish drying, *Viola*-like leaves.

## 5. SARCOPYRAMIS

Wall., Tent. Fl. Nap. 1: t. 23. 1824; Hansen, Bot. Tidsskr. 73: 177-184. 1979 (revision).

Terrestrial herbs, 2—40 cm tall. *Leaves* of a pair sometimes dimorphic, lanceolate or elliptic, base attenuate to broadly rounded, apex acuminate or acute, lamina with 1(—2) pair(s) of lateral primary veins, margin entire or serrulate, petiolate. *Inflorescences* terminal or axillary few-flowered fascicles or solitary flowers. *Flowers* 4-merous, with two stamen whorls, bracts large and conspicuous. *Hypanthium* obpyramidal, glabrous, angular or winged, calyx rim with 4 short cusps. *Petals* broadly obovate, glabrous. *Stamens* 8, isomorphic, anthers opening by a single pore, connective not prolonged below the pollen sacs, slightly spurred dorsally. *Ovary* 4-locular, apically deeply depressed and crowned by a tetramerous disk, placentae axillary. *Fruit* a capsule. *Seeds* about 0.7—1 mm long, wedge-shaped or clavate, tuberculate.

A widespread and morphologically variable taxon very close to *Sonerila* from which it differs in the 4-merous flowers; Nepal, China, Taiwan, Thailand, and the Malayan Archipelago.

***Sarcopyramis nepalensis*** Wall., Tent. Fl. Nap. 1: t. 23. 1824; Ridl., Fl. Mal. Pen. 1: 792. 1922; Craib in Fl. Siam. En. 1: 695. 1931; Hansen, Bot. Tidsskr. 73: 180. 1979.— *S. grandiflora* Griff., Not. Pl. As. 4: 678, pl. 639, Fig. 2 1854.— *S. nepalensis* var. *viridifolia* Kuntze, Rev. Gen. Pl. 1: 248. 1891.— *S. humilis* Nayar, J. Bombay Nat. Hist. Soc. 71: 170, Fig. 1. 1974. Figure 11.

Terrestrial herb, 2—40 cm tall, with a perennial rhizome and annual stems, leaves sometimes spotted white, stem fleshy, occasionally corky, quadrangular to winged, sometimes rooting at the nodes, glabrous. *Leaves* of a pair sometimes slightly unequal in size, elliptic, larger ones (1.7—)3.5—9(—13.3) x 0.8—6 cm, smaller ones 1.2—6 x 0.6—5 cm, base attenuate to broadly rounded, apex acuminate or acute, margin entire or

serrulate, lamina with 1(—2) pair(s) of lateral primary veins, glabrous or with a few hairs and minute sessile glands, petioles 0.4—4(—6) cm long. *Inflorescences* terminal or axillary few-flowered fascicles, peduncle 1—2(—8) cm long. *Flowers* 4-merous, bracts leaf-like, pedicels 1—12(—20) mm long. *Hypanthium* campanulate, usually 4-winged, 1.4—2.5(—4) mm long. *Petals* broadly obovate, 5—13 mm long, apiculate, glabrous, pink. *Stamens* 8, isomorphic, anthers 1—2 mm long, yellow, connective with a dorsal spur 0.6—1.2 mm long (Fig. 11C). *Ovary* 4-locular, fully united with the hypanthium for half its length, apically deeply depressed and with a crown of 4 thick lobes, glabrous or with minute sessile glands. *Capsules* quadrangular, 4—7 mm long, crowned by a tetrapterous disk, calyx lobes persistent and forming a 2—5 mm broad protruding fringe (Fig. 11D & E)).

**T h a i l a n d .** — NORTHERN: Chiang Mai, Phitsanulok. NORTH-EASTERN: Phetchabun.

**D i s t r i b u t i o n .** — Nepal (type), China, Taiwan, Thailand, and the Malayan Archipelago.

**E c o l o g y .** — Collections: 3. Marsh on summit between 1400 and 2450 m alt.

## 6. PHYLLAGATHIS

Bl., Flora 14: 507. 1831; Hansen, Bull. Mus. natl. Hist. nat., 4 sér., 14, 1992 (1993), section B, Adansonia, n. 3-4: 355-428. (partial revision).— *Tylanthera* Hansen, Nord. J. Bot. 9: 632. 1990.

Cauliscent or acaulescent perennial herbs or subshrubs, often a part of the stem prostrate and rooting. *Leaves* equal or subequal, occasionally strongly dimorphic or one of the leaves suppressed, ovate to broadly ovate or elliptic, with (1—)2—4(—7) pairs of lateral primary veins departing at or above the blade base, glabrous or loosely pilose, petiolate, rarely sessile. *Inflorescence* a terminal or axillary scorpioid cyme, variably contracted, or an umbel, rarely a simple dichasium. *Flowers* 4-merous, rarely 5-merous, with one or two stamen whorls. *Hypanthium* campanulate, cylindrical, occasionally cup-shaped or urceolate, with various kinds of hairs and emergences or glabrous, calyx lobes ligulate, triangular, or ovate to broadly obovate, usually sparsely hairy, often persistent in mature fruits. *Petals* elliptic or ovate to broadly obovate, often asymmetric, glabrous or ciliate, pink, purple or white. *Stamens* 4 or 8, rarely 10, isomorphic or rarely dimorphic, opening by a single pore, connective ventrally lobed or

unappendaged, dorsally with a tubercle or a long spur, or rarely a flat ridge (only in Thailand), occasionally unappendaged. *Ovary* 4- or rarely 5-locular, crowned by denticulate or entire scales, or ovary unadorned, partially or fully adnate to the hypanthium, stamen pockets varying accordingly, placentae axillary. *Fruit* a capsule, quadrangular, 8- or rarely 10-ribbed, or campanulate, placentae distinctly stalked and often thready, column usually splitting distally into four horns. *Seeds* about 0.5—0.9 mm long, tuberculate, cuneate or oblong, never cochleate.

Fifty-six species from southern China to the Malay Peninsula, Sumatra and Borneo; four species in Thailand.

The wider concept of the genus adopted here includes pentamerous groups such as *Cyanandrium* Stapf, *Brittenia* Cogn. ex Boerl., *Eraulophyton* Steenis, and *Tigridiopalma* C. Chen. The only difference between them and *Phyllagathis* is flower mery, which is an unstable character in *Phyllagathis* (and in Melastomataceae in general). Occasional pentamerous flowers occur, for example, in *P. rotundifolia* (below) and other species.

#### KEY TO THE SPECIES

1. Stamens 8
  2. Upper leaf surface glabrous; inflorescences bracteate (Fig. 13A); hypanthium subglabrous; stamens isomorphic (Fig. 13C) **2. P. rotundifolia**
  2. Upper leaf surface hispid; inflorescences ebracteate; hypanthium hispid (Fig. 12A); stamens dimorphic (Fig. 12B) **1. P. hispida**
1. Stamens 4
  3. Leaves 25—30 x 17—20 cm; inflorescence an umbel (Fig. 14A), peduncle to 16 cm long **3. P. siamensis**
  3. Leaves 2—5 x 1—3 cm; inflorescence a scorpioid cyme (Fig. 15A), peduncle to 6 cm long **4. P. tuberosa**

**1. *Phyllagathis hispida*** King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist 69: 46. 1900; Ridl., Fl. Mal. Pen. 1: 794. 1922; Craib, Fl. Siam. En. 1: 696. 1931. Figure 12.

Herb, up to 40 cm tall, stems short, woody, and hispid or glabrous. *Leaves* broadly ovate, 10—25 x 8—18 cm, base cordate, apex shortly acuminate, margin denticulate, lamina with 3—5 pairs of lateral primary veins, subcoriaceous, above and below with minute hairs, primary veins with few scattered long hairs, petioles to 8 cm long, especially basally densely covered with hispid hairs, to 12 mm long.

*Inflorescence* an axillary umbellate cyme, peduncle about 4 cm long, shorter than the leaves and sparsely hispid. *Flowers* 4-merous, ebracteate. *Hypanthium* cylindrical to slightly urceolate, about 1 cm long, hirsute, calyx lobes triangular, blunt, caducous. *Petals* broadly ovate, about 13 mm long, white or pale pink. *Stamens* 8, dimorphic, episepalous (outer) stamens up to ca. 1.2 cm long, their anthers yellow at the base, purple at the top, epipetalous (inner) stamens ca. 0.6 cm long, yellow, the connective with a short dorsal spur. *Ovary* 4-locular, apically crowned by 4 conspicuous scales surrounding the style base. *Capsules* about 6 x 5 mm, 4-angled or semi-globose, crowned by the 4 ovary scales (Fig. 12D).

T h a i l a n d . — CENTRAL: Saraburi; PENINSULAR: Pattani.

D i s t r i b u t i o n . — Malay Peninsula (Perak and Pahang, syntypes).

E c o l o g y . — Collections: 4. Shaded moist rocks beside a waterfall in evergreen hardwood forest at about 100 m alt.

**2. *Phyllagathis rotundifolia*** (Jack) Bl., Flora 14: 507. 1831; Ridl., Fl. Mal. Pen. 1: 794. 1922; Craib in Fl. Siam. En. 1: 696. 1931; Bakh. f., Rec. Trav. Bot. Néerl. 40: 266. 1943.— *Melastoma rotundifolium* Jack, Trans. Linn. Soc. London, Bot. 14: 11. 1823.— *P. decipiens* Bakh. f., Rec. Trav. Bot. Néerl. 40: 267. 1943. Figure 13.

Herb, 15—30 cm tall, lower part of the stem fleshy and prostrate. *Leaves* ovate to suborbiculate, sometimes one of a pair reduced, 10—45 x 8—35 cm, base cordate or rounded, apex acuminate, margin entire or finely serrulate, lamina with 2—4 pairs of lateral primary veins, shining dark green above, often anthocyanin red below, above glabrous, below sparsely hairy or glabrous, petioles 6—7 cm long and with conspicuous setae. *Inflorescence* an axillary umbellate cyme on a fleshy, reddish peduncle ca. 15 cm long and with isolated hispid hairs. *Flowers* 4-merous, occasionally 5-merous, subtended by 2 pairs of broad, thick, reddish green or purple bracts (Fig. 13A). *Hypanthium* 4-ribbed or 4-angular, rarely 5-angular, ca. 5 mm long, subglabrous, calyx lobes triangular, about 3 mm long, with a terminal bristle, caducous. *Petals* ovate, about 9 mm long, white or pale pink. *Stamens* 8 (or 10), isomorphic (Fig. 13C), anthers 3—4 mm long, yellow, the connective simple. *Ovary* fully united with the hypanthium, apically crowned by 4 scales surrounding the style base. *Capsules* 4—7 x 4—5 mm, crowned by the 4- or 5-angled, funnel-like ovary outgrowth.

T h a i l a n d . — PENINSULAR: Songkhla, Yala.

D i s t r i b u t i o n . — Burma, Malay Peninsula, and Sumatra (type).

**E c o l o g y .** — Collections: 4. Forming extensive carpets in the shady understory of primary evergreen forest at elevations below 500 m. The Elephant's Footprint is one of the most conspicuous forest floor species in Peninsular Malaysia.

**3. *Phyllagathis siamensis*** Cellinese & Renner, Novon 7(2): 109, Fig. 2. 1997.—*Tylanthera cordata* Hansen, Nord. J. Bot. 9: 634, Fig. 2. 1990. Figure 14.

Acaulescent herb, 30—40 cm tall, sparsely hairy (Fig. 14A). *Leaves* one or two (in the single specimen known), broadly ovate, 25—30 x 17—20 cm, base broadly cordate, apex acuminate, margin denticulate, lamina with 4—5 pairs of lateral primary veins, above and below finely and loosely pilose, petioles about 14 cm long, densely covered by short hairs. *Inflorescence* an axillary umbellate cyme, the peduncle 9—15 cm long, sparsely pilose. *Flowers* 4-merous, bracts subulate and minute, pedicels 5—7 mm long. *Hypanthium* campanulate, about 2.5 mm long, sparsely hairy, calyx teeth about 0.7 mm long. *Petals* broadly ovate, known only from buds, pink. *Stamens* 4, isomorphic (Fig. 14D), anthers about 2 mm long, yellow, base slightly bilobed, connective dorsally enlarged into a flat ridge. *Ovary* 4-locular, fully adnate to the hypanthium, crowned by 4 large quadrangular lobes surrounding the style base. *Capsules* subquadrangular (Fig. 14C), about 3 x 3 mm.

**T h a i l a n d .** — CENTRAL: Saraburi (Sahm Lahn); Nakhon Nayok (Sarika waterfall, LARSEN et al. 3402, AAU, BKF, C, type).

**D i s t r i b u t i o n .** — Endemic.

**E c o l o g y .** — Collection: 1. Along streams at altitudes below 400 m.

**N o t e s .** — Easily recognized by the one or rarely two large and deeply cordate leaves. The new name became necessary because the epithet *cordata* is occupied by *Phyllagathis cordata* Ridl.

**4. *Phyllagathis tuberosa*** (Hansen) Cellinese & Renner, Novon 7(2): 109, Fig. 1. 1997.—*Tylanthera tuberosa* Hansen, Nord. J. Bot. 9: 632, Fig. 1. 1990. Figure 15.

Tiny acaulescent herb, 3—8 cm tall, sparsely hairy, with a tuberous rhizome (Fig. 15A). *Leaves* one to three (in the single specimen known), ovate, 2—5 x 1—3 cm, base truncate or slightly irregularly subcordate, apex acute, margin entire, finely ciliate, lamina with (1—)2 pairs of lateral primary veins, membranaceous, above and below loosely pilose, petioles reddish, 1—3 cm long, pilose. *Inflorescence* a scorpioid cyme

with 3—7 flowers, peduncle 2—6 cm long, sparsely pilose. *Flowers* 4-merous, subtended by two linear bracts about 1 mm long, pedicels about 4 mm long. *Hypanthium* campanulate, 1—2 mm long, sparsely covered with long hairs, calyx lobes about 0.2—3 mm long, acuminate. *Petals* ovate, 3.5 mm long, acute, pink. *Stamens* 4, isomorphic (Fig. 15C), anthers 0.6—0.7 mm long, yellow, connective with a small dorsal appendage. *Ovary* 4-locular, almost completely adnate to the hypanthium, apically rounded. *Capsules* campanulate, about 1.5 mm long and wide.

**T h a i l a n d .** — NORTHERN: Phitsanulok (Phu Mieng Mt., LARSEN et al. 1105 AAU, BKF, C, type).

**D i s t r i b u t i o n .** — Endemic.

**E c o l o g y .** — Collection: 1. Growing on rocks by a stream in evergreen forest. Only known from the type, which was collected at 700 m alt.

**N o t e s .** — One of the smallest species in the genus.

## 7. BLASTUS

Lour., Fl. Cochinch. 2: 526. 1790; Bakh. f., Rec. Trav. Bot. Néerl. 40: 274. 1943; Hansen, Bull. Mus. Hist. Nat., B, Adansonia 1-2: 43-77. 1982 (revision).

Shrubs, 2—4 m tall, branchlets subquadrangular or terete with an indumentum of peltate glands (in Thailand) or pilose. *Leaves* of a pair more or less unequal in size, indumentum like that of the branchlets. *Inflorescences* axillary or terminal cymes. *Flowers* 4-merous, with one stamen whorl, bracts absent or minute. *Hypanthium* campanulate to urceolate, usually quadrangular in cross section, indumentum generally as on the leaves and branchlets, calyx lobes broadly triangular. *Petals* ovate, glabrous or with a few peltate glands on the outside at least in bud. *Stamens* 4, isomorphic, anthers linear, opening by a single pore, connective neither prolonged nor appendaged. *Ovary* partially or entirely adnate to the hypanthium, stamen pockets varying accordingly, ovary apex slightly to deeply depressed and glandular-pilose. *Fruit* a 4-locular capsule about as long as and included in the long-persistent hypanthium, terete or rarely 4-ribbed. *Seeds* straight, cuneate to slightly angulate, 0.3—1.8 mm long.

Twelve species in Assam, southern China, Laos and Vietnam, Malay Peninsula, Sumatra, Borneo, and Celebes; one species in Thailand. The genus is doubtfully distinct from *Ochthocharis* Blume.

**Blastus borneensis** Cogn. in Monogr. Phan. 7: 477. 1891; Hansen, Bull. Mus. Hist. Nat., B, Adansonia 1-2: 55. 1982.— *B. stellulatus* Geddes, Bull. Misc. Inform. Kew 1928: 236. 1928; Craib in Fl. Siam. En. 1: 687. 1931.— *B. borneensis* var. *stellulatus* (Geddes) Hansen, op. cit.: 60. Figure 16.

Shrub, 1.5—5 m high, branchlets terete and with an indumentum of minute peltate and sessile glands (Fig. 16E), sometimes also with plumose hairs when young, older branchlets glabrous. *Leaves* of a pair often unequal, elliptic, smaller one (3—)4—14(—21) x 0.7—4(—8) cm, larger one (4.6—)8—19(—28) x 1.6—6(—10) cm, base attenuate, acute or rounded, apex long acuminate, margin entire or weakly dentate, lamina with (1—)2 pairs of lateral primary veins, the outer pair faint, both surfaces when young with minute brown glands and minute plumose hairs on the midrib, upper surface glabrescent, petioles 0.5—3.5 cm long. *Inflorescences* axillary or terminal cymes 3—6 cm long. *Flowers* 4-merous (Fig. 16B). *Hypanthium* campanulate to urceolate, ca. 3.5 mm long, with yellow peltate glands and sometimes also plumose hairs, sepal rim truncate, about 0.2—0.5(—1.2) mm high, dorsally with 4 cusps. *Petals* ovate, (1—)2—2.5 mm long, white. *Stamens* 4, pink, anthers 2.5—3.5 mm long. *Ovary* 4-locular, partially adnate to the hypanthium for its entire length, apically deeply depressed around the style base. *Fruit* an urceolate or campanulate capsule, sometimes weakly ribbed, about 3—4 mm long, apex not beaked or otherwise adorned.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat (type of *B. stellulatus*, Khao Luang, SMITH 721, BK, K), Trang.

**D i s t r i b u t i o n .** — Indochina, Malay Peninsula, Sumatra, Borneo (type), and Celebes.

**E c o l o g y .** — Collections: 6. Common in the undergrowth of evergreen forest; 400—1600 m alt.

## 8. OCHTHOCHARIS

Bl., Flora 14: 523. 1831; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 13. 1900; Bakh. f., Rec. Trav. Bot. Néerl. 40: 283. 1943; Hansen and Wickens, Kew Bull. 36: 13-29, pl. 2, 3. 1981 (revision).

