

FLORA OF COURTALLUM

VOLUME 2

KKN NAIR & MP NAYAR



BOTANICAL SURVEY OF INDIA

FLORA OF COURTALLUM

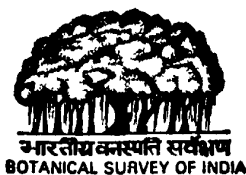
FLORA OF INDIA

Series 3

FLORA OF COURTALLUM

Volume 2

K.K.N. NAIR and M.P. NAYAR



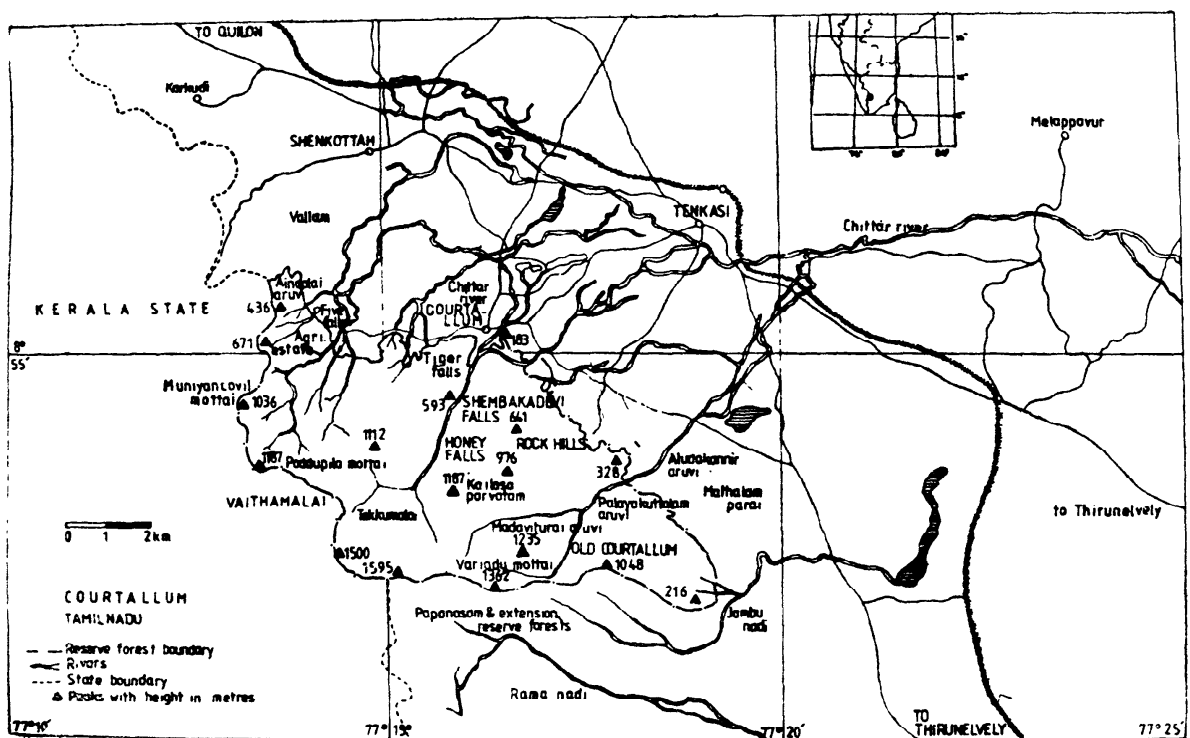
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C O N T E N T S

MONOCOTYLEDONS	342
REFERENCES	405
SEQUENCE OF FAMILIES	409
INDEX TO BOTANICAL NAMES	411



65. BISCHOFIACEAE

BISCHOFIA Bl.

Bischofia javanica Bl., Bijdr. 1168. 1826 ; Hook. f. in Hook. f., Fl. Brit. Ind. 5 : 344. 1887 ; Gamble, Fl. Presid. Madras 2 (7) : 1312. 1925 ; Pax et K. Hoffm. in Engl. & Prantl, Pflanzenfam. (ed. 2) 19C : 78. 1931. *Microelus roeperianus* Wt. et Arn., Edinb. New Phil. J. 14 : 298. 1833 ; Wt., Ic. t. 1880. 1852. *Nira*, *Piruppu*, *Nannal* (Malayalam). *Modigirvembn*, *Milakkadayam*, *Tondi*, *Nannal* (Tamil).

Deciduous trees, 8-12 m high ; trunk cylindric, branches spreading. Leaves trifoliate ; leaflets 7.5-12.5 × 3.5-7 cm, elliptic-ovate, crenate, glabrous, acuminate at apex ; petiolules 1-3.5 cm long. Flowers greenish in axillary paniculate cymes. Berries 0.5-1 cm in diameter, globose, fleshy ; seeds 3-4, oblong-trigonous, smooth.

Fl. & Fr. : October - August.

Common below Shembagadevi along the sides of the stream.

66. STILAGINACEAE

ANTIDESMA Linn.

Antidesma alexiteris Linn., Sp. Pl. 1027. 1753 (*pro parte*) ; Hook. f. in Hook. f., Fl. Brit. Ind. 5 : 359. 1887 ; Pax et K. Hoffm. in Engl., Pflanzenr. 81 : 115. 1922. *A. zeylanicum* Lamk., Enc. Meth. Bot. 1 : 207. 1783 ; Gamble, Fl. Presid. Madras 2 (7) : 1297. 1925.

Deciduous trees, 6-8 m high ; branches spreading, slender, glabrous. Leaves 4-9.5 × 1-3 cm, elliptic, elliptic-lanceate or obovate, coriaceous, entire, glabrous, shiny, acute to shortly acuminate at apex, obtuse or narrowed at base. Flowers greenish-yellow, in axillary and terminal short racemes. Drupes 0.4-0.5 cm across, sub globose, reddish.

Fl. & Fr. : July - November.

Fairly common around Main falls and in Tekkumalai along the sides of the stream.

67. RHAMNACEAE

- 1a. Unarmed climbing shrubs with tendrils *Gouania* 1
- 1b. Trees or armed shrubs without tendrils
- 2a. Plants tomentose or fulvous-hairy ; leaves alternate, 3-5 nerved at base *Ziziphus* 3
- 2b. Plants glabrous ; leaves opposite or subopposite, penninerved *Scutia* 2

1. GOUANIA Jacq.

Gouania microcarpa DC., Prodr. 40. 1825 ; Wt. *et* Arn., Prodr. 167. 1834 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 643. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 225. 1918.

Unarmed, tendril-climbing shrubs ; young branches tomentose ; tendrils simple, axillary at the base of the peduncle. Leaves 5.5-7 × 1.5-3 cm, elliptic-ovate, entire or slightly serrate, glabrous, gradually acuminate at apex, rounded at base ; petioles 1-1.5 cm long, pubescent. Flowers in terminal or axillary spicate panicles.

Fl. : July.

Courtallum (*Robert Wight* 198, CAL).

2. SCUTIA (DC.) Comm. *ex* Brongn.

Scutia myrtina (Burm. f.) Kurz, J. Asiat. Soc. Bengal 44 : 168. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 223. 1918. *Rhamnus myrtinus* Burm. f., Fl. Ind. 60. 1768. *Rhamnus circumscissus* Linn. f., Suppl. 152. 1781. *Scutia circumscissa* (Linn. f.) Radlk., Abh. Naturw. Ver. Bremen 8 : 389. 1883. *S. indica* Brongn., Ann. Sci. Nat. 10 : 363. 1827 ; Wt. *et* Arn., Prodr. 165. 1834 ; Wt. Ill. Ind. Bot. t. 73. 1840 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 640. 1875.

Straggling, thorny shrubs ; branches decussate. Leaves 1.5-3 × 1-2.5 cm, orbicular or elliptic, coriaceous, entire, glabrous, rounded at apex, rounded or cordate at base ; petioles ± 0.5 cm long, filiform. Flowers in axillary fascicles or peduncled umbels.

Fl. : March.

Courtallum (*Robert Wight* 184, CAL).

3. *ZIZIPHUS* Mill.

- 1a. Armed or unarmed trees ; styles 3 *Z. xylopyrus* 3
 1b. Armed stragglers (shrubs) ; styles 2
 2a. Petals 5 ; leaves ovate-lanceate, oblique at base *Z. oenoplia* 1
 2b. Petals absent ; leaves broadly elliptic, cordate at base *Z. rugosa* 2

1. *Ziziphus oenoplia* (Linn.) Mill., Gard. Dict. ed. 8 : 3. 1768 ; Wt. et Arn., Prodr. 163. 1834 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 634. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 220. 1918. *Rhamnus oenoplia* Linn., Sp. Pl. 194. 1753. *Kottavalli*, *Tutalimullu* (Malayalam). *Ambulam*, *Amburi*, *Curai*, *Curaimullu* (Tamil).

Large shrubs ; branches straggling, spiny ; spines stipular, turned backwards, black. Leaves 3-5 × 1-3.8 cm, ovate-lanceate, entire, hairy beneath, acute at apex, oblique at base ; petioles 0.3-0.5 cm long, pubescent. Flowers yellowish-green in shortly peduncled cymes. Drupes up to 0.8 cm across, black.

Fl. & Fr. : August - December.

Common at Shembagadevi.

2. *Ziziphus rugosa* Lamk., Enc. Meth. Bot. 3 : 319. 1789 ; Wt. et Arn., Prodr. 162. 1834 ; Wt., Ic. t. 339. 1840 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 636. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 220. 1918. *Malantudali*, *Tutali* (Malayalam). *Kattulandai*, *Todari* (Tamil).

Armed, straggling shrubs ; branches fulvous-tomentose, recurved-prickly. Leaves 5.5-10 × 4-6.5 cm, broadly-elliptic, denticulate, glabrous above, fulvous-tomentose beneath, rounded or shortly acuminate at apex, cordate at base ; petioles 1-1.5 cm long. Flowers in terminal panicles ; peduncles tomentose. Drupes ± 0.5 cm in diameter, globose.

Fl. & Fr. : March.

Courtallum (*Robert Wight* 183, CAL).

3. *Ziziphus xylopyrus* (Retz.) Willd., Sp. Pl. 1 : 1104. 1797 ; Wt. et Arn., Prodr. 162. 1834 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 634. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 220. 1918. *Rhamnus xylopyrus* Retz., Obs. Bot. 2 : 11. 1781. *Cottukotta*, *Kotta* (Malayalam). *Kottai*, *Kodayilandai*, *Mulludupai* (Tamil).

Armed or unarmed trees, 4-5 m high ; young branches fulvous-tomentose. Leaves $3-8 \times 2.5-4$ cm, broadly-elliptic, crenate-serrate, glabrous above, softly pubescent beneath, obtuse at apex, subcordate at base ; petioles ± 0.8 cm long. Flowers greenish in axillary panicles. Drupes up to 2 cm in diameter, globose, tomentose, pale green.

Fl. & Fr. : October - March.

Common in the outskirts between Tiger falls and Main falls and also on the way to Old Courtallum.

68. LEEACEAE

LEEAE D. Royen *ex* Linn. *nom. gen. cons.*

Leea indica (Burm. f.) Merr., Philipp. J. Sci. Bot. 14 : 245. 1919 & in Enum. 3 : 11. 1923. *Staphylea indica* Burm. f., Fl. Ind. 75, t. 24, f. 2. 1768. *Leea sambucina* Willd., Sp. Pl. 1 : 1177. 1797 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 666. 1875 (*pro parte*) ; Gamble, Fl. Presid. Madras 1 (2) : 240. 1918 ; Suessenguth in Engl. & Prantl, Pflanzenfam. (ed. 2) 20d : 376. 1973. *Manipiranta*, *Nellu* (Malayalam). *Nalava Niyakku*, *Ottunalam* (Tamil).

Straggling or erect shrubs, 1.5-3 m high ; branches striated, young ones green. Leaves 2-3 pinnate, 30-50 cm long ; leaflets $7.5-20 \times 3.5-9$ cm, oblong or elliptic-oblong, coarsely serrate, glabrous, acuminate at apex, acute at base ; nerves 7-12 pairs, arched, prominent beneath ; petiolules up to 1.5 cm long. Flowers greenish yellow in axillary corymbose cymes. Berries 0.5-0.7 cm in diameter, depressed globose, 2-6 lobed, smooth, purple black when ripe ; seeds wedge shaped.

Fl. & Fr. : July - February.

Rare, below the third wooden bridge in Tekkumalai as climbers on hedges along the sides of the stream.

69. VITACEAE

1a. Leaves simple

2a. Flowers hermaphrodite ; tendrils leaf-opposed

Cissus 3

2b. Flowers polygamo-monoecious ; tendrils on the peduncle

Ampelocissus 1

1b. Leaves 3-foliate or pedate

- 3a. Flowers hermaphrodite ; seeds hemispherical
with deep pits

Cayratia 2

- 3b. Flowers polygamo-dioecious ; seeds globose,
oblong or pyriform, 2-furrowed on one face

Tetrastigma 4

1. AMPELOCISSUS Planch. *nom. gen. cons.*

Ampelocissus arnottiana Planch. in DC., Mon. Phan. 5 : 379. 1887 ; Gamble, Fl. Presid. Madras 1 (2) : 231. 1918 ; Suessenguth in Engl. & Prantl, Pflanzenfam. (ed. 2) 20d : 306. 1953. *Vitis indica* Wt. et Arn., Prodr. 131. 1834 (*non* Planch. 1884) : A Laws. in Hook. f., Fl. Brit. Ind. 1 : 653. 1875 (*vix* Linn. *et non* *Vitis indica* Sw. *et auct. plurim.*). *Cenparatti* (Malayalam). *Cambaravatti* (Tamil).

Slender, climbing shrubs ; branched terete, woody, wooly ; tendrils simple, long, borne on peduncles. Leaves simple, 20-25 × 18-21 cm, cordate, scarcely angled, lobed or toothed, the teeth tipped with hardened glands, glabrous above, tomentose beneath, shortly acuminate at apex ; petioles 5-6.5 cm long, grey-tomentose. Flowers in short racemes of sessile umbels. Berries globose, 1-2 seeded.

Fl. : December.

Courtallum (*M. Rama Rao* 2027, CAL).

2. CAYRATIA Juss. *nom gen. cons.*

Cayratia pedata (Lamk.) Juss. ex Gagnep., Not. Syst. 1 : 346. 1911 ; Gamble, Fl. Presid. Madras 1 (2) : 236. 1918 ; Suessenguth in Engl. & Prantl, Pflanzenfam. (ed. 2) 20 d : 279. 1953 ; Furtado, Taxon 13 : 240. 1961. *Cissus pedata* Lamk., Enc. Meth. Bot. 1 : 31. 1783. *Vitis pedata* (Lamk.) Vahl ex Wt. et Arn., Prodr. 426. 1834 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 661. 1875. *Tripadi*, *Veluthakodivalli*, *Naralai* (Malayalam). *Kuttuppiranthi*, *Naralai* (Tamil).

Climbing shrubs ; branches tomentose or slightly hairy ; tendrils long, terminally coiled and forked. Leaves 5-9 foliate, pedate ; rhachis 4-9 cm long ; leaflets 5-12.5 × 2.5-6.5 cm, oblong-lanceate, serrate or rarely entire and wavy along the margins, softly pubescent, acuminate at apex, oblique at base ; petiolules very variable in length (0.5-4 cm). Flowers white or greenish-yellow in axillary corymbose cymes. Berries

subglobose or lobed, 0.7-0.9 cm across, cream coloured when ripe ; seeds 2-4, hemispherical, smooth.

Fl. & Fr. : June October.

Fairly common along the sides of the stream in Tekkumalai and along hedges on the way to Five falls.

3. *Cissus* Linn.

1a. Stems 4-angled ; plants leafless when old *C. quadrangularis* 2

1b. Stems terete ; plants leafy throughout their life

2a. Young branches tomentose ; leaves with repand-
crenate margins *C. repanda* 3

2b. Young branches glabrous ; leaves with entire or
distantly and shallowly serrate margins *C. heyneana* 1

1. *Cissus heyneana* (Wall.) Planch. in DC., Mon. Phan. 5 : 476. 1887 ; Gamble, Fl. Presid. Madras Madras 1 (2) : 234. 1918 ; Sussenguth in Engl. & Prantl, Pflanzenfam. (ed. 2) 20 d : 266. 1953. *Vitis heyneana* Wall. ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 647. 1875.

Climbing shrubs ; branches fleshy, terete ; tendrils stout, simple, flexuous. Leaves 7.5-18 × 3.5-10.5 cm, ovate-cordate, entire, incurved or distantly and shallowly serrate, obtusely acuminate at apex, cordate at base ; petioles 2-3.5 cm long. Flowers reddish outside and greenish inside in few-flowered axillary umbels. Berries 0.5-0.8 cm across, pyriform or globose ; seeds 1-2, smooth.

Fl. & Fr. : January May.

Rather common along the sides of the stream below Shembagadevi and above Main falls.

2. *Cissus quadrangularis* Linn., Mant. 1 : 39. 1767 ; Gamble, Fl. Presid. Madras 1 (2) : 233. 1918 ; Sussenguth in Engl. & Prantl, Pflanzenfam. (ed. 2) 20 d : 262. 1953. *Vitis quadrangularis* Wall. ex Wt. et Arn.. Prodr. 125. 1834 ; Wt., Ic. t. 51. 1838 ; A. Laws. in Hook. f. Fl. Brit. Ind. 1 : 645. 1875. *Changalamperunda*, *Piranta* (Malayalam). *Arugani*, *Indiravalli*, *Kiritti* (Tamil).

Climbing shrubs ; branches fleshy, 4-angled, winged, much contracted at nodes, leafless when old ; tendrils simple, wiry. Leaves 2.5-5.5 × 3-6

cm, broadly-ovate, serrulate, glabrous, rounded at apex, cordate at base ; petioles upto 1.5 cm long. Flowers greenish-white in shortly peduncled umbels. Berries 0.5-0.7 cm in diameter, globose, red when ripe ; seeds obovate, covered with spongy integument.

Fl. & Fr. : January May.

Common at Tiger falls, Chittaruvi and in the out-skirts of the forests on the way to Five falls.

3. *Cissus repanda* Vahl, Symb. Bot. 3 : 18. 1794 ; Gamble, Fl. Presid. Madras 1 (2) : 234. 1918 ; Suessenguth in Engl. & Prantl, Pflanzenfam. (ed 2) 20d : 264. 1953. *Vitis repanda* Wt. et Arn., Prodr. 125. 1834 ; A Laws. in Hook. f., Fl. Brit. Ind. 1 : 648. 1875.

Climbing shrubs ; branches terete, tomentose when young ; tendrils twisted and forked or rarely absent. Leaves 7.5-17.5 × 4.5-15.5 cm, cordate, repand-crenate, tomentose when young, acuminate at apex, shallowly cordate at base ; petioles 2.5-8 cm long. Flowers greenish in leaf-opposed solitary or grouped umbellate cymes. Berries up to 0.8 cm long, pyriform, shortly, mucronate, green ; seed one, obovoid, smooth.

Fl. & Fr. : January May.

A gregarious climber at Five falls and in the Teak plantations.