Small shrubs or treelets, young parts usually densely covered with a brown indumentum of partly glandular hairs, glabrescent, branchlets subquadrangular to

quadrangular, rarely terete. *Leaves* of a pair more or less unequal in size, ovate or elliptic, base rounded to cordate, rarely attenuate, apex acuminate to acute, margin serrulate, lamina with 1—2 pairs of lateral primary veins, rarely 3-plinerved.

*Inflorescences* axillary cymes (in Thailand). *Flowers* 4- or 5-merous, with two stamen whorls. *Hypanthium* campanulate, terete, glabrous or with minute brown glands and a few hairs, calyx rim truncate or sinuous, with 4 or 5 cusps. *Petals* ovate or obovate, glabrous except for a few glandular hairs at the apex. *Stamens* 8 or 10, isomorphic (in Thailand), opening by a single pore, connective typically with a dorso-basal spur, sometimes also ventrally bilobed. *Ovary* 3- or 5-merous, almost entirely adnate to the hypanthium, apically rounded, glabrous, placentae axillary. *Fruit* a globose capsule, rupturing irregularly at maturity. *Seeds* cuneate or wedge-shaped.

Two species in tropical West Africa, five species in Asia, one species in Thailand.

**Ochthocharis javanica** Bl., *Flora* 14: 264. 1831; King, *J. Asiat. Soc. Bengal*, Pt. 2, *Nat. Hist.* 69: 14. 1900; Ridl., *Fl. Mal. Pen.* 1: 775. 1922; Bakh. f., *Rec. Trav. Bot. Néerl.* 40: 285. 1943; Hansen and Wickens, *Kew Bull.* 36: 15, Fig. 1B. 1981.— *O. attenuata* Bakh. f., *Rec. Trav. Bot. Néerl.* 40: 286. 1943.

Shrub, 0.5—2 m high, branchlets subquadrangular or weakly ribbed, when young with an indumentum of minute brown glands. *Leaves* of a pair  $\pm$  unequal, elliptic-lanceolate, smaller leaves (3—)4—7(—12) x 1—3 cm, larger leaves (4—)5—10(—14) x 1—4 cm, base attenuate or broadly attenuate, apex acuminate, margin loosely serrulate, lamina with 1 pair of lateral primary veins departing somewhat above the blade base, both surfaces glabrous except for sparse minute brown glands, lower surface drying paler than the upper one, petioles 0.6—3(—6) cm long. *Inflorescences* axillary cymes to 2.5 cm long. *Flowers* (4—)5-merous, pedicels 3—6 mm long. *Hypanthium* campanulate, 1.5—3 mm long, with sparse minute brown glands, rim truncate, about 0.3 mm high, dorsally with (4—)5 minute cusps. *Petals* ovate, 3—4 mm long, pink. *Stamens* (8 or)10, isomorphic, white, anthers 1.5—1.9 mm long, connective dorso-basally with a minute spur, ventrally unappendaged. *Ovary* adnate to the hypanthium for most of its length, 3- or 4-locular, apically rounded. *Fruit* a globose capsule crowned by the persistent calyx limb.

**T h a i l a n d .** — PENINSULAR: Trang, Satun, Narathiwat.

**D i s t r i b u t i o n .** — India (Andaman Is.), Malay Peninsula, Sumatra, Java (type), Borneo, New Guinea, and the Philippines.

E c o l o g y . — Collections: 4. In primary evergreen forest on limestone bedrock or at the margin of mangrove vegetation; at altitudes below 200 m.

## 9. OXYSPORA

DC., Prodr. 3: 123. 1828; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 8. 1900; Maxwell, Gard. Bull. (Singapore) 35: 216. 1982 [1983].— *Allomorpha* Bl., Flora 14: 522. 1831.— *Hylocharis* Miq., Sum. 2: 319. 1861; Nayar, Jap. J. Bot. 53: 332. 1978.— *Campimia* Ridl., J. Straits Branch Roy. Asiat. Soc. 57: 40. 1911; Hansen, Willdenowia 17: 147-151. 1988.— *Cyphotheca* Diels, Bot. Jahrb. Syst. 65: 103. 1933; H. L. Li, J. Arn. Arbor. 25: 1-42. 1944; Hansen, Nord. J. Bot. 10: 21-23. 1990.— *Styrophyton* S. Y. Hu, J. Arn. Arbor. 33: 174. 1952.— *Tayloriophyton* Nayar, Bull. Bot. Surv. India 2: 90. 1968.

Shrubs or treelets, young parts usually densely covered with minute, partly glandular, stellate hairs, glabrescent. *Leaves* of a pair  $\pm$  unequal, ovate or elliptic, base rounded, cordate, or attenuate, apex acuminate to acute, margin serrulate, lamina with 1—3 pairs of lateral primary veins, rarely 3-plinerved, lateral cross-veins distinct, membranaceous or chartaceous and usually glabrous above. *Inflorescences* terminal paniculate cymes. *Flowers* 4- or 5-merous, with two stamen whorls. *Hypanthium* campanulate or cylindrical, terete or ribbed, glabrous or with minute brown glands and/or hairs, calyx rim truncate and with short cusps. *Petals* obovate and glabrous except for a few glandular hairs at the apex. *Stamens* isomorphic or dimorphic, anthers opening by a single pore, connective barely prolonged below the anthers, typically with a minute dorso-basal spur, sometimes also ventrally minutely bilobed. *Ovary* 3-, 4-, or 5-merous, almost entirely adnate to the hypanthium, apically rounded or beaked, glabrous or with glandular hairs, placentae axillary. *Fruit* an ovoid, campanulate, urceolate, or 8- or 10-ribbed capsule, dehiscing first apically and then also longitudinally. *Seeds* cuneate or wedge-shaped, 0.7—1 mm long.

About 50 species from northern India and China to Malay Peninsula, Indonesia, and Melanesia (Fiji); seven species in Thailand.

### KEY TO THE SPECIES

1. Branchlets, petioles and peduncles 4-winged

3. *O. curtisii*

1. Branchlets, petioles and peduncles not winged
  2. Leaves 11—15 cm wide
    3. Indumentum of persistent hairs; hypanthium and capsules obconical
 

**6. O. stellulata**
    3. Mature plants essentially glabrous; hypanthium and capsules urceolate
 

**2. O. bullata**
  2. Leaves maximally 10 cm wide
    4. Branchlets, petioles, and peduncles conspicuously hispid
 

**5. O. howellii**
    4. Branchlets, petioles, and peduncles minutely furfuraceous or glabrous
      5. Lamina with 2—3 pairs of lateral primary veins; pedicels 15—20 mm long
 

**7. O. umbellulata**
      5. Lamina with 1—2 pairs of lateral primary veins; pedicels 1—4 mm long
        6. Anthers 3—3.5 mm long; species Northern and North-Eastern
 

**1. O. balansae**
        6. Anthers 4—5 mm long; species Peninsular
 

**4. O. exigua**

**1. Oxyspora balansae** (Cogn.) Maxwell, Gard. Bull. (Singapore) 35: 216. 1982 [1983].— *Allomorpha balansae* Cogn. in Monogr. Phan. 7: 1183. 1891; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 901. 1921; C. Chen in Fl. China 53: 166. 1984.— *A. baviensis* Guillaumin, Notul. Syst. (Paris) 2: 324. 1913.— *A. sylvarum* Geddes, Bull. Misc. Inform. Kew 1930: 316. 1930; in Fl. Siam. En. 1: 687. 1931.— *A. urophylla* Diels, Bot. Jahrb. Syst. 65: 102. 1933; C. Chen in Fl. China 53: 166. 1984.

Shrub, 1—3 m tall, young branchlets subterete or angular, reddish-brown furfuraceous. *Leaves* lanceolate to oblong, 8.5—16 x 4—6 cm, base acute or cuneate, apex long-acuminate, tip 2—3 cm long, margin entire or finely serrulate, lamina with 1—2 pairs of lateral primary veins, outer pair faint above smooth and glabrous, below finely puberulous on the veins, petioles 1.5—3.5 cm long. *Inflorescences* few-branched or spicate, 8—12 cm long, minutely puberulous. *Flowers* 4-merous, pedicels 1—2 mm long. *Hypanthium* cylindrical or slightly urceolate, 4—6 mm long, calyx teeth about 0.5 mm long. *Petals* 3—4 mm long, pink. *Stamens* 8, subisomorphic, anthers 3—3.5 mm long. *Capsule* ovoid, 5—7 mm long, conspicuously 8-ribbed, calyx tube and teeth persistent.

**T h a i l a n d .** — NORTHERN: Chiang Rai, Nan (type of *A. sylvarum*: Doi Phu Kha, 1200—1600 m, KERR 4921, BK, K). NORTH-EASTERN: Loei (Phu Kradung).

**E c o l o g y .** — Collections: 10. Dry evergreen forest, on sandstone, beside streams; 700 — 1500 m alt.

**D i s t r i b u t i o n .** — Indochina (type of *A. balansae*: Tonkin).

**2. *Oxyspora bullata* (Griff.) Maxwell, Gard. Bull. (Singapore) 35: 216. 1982 [1983].— *Allomorpha ? bullata* (Griff.) Cogn. in Monogr. Phan. 7: 465. 1891.— *A. malaccensis* Ridl., J. Straits Branch Roy. Asiat. Soc. 79: 69. 1918; Fl. Mal. Pen. 1: 770. 1922.**

Shrub, 2—5 m tall, young branchlets quadrangular, sulcate, or compressed, farinose or furfuraceous. *Leaves* elliptic or ovate-lanceolate, 19—25(—35) x 10—14 cm, base acute, rounded, or shallowly cordate, apex long-acuminate, tip 2—3 cm long, margin entire or obscurely serrulate, lamina with 2—3 pairs of lateral primary veins, at first sparsely furfuraceous on both surfaces, later glabrous except on prominent secondary veins below, petioles 3—10.5 cm long, grooved, minutely furfuraceous, glabrescent. *Inflorescences* many-flowered and spreading, 10—35 cm long, with the flowers in terminal small umbels of 5—9 flowers, reddish furfuraceous, bracts and bracteoles subulate, furfuraceous, ca. 0.5 mm long, caducous. *Flowers* 4-merous, pedicels 2—3 mm long. *Hypanthium* slightly urceolate, 3—4 mm long, furfuraceous, calyx lobes triangular, ca. 0.5 mm long. *Petals* 1.5—2 mm long, elliptic to oblong, pinkish. *Stamens* 8, dimorphic, anthers pink and yellow, episepalous (outer) anthers 2—3 mm long, C-shaped, connective spur ca. 1 mm long, epipetalous (inner) anthers 2—2.5 mm long, slightly curved, connective spur ca. 0.75 mm long. *Capsule* urceolate, 2.5—3 mm long and opening by 4 prominent apical valves.

**T h a i l a n d .** — PENINSULAR: Songkhla, Yala.

**D i s t r i b u t i o n .** — Malay Peninsula (types of *O. bullata* and *A. malaccensis*: Malacca), Sumatra, Borneo (Kalimantan).

**E c o l o g y .** — Collections: 4. Understory of primary and secondary evergreen forest; 50—1000 m alt.

**U s e s .** — An extract of the roots in hot water is drunk by women after giving birth; a poultice of the leaves is applied to the abdomen to reduce fever and to the head to assuage headaches; leaf extracts are also used to treat leprosy.

**3. *Oxyspora curtisii*** King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 9. 1900.—  
*Allomorpha curtisii* (King) Ridl., J. Straits Branch Roy. Asiat. Soc. 57: 40. 1911.—*A. alata* Scort. ex King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 12. 1900; Ridl., Fl. Mal. Pen. 1: 770. 1922.—*A. eupteroton* Guillaumin, Notul. Syst. (Paris) 2: 323. 1913; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 903, Fig. 98. 1921; Craib in Fl. Siam. En. 1: 685. 1931; C. Chen in Fl. China 53: 164, pl. 37, Fig. 1. 1984.—*A. laotica* Guillaumin, op. cit.: 324.—*A. procursa* Craib, Bull. Misc. Inform. Kew 1930: 315. 1930.

Thin shrub, 1—2 m tall, young branchlets puberulous and bluntly or conspicuously 4-angled or 4-winged. *Leaves* ovate or elliptic, 10—25 x 5—14 cm, base attenuate or rounded, apex shortly acuminate, margin serrulate, lamina with 2 pairs of lateral primary veins, the veins prominent beneath, mature blades more or less glabrous above, petioles 1—4(—7) cm long and winged. *Inflorescences* 10—20 cm long, peduncle 4-winged, flowers clustered in small umbels near the ends of the inflorescence branchlets, bracts and bracteoles minute and deciduous. *Flowers* 4-merous, pedicels to 1.5 mm long. *Hypanthium* cylindrical to ovoid, 8-ribbed, 5—8 mm long, puberulous, calyx rim with 4 cusps to 0.5 mm long. *Petals* about 3.5 mm long, pink or white. *Stamens* 8, subisomorphic, 5—7 mm long, anthers white or sometimes pinkish. *Capsule* suburceolate or cylindrical, 6—8 mm long, crowned by the persistent 8-angled calyx rim.

**T h a i l a n d .** — NORTH-EASTERN: Loei; PENINSULAR: Yala (Bukit, 100 m, 1923, KERR 7874, K, type of *Allomorpha procursa*), Narathiwat.

**D i s t r i b u t i o n .** — Indochina (Tonkin: type of *A. eupteroton* ), Laos (type of *A. laotica*), and Malay Peninsula (Perak, type of *O. curtisii* and syntypes of *A. alata*).

**E c o l o g y .** — Collections: 13. In evergreen forest at up to 200 m alt.

**U s e s .** — The leaves are mashed in water and made into a poultice which is applied to the head to cure headaches (Maxwell, 1984: 228).

**4. *Oxyspora exigua*** (Jack) Maxwell, Gard. Bull. (Singapore) 35: 216. 1982 [1983].—  
*Melastoma exiguum* Jack, Trans. Linn. Soc. London, Bot. 14: 10, Pl. 1, Fig. 2a-b. 1823.—*Allomorpha exigua* (Jack) Bl., Flora 14: 523. 1831; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 10. 1900; Ridl., Fl. Mal. Pen. 1: 770. 1922; Craib in Fl. Siam. En. 1: 685. 1931; Bakh. f., Rec. Trav. Bot. Néerl. 40: 290. 1943.—*A. exigua* var. *minor* King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 11. 1900; Craib in Fl. Siam. En. 1: 686. 1931.—*A. porphyranthera* Ridl., J. Straits Branch Roy. Asiat. Soc. 57: 39. 1911.—*A. sumatrana* Boerl. & Koord. in Koord.-Schum., Syst. Verz. 46. 1911.—*A.*

*exigua* var. *capillaris* Ridl., Fl. Mal. Pen. 1: 770. 1922; Craib in Fl. Siam. En. 1: 686. 1931.

Few-branched shrub, 0.5—2 m tall, branchlets subangular and glabrous. *Leaves* of a pair often somewhat unequal in size, ovate, elliptic, or oblong, 10—18 x 5—9 cm, base rounded, obtuse or attenuate, apex acuminate, tip 1—3 cm long, margin entire or finely serrulate, lamina with 2 pairs of lateral primary veins, outer pair thinner than the inner one, both surfaces glabrous, petioles of a pair of leaves  $\pm$  unequal in length, 1.5—5 cm long. *Inflorescences* spreading, lax, glabrous, 5—11 cm long. *Flowers* 4-merous, pedicels 2—4 mm long. *Hypanthium* cylindrical, 2.8—3.5 mm long, glabrous, calyx cusps about 0.5 mm long. *Petals* 1—1.5 mm long, white or pale pink. *Stamens* 8, subisomorphic, anthers 4—5 mm long, cream or pink. *Capsule* campanulate or urceolate, 3—4 mm long, inconspicuously 8-ribbed.

**T h a i l a n d .** — PENINSULAR: Surat Thani, Nakhon Si Thammarat, Songkhla, Pattani, Yala.

**D i s t r i b u t i o n .** — Malay Peninsula (type of *M. exiguum*: Penang fide Merrill, 1952; type of *A. porphyranthera*: Temengor) and Sumatra (type of *A. sumatrana*).

**E c o l o g y .** — Collections: 14. In shaded primary and secondary forest below 500 m alt.

**U s e s .** — A decoction of the roots is drunk by mothers after having given birth; the leaves are used as a poultice on the abdomen to cure fevers (Maxwell, 1984: 229).

**V e r n a c u l a r .** — ..... (Surat Thani).

**5. *Oxyspora howellii*** J. F. Jeffrey & W. W. Sm., Notes Roy. Bot. Gard. Edinburgh 9: 114. 1916. — *Allomorphia howellii* (J. F. Jeffrey & W. W. Sm.) Diels, Bot. Jahrb. Syst. 65: 102. 1933; C. Chen in Fl. China 53: 167. 1984.— *A. setosa* Craib, Bull. Misc. Inform. Kew 1913: 68. 1913; in Fl. Siam. En. 1: 686. 1931; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 901. 1921; C. Chen in Fl. China 53: 168. 1984.— *Oxyspora balansae* var. *setosa* (Craib) Maxwell, Gard. Bull. (Singapore) 35: 216. 1982 [1983] [non *Oxyspora setosa* Craib (1930)]. Figure 17.

Shrub or treelet, 2—6 m tall, branchlets and petioles terete and densely covered with 2—4 mm long, spreading reddish hispid hairs or setae. *Leaves* ovate to oblong, 8.5—18 x 4—9 cm, base obtuse to subcordate, apex long-acuminate, tip 2—3 cm long, margin serrulate, with a fine hair on each tooth, lamina with 2 pairs of lateral primary

veins, outer pair faint, secondary and tertiary veins prominent below, above with sparse appressed 1—2 mm long hairs, below more densely pilose with the hairs mainly on the veins, petioles 3—5 cm long. *Inflorescences* few-branched, 9—12 cm long, bracts and bracteoles minute and deciduous. *Flowers* 4-merous, pedicels 1.5—2 mm long. *Hypanthium* urceolate, 4—6 mm long, puberulous, calyx cusps ca. 0.5 mm long. *Petals* 4—5 mm long, pinkish. *Stamens* 8, subisomorphic, 3—5 mm long. *Capsule* ovoid to urceolate, 5—6 mm long, the 8-angled calyx persistent as an apical rim.

**T h a i l a n d .** — NORTHERN: Chiang Mai (Doi Wao, KERR 2456, BK, K, type of *A. setosa*), Nan.

**E c o l o g y .** — Collections: 4. Evergreen forest on hillsides on sandstone or by streams; 600—1100 m alt.

**D i s t r i b u t i o n .** — Indochina (Tonkin: types of *A. arborescens*, *A. baviensis*, and *A. urophylla*; Yunnan, type of *Oxyspora howellii*).