4. TETRASTIGMA (Miq.) Planch.

Tetrastigma lanceolarium (Roxb.) Planch. in DC., Mon. Phan. 5 : 423. 1887 ; Gamble, Fl. Presid. Madras 1 (2) : 228. 1918. *Vitis lanceolaria* Roxb., Fl. Ind. 1 : 412. 1832 ; Wt. et Arn., Prodr. 128. 1834 ; Wt., Ic. t. 177. (*specim. masc.*) & t. 28 (*specim. femin.*). 1839 ; A. Laws. in Hook. f., Fl. Brit. Ind. 1 : 660. 1875. *V. serratifolia* Wt. et Arn., Prodr. 660. 1834, fide A. Laws. (*non* Rottl. ex A. Laws.). *V. muricata* Wt. et Arn., Prodr. 660. 1834 ; Wt., Ic. t. 740. 1844. *Valiyacodivalli* (Malayalam).

Climbing shrubs ; stem woody, angular towards the apex, glabrous ; tendrils wiry, simple, leaf-opposed. Leaves 5-foliate ; leaflets 2.5-7.5 × 1-3 cm, oblanceate, entire or distantly serrate, glabrous, acute at apex, narrowed towards base ; nerves obscure. Flowers white in leaf-opposed, puberulous, corymbose cymes. Berries 0.5-0.7 cm in diameter, globose, fleshy.

Fl. & Fr. : September - July.

Rare along the sides of the stream in Tekkumalai at lower altitudes.

70. SAPINDACEAE

- 1a. Weak stemmed herbs, climbing or straggling by tendrils ; fruits capsular, membranous, inflated *Cardiospermum* 1
- 1b. Shrubs or trees without tendrils ; fruits berries, drupaceous or capsular, not membranous or inflated
 - 2a. Leaves simple *Dodonaea* 2
 - 2b. Leaves paripinnate
 - 3a. Flowers polygamous ; disc annular *Sapindus* 4
 - 3b. Flowers polygamo-dioecious ; disc cupular, regular or crenately lobed
 - 4a. Flowers apetalous ; stigma 3-4 lobed ; seeds with fleshy aril *Schleichera* 5
 - 4b. Flowers with 4-5 petals ; stigma oblique ; seeds without aril *Lepisanthes* 3

1. CARDIOSPERMUM Linn.

Cardiospermum helicacabum Linn., Sp. Pl. 366. 1753 ; Wt. *et* Arn., Prodr. 109. 1834 ; Wt., Ic. t. 508. 1838 ; Hiern in Hook. f., Brit. Ind. 1 : 670. 1875 ; Gamble, Fl. Presid Madras 1 (2) : 244. 1918 ; Radlk. in Engl., Pflanzenr. 98 : 379. 1956. *Jyotishmati*, *Paluruvam* (Malayalam). *Camuthram*, *Ciliyanai*, *Mudacottam* (Tamil).

Delicate, climbing or straggling herbs with tendrils, 30-60 cm long. Leaves biternate ; leaflets 2-4.5 × 0.5-2 cm, lanceate, serrate, acuminate at apex, narrowed at base. Flower white in axillary cymes. Capsules 2-3 cm across, trigonous, membranous, inflated.

Fl. & Fr. : September January.

Common as a way side weed in the plains.

2. DODONAEA Mill. *nom gen. cons.*

Dodonaea viscosa (Linn.) Jacq., Enum. Pl. Carib. 19. 1760 ; Hiern in Hook. f., Fl. Brit. 1 : 697. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 253. 1918 ; Radlk. in Engl., Pflanzenr. 98 : 1363. 1932. *Ptelea viscosa* Linn., Sp. Pl. 118. 1753. *Dodonaea burmanniana* DC., Prodr. 1 : 616. 1824 ; Wt. *et* Arn., Prodr. 114. 1834 ; Wt. Ill. Ind. Bot. t. 52. 1840. *Vrali* (Malayalam). *Virali* (Tamil).

Much branched glutinous shrubs, 1-2 m high. Leaves $3.5-7.5 \times 0.5-3$ cm, oblong-lanceate, entire, glabrous, shiny above, acute or obtuse at apex, tapering towards the base ; petioles up to 0.5 cm long. Flowers greenish-yellow in few-flowered axillary or terminal racemes or panicles. Capsules 0.5-1.5 cm long, membranous or coriaceous, septicidally 2-6 valved ; valves winged at the base.

Fl. & Fr. : July March.

Very common in the outskirts and plains.

3. LEPISANTHES Bl.

Lepisanthes tetraphylla (Vahl) Radlk., Sber. Bayer. Akad. Wiss. 8 : 276. 1878 ; Gamble, Fl. Presid. Madras 1 (2) : 247. 1918 ; Leenhouts, Blumea 17 : 63. 1969. *Sapindus tetraphylla* Vahl, Symb. Bot. 3 : 54. 1794. *Lepisanthes montana* Bl., Bijdr. 238. 1825 ; Hiern in Hook. f., Fl. Brit. Ind. 1 : 679. 1875. *Sapindus ? deficiens* Wt. et Arn., Prodr. 111. 1834 ; Wt., Ic. t. 141. 1839. *Hemigyrosa canescens* Bl., Rumph. 3 : 166. 1849 ; Hiern, loc. cit. p. 671. *H. longifolia* Hiern in Hook. f., Fl. Brit. Ind. 1 : 671. 1875. *Lepisanthes browniana* Hiern in Hook. f., Fl. Brit. Ind. 1 : 680. 1875. *L. deficiens* Radlk., Sber. Bayer. Akad. Wiss. 8 : 276. 1878 ; Gamble, loc. cit. p. 176. *Ostodes appendiculata* Hook. f., Fl. Brit. Ind. 5 : 401. 1887. *Lepisanthes assamica* Radlk., Rec. Bot. Surv. India 3 : 343. 1907. *L. granulata* Radlk., Rec. Surv. India 3 : 344. 1907. *L. basicardia* Radlk., Rec. Bot. Surv. India 3 : 345. 1907. *L. lamponga* Radlk., Rec. Bot. Surv. India 3 : 345. 1907.

Small trees. Leaves paripinnate, rhachis 30 cm or more in length ; leaflets 5-7 pairs, oblong or oblanceate, entire, glabrous, acuminate at apex, acute or obtuse at base ; petiolules up to 0.6 cm long, stout, tomentose. Flowers in axillary yellowish-tomentose solitary or panicked racemes.

Fl. : October.

Courtallum (*Collector ? s.n. October 1930, PCM*).

4. SAPINDUS Linn.

Sapindus emarginatus Vahl, Symb. Bot. 3 : 54. 1794 ; Wt. et Arn., Prodr. 111. 1834 ; Gamble, Fl. Presid. Madras 1 (2) : 250. 1918. *S. trifolatus* Hiern in Hook. f., Fl. Brit. Ind 1 : 682. 1875 (*pro parte, non*

Linn.) ; Radlk. in Engl., Pflanzenr. 98 : 656. 1956 (as syn.). *Berugukay*, *Aritala* (Malyalam). *Manipungu*, *Niltavanci*, *Ponnangottai* (Tamil).

Trees, 6-10 m high ; branches grey tomentose. Leaves paripinnate; leaflets 7.5- 16.5 × 2.5- 10 cm, ovate-oblong, glabrous above, grey pubescent beneath, emarginate at apex, acute or obtuse at base. Flowers dull-white in terminal panicles. Drupes fleshy, fulvous-hairy when young, green.

Fl. & Fr. : February-May.

Rare in the thick forests above the Teak plantations on the way to New falls.

5. SCHLEICHERA Willd. *nom. gen. cons.*

Schleichera oleosa (Lour.) Oken, Allg. Naturw. Abh. (3) 2 : 1341. 1841 ; Merr., J. Arnold Arb. 31 : 284. 1950. *Pistacia oleosa* Lour., Fl. Cochinch. 2 : 615. 1790. *Schleichera trijuga* Willd., Sp. Pl. 4 (2) : 1096. 1805 ; Wt. et Arn., Prodr. 114. 1834 ; Hiern in Hook. f., Fl. Brit. Ind. 1 : 681. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 248. 1918 ; Radlk. in Engl., Pflanzenr. 98 : 874. 1956. *Puvam*, *Cottilai* (Malayalam). *Cakkattai*, *Kolama*, *Kumbadiri* (Tamil).

Deciduous trees, 15-20 m high; bark grey, smooth. Leaves paripinnate; leaflets 2-8 x 1-3.5 cm, oblong or lanceate, entire, glabrous above, pubescent beneath, obtuse or shortly acuminate at apex, rounded at base. Flowers greenish-yellow in axillary or extra-axillary racemes. Berries 1-1.5 cm long, ellipsoid, echinate with blunt prickles; seeds with pulpy aril.

Fl. & Fr. : February June.

Fairly common in the outskirts around Main falls and Tiger falls and also in the Shola forests at higher altitudes.

71. BURSERACEAE

1a. Disc of the flowers cupular ; drupes globose ; leaves entire

Commiphora 2

1b. Disc of the flowers annular ; drupes ellipsoid ; leaves serrate

Canarium 1

1. CANARIUM Linn.

Canarium strictum Roxb., (Hort. Beng. 49. 1814 *nom. nud.*) Fl. Ind. 3. 138. 1832; Wt *et* Arn., Prodr. 175. 1834 ; A. Benn. in Hook. f., Fl. Brit. Ind. 1 : 534. 1875; Gamble, Fl. Presid. Madras 1 (1) : 172. 1915; Leenhouts, Blumea 9 : 414. 1959. *Telli*, *Viraka*, *Karuttukungilium* (Malayalam). *Attam*, *Kungulu* (Tamil).

Large trees ; young branches densely tomentose. Leaves pinnately compound; leaflets 3-7 pairs with an odd terminal one, 7.5-14 × 4-8.5 cm, unequal sided, ovate, coriaceous, serrate, glabrous above, rusty tomentose beneath, obtusely acuminate at apex, caudate or oblique at base. Flowers bisexual or polygamous in axillary panicles shorter than the leaves. Drupes 3-4 cm long, ellipsoid, tapering at both ends.

Fl. & Fr. : August - September.

Courtallum (*Robert Wight* 208, CAL).

2. COMMIPHORA Jacq. *nom. gen. cons.*

Commiphora caudata (Wt. *et* Arn.) Engl. in DC., Mon. Phan. 4 : 27. 1883 ; Gamble, Fl. Presid. Madras 1 (1) : 171. 1915. *Protium caudatum* Wt. *et* Arn., Prodr. 176. 1834; A. Benn. in Hook. f., Fl. Brit. Ind. 1 : 530. 1875.

Armed trees, 10-12 m high; bark thin. Leaves pinnately compound; leaflets 2-5 pairs with a terminal odd. one, ovate or orbicular. entire, glabrous on both sides, acute at apex, unequal at base; nerves finely reticulate. Flowers yellow in supra-axillary panicles. Drupes globose, 2-loculed, one abortive.

Fl. & Fr. : March - June.

Rare, at Main falls in the dry rocky outskirts.

72. ANACARDIACEAE

1a. Leaves simple

2a. Flowers hermaphrodite ; carpels 5

Buchanania 2

2b. Flowers polygamous ; carpels 2 or 3

3a. Stamens 8-10, connate at base ; leaves
obovate, rounded or truncate at apex

Anacardium 1

- 3b. Stamens 4, free ; leves ovate or elliptic, obtusely acute or acuminate at apex

Nothopegia 4

- 1b. Leaves imparipinnate

Lannea 3

1. ANACARDIUM Linn.

Anacardium occidentale Linn., Sp. Pl. 383. 1753; Wt. *et* Arn., Prodr. 168. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 2 : 20. 1876; Gamble, Fl. Presid. Madras 1 (2) : 260. 1918. *Parangimavu*, *Kasumavu* (Malayalam). *Kolamavu* (Tamil).

Spreading trees, 6-10 m high; bark resinous. Leaves 10-16 × 5-7.5 cm, obovate, coriaceous, glabrous, rounded or truncate at apex, cuneate at base; petioles 0.8-2 cm long, stout, bulbous at base. Flowers pale yellow with pink streaks in terminal panicles. Nuts 2-4.5 cm long, reniform, thick.

Fl. & Fr. : March - July.

The common cashewnut tree often cultivated for its fruits, rarely running wild around Tiger falls and along the dry outskirts of the forests on the way to Old Courtallum.

2. BUCHANANIA Spreng.

Buchanania lanzan Spreng., Schrad. J. 2 : 234. 1800 ; Gamble, Fl. Presid. Madras 1 (2) : 258. 1918. *B. latifolia* Roxb., Fl. Ind. 2 : 385. 1824 ; Wt. *et* Arn., Prodr. 169. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 2 : 23. 1875. *Mungapera* (Malayalam). *Morala* (Tamil).

Trees, 6-8 m high ; bark rough ; branchlets thick. Leaves 7.5-13.5 × 6-9.5 cm, broadly-ovate or obovate, coriaceous, entire, glabrous above, pubescent beneath, obtuse, rounded or emarginate at apex, obtuse or acute at base; petioles 0.5-1.3 cm long, stout. Flowers white in terminal pubescent or hirsute panicles. Drupes 0.6-1.5 cm in diameter, subglobose, black when ripe.

Fl. & Fr. : February May.

Below Honey falls along the sides of rocks in humus soil and on the way to Old Courtallum in the dry rocky outskirts of the forests the species is common.

3. *LANNEA* A. Rich. *nom. gen. cons.*

Lennea coromandelica (Houtt.) Merr., J. Arnold Arbor. 19 : 353. 1939. *Dalium coromandelicum* Houtt., Nat. Hist. 2, 2 : 39, t. 5. f. 2. 1774. *Odina wodier* Roxb., (Hort. Beng. 29. 1814 *nom. nud.*) Fl. Ind. 2 : 293. 1832 ; Wt. et Arn., Prodr. 171. 1834 ; Wt., Ic. t. 60 1838; Hook. f. in Hook. f., Fl. Brit. Ind. 2 : 29. 1875 ; Gamble, Fl. Presid. Madras 1 (2) : 263. 1918. *Kalassam*, *Kalayam*, (Malayalam). *Wodian* (Tamil).

Deciduous trees, 8-10 m high; branches rough. Leaves imparipinnate, crowded at the ends of twiggy branchlets; leaflets 2.5-5 × 2-3.5 cm, ovate-oblong, glabrous, acuminate at apex, acute, rounded or oblique at base. Flowers purplish or yellowish in terminal racemes. Drupes ovoid or ob-ovoid, fleshy.

Fl. & Fr. : March—June.

Common around Main falls and along the dry outskirts of the forests at Tiger falls.

4. *NOTHOPEGIA* Bl.

- 1a. Leaves linear or lanceate, obtusely acute at apex ;
drupes acute at apex

N. heyneana 1

- 1b. Leaves elliptic, ovate or obovate, acuminate or
caudate and acuminate at apex ; drupes depressed at
apex

N. beddomei var. *wynaadica* 2

1. ***Nothopegia heyneana*** (Hook. f.) Gamble, Fl. Presid. Madras 1(2) : 265. 1918 & in Kew Bull. 1918 : 228. 1918. *N. colebrookiana* Bl. var. *heyneana* Hook. f. in Hook. f., Fl. Brit. Ind. 2 : 40. 1875.

Trees, 4-5 m high ; branchlets slightly pubescent. Leaves 6-11.5 × 1.2-2.5 cm, linear or lanceate, glabrous, obtusely acute at apex, narrowed and acute at base; secondary nerves 15-20 pairs; petioles 0.5-0.7 cm long, stout. Flowers white in terminal panicles of racemes. Drupes ± 1 cm long, globose, 1-seeded.

Fl. & Fr. : April - July.

Rare, in the humus soil around Main falls.

2. ***Nothopegia beddomei*** Gamble, var. *wynaadica* Ellis et Chandra-bose, Bull. Bot. Surv. Inda 12 : 257. 1970.

Small trees ; bark wrinkled, glabrous. Leaves $6-10.5 \times 1.5-4.5$ cm, elliptic-ovate or obovate, coriaceous, glabrous, pale whitish beneath, acuminate at apex, attenuate at base; petioles 0.5-0.7 cm long, channelled above, twisted. Flowers unisexual in axillary or extra-axillary spicate cymes ; rhachis rusty-puberulous or pubescent.

Fl. : March.

Courtallum (*Robert Wight* 818, CAL).

Notes : This is first record of distribution of this plant in the eastern side of the Western Ghats and for Tamil Nadu state. This highly endemic taxon is extinct from the area.

73. RUTACEAE

1a. Plants armed with prickles, spines or thorns

- 2a. Leaves imparipinnate ; rhachis jointed and winged

Naringi 7

- 2b. Leaves simple or trifoliate ; rhachis and petiole not winged

- 3a. Leaves simple ; branches with spines

Atalantia 3

- 3b. Leaves trifoliate ; branches with thick thorns or incurved prickles

- 4a. Flowers unisexual ; stamens 5-6 ; fruit small, 4-5 loculed, fleshy ; climbing or straggling shrubs with incurved prickles

Toddalia 9

- 4b. Flowers hermaphrodite ; stamens numerous ; fruits large, 8-15 loculed with woody rind ; trees with thick thorns

Aegle 2

1b. Plants unarmed

- 5a. Leaves simple ; fruits 4-loculed drupes or 4-valved capsules

Acronychia 1

- 5b. Leaves compound, digitately 1-3 foliate or imparipinnate ; fruits succulent berries

- 6a. Leaves 3 or 2 foliate ; rhachis often winged

Pleiospermium 8

- 6b. Leaves imparipinnate ; rhachis or petiolules not winged

- 7a. Filaments flat ; anthers with an apical gland ; style persistent
Glycosmis 5
- 7b. Filaments dilated below the tip or linear-subulate ; anthers glandular on the back or without glands ; style articulated at its apex and deciduous
- 8a. Leaflets crenate along the margins ; filaments dilated below the apex ; anthers large and glandular on the back
Clausena 4
- 8b. Leaflet entire, oblique at the base ; filaments linear-subulate ; anthers small, glands obscure
Murraya 6

1. ACRONYCHIA Forst. *et* Forst. f. *nom. gen. cons.*

Acronychia pedunculata (Linn.) Miq., Fl. Ind. Bat. (suppl.) 532. 1861 ; Hartley, J. Arnold Arbor. 55 : 549. 1975. *Cyminose pedunculata* (Linn.) Roxb., (Hort. Beng. 88. 1814 *nom. nud.*) Fl. Ind. 2 : 239. 1832; Wt. *et* Arn., Prodr. 147. 1834 ; Wt., Ill. Ind. Bot. t. 65. 1840. *Acronychia laurifolia* Bl., Cat. Gew. Buitenz. 63. 1823 & Bijdr. 245. 1824 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 498. 1875 ; Gamble, Fl. Presid. Madras 1 (1) : 152. 1915. *A. barbari* Gamble, Kew Bull. 1915 : 345. 1915 & in Fl. Presid. Madras 1(1) : 152. 1915. *Vidukanali*, *Muttanari* (Malayalam). *Kattukanni Muttainari* (Tamil).

Evergreen trees, 4-5 m high ; bark smooth. Leaves simple, 5-9 × 2-3.5 cm, oblong-lanceate or ovate, entire, coriaceous, glabrous, acute or obtusely acuminate at apex, acute at base ; petiole 1-1.5 cm long or rarely obscure. Flowers white, fragrant in axillary paniculate corymbs. Capsules 0.5-1 cm long, subglobose, 4-valved.

Fl. & Fr. : September February.

Fairly common around Main falls and Five falls in the humus soil.