**N o t e s .** — In contrast to Maxwell who synonymized *Allomorpha setosa* Craib under *O. balansae* we consider it a good species differing from *O. balansae* in the spreading hispid hairs on the branchlets, petioles, and inflorescences. The younger name *O. howellii* is here taken up for this species because the epithet *setosa* is occupied by *Oxyspora setosa* Craib (1930), a synonym of *O. umbellulata*.

**6. *Oxyspora stellulata*** King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 9. 1900; Ridl., Fl. Mal. Pen. 1: 767. 1922.— *Hylocharis stellulata* (King) Nayar, J. Jap. Bot. 53: 333. 1978.— *Oxyspora robusta* Bakh. f., Rec. Trav. Bot. Neerl. 40: 282. 1943.— *Hylocharis robusta* (Bakh. f.) Nayar, J. Jap. Bot. 53: 334. 1978.

Shrub or treelet, to 5 m high, the branchlets slightly flattened and becoming cylindrical, at first minutely stellate-furfuraceous, later glabrous. *Leaves* equal to subequal in size, ovate to elliptic, 25—35 x 11—18 cm, base obtuse or cordate, the apex acuminate, the tip ca. 2 cm long, margin entire, lamina with 2 pairs of lateral primary veins, the inner pair arising from 0.5—6 cm above the blade base, plus an intramarginal pair from slightly above the base, mature blades glabrous but covered with minute scales especially on the veins, petioles flattened, 6—11.5 cm long. *Inflorescence* axes stellate-furfuraceous, later glabrous, 20—34 cm long, flowers in umbellate clusters on the distalmost branchlets, peduncle 4-angled, bracts and bracteoles subulate, 1—4 mm long and covered with stellate hairs, caducous after flowers mature. *Flowers* 4-merous, pedicels 15—20 mm long, minutely puberulous. *Hypanthium* cylindrical, 3.5—5 mm long, often with 4 or 8 vertical ridges, minutely puberulous, calyx lobes triangular, less

frequently ligular, 1—1.5 mm long. *Petals* 7—9 mm long, obovate to elliptic, pink. *Stamens* 8, dimorphic, the 4 outer ones linear, purple, and twice as long (7—9 mm) as the inner 4, short, yellow ones. *Capsule* obconical, 5—6 mm long, crowned by the persistent calyx rim.

**T h a i l a n d .** — PENINSULAR: Pattani, Yala, Narathiwat.

**D i s t r i b u t i o n .** — Malay Peninsula (syntypes of *O. stellulata*: Perak, Sumatra) and Sumatra (type of *O. robusta*).

**E c o l o g y .** — Collections: 6. Understory of primary and secondary evergreen forest; 200—500 m alt.

**7. *Oxyspora umbellulata*** (Hook. f. ex Triana) Maxwell, Gard. Bull. (Singapore) 35: 218. 1982 [1983].— *Allomorphia umbellulata* Hook. f. ex Triana, Trans. Linn. Soc. London, Bot. 28: 74, pl. 6, Fig. 66a. 1871; Kurz, Fl. Burm. 1: 506. 1877.— *Anerinacleistus collinus* Ridl., J. Straits Branch Roy. Asiat. Soc. 57: 47. 1911.— *Oxyspora collina* (Ridl.) Ridl., Fl. Mal. Pen. 1: 768. 1922.— *O. caudata* Geddes, Bull. Misc. Inform. Kew 1930: 313. 1930.— *O. gracilis* Craib, Bull. Misc. Inform. Kew 1930: 314. 1930.— *O. setosa* Craib, Bull. Misc. Inform. Kew 1930: 314. 1930.— *O. collina* var. *subglabra* Craib, Fl. Siam. En. 1: 684. 1931.

Shrub, 2—5 m high, branchlets subterete and glabrous. *Leaves* of a pair sometimes unequal in size, elliptic, ovate-oblong, or ovate-lanceolate, 10—20 x 5—8.7 cm, base obtuse or cordate, apex acuminate, tip 1—2.5 cm long, margin entire, lamina with 2—3 pairs of lateral primary veins, above subglabrous, below softly pilose or puberulous or rarely glabrous, petioles (1—)3—5(—7) cm long. *Inflorescence* axes pilose or minutely puberulous, glabrescent, 4—6 cm long, flowers in clusters of 5—7. *Flowers* 4-merous, pedicels 10—20 mm long, minutely puberulous. *Hypanthium* cylindrical, 6—7 mm long, minutely puberulous, calyx lobes dorsally with a thick, wing-like cusp. *Petals* 7—9 mm long, pink. *Stamens* 8, subisomorphic, anthers 10—12 mm long, white. *Capsule* ± cylindrical, 8—11 mm long, crowned by the persistent calyx rim.

**T h a i l a n d .** — PENINSULAR: Ranong, Surat Thani (Khao Nawng, 1000—1200 m, KERR 13261, BK, K, type of *O. gracilis*), Nakhon Si Thammarat (Khao Luang, 1300—1600 m, KERR 15500, BK, K, type of *O. caudata*), Phatthalung (vic. of Khao Sung, 900 m, KERR 15236, BK, K, type of *O. setosa*), Satun (Klawng Ton area, KERR 14547, BK, K, type of *O. collina* var. *subglabra*), Yala.

**D i s t r i b u t i o n .** — Burma (type: Tenasserim or Andaman Islands, HELFER 2660, K), Burma.

**E c o l o g y .** — Collections: 19. Evergreen forest; 180—1600 m alt.

**V e r n a c u l a r .** — ..... (Pattani), .... (Nakhon Si Thammarat).

## 10. ANERINCLEISTUS

Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 250. 1844; Maxwell, Proc. Acad. Nat. Sci. Philadelphia 141: 29-72. 1989 (revision).— *Pomatostoma* Stapf, Icon. Pl. 25: pl. 2420. 1895.— *Creaghiella* Stapf, Icon. Pl. 25: pl. 2455. 1896; Bakh. f., Rec. Trav. Bot. Néerl. 40: 296. 1943.— *Oritrephes* Ridl., J. Linn. Soc., Bot. 38: 309. 1908.— *Phaulanthus* Ridl., J. Straits Branch Roy. Asiat. Soc. 57: 41. 1911.— *Plagiopetalum* Rehder in Sargent, Pl. Wilson. 3: 452. 1917.— *Krassera* O. Schwartz, Mitt. Inst. Allg. Bot. Hamburg 7: 247. 1931.

Shrubs or treelets, 6—10 m tall. *Leaves* of a pair equal or unequal, symmetric or very asymmetric, base cordate, rounded, acute, cuneate or auriculate, apex acute to acuminate, lamina glabrous or furfuraceous, tomentose or setose, with 1—3 pairs of lateral primary veins, these sometimes departing slightly above the blade base; petiolate. *Inflorescences* (in Thailand) in sessile clusters on the stem or axillary, elsewhere also terminal glomerulate cymes. *Flowers* 4-merous, with two stamen whorls, bracts usually minute, deciduous. *Hypanthium* campanulate, glabrous or with an indumentum as on the leaves, calyx lobes linear to triangular, often laterally compressed or dorsally keeled or winged. *Petals* lanceolate to suborbicular. *Stamens* subisomorphic, anthers opening by a single pore, connective not prolonged below the anthers, dorsally minutely spurred. *Ovary* adnate to the hypanthium by 4 septa, 4-locular, apically rounded or 4-lobed, placentae axillary. *Capsule* subglobose, cylindrical, or urceolate, dehiscent with 4 apical valves exerted from the hypanthium at maturity. *Seeds* 0.5—0.8 mm long, cuneate to ± straight.

According to Maxwell's revision of the genus, it comprises 30 species in India and the Malesian region. Two species are known from Thailand.

## KEY TO THE SPECIES

1. Leaf surfaces with dense appressed setae; calyx tube c. 3 mm long

**1. A. griffithii**

1. Leaf surfaces glabrous except for sparse appressed setae on the veins; calyx tube  
4—5 mm long

**2. *A. pedunculatus***

**1. *Anerinclaistus griffithii*** Hook. f. ex Triana, Trans. Linn. Soc. London, Bot. 28: 75. 1871; Maxwell, Proc. Acad. Nat. Sci. Philadelphia 141: 48. 1989.— *Phaulanthus griffithii* (Hook. f. ex Triana) Ridl., J. Straits Branch Roy. Asiat. Soc. 57: 42. 1911.— *A. helferi* Hook. f. ex Triana, Trans. Linn. Soc. London, Bot. 28: 75. 1871; Maxwell, Proc. Acad. Nat. Sci. Philadelphia 141: 49. 1989.— *P. helferi* (Hook. f. ex Triana) Ridl., J. Straits Branch Roy. Asiat. Soc. 57: 42. 1911.

Shrub, to 2.5 m tall, branches terete, like the petioles and principal leaf nerves densely appressed or spreading setose, setae to 2.5 mm long. *Leaves* of a pair equal or nearly so, broadly elliptic to ovate, 7.5—27 x 3—18 cm, base almost cordate, sometimes acute, apex acuminate, margin entire to minutely serrulate, lamina with 2—3 pairs of lateral primary veins, on both surfaces appressed setose, petioles 1—11 cm long. *Inflorescences* sessile clusters of flowers, on leafless nodes or rarely in leaf axils. *Flowers* 4-merous, pedicels 7—12 mm long, bracts subulate, minute and caducous. *Hypanthium* campanulate, 2.5—3 mm long, densely hirsute or hispid-setose, calyx lobes linear-subulate, 1—2 mm long, hispid. *Petals* 3—3.5 mm long, pink. *Stamens* 8, subsisomorphic, anthers 3—3.5 mm long, yellow. *Capsule* slightly urceolate and angular, 4—5 mm long, with an indumentum of pinkish setae and persistent calyx lobes.

**T h a i l a n d .** — PENINSULAR: Ranong, Satun, Songkhla.

**D i s t r i b u t i o n .** — Burma (type of *A. helferi*: Tenasserim or Andamans; type of *A. griffithii*: Mergui, South Burma) to Malay Peninsula.

**E c o l o g y .** — Collections: 4. Understory of evergreen forest on granitic bedrock or limestone below 200 m alt.

**2. *Anerinclaistus pedunculatus*** (Craib) Nayar, J. Bombay Nat. Hist. Soc. 72(3): 881. 1976.— *P. pedunculatus* Craib, Bull. Misc. Inform. Kew 1930: 317. 1930; Fl. Siam. En. 1: 688. 1931. — *P. brevidens* Craib, Bull. Misc. Inform. Kew 1930: 316. 1930; Fl. Siam. En. 1: 688. 1931.— *A. brevidens* (Craib) Nayar, J. Bombay Nat. Hist. Soc. 72(3): 881. 1976.— *P. nervosus* Craib, Bull. Misc. Inform. Kew 1930: 317. 1930; Fl. Siam. En. 1: 688. 1931.

Figure 18.

Shrub, to 1 m tall, branchlets terete, young parts covered with appressed setae to 1 mm long. *Leaves* of a pair usually somewhat unequal, elliptic to ovate-oblong, 6—29 x 3—15 cm, base acute, apex acuminate, margin entire to minutely serrulate, lamina with 1 pair of lateral primary veins plus a faint intramarginal pair, upper surface glabrous except appressed-setose on veins, lower surface more densely setose, petioles 1.5—6.5 cm long. *Inflorescences* sessile clusters of flowers, on leafless nodes or in leaf axils. *Flowers* 4-merous, pedicels 7—12 mm long, bracts subulate, minute, caducous. *Hypanthium* campanulate, 4—8 mm long, appressed setose, often pinkish-red, calyx lobes triangular, 1 mm long, aristate. *Petals* ca. 8 mm long, yellow or white. *Stamens* 8, subisomorphic, anthers 5.5—6 mm long, yellow. *Capsule* slightly urceolate, ca. 6 mm long, strigose.

**T h a i l a n d .** — PENINSULAR: Chumphon (La-un, 20 m, KERR 16491, BM, BK, K, type of *P. pedunculatus*), Ranong (LARSEN et al. 43107), Surat Thani, Phangnga (Kapong, 100 m, KERR 17127, BM, BK, K, type of *P. nervosus*), Songkhla (Klawng Yai, 50 m, KERR 15888, BK, BM, K, type of *P. brevidens*).

**D i s t r i b u t i o n .** — Endemic.

**E c o l o g y .** — Collections: 10. Evergreen forest.

**N o t e .** — Although synonymized under *A. griffithii* by Maxwell (Proc. Acad. Nat. Sci. Philadelphia 141: 29-72. 1989), *A. pedunculatus* is distinct from *A. griffithii* in leaf and stem pubescence and in flower size, and the two species are easily distinguished in the herbarium and in the field (S. Renner, personal observation, 1992).

## 11. DISSOCHAETA

Bl., Flora 14: 492. 1831; Maxwell, Fed. Mus. Journal 29: 45-117. 1983.— *Aplectrum*  
Bl., Flora 14: 502. 1831 [nom. illeg., non Torr. 1826].— *Diplectria* Bl. ex Reichenbach,  
Nomencl. 174. 1841; Bakh. f., Rec. Trav. Bot. Néerl. 40: 198. 1943; Veldk. et al.,  
Blumea 24: 410. 1978.— *Marumia* Bl., Flora 14: 504. 1831 [non Reinwardt, 1828];  
Miq., Fl. Ind. Bat. 1: 532. 1856.— *Dalenia* Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot.  
243. 1844.— *Macrolenes* Naudin, Ann. Sci. Nat. Bot. 3, 15: 311. 1851; Bakh. f., Rec.  
Trav. Bot. Néerl. 40: 203. 1943; Maxwell, Gard. Bull. (Singapore) 33: 321. 1980.—  
*Omphalopus* Naudin, Ann. Sci. Nat. Bot. 3, 15: 277. 1851.— *Anplectrum* A. Gray,  
U.S. Expl. Exped. 1, Bot., Phan.: 597. 1854; Ridl., Fl. Mal. Pen. 1: 799. 1922.—  
*Backeria* Bakh. f., Rec. Trav. Bot. Néerl. 40: 130. 1943 [nom. superfl.].—  
*Neodissochaeta* Bakh. f., Rec. Trav. Bot. Néerl. 40: 134. 1943.

Scrambling or straggling shrubs, indumentum stellate-furfuraceous or stellate-pubescent, often also with emergences of various kinds, rarely with hirsute hairs or glabrous, nodes swollen and with interpetiolar ridges, crests or pockets. *Leaves* lanceolate to elliptic, those of a pair equal, base acute, rounded or subcordate, apex acute or acuminate, lamina with 1—2 pairs of lateral primary veins, usually glabrous above, stellate-furfuraceous or stellate-pubescent below, sometimes with a pair of hair cushions below near the blade base, petiolate. *Inflorescences* terminal or axillary few- to many-flowered paniculate cymes. *Flowers* 4-merous, bracts minute to large and leaf-like, persistent or deciduous. *Hypanthium* campanulate or urceolate, stellate-pubescent, scaly or covered with spreading bristles (emergences that themselves may bear stellate hairs), calyx rim truncate, irregularly undulate, minutely 4-lobed, or with narrowly triangular or lanceolate lobes. *Petals* oblong or ovate, glabrous or pubescent. *Stamens* 8 or 4, strongly dimorphic, or the inner or outer whorl staminodial, or the inner whorl lacking anthers opening by 1 or 2 pores (in *D. gracilis*), occasionally the pollen sacs tessellate-reticulate (*D. fallax*), connective prolonged below the anthers, dorsally spurred or with filiform appendages, ventrally bilobed or with filiform appendages. *Ovary* 4-locular, apically rounded, adnate to the hypanthium by 4 or 8 septa, stamen pockets of variable depths reflecting the length of the anthers, placentae axillary. *Fruit* a soft and fleshy or dry and somewhat woody berry, subglobose and capped by the persistent calyx lobes, densely or sparsely stellate-pilose or furfuraceous, or glabrous, often drying with 8 longitudinal lines, mature dark purple or blue, seeds straight to slightly curved or cuneate, 0.5—0.8 mm long.

About 40 species in India, Indochina, Burma, Malay Peninsula, Sumatra, Java, Borneo, Celebes, New Guinea, and the Philippines; 12 species in Thailand.

*Note* : *Dissochaeta* (including *Diplectria* and *Macrolenes*) is distinguished from other berry-fruited genera present in Thailand by its scrambling habit, the variously thickened and adorned leaf nodes, and the strong stamen dimorphism. Flowering or fruiting material is needed for reliable identifications because the indumentum in several of the more widespread species tends to be variable. The only difference between species traditionally assigned to *Diplectria* and those traditionally assigned to *Dissochaeta* lies in the androecium. In *Diplectria* it is the episepalous (outer) stamen whorl that becomes staminodial, in *Dissochaeta* it is the epipetalous (inner) whorl that is reduced or lacking. The long-standing disagreement between authors on the generic boundaries in the *Dissochaeta* alliance led to numerous transfers between the dubiously differentiated genera *Diplectria*, *Marumia*, *Dalenia*, *Macrolenes*, *Anplectrum*, and *Backeria* (see the lists of synonyms). After studying representatives of these groups in the herbarium and in the field, we agree with G. Don, C. Naudin and C.

A. Backer that *Diplectria*, *Dissochaeta*, and *Macrolenes* form a monophyletic group (which recently was found strongly supported by molecular data), best ranked as one genus.

We are indebted to James F. Maxwell for the generous gift of the original richly illustrated copy of his dissertation (Maxwell, Taxonomic Revision of Diplectrinae Maxw. and Dissochaetinae Naud. (Dissochaeteae), 1980) with which we have compared all our descriptions of species of *Dissochaeta* sensu lato.