2. AEGLE Correa. *nom. gen. cons.*

Aegle marmelos (Linn.) Correa, Trans. Linn. Soc. Lond. 5 : 223. 1800; Wt. *et* Arn., Prodr. 96. 1834; Wt., Ic. t. 16. 1838; Hook. f., Fl. Brit

Ind. 1 : 516. 1875; Gamble, Fl. Presid. Madras 1 (1) : 161. 1915. *Crataeva marmelos* Linn.. Sp. Pl. 444. 1753. *Kuvalam*, *Mavilavu*. *Vilvam* (Malayalam). *Alurigam*, *Vilva*, *Iylambudi*, *Kuvilam*, *Villuvam* (Tamil).

Armed deciduous trees, 5-10 m high; bark greyish, glabrous; thorns 1-2.5 cm long, straight. Leaves trifoliate; leaflets 3-6.5 × 2-3.5 cm, lanceate or ovate-elliptic, entire, glabrous, acute at apex, tapering at base; rhachis 1.5-3 cm long. Flowers greenish-white externally, pale yellowish inside, fragrant in axillary panicles. Berries 5-8 cm across, subglobose with woody, yellowish rind.

Fl. & Fr. : February-July.

Planted near Courtallum temple for its religious importance, occasionally running wild along the outskirts of the forest on the way to Five falls.

3. *ATALANTIA* Correa *nom. gen. cons.*

1a. Flowers in corymbs ; leaves not emarginate at apex *A. monophylla* 1

1b. Flowers in cymes ; leaves emarginate at apex *A. wightii* 2

1. *Atalantia monophylla* DC., Prodr, 535. 1824; Wt. et Arn., Prodr. 91. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 511. 1875; Gamble, Fl. Presid. Madras 1 (1) : 159. 1915; Airy Shaw, Kew Bull. 1939 : 292. 1939. *Limonia monophylla* Roxb., Pl. Corom. 1 : 60, t. 83. 1795 (*non* Linn.). *Trichiila spinosa* Willd., Sp. Pl. 2 : 554. 1799. *Atalantia spinosa* (Willd.) Tanaka, J. Bot. 68 : 232. 1930 (*non* Hook. ex Koorders, 1912). *Malnerega malabarica* Raf., Syl. Tell. 143. 1838. *Atalantia malabarica* (Raf.) Tanaka, J. Indian Bot. Soc. 16 (4) : 233. 1937. *A. floribunda* Wt., Ic. t. 1611. 1850. *Malanarakam*, *Kattukurunta*, *Kattunarakam*, *Kolanna* (Malayalam). *Kattelu-meccai*, *Kattukurundu*, *Kattanarakam* (Tamil).

Shrubs or small trees, 3-6.5 m high; older branches spinescent. Leaves 3-4.5 × 2-3.5 cm, ovate, oblong or elliptic, coriaceous, entire, glabrous, mostly obtuse at apex, ovate at base; petioles 0.3—0.5 cm long. Flowers white, fragrant in axillary corymbs or umbels. Berries ±1.5 cm in diameter, globose with small depressions on the surface.

Fl. & Fr. : February December.

In the outskirts and lower altitudes of the forest the plant is rather common.

2. *Atalantia wightii* Tanaka, Bull. Soc. Bot. France 5, 4 : 714. 1928 ; J. Bot. 68 : 232. 1930 & in J. Indian Bot. Soc. 6(4) : 234. 1937 ; Fischer in Gamble, Fl. Presid. Madras 3 (11) : 1895. 1936 (in corrigenda). *A. ceylanica* (Arn.) Oliv. (*pro parte*) ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 512. 1875.

Branched shrubs with stout spines 1.5-3 cm long. Leaves 7-10.5 × 3-4.5 cm ovate, oblong or ovate-lanceate, coriaceous, obtusely acuminate at apex, ovate at base; petioles ±0.5 cm long, stout. Flowers white with a light smell in axillary cymes. Berries ± 2 cm across, globose or ovoid, smooth, black whenripe.

Fl. & Fr. : October December.

Common in the outskirts around Tiger falls. This rare and endemic species of Peninsular India is in an endangered state at Courtallum.

4. *CLAUSENA* Burn. f.

Clausena dentata (Willd.) M.J. Roem., Syn. Hesp. 44. 1846 ; Tanaka, J. Indian Bot. Soc. 16 : 230. 1937. *Amyris dentata* Willd., Sp. Pl. 2 : 337. 1799. *Clausena willdenovii* Wt. et. Arn., Prodr. 96. 1834 ; Wt., Ic. t. 14. 1838 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 506. 1875 ; Gamble, Fl. Presid. Madras 1 (1) : 155. 1915.

Small trees, 4-6 m high ; young branches pubescent. Leaves imparipinnate ; leaflets 7-13, 4.5-7.5 × 2-4.5 cm, ovate-oblong, crenate, pubescent, obscurely acuminate at apex, oblique at base ; petioles 0.2-0.3 cm long. Flowers white, fragrant in terminal or axillary corymbose panicles. Berries 0.5-0.7 cm in diameter, globose, pulpy, cream-coloured.

Fl. & Fr. : February August.

Fairly common along the dry outskirts and hedges. The fruits are edible.

5. *GLYCOSMIS* Correa

1a. Ovary 3 or 2-loculed

G. angustifolia 1

1b. Ovary 5-loculed

2a. Ovary sessile or shortly stalked ; inflorescence of axillary or terminal panicles

- 3a. Inflorescence of short axillary panicles ; ovary shortly stalked ; fruits pitted, glandular *G. mauritiana* 3
- 3b. Inflorescence of long (as long or longer than the rhachis) axillary or terminal panicles ; ovary sessile ; fruits mamillate *G. pentaphylla* 4
- 2b. Ovary on a swollen gynophore ; inflorescence of terminal spikes or racemes *G. macrocarpa* 2

1. *Glycosmis angustifolia* Lindl. ex Wt. et Arn., Prodr. 93. 1834 ; Narayanaswami, Rec. Bot. Surv. India 14 (2) : 64. 1941. *G. pentaphylla* var. B, subvar. 4. *angustifolia* Oliv. J. Linn. Soc. Lond. 5, suppl. 37. 1860. *G. pentaphylla* var. 2, subvar. 3. *angustifolia* Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 500. 1875.

Erect shrubs, 2-2.5 m high ; branches smooth, pale-white. Leaves imparipinnate ; leaflets 2-5, $3.5 \times 0.8-1.2$ cm, narrow elliptic-lanceate, entire, shiny above, obtusely acuminate at apex, acute at base. Flowers greenish-white in short, few-flowered, axillary compound racemes ; ovary on a broad gynophore. Berries globose, pitted, glandular.

Fl. & Fr. : December March.

Rare, along the sides of ravines on the way to Vaithamalai opposite to Ammathottam in the humid, shady shola. This rare endemic species of Western Ghats requires protection before it gets extinct.

Notes : Narayanaswami (*loc. cit.* p. 64) treated *G. mauritiana* (Lamk.) Tanaka var. *angustifolia* Tanaka (J. Bot. 68 226. 1928) as a synonym of this species with the following note (*loc. lit.* p. 67). 'Tanaka has reduced this to a variety of his *G. mauritiana*, but there is not even the remote approach to it when we take into consideration the reproductive parts.' But there is doubt about the identity of *G. angustifolia* Lindl. ex Wt. et Arn. and Tanaka's plant due to the following reasons. When Tanaka (*loc. cit.*) erected the variety he notes 'distinguished from *G. biloculani* by the more crowded leaflets and many flowered inflorescence with stipitate obtuse ovary without gynophore.' But Narayanaswami (*loc. cit.*) stresses the importance of a few flowered inflorescence and the presence of a prominent gynophore for *G. angustifolia* Lindl. ex Wt. et Arn. which is observed here in the type specimen of it, namely Wall. Cat. no. 6378 present at Central National Herbarium. Secondly, when Wight and Arnott (*loc. cit.*) described the species *G. angustifolia* Lindl. they cited the specimen Wall. Cat. no. 6373 and Wight Cat. no. 315 and not Wight no. 367 which is the type specimen of the var. *angustifolia* of Tanaka (*loc. cit.*). There is no reason to think that when Wight and Arnott (*loc. cit.*)

described the species, they were not aware of the specimen Robert Wight 367, and if it was the same as Wight Cat. no. 315, they would have cited it also there. However it may be noted here that the variety *Glycosmis mauritiana* var. *angustifolia* Tanaka is also described from Courtallum which is the type locality of it.

2. *Glycosmis macrocarpa* Wt., Ill. Ind. Bot. 1 : 109. 1840 ; Narayanaswamy, Rec. Bot. Surv. India 14 (2) : 43. 1941. (excl. descrip.). *G. pentaphylla* var. *macrocarpa* (Wt.) Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 500. 1875.

Erect shrubs ; branchlets nearly glabrous. Leaves 3-5 foliate ; leaflets upto 12×4 cm, oblong or elliptic-lanceate, entire, glabrous, obtusely acuminate at apex, cuneate at base. Flowers small in terminal short racemes. Berries 1.2-2.5 cm across, subglobose, constricted at base.

Fl. : April.

Courtallum (Robert Wight 103, LE).

An endemic species of Peninsular India, extinct from Courtallum, its type locality.

3. *Glycosmis mauritiana* (Lamk.) Tanaka, Bot. Not. 1928 : 159. 1928 & in J. Indian Bot. Soc. 16 : 229. 1937 ; Brizicky, J. Arnold Arbor. 43 : 90. 1962 (excl. syn. *G. pentaphylla* DC.) ; Mitra et Subr., J. Arnold Arbor. 50 : 155. 1969. *Limonia mauritiana* Lamk., Enc. Meth. Bot. 3 : 517. 1792. *L. pentaphylla* auct. (non Retz.) ; Roxb., Pl. Corom. 1 : 60, t. 84. 1798. *Glycosmis pentaphylla* sensu Narayanaswami, Rec. Bot. Surv. India 14 (2) : 12. 1941 (excl. syn. *L. pentaphylla* Retz.). *G. cochinchinensis* Pierre ; Gamble, Fl. Presid. Madras 1 (1) : 153. 1915 (*pro parte*). Kattupanal, Malampandal (Malayalam).

Shrubs, 2-4.5 m high ; branchlets yellowish. Leaves pinnate ; leaflets usually 5, rarely 4-1, 3-5 × 2.5-4.5 cm, elliptic, ovate or rarely obovate, entire, glabrous, obtuse or obtusely acuminate at apex, tapering towards the base. Flowers white in short axillary panicles. Berries up to 1 cm long, subglobose, pulpy.

Fl. & Fr. : January - May.

Common in the outskirts and waste places.

4. *Glycosmis pentaphylla* (Retz.) DC., Prodr. 1 : 538. 1824 (*quod basionym*) ; Tanaka, J. Indian Bot. Soc. 16 : 229. 1937 ; Mitra et Subr., J. Arbor. 50 : 155. 1969. *Limonia pentaphylla* Retz., Obs. Bot. 5 : 24.

1789. *L. arborea* Roxb., Pl. Corom. 1 : 60, t. 85. 1798. *Glycosmis arborea* (Roxb.) DC., Prodr. 1 : 538. 1824 ; Gamble, Fl. Presid. Madras 1 (1) : 153. 1915 ; Narayanaswami, Rec. Bot. Surv. India 14 (2) : 155. 1941 ; Brizicky, J. Arnold Arbor. 43 : 90. 1962. *Panal* (Malayalam).

Erect shrubs, up to 1.5 m high ; branchlets glabrous, green. Leaves pinnate, 3-7 foliate ; leaflets 10-12.5 × 4.5-6.5 cm, elliptic or elliptic-lanceate, entire or wavy-serrated, glabrous, acute or acuminate at apex, acute at base ; petioles obscure. Flowers white, aromatic in axillary or terminal panicles. Berries 0.4-0.7 cm across, subglobose, glandular.

Fl. & Fr. : January May.

Common in the waste places and outskirts on the way to New falls from Tiger falls.

6. MURRAYA Koen. ex Linn. *nom. gen. cons.*

Murraya paniculata (Linn.) Jacq., Mal. Misc. 1 (5) : 31. 1820. *Chalcas paniculata* Linn., Mant. 1 : 68. 1767 ; Tanaka, J. Bot. 68 : 229. 1930. *Murraya exotica* Linn., Mant. 2 : 563. 1771 ; Wt. et Arn., Prodr. 94. 1834 ; Wt., Ic. t. 96. 1838 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 502. 1875 ; Gamble, Fl. Presid. Madras 1 (1) : 155. 1915. *Konei*, *Pancandali*, *Vengarai* (Tamil).

Evergreen shrubs or small trees, 3-4 m high ; bark smooth, light yellow. Leaves imparipinnate ; leaflets 5-7, alternate, 3-5 × 2-3 cm, ovate or rhomboid, entire, glabrous, subacuminate at apex, narrowed at base. Flowers white, fragrant in terminal or axillary corymbs. Berries 1-1.5 cm long, subglobose, smooth, red when ripe.

Fl. & Fr. : April - August.

Common in the outskirts but rare in the interior areas around Shembagadevi.

7. NARINGI Adans.

Naringi crenulata (Roxb.) Nicolson in Flora of Hassan District, Karantaka, India 387. 1976 ; Panigrahi, Bull. Bot. Surv. India 17 (1-4) : 196. 1975 (1978). *Limonia crenulata* Roxb. Pl. Corom. 1 : 60, t. 86. 1798. *Hesperethusa crenulata* (Roxb.) M. J. Roem., Synops. Mon.

Hespr 1 : 38. 1846. *Limonia acidissima* auct. multi. ; Wt. et Arn., Prodr. 92. 1834 ; Hook. f. in Hook. f., Fl. Brit. India 1 : 507. 1875. (non Linn. 1762).

Thorny shrubs, 2.5 - 3 m high : thorns axillary, 1 - 2 cm long. Leaves pinnate ; leaflets 2 - 4 pairs, 2 - 2.5 × 1 - 1.5 cm, ovate or linear, serrate, glabrous, obtuse, ovate or nouched at apex, narrowed into the base ; rachis jointed, winged. Flowers white in axillary, umbelliform, leafy racemes. Berries 0.5 - 1 cm across, globose, black when ripe.

Fl. & Fr. : May - November.

Very rare, at Five falls in the outskirts.

8. *PLEIOSPERMIUM* (Engl.) Swingle

Pleiospermium alatum (Wt. et Arn.) Swingle, J. Wash. Acad. Sci. 6 : 425. 1916 ; Tanaka, J. Bot. 68 : 231. 1930. *Limonia alata* Wt. et Arn., Prodr. 92. 1834 ; Wt., Ill. Ind. Bot. 41. 1840 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 508. 1875 ; Gamble, Fl. Presid. Madras 1 (1) : 157. 1915. *Malainarattai* (Tamil).

Shrubs or small trees ; branches woody. Leaves 3 or rarely 2 foliate ; leaflets 2.5 - 6.5 × 2 - 4.5 cm, sessile, obovate, entire, glabrous, rounded at apex, cuneate at base. Flowers greenish-white in terminal or axillary, paniculate racemes : Berries up to 2 cm in diameter, globose, with dotted depressions on the surface.

Fl. : April.

Courtallum (*Robert Wight* 108, CAL).

9. *TODDALIA* Juss. nom. gen. cons.

Toddalia asiatica (Linn.) Lamk., Enc. Meth. Bot. 2 : 116. 1793 ; Gamble, Fl. Presid. Madras 1 (1) : 150. 1915. *Paullinia asiatica* Linn., Sp. Pl. 365. 1753. *Toddalia aculeata* Pers., Syn. 1 : 249. 1805 ; Wt. et Arn., Prodr. 149. 1834 ; Wt., Ill. Ind. Bot. 66. 1840 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 497. 1875. *Kakkatukali*, *Kattukara*, *Malakuthani* (Malayalam). *Kattumilagu*, *Milagarani* (Tamil).

Climbing or straggling shrubs, 3 - 7 m high ; branches with incurved prickles. Leaves trifoliate ; leaflets up to 3.5 × 1.7 cm, oblong to broadly-

lanceate, crenulate, glabrous, acute, obtuse or nouched at apex, acute at base. Flowers white in axillary cymes. Berries about 1 cm across, lobed, orange-coloured when ripe.

Fl. & Fr. : November March.

Very common in the outskirts and interior parts.

74. MELIACEAE

- 1a. Flowers hermaphrodite ; drupes 5-loculed,
5-ribbed

Cipadessa 2

- 1b. Flowers polygamo-dioecious ; berries 1-2 loculed,
not ribbed

Aglaia 1

1. AGLAIA Lour.

- 1a. Peduncles slender, wiry, uniformly thick throughout ;
flowers almost distichous on the inflorescence
branches

A. odorata 2

- 1b. Peduncles stout, not wiry, more thicker towards base ;
flowers arranged in small groups on the short inflores-
cence branches (not distichous)

A. elaeagnoidea 1

1. *Aglaia elaeagnoidea* (Juss.) Benth., Fl. Austrl. 1 : 383. 1863 ; Back. et. Bakh. f., Fl. Java 2 : 128. 1965. *Nemadra elaeagnoidea* Juss., Mem. Mus. Hist. Nat. Paris 19 : 259, t. 14. 1830. *Aglaia roxburghiana* (Wt. et. Arn.) Miq., Ann. Mus. Lugd. Bat. 4 : 41. 1858 ; Hiern in Hook. f., Fl. Brit. Ind. 1 : 555. 1875 ; Gamble, Fl. Presid. Madras 1 (1) : 180. 1915.

Trees, 8 - 12 m high ; young branches tomentose. Leaves pinnate, often 6 or 7 foliate ; leaflets 2.5 - 6.5 × 0.8 - 4.5 cm, oblong, obtuse at apex, narrowed towards base ; petiolules 0.3 - 1 cm long. Flowers yellowish in axillary, short panicles towards the apex of branches. Berries ± 1 cm across, rounded at apex, narrowed into the stalk at the base.

Fl. & Fr. : January - May.

Common in the foot-hills and lower altitudes, especially below Chittaruvu.

- 1a. Leaflets large, often 5-9.5 cm long, oblong or oblanceate ; barries $\pm$ 1 cm across var. *bourdillonii* 1
- 1b. Leaflets small, often up to 4 cm long, oblanceate or rarely linear eillptic ; barries up to 0.7 cm across var. *courtallensis* 2

1. *Aglaia elaeagnoidea* (Juss.) Benth. var. *bourdillonii* (Gamble) K.K. N. Nair, J. Bomb. Nat. Hist. Soc. 78 : 426. 1981. *A. bourdillonii* Gamble, Bull. Misc. Inf. Kew 1915 : 346 47, 1915 & Fl. Presid. Madras 1 (1) : 180, 1915 ; Harms in Engl. & Prantl. Pflanzenfam. (ed. 2) 19b : 146. 1940 ; Choudhuri, Bull. Bot. Soc. Bengal 21 : 6. 1967. *A. roxburghiana sensu* Bedd. Fl. Sylvat. t. 130B. 1871.

Fl. & Fr. : January May.

Common in the outskirts and rarely towards the interior of the forest around Shembagadevi.

2. *Aglaia elaeagnoidea* (Juss.) Benth. var. *courtallensis* (Gamble) K.K.N. Nair, J. Bomb. Nat. Hist. Soc. 78 : 426. 1981. *A. roxburghiana* (Wt. et Arn.) Miq. var. *courtallensis* Gamble, Fl. Presid. Madras 1 (1) : 180. 1915.

Fl. & Fr. : January May.

Graceful trees for their stunted habit and profusely branched apex, rare in the foot-hills around Old Courtallum.