### KEY TO THE SPECIES

1. Leaf nodes prominently thickened, 6—7 mm wide and with two annular interpetiolar pockets, crests, or ridges adorned with marginal bristles **11. *D. stipularis***
1. Leaf nodes not prominently thickened and lacking annular pockets
  2. Calyx with 4 triangular lobes, 3—15 mm long; episepalous (outer) stamens with a 4—9 mm long connective prolongation between the anthers and the filament insertion
    3. Inflorescences with 20—35 flowers **2. *D. annulata***
    3. Inflorescences with up to 12 flowers
      4. Hypanthia variously pubescent but lacking long bristles **1. *D. affinis***
      4. Hypanthia with stellate hairs and 2—3 mm long thickened bristles that may themselves be covered with stellate hairs
        5. Petioles 0.5—1 cm long; connective prolonged below the anthers for about 5 mm **5. *D. echinulata***
        5. Petioles 1—1.8 cm long; connective prolonged below the anthers for about 9 mm **10. *D. reformata***
  2. Calyx truncate or crenate with irregular undulations or 4 minute cusps or lobes (max. to 2 mm long); stamens with a maximally 1 mm long connective prolongation between the anthers and the filament insertion
    6. Stamens 4, staminodes lacking
      7. Anthers medifixed, pollen sacs tessellate-reticulate **6. *D. fallax***
      7. Anthers basifixed, pollen sacs smooth
        8. Hypanthium 3—4 mm long; anthers 4—6 mm long **9. *D. monticola***
        8. Hypanthium about 6 mm long; anthers 8—11 mm long **8. *D. intermedia***
  6. Stamens 4, staminodes present
    9. Episepalous (outer) stamens fertile and opening by 2 pores, inner

stamens staminodial

**7. D. gracilis**

9. Episepalous (outer) stamens staminodial, inner stamens fertile and opening by a single pore

10. Fertile stamens without dorsal connectives appendages

**12. D. viminalis**

10. Fertile stamens at least dorsally appendaged

11. Leaves puberulous below; calyx rim truncate (visible in both flowers and fruits)

**4. D. divaricata**

11. Leaves glabrous below; calyx rim crenate, cracked, or lobed

**3. D. conica**

**1. Dissochaeta affinis** (Korth.) Clausing, comb. nov. — *Melastoma nemorosum* Jack, Trans. Linn. Soc. London, Bot. 14: 8. 1823; Calcutta J. Nat. Hist. 5(15): 319. 1843.— *Marumia nemorosa* (Jack) Bl., Flora 14: 505. 1831; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 47. 1900.— *M. affinis* Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 241, pl. 60. 1844.— *M. leprosa* Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 241. 1844 [non *D. leprosa* Blume]. — *M. verrucosa* Cogn. in Monogr. Phan. 7: 549. 1891.— *M. nemorosa* var. *verrucosa* (Cogn.) Ridl., Fl. Mal. Pen. 1: 795. 1922.— *M. dimorpha* Craib, Bull. Misc. Inform. Kew 1930: 320. 1930; in Fl. Siam. En. 1: 696. 1931; Ridl., Fl. Mal. Pen. 1: 795. 1922.— *M. impressa* Craib, Bull. Misc. Inform. Kew 1930: 321. 1930; in Fl. Siam. En. 1: 696. 1931.— *Macrolenes nemorosa* (Jack) Bakh. f., Rec. Trav. Bot. Néerl. 40: 206. 1943.— *M. dimorpha* (Craib) Maxwell, Gard. Bull. (Singapore) 33: 321. 1980 [non *Dissochaeta nemorosa* G. Don, Gen. Syst. 2: 783. 1832].

Scrambling shrub or woody climber, branchlets covered with persistent, brown or dark red-brown stellate hairs, nodes with undulate interpetiolar ridges. *Leaves* elliptic, 9—16 x 4—9 cm, base rounded to cordate, apex acuminate, tip ca. 5 mm long, lamina with 2—3 pairs of lateral primary veins, young leaves covered with a stellate tomentum on both surfaces, mature mostly glabrous, petioles 0.8—1 cm long, covered with stellate hairs. *Inflorescence* axillary with three flowers, 5—6 cm long, bracts 12—15 mm long, lanceolate or subulate. *Hypanthium* tubular to urceolate, 8—15 mm long, densely covered with a brown or red-brown stellate indumentum and sometimes sparsely pustulate, calyx lobes obovate to triangular, 7—15 mm long, on the inside with a prominent vertical midridge. *Petals* suborbicular, about 25 mm long, pinkish-white. *Stamens* 8, dimorphic, episepalous (outer) ones with L-shaped anthers, about 12 mm long, connective prolongation below the anthers ca. 8 mm long, basally enlarged into a

membranaceous ring bearing numerous up to 4 mm long filiform appendages, epipetalous (inner) stamens with S-shaped anthers, about 15 mm long, connective barely prolonged below the anthers but ventrally with up to 6 mm long filiform appendages. *Berry* dry and somewhat woody, urceolate, 7-10 mm across, usually covered with stellate hairs.

**T h a i l a n d .** — PENINSULAR: Ranong, Surat Thani, Phangnga (Kapong, Takuapa, 100 m, KERR 17110, BK, K, type of *Marumia impressa*), Krabi, Nakhon Si Thammarat, Phatthalung, Trang, Satun, Songkhla, Yala (Bannang Sata, 50 m, KERR 7283, BK, K, type of *Marumia dimorpha*), Narathiwat.

**D i s t r i b u t i o n .** — Malay Peninsula, Sumatra, and Borneo (Bandjermasin: Gunong Sakoembang, KORTHALS s.n., L, type of *Marumia affinis*).

**E c o l o g y .** — Collections: 25. Along margins of evergreen primary or secondary forest; from sea-level to 1000 m alt. Flowering and fruiting year-round.

**N o t e s .** — *Dissochaeta affinis* is related to *D. echinulata* and *D. reformata*. It differs mainly in the indumentum of the hypanthium and in details of stamen morphology.

The younger name *Marumia affinis* Korth. is here taken up for this species because the epithet *nemorosa* is already occupied by *D. nemorosa* G. Don.

**2. *Dissochaeta annulata*** Hook. f. ex Triana, Trans. Linn. Soc. London, Bot. 28: 83. 1871; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 50. 1900; Ridl., Fl. Mal. Pen. 1: 796. 1922.— *Macrolenes griffithii* Nayar, J. Jap. Bot. 55: 47. 1980.— *Dissochaeta annulata* var. *griffithii* (Nayar) Maxwell, Gard. Bull. (Singapore) 33: 313. 1980.

Scrambling shrub or woody climber, young branchlets and leaves densely covered with brownish-red stellate hairs and often with scattered bristles, nearly glabrous at maturity, nodes thickened and with distinct interpetiolar ridges. *Leaves* lanceolate or ovate, 6.5—15 x 3.5—8 cm, base cordate or rounded, apex acuminate, tip to 1.5 cm long, lamina with 1—2 pairs of lateral primary veins, the intramarginal pair quite faint, petioles 0.7—3 cm long, densely stellate tomentose. *Inflorescence* many-flowered paniculate cymes in the upper leaf axils, 18—25 cm long and with 20—35 flowers, bracts 1—3 x 0.5—1 cm, spatulate and often persistent during flowering. *Hypanthium* campanulate, 10—15 mm long, with stellate hairs and often a few gland-tipped bristles, calyx truncate or with 4 rounded or undulate lobes, 2—4 mm long, ovary 1/2 as long as the hypanthium. *Petals* ovate to obovate, clawed at the base, rounded at the tip, 15—20 mm long, often with minute cilia along the margin, pink, red, or purplish, or one side

white, other side red. *Stamens* 8, dimorphic, episealous (outer) ones with L-shaped anthers, 16—18 mm long, connective prolonged below the anthers for 4—7 mm and bearing two filiform up to 8 mm long appendages, epipetalous (inner) stamens with S-shaped anthers, about 12—14 mm long, connective barely prolonged below the anthers but dorsally and ventrally with filiform appendages. *Berry* dry and somewhat woody, urceolate, about 1 cm across and crowned by the 4 persistent calyx lobes, densely covered with stellate hairs.

**T h a i l a n d .** — PENINSULAR: Trang.

**D i s t r i b u t i o n .** — Malay Peninsula (Penang: type of *Dissochaeta annulata* var. *annulata*; Malacca: type of *Macrolenes griffithii*), Borneo (Sabah and Sarawak), and Moluccas.

**E c o l o g y .** — Collection: 1. Along margins of evergreen forest at 800 m altitude.

**N o t e s .** — Among its Thai congeners, *D. annulata* is the only species combining long hypanthia with many-flowered inflorescences. The other species with long hypanthia, *D. affinis*, *D. echinulata*, and *D. reformata*, have few-flowered inflorescences.

**3. *Dissochaeta conica*** (Bakh. f.) Clausen, comb. nov. — *Diplectria conica* Bakh. f., Rec. Trav. Bot. Néerl. 40: 202. 1943; Veldk. et al., Blumea 24: 414. 1978 (q.v. for full synonymy).

Scrambling shrub or woody climber, branchlets glabrous, nodes thickened with linear interpetiolar ridges. *Leaves* ovate, 8—15 x 3—6 cm, base broadly rounded, apex acuminate, tip 0.5—1.2 cm long, lamina with 1 pair of lateral primary veins, on both surfaces glabrous, petioles 0.5—1.2 cm long, glabrous. *Inflorescences* terminal and/or axillary many-flowered paniculate cymes, 20—40 cm long, bracts 2—4 x ca. 1 mm, linear. *Hypanthium* cylindrical, 6.5—8 mm long, minutely puberulous, glabrescent, calyx rim 1—2 mm high, distinctly crenate, cracked, or lobed, ovary about 1/2 as long as the hypanthium, stamen pockets extending to the base of the ovary. *Petals* broadly ovate, 8 mm long, pale purple. *Stamens* 4, plus 4 staminodes, epipetalous (inner) stamens fertile, anthers 9—10.5 mm long and S-shaped, connective barely prolonged below the anthers and dorsally with a ca. 1 mm long triangular spur, ventrally minutely bilobed, outer stamens staminodial and with a ca. 6 mm long anther remnant, dorsal connective spur about 1 mm long, ventral appendages minute or absent. *Berry*

subglobose to urceolate, about 6 mm across, capped by the persistent calyx limb, glabrous.

**T h a i l a n d .** — PENINSULAR: Yala.

**D i s t r i b u t i o n .** — Malay Peninsula, Sumatra (type), and Java.

**E c o l o g y .** — Collection: 1. In evergreen forest at 650 m alt.

**N o t e s .** — *Dissochaeta conica* resembles *D. divaricata* but differs from that species in having glabrous leaves and crenate calyx margins (vs. puberulous leaves and truncate calyx margins in *D. divaricata*).

**4. *Dissochaeta divaricata*** (Willd.) G. Don, Gen. Syst. 2: 783. 1832; Naudin, Ann. Sci. Nat. Bot. 3, 15: 70. 1851.— *Melastoma divaricatum* Willd., Sp. Pl., ed. 4, 2: 596. 1799 ('*divaricata*').— *M. glaucum* Jack, Trans. Linn. Soc. London, Bot. 14: 15. 1823.— *M. cyanocarpon* Bl., Bijdr. 17: 1073. 1826.— *Dissochaeta cyanocarpa* (Bl.) Bl., Flora 14: 501. 1831.— *D. glauca* (Jack) Bl., Flora 14: 501. 1831.— *Anplectrum cyanocarpum* (Bl.) Triana, Trans Linn. Soc. Bot., London 28: 84, pl. 7, Fig. 90c. 1871.— *A. divaricatum* (Willd.) Triana, Trans. Linn. Soc. London, Bot. 28: 84, Pl. 7, Fig. 90b. 1871; Ridl., Fl. Mal. Pen. 1: 800. 1922.— *A. glaucum* (Jack) Triana, Trans. Linn. Soc. London, Bot. 28: 84. 1871; C. B. Clarke in Hook. f., Fl. Br. Ind. 2: 545. 1879; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 89. 1921; Ridl., Fl. Mal. Pen. 1: 799. 1922; Craib in Fl. Siam. En. 1: 697. 1931.— *A. barbatum* Wall. ex C. B. Clarke in Hook. f., Fl. Br. Ind. 2: 546. 1879; Craib in Fl. Siam. En. 1: 697. 1931.— *Diplectria cyanocarpa* (Bl.) Kuntze, Rev. Gen. Pl. 1: 246. 1891; Bakh. f., Rec. Trav. Bot. Néerl. 40: 199. 1943.— *D. divaricata* (Willd.) Kuntze, Rev. Gen. Pl. 1: 246. 1891; Bakh. f., Rec. Trav. Bot. Néerl. 40: 200. 1943; Veldk. et al., Blumea 24: 417. 1978.— *Anplectrum patens* Geddes, Bull. Misc. Inform. Kew 1928: 72. 1928.— *A. stellulatum* Geddes, Bull. Misc. Inform. Kew 1928: 236. 1928; Craib in Fl. Siam. En. 1: 699. 1931.— *Backeria barbata* (Wall. ex C. B. Clarke) Raizada, Ind. For. 94: 435. 1968.— *Diplectria barbata* (Wall. ex C. B. Clarke) Franken & Roos in Veldk. et al., Blumea 24: 415. 1978.

Scrambling shrub or woody climber, branchlets floccose-puberulous or glabrous, with or without 2—3 mm long stellate hairs or bristles, interpetiolar ridges low, variously setose (the setae to 4.5 mm long), puberulous, or glabrous. *Leaves* ovate, oblong, or lanceolate, 6.5—13(—17) x 2.5—6.5(—8) cm, base rounded, apex acute to acuminate, tip ca. 0.5 cm long, lamina with 1—2 pairs of lateral primary veins, mature above glabrous to sparsely puberulous, below variously puberulous with brown stellate

hairs, glabrescent, petioles 0.5—2.0 cm long, often edged with 1—2 mm long setae. *Inflorescences* terminal or axillary many-flowered paniculate cymes, 6—30 cm long, stellate pubescent to glabrous, bracts 4—14 x 1—4 mm, leaf-like, margin with fine bristles, caducous. *Hypanthium* campanulate or urceolate, 4—6 mm long, furfuraceous and often tinged purplish-blue, calyx rim 1 mm high, truncate, ovary 1/2 to 3/4 as long as the hypanthium, adnate to the hypanthium by 8 septs, stamen pockets extending more or less to the base of the ovary. *Petals* oblong to obovate, 7—10 mm long, white, pale purple, or pinkish. *Stamens* 4, plus 4 staminodes, epipetalous (inner) stamens fertile, anthers S-shaped, 5—7.5 mm long, connective not prolonged below the anthers, dorsally with a triangular or bifid spur, ventrally minutely bilobed, outer stamens staminodial, trapezoid, 1.5—2.5(—4.5) mm long and with a ca. 2 mm long more or less filiform dorsal appendage. *Berry* ellipsoid, about 8 mm long, stellate puberulous or glabrous.

**T h a i l a n d .** — NORTHERN: Phitsanulok (NW of Nakhon Thai, KERR 5870, BK, K, type of *D. stellulatum*), Uttaradit; EASTERN: Nakhon Ratchasima; SOUTH WESTERN: Kanchanaburi; SOUTH-EASTERN: Chanthaburi, Trat; PENINSULAR: Ranong, Phangnga, Phuket, Nahon Si Thammarat, Trang, Songkhla, Surat Thani, Yala, Narathiwat (hills W of Bachaw, KERR 7215, BK, K, type of *D. patens*).

**D i s t r i b u t i o n .** — Burma, Laos, Vietnam, Malay Peninsula (Penang: type of *Melastoma glaucum*), Sumatra, Java (type of *Melastoma cyanocarpon*), and Borneo.

**E c o l o g y .** — Collections: 37. Along margins of evergreen forest, beside rivers, and along roadsides; 20—1000 m alt (up to 1600 m outside Thailand).

**V e r n a c u l a r .** — ..... (Trang), .... (Surat Thani).

**U s e s .** — Used in Pahang as a 'meroyan,' that is, a decoction drunk during the first three days after childbirth. A hot decoction of the leaves or roots is also used to treat fevers (Veldkamp et al., op. cit.: 419) and against scabies (op. cit.: 416).

**N o t e s .** — *Dissochaeta divaricata* is similar to *D. conica* (for differences see note under that species). According to Veldkamp et al. (Blumea 24: 420-421. 1978), it is unclear from where the type of this species, a specimen labeled KLEIN s.n. in the Willdenow herbarium (No. 8218), came and who collected it.

**5. *Dissochaeta echinulata*** (Naudin) Clausen, comb. nov. — *Marumia echinulata* Naudin, Ann. Sci. Nat. Bot. 3, 15: 280. 1851.— *Marumia rhodocarpa* var. *esetosa* Craib in Fl. Siam. En. 1: 697. 1931.— *Macrolenes echinulata* (Naudin) Bakh. f., Rec. Trav. Bot. Néerl. 40: 209. 1943.— *M. echinulata* var. *esetosa* (Craib) Maxwell, Gard. Bull. (Singapore) 33: 321. 1980.

Scrambling shrub or woody climber, branchlets with minute stellate hairs and with few to many 2—3 mm long dark maroon bristles, interpetiolar ridges prominent. *Leaves* elliptic to ovate, 7.5—13 x 3.5—6 cm, base rounded to cordate, apex acuminate, tip to 1 cm long, lamina with 2—3 pairs of lateral primary veins, young with a purple-brown stellate tomentum on both surfaces, mature leaves glabrous, petioles 0.5—1 cm long, with stellate hairs. *Inflorescences* in the upper leaf axils 4—7 cm long and with 1—5 flowers, bracts 1—4 mm long, linear, caducous. *Hypanthium* campanulate-urceolate, 10—12 mm long, with stellate hairs and long bristles, calyx rim, 2—3 mm high, lobes broadly triangular, 5—7 mm long, ovary 1/2 as long as the hypanthium, stamen pockets extending to the base of the ovary. *Petals* broadly ovate, about 18 mm long, white. *Stamens* 8, dimorphic, episealous (outer) ones with L-shaped anthers, about 15 mm long, connective basally prolonged for about 5 mm and with a ring of 5—7 filiform appendages (ventrally up to 4 mm long, dorsally up to 7 mm long), epipetalous (inner) stamens with C- or S-shaped anthers, about 10 mm long, connective barely prolonged below the anthers and with two ventral and two dorsal filiform appendages. *Berry* dry and somewhat woody, urceolate, about 10 mm across, covered with deciduous stellate hairs and persistent bristles.

**T h a i l a n d .** — PENINSULAR: Narathiwat (Sungai Pa Di/Padi, BOURKE s.n., BK, K, type of var. *esetosa*).

**D i s t r i b u t i o n .** — Malay Peninsula (Malacca: type of *Marumia echinulata*), Sumatra, and Java.

**E c o l o g y .** — Collections: 2. Along margins of primary or old secondary forest at low altitudes.

**N o t e s .** — *Dissochaeta echinulata* is doubtfully distinct from *D. reformata* Bl.; according to Maxwell, the two species may be distinguished by their petioles and connective prolongations, which are of different lengths.

**6. *Dissochaeta fallax*** (Jack) Bl., Flora 14: 493. 1831; Maxwell, Gard. Bull. (Singapore) 33: 313. 1980.— *Melastoma fallax* Jack, Trans. Linn. Soc. London, Bot. 14: 13. 1823.— *Omphalopus fallax* (Jack) Naudin, Ann. Sci. Nat. Bot. 3, 15: 277. 1851; Pl. 4, Fig. 5. 1851; Bakh. f., Rec. Trav. Bot. Néerl. 40: 118. 1943.