2. *Aglaia odorata* Lour., Fl. Cochinch. 173. 1790 ; Wt. Ic. t. 511. 1840 ; Hiern in Hook. f., Fl. Brit. Ind. 1 : 554. 1875 ; Gamble, Fl. Presid. Madras 1 (1) : 181. 1915.

Small trees ; young branches stellate-scaly. Leaves pinnately 3 foliate ; leaflets 3 $5.5 \times 1 - 1.5$ cm, terminal one the largest, oblong, glabrous, obtuse at apex, narrowly acute at base. Flowers in lax panicles.

Fl. : August.

Courtallum (*Robert Wight* 98, 100, CAL).

2. CIPADESSA Bl.

***Cipadessa baccifera* (Roth) Miq., Ann. Mus. Lugd. Bat. 4 : 6. 1869 - 70 ; Gamble, Fl. Presid. Madras 1 (1) : 176. 1915. *Melia baccifera* Roth, Nov. Sp. Pl. Ind. Or. 215. 1821. *Cipadessa fruticosa* Bl.,**

Bijdr. 162. 1825 ; Hiern in Hook. f., Fl. Brit. Ind. 1 : 545. 1875. *Cerattai, Pulippan* (Tamil).

Branched shrubs, 2-3 m high ; branchlets silky-pubescent. Leaves imparipinnate ; leaflets 4-6.5 × 1.5-2.5 cm, elliptic-lanceate, entire or serrate, glabrous, acuminate at apex, acute at base ; petiolules up to 0.6 cm long. Flowers greenish-yellow in axillary corymbose panicles shorter than the leaves. Berries 0.3-0.5 cm in diameter, 5-lobed, 5-loculed, scarlet when ripe.

Fl. & Fr. : September - November.

Common in the outskirts on the way to Five falls.

75. OXALIDACEAE

- 1a. Leaves digitately 3-foliate ; capsule valves cohering to the axis

Oxalis 2

- 1b. Leaves pinnately many-foliate ; capsule valves detaching from the axis

Biophytum 1

1. BIOPHYTUM DC.

- 1a. Stem not branched ; apex of the leaves obliquely truncate

B. sensitivum 2

- 1b. Stem branched ; apex of the leaves cuspidate

B. intermedium 1

1. *Biophytum intermedium* Wt., Ill., Ind. Bot. 1 : 162. 1840 ; Edgew. *et* Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 438. 1872 ; Gamble, Fl. Presid. Madras 1 (1) : 133. 1915 ; Kunth in Engl., Pflanzenr. 95 : 412. 1930. *Oxalis intermedia* Steud., Nom., (ed. 2) 2 : 240, 1841.

Trailing herbs, up to 30 cm long ; stem wiry, branched, pubescent towards apex. Leaves crowded at the ends of the stems, pinnate, 2.5-4.5 cm long ; leaflets 15-23 pairs, $\pm 0.6 \times 0.2$ cm, linear-oblong, almost glabrous, sharply cuspidate at apex, oblique at base. Flowers yellow in terminal umbels on filiform peduncles. Capsules up to 0.5 cm long, 5-valved ; seeds tubercled.

Fl. & Fr. : August - November.

Rare, along the sides of rocks in Tekkumalai above the second bridge, where water flows during monsoon.

2. *Biophytum sensitivum* (Linn.) DC. Prodr. 1 : 690. 1824 ; Edgew. *et* Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 436. 1872 ; Gamble, Fl. Presid. Madras 1 (1) : 133. 1915 ; Kunth in Engl., Pflanzenr. 95 : 393. 1930. *Oxalis sensitiva* Linn., Sp. Pl. 434. 1753 ; Wt. *et* Arn., Prodr. 142. 1834 (*pro parte*). *O. metziana* Edgew. *et* Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 438. 1872. *Mukkuti* (Malayalam).

Erect herbs, 15 25 cm high ; stem unbranched, short. Leaves in rosettes at the apex of the stem, pinnate, 4 8 cm long ; leaflets 10 14 pairs. $\pm 1 \times 0.3$ cm, oblong, glabrous or hairy above, obliquely truncate at apex, narrowed at base. Flowers yellow in terminal umbels on hairy rhachis Capsules 0.2 0.4 cm long, ellipsoid, apiculate ; seeds transversally striated.

Fl. & Fr. : August December.

Fairly common, around Five falls and in the Agricultural estate and Udayathan estate above, as an undergrowth, along with grasses.

2. OXALIS Linn.

1a. Stem underground, bulbous ; petioles 8-30 cm long, sheath-like at base

O. corymbosa 2

1b. Stem aerial, filiform, much branched ; petioles 2.5-3.5 cm long, not sheath-like at base

O. corniculata 1

1. *Oxalis corniculata* Linn., Sp. Pl. 435. 1753 ; Wt. *et* Arn., Prodr. 142. 1834 ; Wt., Ic. t. 1838. 1852 ; Edgew. *et* Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 436. 1874 ; Gamble, Fl. Presid. Madras 1 (1) : 132. 1915 ; Calder, Rec. Bot. Surv. India 6 (8) : 331. 1919 ; Kunth in Engl., Pflanzenr. 95 : 146. 1930.

Erect herbs, 30 40 cm high ; stem much branched, wiry, hairy or pubescent, rarely creeping and rooting at lower nodes. Leaves 3 - foliate ; leaflets up to 1.6×1 cm, obcordate, appressedly hairy or glabrate, emarginate at apex, cuneate at base. Flowers yellow, in axillary long-pedunculate, hairy umbels. Capsules 1 2 cm long, cylindrical, pubescent, shortly beaked.

Fl. & Fr. : May - December.

A weed common in Agricultural and Udayathan estate above Five falls.

2. *Oxalis corymbosa* DC., Prodr. 1 : 696. 1824 ; Calder, Rec. Bot. Surv. India 6 (8) : 337: 1912. *O. martiana* Zucc., Denkschr. Akad. Muench. 9 : 144, no. 6. 1823 24 ; Kunth in Engl., Pflanzenr. 95 : 250. 1930.

Perennial herbs ; stem underground, bulbous, fleshy, with bulbils. Leaves erect, 8 30 cm high, 3 foliate ; leaflets 1.5 3.5 × 1.5 4 cm, subsessile, glabrous above, appressed hairy beneath, deeply notched at apex with rounded lobes, cuneate at base ; rhachis hairy, sheath-like at base. Flowers deeply rose-coloured towards apex, whitish towards base, 2-many in subumbellate corymbs.

Fl. : May July.

A common weed in the humid areas at higher elevations of Tekkumalai along the sides of rocks.

Notes : The plant appears to be of recent introduction in India as it is not included in *Flora of British India* and *Flora of the Presidency of Madras*. However, as early as 1912, Calder (*loc. cit.*) reported it from Calcutta Botanical Gardens, and Kunth (*loc. cit.* p. 251) recorded it from Kodaikanal in Peninsular India.

76. BALSAMINACEAE

IMPATIENS Linn.

- | | |
|--|------------------------|
| 1a. Plants epiphytic | <i>I. auriculata</i> 2 |
| 1b. Plants terrestrial | |
| 2a. Scapigerous herbs with tuberous root stocks | <i>I. acaulis</i> 1 |
| 2b. Non-scapigerous herbs without tuberous root stock | |
| 3a. Annual slender herbs | |
| 4a. Leaves rosulate at the apex of the simple stem | <i>I. umbellata</i> 6 |
| 4b. Leaves alternate, scattered throughout the branched stem | |
| 5a. Flowers solitary on solitary, binate or fascicled pedicels | |
| 6a. Spurred sepal 2-3 cm long | <i>I. faccida</i> 4 |
| 6b. Spurred sepal up to 1 cm long | <i>I. dasysperma</i> 3 |
| 5b. Flowers in subterminal racemes with long, axillary, solitary peduncles | <i>I. uncinata</i> 7 |
| 3b. Perrennial robust herbs | <i>I. grandis</i> 5 |

1. *Impatiens acaulis* Arn. in Hook., Bot. Mag. 1 : 325. 1835 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 443. 1874 & in Rec. Bot. Surv. India 4 : 44. 1906 ; Gamble, Fl. Presid. Madras 1 (1) : 138. 1915.

Scapigerous herbs, 4-30 cm high ; rootstock tuberous. Leaves radical, variable in shape, 7.5-12.5 cm in diameter, suborbical, ovate or oblong, subentire or crenate, obtuse or subacute at apex, subcordate, rounded or subacute at base ; petioles 4-20 cm long, fleshy. Flowers violet, large, showy, in terminal racemes ; spur long, slender curved. Capsules ± 2 cm long, ellipsoid, acute at both ends.

Fl. & Fr. : July September.

2. *Impatiens auriculata* Wt., Madras J. Litt. & Sci. (ser. 1) 5 : 8, pl. 3. 1837 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 460. 1874 & in Rec. Bot. Surv. India 4 : 45. 1905 ; Gamble, Fl. Presid. Madras 1 (1) : 139. 1915.

Succulent epiphytes, 6-8 cm high ; stem short, swollen. Leaves confined to the apex of the stem, 1.5 4.5 $\times$ 1-2 cm, broadly-ovate, crenulate, glabrous or minutely puberulous, sharply acute at apex, obtuse or acute at base ; petioles up to 1 cm long, stout. Flowers in axillary few flowered peduncles ; spur hooked. Capsules up to 1.3 cm long, oval.

Fl. & Fr. : August September.

Courtallum (*Robert Wight* 349, CAL).

Notes : The colour of the flower as noted by Robert Wight (*loc. cit.*) is quite interesting. The upper sepal or helmet to which it generally resembles in form and situation is bright green, the lateral sepals and the spur is deep scarlet, while the upper projecting portion of the petals is dark purple. In the protologue of the species it is mentioned that the peduncle bears two flowers. But the type specimens represented by plants in different stages of fruiting, show solitary capsules. An endemic but extinct species of South India.