Scrambling shrub or woody climber, branchlets greyish stellate-furfuraceous, interpetiolar ridges raised. *Leaves* ovate, 10—15 x 4.5—5.6 cm, base rounded or shallowly cordate, apex acuminate, tip 1—1.5 cm long, lamina with 1(—2) pair(s) of

lateral primary veins, above glabrous, below densely covered with fine stellate hairs, petioles 1.2—1.4 cm long, stellate-pubescent. *Inflorescence* a densely pubescent paniculate cyme, terminal or in upper leaf axils, 9—30 cm long and many-flowered, bracts minute, caducous. *Hypanthium* urceolate, 4—4.5 mm long, with stellate hairs, calyx rim truncate, 1 mm high and with 4 undulations or cusps, ovary entirely adnate to outer wall of hypanthium. *Petals* ovate to oblong, 9—15 mm long, white with visible reddish venation. *Stamens* 4, episepalous, anthers yellow, ovate, pollen sacs tessellate-reticulate, ca. 7 mm long, connective with a dorsal crest attached near the middle of the anther, 3—4 mm long, lacking ventral appendages. *Berry* globose, 6—8 mm across, sparsely covered with stellate hairs to nearly glabrous, crowned by the calyx remnant.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat (BEUSEKOM 880).

**D i s t r i b u t i o n .** — Malay Peninsula (Gunong Ulu Kali, Selangor, Gunong Telapak), Sumatra (type of *Melastoma fallax*), Java, Bali, and New Guinea.

**E c o l o g y .** — Collection: 1. In low trees of evergreen forest at 750 m alt.

**N o t e s .** — *Dissochaeta fallax* differs from all other Thai species of *Dissochaeta* in having tessellate-reticulate pollen sacs and medifixed anthers while the other species have smooth pollen sacs and basifixed anthers.

**7. *Dissochaeta gracilis*** (Jack) Bl., Flora 14: 498. 1831; Ridl., Fl. Mal. Pen. 1: 797. 1922; Craib in Fl. Siam. En. 1: 697. 1931; Bakh. f., Rec. Trav. Bot. Néerl. 40: 137. 1943.— *Melastoma gracile* Jack, Trans. Linn. Soc. London, Bot. 14: 14. 1823.— *Neodissochaeta gracilis* (Jack) Bakh. f., Rec. Trav. Bot. Néerl. 40: 137. 1943.

Scrambling shrub or woody climber with slender branches, young branchlets sparsely to densely covered with red-brown stellate hairs, older branches glabrous, nodes with prominent interpetiolar ridges. *Leaves* thin, lanceolate to ovate, 8—15 x 2.5—7 cm, base rounded or cordate, apex acuminate, tip 0.5—0.8 cm long, lamina with 1(—2) pair(s) of lateral primary veins, the intramarginal pair faint, mature leaves glabrous above, glabrous or with scattered stellate hairs below, rarely furfuraceous, petioles 0.7—1.5 cm long, sparsely to densely furfuraceous or glabrous. *Inflorescence* a finely stellate pubescent or glabrous many-flowered paniculate cyme, terminal or in the upper leaf axils, 9—25 cm long, bracts 6—12 mm long, linear or lanceolate, caducous. *Hypanthium* campanulate-urceolate, 3—4 mm long, sparsely to densely covered with stellate hairs, glabrescent, calyx rim 1—2 mm wide, truncate or undulate with 4 minute cusps or lobes, ovary 1/2 as long as the hypanthium, surrounded by 4 shallow stamen pockets. *Petals* ovate, about 4 mm long, white to pink. *Stamens* 4, plus 4 staminodes,

episepalous (outer) stamens fertile, anthers clavate, 2—2.7 mm long with a truncate 2-pored tip (the pores separated by a relatively thin septum), connective barely prolonged below the anthers, dorsally enlarged and bearing two linear lobes (curved to the ventral side of the stamen), about 2 mm long, inner stamen whorl staminodial and with C-shaped anther remnants, 1.5 mm long, connective with a minute dorsal spur and two short ventral appendages. *Berry* subglobose, < 5 mm long, capped by the calyx remnant, glabrous.

**T h a i l a n d .** — PENINSULAR: Phatthalung, Trang, Satun, Pattani, Yala, Narathiwat.

**D i s t r i b u t i o n .** — Malay Peninsula (type from Malaya fide Merrill, 1952), Sumatra, and Borneo.

**E c o l o g y .** — Collections: 15. Along disturbed margins of evergreen forest at 100—900 m altitude.

**N o t e s .** — *Dissochaeta gracilis* has a slender habit with thin leaves and branches. The flowers are small and their stamens have short, straight, truncate anthers that open by two pores whereas anthers in all other species of *Dissochaeta* in Thailand open by a single pore.

**8. *Dissochaeta intermedia*** Bl., Flora 14: 493. 1831; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 54. 1900; Bakh. f., Rec. Trav. Bot. Néerl. 40: 223. 1943.

Scrambling shrub or woody climber, branchlets covered with brown stellate hairs, interpetiolar ridges distinct. *Leaves* thin or subcoriaceous, ovate to oblong, 9—19 x 3.5—9 cm, base rounded or slightly cordate, apex acuminate, tip ca. 0.5 cm long, lamina with 1—2 pairs of lateral primary veins, glabrous above, covered with a stellate indumentum below, petioles 1—1.8 cm long, stellate furfuraceous. *Inflorescences* densely stellate-pubescent many-flowered terminal paniculate cymes, 14—20 cm long, bracts minute, caducous. *Hypanthium* urceolate, 4.5—6 mm long, covered with stellate hairs or glabrous, calyx with 4 undulations or lobes, 1—1.3 mm long, ovary villous, 4 stamen pockets deep. *Petals* elliptic, 8—12 mm long, pink or purple. *Stamens* 4, episepalous, anthers S-shaped, 8—11 mm long, connective barely prolonged below the anthers, dorsally with a short spur, ventrally with two filiform appendages, 2—4 mm long. *Berry* urceolate, 6—8 x 5—6 mm, with a distinct calyx remnant and more or less covered with stellate hairs.

**T h a i l a n d .** — PENINSULAR: Phangnga/ Ranong, Yala.

**D i s t r i b u t i o n .** — Malay Peninsula, Sumatra, and Java (syntypes of *D. intermedia*, Pulu, KUHL and VAN HASSELT s.n.).

**E c o l o g y .** — Collections: 2. In secondary forest at 500—1000 m elevation.

**N o t e s .** — *D. intermedia* resembles *D. monticola* and *D. fallax*. It differs from the latter by lacking tessellate medifixed anthers, while it differs from the former in having much smaller bracts, longer hypanthia, and longer anthers.

**9. *Dissochaeta monticola*** Bl., Flora 14: 494. 1831 [syn. under *D. intermedia* by Bakh. f., Rec. Trav. Bot. Néerl. 40: 223. 1943] — *D. biligulata* Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 240. 1844. — *D. celebica* Bl., Mus. Bot. Lugd.-Bat. 1: 36. 1849; C. B. Clarke in Hook. f., Fl. Br. Ind. 2: 544. 1879; Ridl., Fl. Mal. Pen. 1: 798. 1922; Craib in Fl. Siam. En. 1: 697. 1931. — *D. bancana* Miq., Fl. Ind. Bat. 1: 529. 1856. — *Anplectrum biligulatum* (Korth.) Triana, Trans. Linn. Soc. London, Bot. 28: 85. 1871. — *Diplectria biligulata* (Korth.) Kuntze, Rev. Gen. Pl. 1: 246. 1891. — *Dissochaeta subviridis* Elm., Leafl. Philip. Bot. 6: 1193. 1911. — *Neodissochaeta biligulata* (Korth.) Bakh. f., Rec. Trav. Bot. Néerl. 40: 140. 1943. — *N. celebica* (Bl.) Bakh. f., Rec. Trav. Bot. Néerl. 40: 141. 1943. Figure 19.

Scrambling shrub or woody climber, young branchlets densely covered with stellate hairs, more or less glabrous when older, nodes with distinct interpetiolar ridges. *Leaves* ovate, 6—15 x 3—8 cm, base rounded or slightly cordate, apex acuminate, lamina with 1—2 pairs of lateral primary veins, above glabrous except for occasional stellate hairs on the nerves, below sparsely to densely stellate-pilose especially on the nerves, petioles 0.7—1.7 cm long, stellate-furfuraceous. *Inflorescences* many-flowered paniculate cymes, terminal or sometimes in the upper leaf axils, up to 25 cm long, bracts 4—8 mm long, linear, caducous. *Hypanthium* campanulate to urceolate, 3—4 mm long, stellate furfuraceous or glabrous, calyx rim truncate or with 4 shallow undulations or cusps, ovary 3/4 as long as the hypanthium, apically sometimes with bristles or appressed-puberulous, 4 stamen pockets shallow. *Petals* ovate, about 6 mm long, white or pink. *Stamens* 4, episepalous, anthers C-shaped, 4—6 mm long, connective barely prolonged below the anthers, dorsally with two linear appendages (curved to the ventral side of the stamen), up to 3 mm long. *Berry* globose, ca. 5 mm across, capped by the calyx remnant and more or less glabrous.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat, Phatthalung, Narathiwat.

**D i s t r i b u t i o n .** — Indochina, Malay Peninsula (Kedah, Penang, Perak, Selangor, Johore), Sumatra (types of *D. bancana* and *D. biligulata*), Java (type of *D. monticola*), Borneo, Celebes (type of *D. celebica*), and the Philippines.

**E c o l o g y .** — Collections: 5. In evergreen forest or in disturbed places, such as forest margins and gaps; low altitudes up to 600 m.

**N o t e s .** — *Dissochaeta monticola* commonly develops adventitious roots that provide aerial support. For differences between *D. monticola* and *D. intermedia* see note under that species.

**10. *Dissochaeta reformata*** Bl., Mus. Bot. Lugd.-Bat. 1: 37. 1849.— *Melastoma stellulatum* Jack, Trans. Linn. Soc. London, Bot. 14: 6. 1823.— *Marumia stellulata* (Jack) Bl., Flora 14: 505. 1831.— *Marumia reticulata* Bl., Mus. Bot. Lugd.-Bat. 1: 34. 1849; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 49. 1900— *Anplectrum reformatum* (Bl.) Triana, Trans. Linn. Soc. London, Bot. 28: 85. 1871. — *Diplectria reformatata* (Bl.) Kuntze, Rev. Gen. Pl. 1: 246. 1891.— *Marumia ciliatiloba* Baker f., J. Bot. 62, suppl. 1: 40. 1924.— *Macrolenes ciliatiloba* (Baker f.) Bakh. f., Rec. Trav. Bot. Néerl. 40: 215. 1943.— *Macrolenes reticulata* (Bl.) Bakh. f., Rec. Trav. Bot. Néerl. 40: 215. 1943.— *Macrolenes stellulata* (Jack) Bakh. f., Rec. Trav. Bot. Néerl. 40: 216. 1943.— *M. stellulata* var. *ciliatiloba* (Baker f.) Maxwell, Gard. Bull. (Singapore) 33: 321. 1980. [non *Dissochaeta stellulata* Furtado]. Figure 20.

Scrambling shrub or woody climber, branchlets covered with minute brown stellate hairs, nodes swollen and with distinct interpetiolar ridges. *Leaves* elliptic to oblong, 8—18 x 3.5—9.5 cm, base rounded to cordate, apex acuminate, tip 0.6—0.8 cm long, lamina with 2—3 pairs of lateral primary veins, mature leaves above and below glabrous except for a pair of hair cushions at the blade base, petioles 1—1.8 cm long, stellate-furfuraceous. *Inflorescence* cymes in the upper leaf axils, rarely terminal, 6—10 cm long and with 3—12 flowers, bracts 5—6 mm long, linear, caducous. *Hypanthium* campanulate, 10—15 mm long, densely covered with stellate hairs and thickened bristles that themselves bear stellate hairs, calyx lobes triangular, 5—7 mm long, ovary 1/2 as long as the hypanthium, usually with a ring of bristles on the villous top, stamen pockets extending to the base of the ovary. *Petals* elliptic to ovate, 10—25 mm long, white with a pinkish hue. *Stamens* 8, dimorphic, episealous (outer) ones with L-shaped anthers, about 17 mm long, connective prolonged below the anthers for about 9 mm, basally enlarged and bearing numerous filiform appendages, epipetalous (inner) stamens with S-shaped anthers, ca. 10 mm long, connective barely prolonged below the anthers and ventrally with two long filiform appendages, dorsally with two

short spurs. *Berry* dry and somewhat woody, campanulate, 10—12 mm across, covered with the same indumentum as the hypanthium.

**T h a i l a n d .** — PENINSULAR: Songkhla, Yala, Narathiwat.

**D i s t r i b u t i o n .** — Malay Peninsula (Lingga Archipelago), Sumatra (types of *M. reticulata* and *M. ciliatiloba*), Java, and Borneo (type of *D. reformata*, KORTHALS s.n., L).

**E c o l o g y .** — Collections: 4. Forest margins and gaps at low altitudes.

**N o t e s .** — *Dissochaeta reformata* closely resembles *D. echinulata* (cf. note under that species). The epithet *reformata* is here taken up for *Melastoma stellulatum* Jack because the epithet *stellulata* is occupied by *Dissochaeta stellulata* Furtado (1963), a synonym of *D. rostrata* Korth., while the epithet *reticulata* is occupied by *D. reticulata* Blume (1831), a synonym of *D. velutina* Blume.

**11. *Dissochaeta stipularis* (Bl.) Clausen, comb. nov.** — *Melastoma stipulare* Bl., Bijdr. 17: 1073. 1826.— *Aplectrum stipulare* Bl., Flora 14: 503. 1831.— *Anplectrum stipulare* (Bl.) Triana, Trans. Linn. Soc. London, Bot. 28: 84. 1871.— *Anplectrum annulatum* Triana ex C. B. Clarke in Hook. f., Fl. Br. Ind. 2: 546. 1879.— *Diplectria stipularis* (Bl.) Kuntze, Rev. Gen. Pl. 1: 246. 1891; Veldk. et al., Blumea 24: 424. 1978.— *A. lepidosetosum* King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 56. 1900; Ridl., Fl. Mal. Pen. 1: 799. 1922.— *Backeria stipularis* (Bl.) Bakh. f., Rec. Trav. Bot. Néerl. 40: 132. 1943; in Backer & Bakh.f., Fl. Java 1: 366. 1963.— *Diplectria annulata* var. *seticarpa* Furtado, Gard. Bull. (Singapore) 20: 107. 1963. Figure 21.

Scrambling shrub or woody climber, branchlets with scattered minute stellate hairs and up to 2 mm long reddish-brown glandular hairs or bristles, nodes prominently thickened, 6—7 mm wide and with two annular interpetiolar pockets, crests, or ridges, these densely covered with stellate hairs and marginal bristles, rarely glabrous. *Leaves* oblong or ovate, 9—17 x 3—8 cm, base rounded or cordate, apex acuminate, the tip 1—2 cm long, lamina with 2 pairs of lateral primary veins, mature leaves mostly glabrous above and below, petioles 0.5—0.7 cm long, densely covered with minute stellate hairs and bristles. *Inflorescences* many-flowered brown-pubescent terminal or axillary paniculate cymes, 10—15 cm long, bracts minute and linear, with stellate hairs and bristles along the margin. *Hypanthium* campanulate-cylindric, 3—5 mm long, densely covered with reddish-brown stellate and/or gland-tipped bristles, rarely glabrous, calyx truncate or with 4 shallow undulations, ovary 2/3 as long as the hypanthium, surrounded by 8 stamen pockets of unequal length, those of the

staminodes extending just below the top of the ovary. *Petals* ovate to suborbicular, 3—3.5 mm long, white. *Stamens* 4, plus 4 staminodes, epipetalous (inner) stamens fertile, anthers 2—3 mm long, connective barely prolonged below the anthers and with a triangular dorsal appendage, ventrally minutely bilobed, outer stamens staminodial with anther remnants about the same length as the fertile anthers, connective dorsally with triangular appendage, about 2.5 mm long, ventrally distinctly bilobed. *Berry* globose, 6—7 mm across, loosely covered with bristles or glabrous.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat, Satun, Songkhla.

**D i s t r i b u t i o n .** — Malay Peninsula, Sumatra, Java (type of *Melastoma stipulare*), and Borneo.

**E c o l o g y .** — Collections: 3. In open areas in limestone zones, also in disturbed evergreen forest at low altitudes.

**N o t e s .** — *Dissochaeta stipularis* resembles *D. divaricata* from which it differs in the more prominently thickened nodes with two annular pockets and the hirsute inflorescences. We agree with Backer (unpublished manuscript cited in Bakh., Rec. Trav. Bot. Néerl. 40: 132. 1943) that *Diplectria stipularis* belongs in *Dissochaeta*.

**12. *Dissochaeta viminalis*** (Jack) Clausen, comb. nov. — *Melastoma viminale* Jack, Trans. Linn. Soc. London, Bot. 14: 16. 1823.— *M. rostratum* Bl., Bijdr. 17: 1074. 1826.— *Aplectrum pallens* Bl., Mus. Bot. Lugd.-Bat. 1: 38. 1849.— *Anplectrum pallens* (Bl.) Triana, Trans. Linn. Soc. London, Bot. 28: 84. 1871; Ridl., Fl. Mal. Pen. 1: 800. 1922; Craib in Fl. Siam. En. 1: 689. 1931.— *A. viminale* (Jack) Triana, Trans. Linn. Soc. London, Bot. 28: 84. 1871.— *A. rostratum* (Bl.) Triana, Trans. Linn. Soc. London, Bot. 28: 84. 1871.— *Diplectria viminalis* (Jack) Kuntze, Rev. Gen. Pl. 1: 246. 1891; Veldk. et al., Blumea. 24: 427. 1978; Maxwell, Gard. Bull. (Singapore) 33: 312. 1980.— *Diplectria pallens* (Bl.) Kuntze, Rev. Gen. Pl. 1: 246. 1891.— *Diplectria rostrata* (Bl.) Kuntze, Rev. Gen. Pl. 1: 246. 1891.— *Backeria viminalis* (Jack) Bakh. f., Rec. Trav. Bot. Néerl. 40: 133. 1943. — *B. viminalis* var. *rostrata* (Bl.) Bakh. f., Rec. Trav. Bot. Néerl. 40: 134. 1943, nom. superfl., see Veldk. et al., l.c.— *B. pallens* (Bl.) Raizada, Ind. For. 94: 435 (1968).

Scrambling shrub or woody climber, branchlets puberulous to glabrous, nodes slightly thickened and with distinct linear interpetiolar ridges. *Leaves* lanceolate, elliptic-oblong, or ovate, 5—13 x 2—5 cm, base truncate, emarginate-cordate or rounded, apex acuminate, tip 0.8—1.4 cm long, lamina with 1(—2) pair(s) of lateral primary veins, mature blades mostly glabrous on both sides, petioles 0.4—0.9 cm long, shortly setose

or with a cushion of minute hairs. *Inflorescences* axillary or terminal, upright or lax panicate cymes, 7—18 cm long and with 10—25 flowers, bracts 3—10 x 3—4 mm, spatulate. *Hypanthium* campanulate, 3—4.5 mm long, glabrous, calyx truncate and splitting irregularly. *Petals* oblong to broadly ovate, about 5 mm long, pale lilac, cream, or white, ovary 1/2 as long as the hypanthium, surrounded by 4 stamen pockets extending to 1/2 the length of the ovary. *Stamens* 4, plus 4 staminodes, epipetalous (inner) stamens fertile, anthers S-shaped and ca. 2.5 mm long, connective barely prolonged below the anthers, ventrally minutely bilobed, dorsally unappendaged, outer stamens staminodial, triangular, 2—2.5 mm long, with a filiform dorsal spur rising from a thick base and two smaller ventral lobes. *Berry* subglobose, about 6 mm across, glabrous

**T h a i l a n d .** — PENINSULAR: Satun (KERR 14461), Songkhla (KERR 14587).

**D i s t r i b u t i o n .** — Malay Peninsula, Sumatra (type: JACK, destroyed, neotype selected by Veldkamp et al., *Blumea*. 24: 427. 1978), Java (type of *Melastoma rostratum* and neotype of *Diplectria viminalis*), the Billiton Islands, Borneo (Sabah, Sarawak, Kalimantan), and New Guinea (West Irian)

**E c o l o g y .** — Collections: 2. In primary and secondary forest at low altitudes.

**N o t e s .** — *Dissochaeta viminalis* resembles *D. divaricata* but differs from that species in having much smaller and less branched inflorescences and fertile stamens that are dorsally unappendaged.

## 12. MEDINILLA

Gaudich., *Voy. Uranie*: 484. 1830; Bakh. f., *Rec. Trav. Bot. Néerl.* 40: 147. 1943; Maxwell, *Gard. Bull. (Singapore)* 31: 146. 1978; Regalado, *Blumea* 35: 5-70. 1990 (partial revision).— *Hypenanthus* Bl., *Mus. Bot. Lugd.-Bat.* 1: 21. 1849.— *Medinillopsis* Cogn. in *Monogr. Phan.* 7: 603. 1891.— *Cephalomedinilla* Merr., *Philipp. J. Sci.* 5: 204. 1910.

Epiphytic shrubs or root climbers (in Thailand *M. radicans*), rarely terrestrial, branches terete, winged, or angular, smooth or pustulate, nodes sometimes with soft or stiff bristles up to 15 mm long. *Leaves* opposite or in whorls of 3—5, or one leaf reduced or absent, blades entire, elliptic, glabrous, coriaceous or succulent, sessile or petiolate, with 1—5 pairs of lateral primary veins, sometimes slightly plinerved, secondary and tertiary veins often indistinct or invisible, margin entire. *Inflorescences*

terminal or axillary, paniculate or umbellate, many-flowered cymes, often fascicled in leaf axils or on defoliated nodes, in some species reduced to few-flowered cymes or solitary flowers, sometimes cauliflorous. *Hypanthium* cylindrical or campanulate or urceolate, normally glabrous, calyx rim very shortly dentate or truncate. *Flowers* 4-, 5-, or 6-merous, with two stamen whorls. *Petals* generally obovate, thin. *Stamens* usually isomorphic (in *M. radicans* slightly dimorphic), anthers linear or slightly curved, opening by a single apical pore, connective not or barely prolonged below the anthers, ventrally minutely bilobed and dorsally shortly spurred. *Ovary* 4-6-locular, stamen pockets of various lengths or absent, placentae axillary. *Fruit* a globose smooth berry with a thin or thick pericarp. *Seeds* normally numerous, rarely few (*M. curtisii*), ovoid or pyramidate, 0.5—2.0 mm long.

Between 150 (Whiffin in Fl. Australia 18: 251. 1990) and 400 (Regalado, Blumea 35: 5. 1990, Blumea 40:113. 1995) species in Indo-Malesia (Borneo: 48; the Philippines: 80), North Australia (1), Madagascar (70), and tropical Africa (2); five species in Thailand. *Medinilla* is a polymorphic and likely paraphyletic genus.

#### KEY TO THE SPECIES

- |   |                                |
|---|--------------------------------|
| 1. Leaves in whorls of 4 or 5   | <b>4. <i>M. radicans</i></b>   |
| 1. Leaves opposite  |                                |
| 2. Inflorescences terminal  | <b>2. <i>M. curtisii</i></b>   |
| 2. Inflorescences on leafless nodes on older branchlets or axillary   |                                |
| 3. Inflorescences pendent, peduncle 6—16 cm long  | <b>1. <i>M. alpestris</i></b>  |
| 3. Inflorescences upright, peduncle shorter than 6 cm   |                                |
| 4. Petioles 0.8-1.8 cm long; inflorescence 3—4 cm long, with 5—10 flowers; hypanthium 5—6 mm long   | <b>3. <i>M. laurifolia</i></b> |
| 4. Petioles 0.1—0.4 cm long; inflorescence 1.5—2.5 cm long, with fewer than 5 flowers or flowers in pairs or solitary; hypanthium 3—4 mm long | <b>5. <i>M. rubicunda</i></b>  |

**1. *Medinilla alpestris*** (Jack) Bl., Flora 14: 514. 1831.— *Melastoma alpestre* Jack, Trans. Linn. Soc. London, Bot. 14: 20, Pl. 1, Fig. 3. 1823.— *M. javanense* Bl., Bijdr. 17: 1078. 1826.— *Medinilla javanensis* (Bl.) Bl., Flora 14: 515. 1831; Bakh. f., Rec. Trav. Bot. Néerl. 40: 182. 1943.— *M. penduliflora* Ridl., J. Fed. Malay. States Mus. 4:

19. 1911; Fl. Mal. Pen. 1: 804. 1922; Craib in Fl. Siam. En. 1: 700. 1931; Maxwell, Gard. Bull. (Singapore) 31: 167. 1978.

Epiphytic shrub, 1—2 m tall, branchlets and branches glabrous, smooth and sharply quadrangular. *Leaves* opposite, elliptic to ovate, 9.5—20 x 5—12 cm, sessile or petioles to 1.5 cm long, base rounded or cordate, often amplexicaul, apex acute or obtuse, lamina with 1 pair of lateral primary veins departing above the blade base. *Inflorescences* pendulous loose paniculate cymes, on older leafless nodes or axillary, 16—32 cm long, with 5—15 flowers, peduncle 6—16 cm long. *Flowers* 5-merous, pedicels 5—6 mm long, bracts 0.5—0.8 mm long, lanceolate. *Hypanthium* campanulate, 5—6 mm long, smooth, glabrous, calyx rim about 1 mm high, truncate or with 5 minute teeth, ovary ca. 3/4 as long as the hypanthium, stamen pockets extending below the middle of the ovary. *Petals* obovate, 8—9 mm long, white. *Stamens* equal in size and shape, anthers ca. 8 mm long, curved, connective dorso-basally with a purple spur, up to 0.7 mm long, ventrally with two yellow lobes. *Berry* 7—8 mm across, campanulate, apex truncate, pinkish white.

**T h a i l a n d .** — PENINSULAR: Surat Thani, Krabi, Nakhon Si Thammarat (Khao Luang).

**D i s t r i b u t i o n .** — Malay Peninsula (type of *M. penduliflora*), Sumatra (type of *M. alpestre*), Java (type of *M. javanensis*), and Indonesia (Bali, Timur).

**E c o l o g y .** — Collections: 6. In open places at 1200—1740 m alt.

**2. *Medinilla curtisii*** Hook. f., Bot. Mag.: pl. 6730. 1883 and Gard. Chron. 20: 621, Fig. 108. 1883; Bailey in Stand. Cycl. Hort. 2: 2021. 1947; Bakh. f., Rec. Trav. Bot. Néerl. 40: 191. 1943; Maxwell, Gard. Bull. (Singapore) 31: 161. 1978.— *M. elliptica* Craib, Bull. Misc. Inform. Kew 1930: 322. 1930; Fl. Siam. En. 1: 699. 1931.— *M. elliptica* var. *tetramera* Craib in Fl. Siam. En. 1: 699. 1931.

Epiphytic shrubs, to 1 m high, young branches subquadrangular, older branches subterete. *Leaves* opposite, ovate or ovate-oblong, 5—11.5 x 3—5 cm, sessile, base subamplexicaulous, apex acute or acuminate, lamina with 1 pair of lateral primary veins, sometimes departing above the blade base. *Inflorescences* terminal many-flowered paniculate cymes, 4—8 cm long, peduncle 2—3 cm long, 4—angled and often with 4 membranaceous wings. *Hypanthium* campanulate, 5—6 mm long, slightly grooved, glabrous, rim truncate or with minute teeth, ovary ca. 3/4 as long as the hypanthium, stamen pockets extending to below the middle of the ovary. *Flowers* 4 or 5-merous,

pedicels 8—10 mm long, bracts and bracteoles lanceolate, ca. 0.5 mm long, caducous. *Petals* obovate, ca. 12 mm long, purplish-pink. *Stamens* 8 or 10, equal, anthers 6—7 mm long, purple, connective dorsally with a basal spur, ventrally with two yellow lobes. *Berry* about 5—6 mm across, urceolate, orange.

**T h a i l a n d .** — SOUTH-EASTERN: Trat; PENINSULAR: Chumphon (Khao Nam Sao, KERR 12054, BK, K, type of var. *tetramera*), Ranong (Khao Patwa Chondong, 12 km N of Kapoe, 900 m, KERR 16779, BK, K, type of *M. elliptica*), Phangnga, Phatthalung, Trang.

**D i s t r i b u t i o n .** — Sumatra (type).

**E c o l o g y .** — Collections: 8. Evergreen forest at 800—900 m alt..

**3. *Medinilla laurifolia*** (Bl.) Bl., *Flora* 14: 511. 1831; Bakh. f., *Rec. Trav. Bot. Néerl.* 40: 186. 1943; Maxwell, *Gard. Bull.* (Singapore) 31: 162, pl. 2 (photo). 1978.— *Melastoma laurifolium* Bl., *Bijdr.* 17: 1069. 1826.— *Medinilla ferrata* Craib, *Bull. Misc. Inform. Kew* 1930: 323. 1930; *Fl. Siam. En.* 1: 700. 1931.

Epiphytic shrubs, upper branches terete, covered with small pustules and tubercles, texture rough and wrinkled when dry, glabrous. *Leaves* opposite, elliptic, 7—18 x 4—7.5 cm, base decurrent or acute, apex acute or obtuse, lamina with 1 pair of lateral primary veins, above drying with a roughened texture, petioles 0.8—1.8 cm long. *Inflorescences* few-flowered cymes on leafless nodes of older branches or axillary, 3—4 cm long, 5—10 flowers, peduncle 1.5—2.5 cm long. *Hypanthium* campanulate, 5—6 mm long, smooth, glabrous, calyx rim truncate or with 5 or 6 minute teeth, ovary ca. 3/4 as long as the hypanthium, stamen pockets extending below the middle of the ovary. *Flowers* 5- or 6-merous, pedicels 5—6 mm long, bracts and bracteoles triangular, ca. 0.5 mm long. *Petals* obovate, 15—18 mm long, 9—11 mm wide. *Stamens* 10 or 12, equal, anthers 6—8 mm long, J-shaped, purple or yellow, connective dorsally with a basal spur, ventrally with two yellow lobes. *Berry* 5—6 mm diam. and 0.8—1.5 cm long, campanulate, truncate on top.

**T h a i l a n d .** — NORTH-EASTERN: Loei (SMITINAND 1928, SØRENSEN 6269); PENINSULAR: Surat Thani (Khao Nawng, 800 m, KERR 13253, BK, K, type of *M. ferrata*; see type photo in Maxwell 1978, pl. 2).

**D i s t r i b u t i o n .** — Sumatra, Java (type of *M. laurifolia*, BLUME s.n.), and Celebes.

E c o l o g y . — Collections: 3. Evergreen lower montane forest at 700—1300 m alt.

**4. *Medinilla radicans*** (Bl.) Bl., Flora 14: 509. 1831; Bakh., Rec. Trav. Bot. Néerl. 40: 160. 1943; Maxwell, Gard. Bull. (Singapore) 31: 169, Fig. 9. 1978.— *Melastoma radicans* Bl., Bijdr. 17: 1069. 1826.

Root climber, branchlets  $\pm$  terete, ribbed or smooth, glabrous, sometimes with shallow grooves and thickened nodes, bark striate or pustulate, adventitious roots common. *Leaves* in whorls of 4 or 5, obovate or elliptic, 7—16 x 3—6.5 cm, coriaceous, apex acute or acuminate, base decurrent, lamina with 1 pair of lateral primary veins, petioles 1.5—3 cm long. *Inflorescences* umbelliform short cymes with 6—8 flowers, up to 3 cm long and borne on leafless nodes on older branches, peduncle 0.5—1 cm long. *Flowers* 4-merous, bracts and bracteoles minute, caducous. *Hypanthium* campanulate, elongated, including the truncate calyx rim, 7—11 mm high, mucronate, ovary ca. 3/4 as long as the hypanthium, stamen pockets extending below the middle of the ovary. *Petals* 4, thickened, oblong, rounded at the tip, 8—10 mm long, pink or white. *Stamens* 8, dimorphic, episepalous (outer) stamens 15—16 mm long, anthers straight, connective between the anthers and the filament insertion 3 mm long, dorsal and ventral connective appendages shorter than those of the smaller inner stamens, epipetalous (inner) stamens 7—9 mm long, anthers curved, connective with a spatulate dorsal spur, ca. 2 mm long and with two ventral thickened, bulbous spurs, ca. 1.5 mm long. *Fruit* urceolate, 9—11 mm across, remnant of the calyx rim 4—5 mm wide, pericarp 1 mm thick, pinkish-green turning dark red when ripe.

T h a i l a n d . — PENINSULAR: Nakhon Si Thammarat (Khao Luang, BEUSEKOM 1022).

D i s t r i b u t i o n . — Malay Peninsula, Sumatra, and Java (type of *M. radicans*, BLUME s.n.).

E c o l o g y . — Collection: 1. Altitude: 450 m.

**5. *Medinilla rubicunda*** (Jack) Bl., Flora 14: 512. 1831; Bakh. f. in Backer & Bakh.f., Fl. Java 1: 368. 1963; Maxwell, Gard. Bull. (Singapore) 31: 174, Fig. 10 and Pl. 3 (photo of type). 1978.— *Melastoma rubicundum* Jack, Trans. Linn. Soc. London, Bot. 14: 18. 1823.— *Medinilla emarginata* Craib, Bull. Misc. Inform. Kew 1930: 322. 1930; Fl. Siam. En. 1: 700. 1931.

Epiphytic shrubs, branches quadrangular, fleshy, glabrous, smooth or pustulate. *Leaves* opposite, elliptic, or oblanceolate, 7—13 x 3—5 cm, base cuneate-decurrent, sometimes auricled, apex acute to shortly acuminate, lamina with 1 pair of lateral primary veins departing above the blade base, fleshy to coriaceous, petioles to 0.4 cm long. *Inflorescences* axillary few-flowered fasciculate cymes, 1.5—2.5 cm long, or flowers solitary or in pairs, peduncle 0—3 mm long. *Flowers* 4- or 5-merous, pedicels 3—4(—6) mm long, bracts minute, lanceolate. *Hypanthium* campanulate, 3—4 mm long, calyx rim ca. 1 mm high, obscurely 4- or 5-dentate, ovary ca. 3/4 as long as the hypanthium, stamen pockets extending below the middle of the ovary. *Petals* oblong to obovate, acute, 5—7 mm long, 4—5 mm wide, white or pale pink. *Stamens* 8 or 10, equal, anthers straight, ca. 5 mm long, connective dorsally crested, ventrally with two small auricles. *Berry* 5—6 mm across, urceolate or subglobose, with a fleshy pulp and a thin pericarp, pink.

**T h a i l a n d .** — NORTHERN. Phitsanulok; NORTH-EASTERN: Loei; PENINSULAR: Ranong, Satun, Pattani (Betong, KERR 7603, K), Yala (Khao Kalakiri, 900 m, KERR 7773, BK, K, type of *M. emarginata*), Narathiwat .

**D i s t r i b u t i o n .** — India (Nepal), China, Burma, and Malay Peninsula (WALLICH cat. 4086, type of *M. rubicundum*).

**E c o l o g y .** — Collections: 8. Growing in evergreen forest, also on trees in peat swamp forest or on rocks; up to 1400 m alt.

### 13. PACHYCENTRIA

Bl., Flora 14: 519. 1831; Becc., Malesia 2: 236. 1884; Bakh. f., Rec. Trav. Bot. Néerl. 40: 120. 1943; Maxwell, Gard. Bull. (Singapore) 31: 201. 1978; Clausen, Blumea 45: 00-00. 2000 (revision).— *Pogonanthera* Bl., Flora 14: 520. 1831; Bakh. f., Rec. Trav. Bot. Néerl. 40: 127. 1943; Maxwell, Gard. Bull. (Singapore) 31: 209. 1978.

Epiphytic or terrestrial shrubs, with adventitious roots, these sometimes irregularly swollen, branches terete, flattened or obscurely 4-angled, striate, 2-grooved or smooth, furfuraceous or glabrous, often stunted, nodes thickened. *Leaves* opposite, blades entire, lanceolate, elliptic, ovate to orbicular, petiolate, glabrous, coriaceous to thin, base narrowed or rounded, sometimes with small auricles, apex acute or rounded, 1—3-nerved, mid-rib prominent, secondary veins mostly faint. *Inflorescences* terminal or axillary, many- or few-flowered thyrses, sometimes reduced to paired or solitary

flowers. *Hypanthium* urceolate, strongly constricted above the globose ovary, often ribbed on outside, calyx tube with or without 4 teeth or lobes. *Flowers* 4-merous. *Petals* 4, ovate, elliptic or oblong. *Stamens* 8, usually equal in size (in *P. varingiifolia* the outer stamens slightly larger), anthers straight, opening with a single apical pore, connective with a thick or flattened dorsal spur (a tuft of hairs in *P. pulverulenta*), ventral connective appendages lacking (present as two beaks only in *P. varingiifolia*). *Ovary* 1/4 to 1/2 as long as the hypanthium, 4-locular, totally adnate to hypanthium, stamen pockets lacking, placentae axillary. *Fruit* a globose smooth berry with thin pericarp, capped by a distinct rim deriving from the calyx. *Seeds* 6 to many, ovoid, compressed ovoid or cylindrical, 0.6—2.5 mm long.

*Pachycentria* comprises eight species and is distributed in Burma, Thailand, Peninsular Malaysia, Sumatra, Java, Borneo, Philippines, Celebes, and New Guinea. *Pogonanthera* is regarded as congeneric with *Pachycentria* because of continuous morphological variation between the two. *Pachycentria* sensu lato is also closely related to *Medinilla* from which it is distinguished by the small ovary and constricted hypanthium (Fig. 21C and 22B) and by seeds with honeycomb-shaped testa cells.

#### KEY TO THE SPECIES

1. Blade base with two small auricles; flowers small (4—5 mm long); stamens connective with a dorsal tuft of hairs **2. *P. pulverulenta***
1. Blade base lacking auricles; flowers > 5 mm long; stamen connective with a dorsal spur and/or ventral lobes
  2. Inflorescences many-flowered; flowers 5—10 mm long; stamens equal in size and shape, connective with a distinct dorsal spur, ventrally unappendaged; seeds 8—12, 2.0—2.5 mm long **1. *P. constricta***
  2. Inflorescences few-flowered; flowers 14—22 mm long; stamens subequal, connective dorsally shortly spurred or dorsal appendage lacking, ventrally bilobed, seeds 20—40, 0.7—1.0 mm long **3. *P. varingiifolia***

**1. *Pachycentria constricta*** (Bl.) Bl., *Flora* 14: 519. 1831; Bakh. f., *Rec. Trav. Bot. Néerl.* 40: 124. 1943; Maxwell, *Gard. Bull.* (Singapore) 31: 202. 1978.—*Melastoma constrictum* Bl., *Bijdr.* 17: 1049. 1826.—*P. tuberculata* Korth., *Verh. Nat. Gesch. Ned. Bezitt., Bot.* 246, pl. 63, Figs. 1-2. 1844; Ridl., *Fl. Mal. Pen.* 1: 805. 1922; Craib in *Fl. Siam. En.* 1: 701. 1931.—*P. cordata* Bl., *Mus. Bot. Lugd.-Bat.* 1: 24. 1849.—*P.*

*elliptica* Bl., Mus. Bot. Lugd.-Bat. 1: 23. 1849.— *P. laxiflora* Bl., Mus. Bot. Lugd.-Bat. 1: 23. 1849.— *P. rigida* Bl., Mus. Bot. Lugd.-Bat. 1: 23. 1849.— *P. zollingeriana* Naudin, Ann. Sci. Nat. Bot. III, 15: 301. 1851.— *P. junghuhniana* Miq., Fl. Ind. Bat. 1: 552. 1856.— *P. macrorhiza* Becc., Malesia 2: 237. 1884.— *P. formicaria* Merr., Philipp. Journ. Sci. 1, Suppl.: 215. 1906.— *P. javanensis* Hochr., Candollea 2: 475. 1924.— *P. lanceolata* O. Schwartz, Mitt. Inst. Allg. Bot. Hamburg 7: 255. 1931.— *P. oligosperma* O. Schwartz, Mitt. Inst. Allg. Bot. Hamburg 7: 256. 1931.

Epiphytic or rarely epilithic shrubs, to 1.5 m high, adventitious roots with tuberous, orange to brown swellings, young branchlets flattened, grooved or with two ridges, becoming terete and smooth, covered with a red-brown indumentum or glabrous. *Leaves* 5.5—24 x 2—8.5 cm, lanceolate to elliptic or obovate, base narrowed, rounded, or cordate, apex obtuse or acuminate, lamina with 1 pair of lateral primary veins, midrib prominent, secondary venation obscure, subcoriaceous, often purplish below, petioles 0.3—1.5 cm long. *Inflorescences* many-flowered terminal paniculate cymes, often with bright red axes, 2—6 cm long, peduncle 1—3 cm long, bracts and bracteoles minute, triangular and persistent. *Flowers* 4-merous, 5—10 mm long. *Hypanthium* urceolate, 3—4 x ca. 2 mm, calyx rim truncate with 4 thickened cusps, sparsely furfuraceous, pink, ovary 1/3 as long as the hypanthium, completely adnate to the hypanthium, stamen pockets lacking. *Petals* oblong or obovate, acuminate and thickened at the tip, clawed at the base, 5—7 mm long, white to pink, often tinged pink, sometimes yellow, glabrous. *Stamens* 8, isomorphic, 5—6 mm long, anthers cylindrical, curved at the tip, connective with a 0.5—0.75 mm long dorsal spur arising from the lower half. *Berry* 5—7 mm in diam., capped by the red calyx remnant, urceolate when young, later globose, immature yellowish-green, mature orange to dark red.

**T h a i l a n d .** — PENINSULAR: Chumphon, Ranong, Surat Thani, Phangnga, Phuket, Krabi, Yala.

**D i s t r i b u t i o n .** — Burma, Malay Peninsula, Sumatra, Java (types of *Pachycentria constricta*, *P. junghuhniana*, *P. zollingeriana* and *P. javanensis*), Borneo (types of *P. macrorhiza*, *P. oligosperma* and *P. lanceolata*), Celebes, and the Philippines (type of *P. formicaria*).

**E c o l o g y .** — Collections: 13. *Pachycentria constricta* is found in a great variety of habitats, from dry to wet forests and from nutrient-poor to nutrient-rich sites; it occurs at up to 1300 m alt. The seeds of *P. constricta* are dispersed by ants, and the species can be found growing on ant plants or in ant gardens. The adventitious roots often are swollen orange tubers that store water (Clausing, Flora 193: 361-368. 1998).

**Notes.** — Young leaves are purple below; in older leaves, at least the main nerves are flushed red. The inflorescences and peduncles are orange to red. The petals may be red or white, or red with white margins or white tinged pink or white with a pink base. The anthers are mostly pink or purple with a white, rostrate tip, and the style is white with a pink stigma.

**2. *Pachycentria pulverulenta*** (Jack) Clausen, *Blumea* 45: 00. 2000.— *Melastoma pulverulentum* Jack, *Trans. Linn. Soc. London, Bot.* 14: 19. 1823.— *Pogonanthera pulverulenta* (Jack) Bl., *Flora* 14: 521. 1831; C. B. Clarke in Hook. f., *Fl. Br. Ind.* 2: 550. 1879; Becc., *Malesia* 2: 241. 1884; Ridl., *Fl. Mal. Pen.* 1: 805. 1922; Bakh. f., *Rec. Trav. Bot. Néerl.* 40: 128. 1943; Maxwell, *Gard. Bull. (Singapore)* 31: 209. 1978.— *P. reflexa* Reinw. ex Bl., *Flora* 14: 521. 1831.— *P. pauciflora* Becc., *Malesia* 2: 241. 1884.— *P. latifolia* O. Schwartz, *Mitt. Inst. Allg. Bot. Hamburg* 7: 252. 1931.

Figure 22.

Epiphytic or epilithic shrubs, 0.5—2.0 m tall, rarely terrestrial and then up to 3 m tall. *Leaves* variable in size and shape, obovate, elliptic, oblanceolate, or lanceolate, 4—10(—16) x 1—6(—8) cm, base with two distinct 1—3 mm long auricles, apex acute to acuminate, lamina with 1(—2) pair(s) of lateral primary veins, often papillose below, petioles 5—10(—20) cm long. *Inflorescences* many-flowered terminal paniculate cymes, often with red axis and somewhat umbellate, peduncle 1.5—3 cm long. *Flower* 4-merous, 4—5 mm long, bracts and bracteoles 1—1.5 mm long, lanceolate and red-brown furfuraceous. *Hypanthium* campanulate, 1.5—2 x 1.5 mm, slightly constricted above ovary, papillose, calyx rim with 4 triangular thickened lobes or cusps (< 0.3 mm), ovary globose, ca. 1 mm in diameter, completely adnate to the hypanthium, stamen pockets lacking. *Petals* thin, obovate, acute at the tip, papillose on both surfaces, 3—5 mm long, orange-red to yellow. *Stamens* 8, subequal, 2—3.5 mm long, anthers cylindrical with a dorsal tuft of multicellular papillae on the lower third of connective, connective sometimes thickened at the insertion zone of the papills. *Berry* 4—6 mm in diam., globose, capped by the calyx neck, turning green to dark red while ripening.

**Thailand.** — PENINSULAR: Phatthalung, Satun, Songkhla.

**Distribution.** — Malay Peninsula, Sumatra (type of *Melastoma pulverulentum*) and throughout the Malayan Archipelago.

**Ecology.** — Collections: 4. Occurring in lowland primary and secondary forest at up to 600 m elevation.

**Notes.** — *Pachycentria pulverulenta* is variable in height (0.6—8 m) and leaf size, probably dependent on microclimate and environment. Occasionally the adventitious roots of *P. pulverulenta* become tuberous like those of *P. constricta* and *P. varingiifolia*, but *P. pulverulenta* differs from these species in the small auricles at the blade bases and the dorsal tuft of papillae on the anthers. The leaves are olive green above and lighter green below, the main nerves often are red or brown. All floral parts are more or less densely covered with short yellowish-white papillae, making them appear powdered. The calyx is often red, sometimes green while the petals show all transitions between yellow, orange, and red. The anthers and the style are usually white or yellow, but sometimes the anthers are lilac. The fruits are reddish green or yellow green when young, turning dark red when ripe.

**3. *Pachycentria varingiifolia*** (Bl.) Bl., Flora 14: 520. 1831; Bakh. f., Rec. Trav. Bot. Néerl. 40: 126. 1943.—*Melastoma varingiifolium* Bl., Bijdr. 17: 1071. 1826.—*Medinilla varingiifolia* (Bl.) Nayar, Blumea 18: 569. 1970; Maxwell, Gard. Bull. (Singapore) 31: 189, pls. 6 & 7 (photos). 1978.—*Medinilla heteranthera* King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 61. 1900.—*Pachycentria scandens* Ridl., J. Straits Branch Roy. Asiat. Soc. 1: 61. 1923.—*Medinilla ohwii* Nayar, Blumea 18: 567. 1970. Figure 23.

Epiphytic shrubs, occasionally terrestrial, scandent or erect, to 4.5 m high, climbing with adventitious roots, roots sometimes swollen and tuberous, branchlets terete, smooth, glabrous, becoming ridged and wrinkled when older, drying reddish. *Leaves* lanceolate or ovate, 5—10 x 2—5 cm, base narrowed or slightly rounded, apex short to long-acuminate, lamina with 1 pair of lateral primary veins, subcoriaceous to fleshy and coriaceous, above often with a rugose surface and dark green except for the reddish midrib, below reddish, margin sometimes serrulate when dry, petioles 1—1.7 cm long. *Inflorescences* few-flowered terminal cymes, 2—6 cm long, or rarely solitary flowers, axes terete, often succulent, glabrous, peduncle 1—3 cm long. *Flowers* 4-merous, 14—22 mm long, bracts and bracteoles lanceolate, 1—3 mm long. *Hypanthium* 4—8 mm x ca. 2 mm, urceolate, constricted above the ovary, calyx rim 1—1.5 mm high, truncate, undulate or with 4 triangular lobes or cusps, rarely ciliate, ovary globose, 1/4 as long as the hypanthium, 1—2 mm across and completely adnate to the hypanthium, stamen pockets lacking. *Petals* ovate, 12—18 mm long, base truncate, apex acuminate, dorsally with thickened cusps, changing from pink to white from the base to the tip. *Stamens* 8, subequal, with a rostrate tip, connective ventrally bilobed, dorsally with a more or less produced spur, presence and length of the dorsal spur differing within

single flowers, episealous (outer) stamens with 6—10 mm long anthers, anthers either light yellow or purplish, epipetalous (inner) stamens with 5—7 mm long anthers. *Berry* 6—8 mm in diam., subglobose and with a distinct, 2—3 mm high and 4—5 mm wide neck, pericarp glabrous, rugose when dry, green turning red.

**T h a i l a n d .** — PENINSULAR: Nakhon Si Thammarat (Khao Luang: SMITINAND 867).

**D i s t r i b u t i o n .** — Malay Peninsula (Pahang, Perak [syntypes of *Medinilla heteranthera*], Trengganu), Sumatra (type of *M. ohwii*), and Java (type of *Melastoma varingiifolium*).

**E c o l o g y .** — Collection: 1. In evergreen forest or on exposed rocks; lowland to 2000 m elevation (outside Thailand).

#### 14. PSEUDODISSOCHAETA

Nayar, J. *Bombay Nat. Hist. Soc.* 65: 557. 1969.

Terrestrial shrubs, branchlets slender, subterete or angular, subglabrous or softly pilose. *Leaves* thin, lanceolate, those of a pair isomorphic, shortly petiolate or subsessile, lamina with 2—3 pairs of lateral primary veins, margin at least apically serrulate, secondary and tertiary veins usually distinctly visible, glabrous or only sparsely pilose. *Inflorescences* terminal or axillary few- or many-flowered paniculate cymes. *Flowers* 4-merous, with two stamen whorls, bracts subulate and small. *Hypanthium* campanulate, calyx rim subtruncate or shallowly lobed. *Petals* ovate to oblong, glabrous. *Stamens* 8, isomorphic or subisomorphic, opening by a single pore, connective dorsally minutely spurred and expanded around the filament insertion, ventrally minutely bilobed. *Ovary* 4-locular, apically rounded or sometimes depressed around the style base, adnate to the hypanthium by 8 septs, stamen pockets descending to the middle or the base of the ovary, placentae axillary. *Fruit* a globose or urceolate berry. *Seeds* cuneate, in some species strongly crooked, 0.5—0.75 mm long.

A genus of seven species; Assam to Indochina; two species in Thailand.

#### KEY TO THE SPECIES

1. Inflorescences axillary or terminal, few-flowered; leaves 6—10 cm long, below

glabrous

**1. *P. septentrionalis***

1. Inflorescences terminal, many-flowered; leaves 14—18.5 cm long, below sparsely brownish-pilose **2. *P. subsessilis***

**1. *Pseudodissochaeta septentrionalis*** (W. W. Sm.) Nayar, J. Bombay Nat. Hist. Soc. 65: 565, Fig. 4. 1969; Veldk. & Nayar, Blumea 24: 435. 1978.— *Oritrephes septentrionalis* W. W. Sm., J. Asiat. Soc. Bengal, Pt. 2 Nat. Hist. 7: 69. 1911.— *Medinilla caerulescens* Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 921. 1921.— *M. caerulescens* var. *nuda* Craib in Fl. Siam. En. 1: 699. 1931.— *Anplectrum yunnanensis* Kraenzlin, Vierteljahrsschr. Naturf. Ges. Zürich 76: 153. 1931.— *Medinilla septentrionalis* (W. W. Sm.) H. L. Li, J. Arn. Arbor. 25: 38. 1944; C. Chen in Fl. China 53: 274, Pl. 54, Fig. 9-10. 1984.

Shrub, 0.3—4 m tall, spreading or sometimes scrambling, the young branchlets terete and glabrous, leaf nodes with distinct interpetiolar lines and minute bristles. *Leaves* ovate or lanceolate, 6—10 x 1.5—3 cm, base cuneate or rounded, apex acuminate, the drip tip to 1.5 cm long, margin serrulate to subentire, lamina with 2 pairs of lateral primary veins, mature glabrous on both surfaces, petioles 0.4—0.9 cm long. *Inflorescences* axillary or terminal 1—5-flowered cymes, 2—5 cm long. *Flowers* with pedicels about 1 cm long, bracts minute and subulate. *Hypanthium* campanulate, about 5 mm long, calyx rim with 4 shallow lobes, ovary 2/3 as long as the hypanthium, apically depressed-concave. *Petals* obovate, about 6 mm long. *Stamens* subequal, outer ones about 13 mm long, inner ones about 11 mm long, connective ventrally minutely bilobed. *Berry* ovoid to urceolate, about 7 mm long.

**T h a i l a n d .** — NORTHERN: Chiang Mai, Chiang Rai, Nan, Lampang, Phitsanulok; NORTH-EASTERN: Phetchabun (Phu Lomlo peak, 1200 m, KERR 5787, BK, type of var. *nuda*); EASTERN: Nakhon Ratchasima; CENTRAL: Nakhon Nayok.

**D i s t r i b u t i o n .** — Southern China (HENRY 11705, E, K, type of *A. yunnanensis*), Vietnam, Laos (HARMAND 1243, P, lectotype of *M. caerulescens*), Vietnam, and upper Burma (McGREGOR 751, E, lectotype of *P. septentrionalis*).

**E c o l o g y .** — Collections: 15. Evergreen forest at 800—1500 m alt.

**V e r n a c u l a r .** — .....(Nakhon Ratchasima).

**2. *Pseudodissochaeta subsessilis*** (Craib) Nayar, J. Bombay Nat. Hist. Soc. 65: 561, Fig. 2. 1969; Veldk. & Nayar, Blumea 24: 432. 1978.— *Allomorpha subsessilis* Craib,

Bull. Misc. Inform. Kew 1913: 69. 1913; Guillaumin in Lecomte, Fl. Gén. I.-C. 2: 902. 1921; Craib in Fl. Siam. En. 1: 686. 1931.— *Anerinacleistus sessilifolius* Guillaumin, op. cit.: 905.

Shrub, 2—4 m tall, sometimes scrambling, with thin sharply 4-angled branchlets, subglabrous, leaf nodes with distinct interpetiolar lines. *Leaves* lanceolate to ovate, 14—18.5 x 3—4 cm, subsessile, base rounded to cordate, apex acuminate, drip tip to 1 cm long, margin loosely denticulate, lamina with 2 pairs of lateral primary veins, above glabrous except for a few hairs along the midrib and main veins and near the blade base, below sparsely pilose with simple brown hairs. *Inflorescences* terminal many-flowered paniculate cymes, 15—28 cm long. *Flowers* 4-merous, pedicels about 2 mm long. *Hypanthium* campanulate, 3—4 mm high, calyx rim with minute triangular lobes, finely puberulous, ovary 2/3 as long as the hypanthium. *Petals* obovate to suborbicular with a basal claw, 2.7—3 mm long, apex rounded. *Stamens* subequal, about 4—5 mm long, connective dorsally minutely spurred. *Berries* globose, about 6 x 5 mm.

**T h a i l a n d .** — NORTHERN: Chiang Mai (Doi Wao, KERR 2427, K, type of *Allomorpha subsessilis*), Phayao, Nan, Lampang; NORTH-EASTERN: Nong Khai.

**D i s t r i b u t i o n .** — Laos (THOREL s.n., P, type of *Anerinacleistus sessilifolius*).

**E c o l o g y .** — Collections: 6. Evergreen forest at 150—900 m alt.

## 15. CLIDEMIA

D. Don, Mem. Wern. Nat. Hist. Soc. 4: 306. 1823; Ridl., Fl. Mal. Pen. 1: 807. 1922; Bakh. f., Rec. Trav. Bot. Néerl. 40: 113. 1943.

Shrubs, hirsute or villous with simple spreading often glandular hairs. *Leaves* opposite, those of a pair equal and with 2 pairs of lateral primary veins (in Thailand). *Inflorescences* few-flowered axillary cymes (in Thailand). *Flowers* 5-merous (in Thailand), with two stamen whorls. *Hypanthium* campanulate, often glandular-pubescent. *Petals* usually white, thin. *Stamens* opening by a single pore, connective barely prolonged below the anthers and dorsally shortly spurred. *Ovary* 5-locular, stamen pockets lacking, placentae axillary. *Fruit* a dark blue or black berry covered with long hispid hairs. *Seeds* straight and ovoid.

A genus of about 120 species in the New World from Mexico to Peru and Bolivia; one species introduced in Thailand.

**Clidemia hirta** (L.) D. Don, Mem. Wern. Nat. Hist. Soc. 4: 306. 1823; Bakh. f., Rec. Trav. Bot. Néerl. 40: 113. 1943.— *Melastoma hirtum* Linn., Sp. Pl. 1: 390. 1753 ('hirta').

Shrub, 1—1.5 m tall, branchlets hirsute with spreading glandular hairs. *Leaves* ovate to broadly ovate, 5—15 x 5—8 cm, base subcordate or rounded, apex acute to shortly acuminate, margin serrulate, lamina with 2 pairs of lateral primary veins, on both sides loosely covered with simple hairs, petioles to 3 cm long. *Inflorescences* axillary and usually few-flowered with 3—5(—15) flowers. *Hypanthium* campanulate, about 5 mm long and glandular-hirsute. *Petals* ovate, 8—11 mm long, white. *Stamens* 10, white, anthers 4—5 mm long, connective with a minute dorsal spur. *Berries* 5—7 mm in diam., dark blue.

T h a i l a n d . — PENINSULAR: Satun, Songkhla, Yala, Narathiwat.

D i s t r i b u t i o n . — In the New World from Mexico to Bolivia; an invasive pest, called Koster's Curse, in much of the paleotropics and especially in Hawaii.

E c o l o g y . — Collections: 6. Disturbed sites from sea-level to 150 m elevation.

N o t e s . — Bakhuizen f. (1943) documents the early presence of this extremely aggressive weed in the Malesian Archipelago. Compare also L.L. Wester and H.B. Wood, Koster's curse (*Clidemia hirta*), a weed pest in Hawaiian forests, Environmental Conservation 4: 35-41 (1977).

## INDEX OF NAMES

- Allomorphia* Bl.
- A. alata* Scort. ex King
- A. balansae* Cogn.
- A. baviensis* Guillaumin
- A. ? bullata* (Griff.) Cogn.
- A. curtisii* (King) Ridl.
- A. eupteroton* Guillaumin
- A. exigua* (Jack) Bl.
- A. exigua* var. *capillaris* Ridl.
- A. exigua* var. *minor* King

*A. howellii* (J. F. Jeffrey & W. W. Sm.) Diels  
*A. laotica* Guillaumin  
*A. malaccensis* Ridl.  
*A. porphyranthera* Ridl.  
*A. procursa* Craib  
*A. setosa* Craib  
*A. subsessilis* Craib  
*A. sumatrana* Boerl. & Koord.  
*A. sylvarum* Geddes  
*A. umbellulata* Hook. f. ex Triana  
*A. urophylla* Diels

*Anerinacleistus* Korth.

*A. brevidens* (Craib) Nayar  
*A. collinus* Ridl.  
*A. griffithii* Hook. f. ex Triana  
*A. helferi* Hook. f. ex Triana  
*A. pedunculatus* (Craib) Nayar  
*A. sessilifolius* Guillaumin

*Anplectrum* A. Gray

*A. annulatum* Triana ex C. B. Clarke  
*A. barbatum* Wall. ex C. B. Clarke  
*A. biligulatum* (Korth.) Triana  
*A. cyanocarpum* (Bl.) Triana  
*A. divaricatum* (Willd.) Triana  
*A. glaucum* (Jack) Triana  
*A. lepidosetosum* King  
*A. pallens* (Bl.) Triana  
*A. patens* Geddes  
*A. reformatum* (Bl.) Triana  
*A. rostratum* (Bl.) Triana  
*A. stellulatum* Geddes  
*A. stipulare* (Bl.) Triana  
*A. viminale* (Jack) Triana  
*A. yunnanensis* Kraenzlin

*Aplectrum* Bl., nom. illeg.

2. *pallens* Bl.

*A. stipulare* Bl.

*Backeria* Bakh. f.

*B. barbata* (Wall. ex C. B. Clarke) Raizada

*B. pallens* (Bl.) Raizada

*B. stipularis* (Bl.) Bakh. f.

*B. viminalis* (Jack) Bakh. f.

*B. viminalis* var. *rostrata* (Bl.) Bakh. f.

*Blastus* Lour.

*B. borneensis* Cogn.

*B. borneensis* var. *stellulatus* (Geddes) Hansen

*B. stellulatus* Geddes

*Brittenia* Cogn. ex Boerl.

*Campimia* Ridl.

*Cephalomedinilla* Merr.

*Ceramicalyx* Bl.

*C. stellatus* (Buch.-Ham. ex Ker-Gawler) Bl.

*Creaghiella* Stapf

*Clidemia* D. Don

*C. hirta* (L.) D. Don

*Cyanandrium* Stapf

*Cyphotheca* Diels

*Dalenia* Korth.

*Diplectria* Bl. ex Reichenbach

*D. annulata* var. *seticarpa* Furtado

*D. barbata* (Wall. ex C. B. Clarke) Franken & Roos

*D. biligulata* (Korth.) Kuntze  
*D. conica* Bakh. f.  
*D. cyanocarpa* (Bl.) Kuntze  
*D. divaricata* (Willd.) Kuntze  
*D. pallens* (Bl.) Kuntze  
*D. reformata* (Bl.) Kuntze  
*D. rostrata* (Bl.) Kuntze  
*D. stipularis* (Bl.) Kuntze  
*D. viminalis* (Jack) Kuntze

Dissochaeta Bl.

*D. affinis* (Korth.) Clausing  
*D. annulata* Hook. f. ex Triana  
*D. annulata* var. *griffithii* (Nayar) Maxwell  
*D. bancana* Miq.  
*D. biligulata* Korth.  
*D. celebica* Bl.  
*D. conica* (Bakh. f.) Clausing  
*D. cyanocarpa* (Bl.) Bl.  
*D. divaricata* (Willd.) G. Don  
*D. echinulata* (Naudin) Clausing  
*D. fallax* (Jack) Bl.  
*D. glauca* (Jack) Bl.  
*D. gracilis* (Jack) Bl.  
*D. intermedia* Bl.  
*D. monticola* Bl.  
*D. nemorosa* G. Don  
*D. reformata* Bl.  
*D. stellulata* Furtado  
*D. stipularis* (Bl.) Clausing  
*D. subviridis* Elm.  
*D. viminalis* (Jack) Clausing

*Dissotis* Benth.

*D. pellegriniana* H. Boissieu

Enaulophyton Steenis

*Ewyckia* Bl.

*E. tuberculata* Korth.

*Hylocharis* Miq.

*H. stellulata* (King) Nayar

*H. robusta* (Bakh. f.) Nayar

*Hypenanthe* Bl.

*Kibessia* DC.

*K. angustifolia* Bl.

*K. echinata* (Jack) Cogn.

*K. pubescens* Decne.

*K. simples* var. *oblonga* Bl.

*K. tuberculata* (Korth.) C. B. Clarke

*Krassera* O. Schwartz

*Lachnopus* Bl.

*Macrolenes* Naudin

*M. ciliatiloba* (Baker f.) Bakh. f.

*M. dimorpha* (Craib) Maxwell

*M. echinulata* (Naudin) Bakh. f.

*M. echinulata* var. *esetosa* (Craib) Maxwell

*M. griffithii* Nayar

*M. nemorosa* (Jack) Bakh. f.

*M. reticulata* (Bl.) Bakh. f.

*M. stellulata* (Jack) Bakh. f.

*M. stellulata* var. *ciliatiloba* (Baker f.) Maxwell

*Marumia* Bl.

*M. affinis* Korth.

*M. ciliatiloba* Baker f.

*M. dimorpha* Craib

*M. echinulata* Naudin

*M. impressa* Craib

*M. leprosa* Korth.

*M. nemorosa* (Jack) Bl.  
*M. nemorosa* var. *verrucosa* (Cogn.) Ridl.  
*M. rhodocarpa* var. *esetosa* Craib  
*M. reticulata* Bl.  
*M. stellulata* (Jack) Bl.  
*M. verrucosa* Cogn.

*Macropilaxis* Bl.

Medinilla Gaudich.  
*M. alpestris* (Jack) Bl.  
*M. caeruleascens* Guillaumin  
*M. caeruleascens* var. *nuda* Craib  
*M. curtisii* Hook. f.  
*M. elliptica* Craib  
*M. elliptica* var. *tetramera* Craib  
*M. emarginata* Craib  
*M. ferrata* Craib  
*M. heteranthera* King  
*M. javanensis* (Bl.) Bl.  
*M. laurifolia* (Bl.) Bl.  
*M. ohwii* Nayar  
*M. penduliflora* Ridl.  
*M. radicans* (Bl.) Bl.  
*M. rubicunda* (Jack) Bl.  
*M. septentrionalis* (W. W. Sm.) H. L. Li  
*M. varingiifolia* (Bl.) Nayar

*Medinillopsis* Cogn.

Melastoma L.  
*M. acutisepalum* Geddes  
*M. affine* D. Don  
*M. alpestre* Jack  
*M. clarkeanum* Cogn.  
*M. constrictum* Bl.  
*M. cyanocarpon* Bl.  
*M. cyanoides* Sm.

*M. decemfidum* Roxb. ex Jack  
*M. dendrisetosum* C. Chen  
*M. divaricatum* Willd.  
*M. exiguum* Jack  
*M. fasciculare* Naudin  
*M. fallax* Jack  
*M. glaucum* Jack  
*M. gracile* Jack  
*M. hirtum* L.  
*M. houtteanum* Naudin  
*M. imbricatum* Wall. ex C. B. Clarke  
*M. imbricatum* var. *longipes* Craib  
*M. javanense* Bl.  
*M. laurifolium* Bl.  
*M. malabathricum* L.  
*M. malabathricum* ssp. *malabathricum*  
*M. malabathricum* ssp. *normale* (D. Don) K. Meyer  
*M. malabathricum* var. *grandiflorum* Craib  
*M. malabathricum* var. *normale* (D. Don) King  
*M. malabathricum* var. *polyanthum* (Bl.) Benth.  
*M. minahassae* Koord. ex K. Meyer  
*M. nemorosum* Jack  
*M. normale* D. Don  
*M. normale* var. *divergens* Craib  
*M. orientale* Guillaumin  
*M. pellegrinianum* (Boissieu) K. Meyer  
*M. polyanthum* Bl.  
*M. pulverulentum* Jack  
*M. radicans* Bl.  
*M. rostratum* Bl.  
*M. rotundifolium* Jack  
*M. rubicundum* Jack  
*M. saigonense* (Kuntze) Merr.  
*M. sanguineum* Sims  
*M. sanguineum* var. *latisepalum* C. Chen  
*M. scabrum* Ridl.  
*M. stellulatum* Jack  
*M. stipulare* Bl.

*M. sumatranum* var. *lanatum* Bakh. f.

*M. varingiifolium* Bl.

*M. villosum* Sims [non Aublet]

*M. viminale* Jack

*M. wallichii* DC.

*Neodissochaeta* Bakh. f.

*N. biligulata* (Korth.) Bakh. f.

*N. celebica* (Bl.) Bakh. f.

*N. gracilis* (Jack) Bakh. f.

*Ochthocharis* Bl.

*O. attenuata* Bakh. f.

*O. javanica* Bl.

*Omphalopus* Naudin

*O. fallax* (Jack) Naudin

*Oritrephes* Ridl.

*O. septentrionalis* W. W. Sm.

*Osbeckia* L.

*O. aspericaulis* Hook. f. ex Triana

*O. angustifolia* D. Don

*O. chinensis* L.

*O. chinensis* var. *angustifolia* (D. Don) C.Y. Wu & C. Chen

*O. cinerea* Cogn.

*O. cochinchinensis* Cogn.

*O. crinita* Benth. ex Naudin

*O. garrettii* Craib

*O. marginulata* C. B. Clarke

*O. nepalensis* Hook. f.

*O. paludosa* Craib

*O. parva* Geddes

*O. pulchra* Geddes

*O. pulchra* var. *rubra* Craib

*O. racemosa* Craib

*O. saigonense* Kuntze

*O. setoso-annulata* Geddes  
*O. sikkimensis* Craib  
*O. stellata* Buch.-Ham. ex Ker-Gawler  
*O. stellata* var. *crinita* (Benth. ex Naudin) C. Hansen  
*O. stellata* var. *marginulata* (C. B. Clarke) C. Hansen  
*O. thorelii* Guillaumin  
*O. watanae* Craib

*Otanthera* Bl.

*O. bracteata* Korth.  
*O. confusa* Craib  
*O. cyanoides* (Sm.) Triana

*Oxyspora* DC.

*O. balansae* (Cogn.) Maxwell  
*O. balansae* var. *setosa* (Craib) Maxwell  
*O. bullata* (Griff.) Maxwell  
*O. caudata* Geddes  
*O. collina* (Ridl.) Ridl.  
*O. collina* var. *subglabra* Craib  
*O. curtisii* King  
*O. exigua* (Jack) Maxwell  
*O. gracilis* Craib  
*O. howellii* J. F. Jeffrey & W. W. Sm.  
*O. robusta* Bakh. f.  
*O. setosa* Craib  
*O. stellulata* King  
*O. umbellulata* (Hook. f. ex Triana) Maxwell

*Pachycentria* Bl.

*P. constricta* (Bl.) Bl.  
*P. cordata* Bl.  
*P. elliptica* Bl.  
*P. formicaria* Merr.  
*P. javanensis* Hochr.  
*P. junghuhniana* Miq.  
*P. lanceolata* O. Schwartz  
*P. laxiflora* Bl.

*P. macrorhiza* Becc.  
*P. oligosperma* O. Schwartz  
*P. pulverulenta* (Jack) Clausing  
*P. rigida* Bl.  
*P. scandens* Ridl.  
*P. tuberculata* Korth.  
*P. varingiifolia* (Bl.) Bl.  
*P. zollingeriana* Naudin

*Phaulanthus* Ridl.  
*P. brevidens* Craib  
*P. griffithii* (Hook. f. ex Triana) Ridl.  
*P. helferi* (Hook. f. ex Triana) Ridl.  
*P. nervosus* Craib  
*P. pedunculatus* Craib

*Phyllagathis* Bl.  
*P. decipiens* Bakh. f.  
*P. hispida* King  
*P. rotundifolia* (Jack) Bl.  
*P. siamensis* Cellinese & Renner  
*P. tuberosa* (Hansen) Cellinese & Renner

*Plagiopetalum* Rehder

*Pogonanthera* Bl.  
*P. latifolia* O. Schwartz  
*P. pauciflora* Becc.  
*P. pulverulenta* (Jack) Bl.  
*P. reflexa* Reinw. ex Bl.

*Pomatostoma* Stapf

*Pseudodissochaeta* Nayar  
*P. septentrionalis* (W. W. Sm.) Nayar  
*P. subsessilis* (Craib) Nayar

*Pternandra* Jack

*P. caerulea* Jack  
*P. echinata* Jack  
*P. echinata* var. *pubescens* (Decne.) King  
*P. griffithii* King  
*P. tuberculata* (Korth.) Nayar

*Rectomitria* Bl.  
*R. tuberculata* (Korth.) Bl.

*Sarcopyramis* Wall.  
*S. grandiflora* Griff.  
*S. humilis* Nayar  
*S. nepalensis* Wall.  
*S. nepalensis* var. *viridifolia* Kuntze

*Sonerila* Roxb.  
*S. alata* Ridl.  
*S. alata* Chun & How ex C. Chen  
*S. angulata* Craib  
*S. begoniifolia* Bl.  
*S. bicolor* Stapf & King  
*S. brachyantha* Stapf & King  
*S. caesia* Stapf & King  
*S. capitata* Stapf & King  
*S. calophylla* Ridl.  
*S. cantonensis* Stapf  
*S. ciliata* Ridl.  
*S. collina* R. N. Parker  
*S. congesta* Stapf & King  
*S. cyclaminella* Stapf & King  
*S. deflexa* Craib  
*S. epilobioides* Stapf & King  
*S. erecta* Jack  
*S. erecta* var. *discolor* Stapf & King  
*S. erecta* var. *flexuosa* Stapf & King  
*S. flaccida* Stapf & King  
*S. fusca* Craib

- S. gibbsiae* Ridl.
- S. gracilis* Geddes
- S. griffithii* C. B. Clarke
- S. helferi* C. B. Clarke
- S. heterostemon* Naudin
- S. insularis* Craib
- S. integrifolia* Stapf
- S. kerrii* Craib & Stapf
- S. loeiensis* Cellinese & Renner
- S. macrophylla* Stapf & King
- S. maculata* Roxb.
- S. maculata* var. *angustifolia* Kurz
- S. maculata* var. *emaculata* Benn.
- S. maculata* var. *glabrata* Stapf
- S. matangensis* Ridl.
- S. moluccana* Roxb.
- S. moluccana* var. *caulescens* Miq.
- S. muscicola* Stapf & King
- S. nisbetiana* Craib
- S. notata* Craib
- S. obliqua* Korth.
- S. paradoxa* Naudin
- S. parva* Geddes
- S. picta* Korth.
- S. picta* var. *clarkeana* Craib
- S. picta* var. *concolor* Ridl.
- S. picta* var. *maculata* Ridl.
- S. picta* var. *pusilla* Ridl.
- S. plagiocardia* Diels
- S. quadrangularis* Guillaumin
- S. rheedii* Wall. ex Wight & Arn.
- S. rivularis* Cogn.
- S. setosa* Ridl.
- S. siamensis* Nayar
- S. spectabilis* Nayar
- S. succosa* Ridl.
- S. sylvicola* Craib
- S. tenera* Royle

*S. tenera* var. *robustior* Guillaumin

*S. teysmanniana* Miq.

*S. urceolata* Cellinese & Renner

*S. violaeifolia* Hook. f. ex Triana

*Styrophyton* S. Y. Hu

*Tayloriophyton* Nayar

*Tigridiopalma* C. Chen

*Tylanthera* C. Hansen

*T. cordata* C. Hansen

*T. tuberosa* C. Hansen