3. *Impatiens dasysperma* Wt., Madras J. Litt. & Sci. (ser. 1) 5 : 7, pl. 2. 1837 & Ic. t. 742. 1844 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 157. 1874 & in Rec. Bot. Surv. India 4 : 47. 1906 ; Gamble, Fl. Presid. Madras 1 (1) : 143. 1915.

Erect herbs, 15-25 cm high ; branches slender, glabrous. Leaves up to 7.5 $\times$ 3.2 cm, ovate-lanceate, slightly hairy above, glabrous beneath, crenate-serrated, acuminate at apex, rounded or truncate at base ; petioles up to 3 cm long, slender. Flowers solitary towards the apex of branches. Capsules ± 0.5 cm across, apiculate at apex.

Fl. & Fr. : August September.

Courtallum (*Robert Wight* 334, CAL).

An endemic species of Southern Western Ghats, lost from Courtallum.

4. *Impatiens flaccida* Arn. in Hook., Bot. Mag. 1 : 332. 1835 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 457. 1874 & in Rec. Bot. Surv. India 4 : 47. 1906 ; Gamble, Fl. Presid. Madras 1 (1) : 143. 1915.

Slender, erect herbs, 20-60 cm high; stems fleshy, glabrous. Leaves 1.5-10 × 1-3 cm, elliptic-lanceate, serrate or crenate-serrate, glabrous, acuminate at apex, acute or narrowed at base ; petioles 1.5-2.5 cm long, slender. Flowers rose-purple, solitary or fascicled, axillary. Capsules up to 1 cm long, ellipsoid, acuminate at apex.

Fl. & Fr. : July September.

Rather common in the higher altitudes of Tekkumalai around and below the third wooden bridge and also on the way to Vaithamalai.

5. *Impatiens grandis* Heyne ex Wall. in Roxb., Fl. Ind. 2 : 464. 1824 ; Wt. et Arn., Prodr. 137. 1834 ; Wt., Madras J. Litt. & Sci. (ser. 1) 4 : 10, pl. 5. 1837 ; Bedd., Ic. Pl. Ind. Or. t. 153. 1874 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 463. 1874 & in Rec. Bot. Surv. India 4 : 47. 1906 ; Gamble, Fl. Presid. Madras 1 (1) : 143. 1915.

Robust herbs; branches glabrous with prominent leaf scars. Leaves confined to the apex of branches, 8-15 × 3-8 cm, ovate-lanceate or elliptic, thick, crenate-serrate, rough above, hairy beneath, acuminate at apex, acute at base ; petioles 2-9.5 cm long, stout. Flowers in subumbellate clusters of 3-4, on long peduncles ; spur longer than the petals, tubiform. Capsules 1.5-2 cm long, obscurely 4-angled, ellipsoid.

Fl. & Fr. : September.

Courtallum (*R.H. Beddome s.n.*, MH ; *Robert Wight* 340, CAL).

Notes : Neither in the protologue of the taxon nor in the *Wallichian Catalogue* where the plant is recorded, the type locality of the species is given. An intensive search made during the present studies to trace the type material of the species resulted in the finding out of it at Central National Herbarium, i.e. *Herb. Heyne. Wall. Cat. no. 4759B*. But this specimen lacks in details from where it is collected. *Wight (loc. cit.)* is of

the opinion that it may be from Courtallum. The representation of the species at Central National Herbarium shows that it is confined to Tirunelvely district in Tamil Nadu State and hence this may be the type locality of the species. This highly endemic balsam is now extinct from Courtallum.

6. *Impatiens umbellata* Heyne ex Wall. in Roxb., Fl. Ind. 2 : 464. 1824 ; Wt. et Arn., Prodr. 127. 1834 ; Wt., Madras J. Litt. & Sci. (ser. 1) 5 : 9, pl. 4. 1837 & Ic. t. 745. 1844 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 461. 1874 & in Rec. Bot. Surv. India 4 : 49. 1906 ; Gamble, Fl. Presid. Madras 1 (1) : 145. 1915.

Erect herbs, 10-20 cm high ; stem solitary. Leaves rosulate at the apex of the stem, 3-5.5 × 2.5-3.5 cm, elliptic-lanceate, distantly crenate, obtuse or acute at apex, cuneate at base ; petioles up to 3 cm long. Flowers 4-6, on short peduncles ; spur slender, tapering, curved upwards, longer than the petals. Capsules glabrous many seeded.

Fl. & Fr. : August - September.

Courtallum (*Herb. Heyne Wall. Cat 4757, CAL*).

An endemic species, extinct from Courtallum.

7. *Impatiens uncinata* Wt., Madras J. Litt. & Sci. (ser. 1) 5 : 11, pl. 6. 1837 & in Ic. t. 747. 1844 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 465. 1874 & in Rec. Bot. Surv. India 4 : 48. 1906 ; Gamble, Fl. Presid. Madras 1 (1) : 144. 1915.

Erect, slender, herbs up to 30 cm high ; branches subglabrous. Leaves 3.2-7 × 2-3.5 cm, ovate, suborbicular or ovate-oblong, bristleserrated, glabrous or hairy along the veins above, obtuse, acute or acuminate at apex, acute or rounded at base ; petioles 1.5-4 cm long, slender. Flowers subumbellate on shortly racemed glabrous peduncles towards the apex of branches ; spur shorter than the flower, hooked. Capsules up to 0.6 cm long, attenuated below.

Fl. & Fr. : August - September.

Courtallum (*Robert Wight 344, CAL*).

Notes : The specimen on the top left-hand corner of the type sheet examined here, is a different species namely *I. auriculata* Wt.

Wight (*loc. cit.*) described the species from Courtallum as found in the following habitat. 'Very distinct and handsome species growing in thick shady jungles on the top of the hill moistened with frequent showers and constant mist'. A highly endemic balsam.

77. ERYTHROXYLACEAE

ERYTHROXYLUM P. Br.

Erythroxylum monogynum Roxb., Pl. Corom. 1 : 61. t. 88. 1795 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 414. 1874 ; Schulze in Engl., Pflanzenr. 29 : 129. 1907 ; Dunn. in Gamble, Fl. Presid. Madras 1 (1) : 127. 1915. *Sethia indica* DC., Prodr. 1 : 576. 1817 ; Wt., *et* Arn., Prodr. 106. 1834 ; Wt., Ill. Ind. Bot. t. 48. 1840. *Cem, Devadaru* (Malayalam). *Cem, Cembullican, Devadari* (Tamil).

Trees, 4.5-6 m high. Leaves 3.5-5.5 × 1.5-2.7 cm, obovate or oblong, entire, glabrous, pale beneath, rounded or obtuse at apex, cuneate at base ; petioles up to 0.3 cm long, stout. Flowers greenish, axillary or fascicled. Drupes 0.7-1 x 0.4-0.5 cm, oblong, ellipsoid, angular.

Fl. & Fr. : May January.

Beautiful trees common around Shembagadevi.

78. LINACEAE

HUGONIA Linn.

Hugonia mystax Linn., Sp. Pl. 675. 1753 ; Wt. *et* Arn., Prodr. 72. 1834 ; Wt., Ill. Ind. Bot. t. 72. 1840 ; Hook, f. in Hook. f., Fl. Brit. Ind. 1 : 413. 1874 ; Dunn in Gamble, Fl. Presid. Madras 1 (1) : 126. 1915 ; Winkl. in Engl. & Prantl, Pflanzenfam. (ed. 2) 190 : 108. 1931. *Modirakanni* (Malayalam). *Agori, Kodivirai, Modirakanni* (Tamil).

Straggling or climbing shrubs, reaching 3-5 m high; branches yellowish-tomentose ; tendrils woody, bifid, circinate. Leaves 3.5-6.5 × 2.5-3.8 cm, elliptic-ovate or obovate, entire, glabrous, obtuse or subacute at apex, tapering towards base ; stipules two, subulate. Flowers yellow, axillary, the peduncles often transformed into circinate hooks. Drupes ± 0.8 cm in diameter, globose, fleshy surrounded by the persistent calyx.

Fl. & Fr. : August - December.

Common in the dry outskirts of the forest between Tiger falls and Main falls and also on the way to Tekkumalai.

79. MALPIGHIACEAE

HIPTAGE Gaertn.

- 1a. Leaves lanceate or ovate, more or less long acuminate ;
fruits with an additional (4th) dorsal comb *H. benghalensis* 1
- 1b. Leaves elliptic with a short bent point at apex ; fruits with
out an additional (4th) dorsal comb *H. parviflora* 2

Hiptage benghalensis (Linn.) Kurz, J. As. Soc. Bengal 14 (2) : 36. 1879 & For. Fl. Burma 1 : 173. 1877 ; Niedenz. in Engl., Pflanzenr. 91 : 77. 1928 ; Blatter, J. Indian Bot. Soc. 9 : 149. 1930. *Banisteria benghalensis* Linn., Sp. Pl. 427. 1753. *Hiptage madablota* Gaertn., Fruct. 2 : 169. 1791 ; Wt. et Arn., Prodr. 107. 1834 ; Wt., Ill. Ind. Bot. t. 50. 1838 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 418. 1872 ; Dunn in Gamble, Fl. Presid. Madras 1 (1) : 128. 1915. *Gaertnera racemosa* Roxb., Pl. Corom. 1 : t. 18. 1795 & Fl. Ind. 2 : 368. 1832.

Straggling shrubs, 3-4 m high ; young branches pubescent. Leaves 8-11.5 × 3-4.5 cm, ovate-lanceate, entire, glabrous, acuminate at apex, acute at base ; petioles 0.5-0.8 cm. long, pubescent. Flowers white, fragrant, in terminal or axillary racemes. Samaras with 3 large wings 2.5-4.5 cm long and a small additional dorsal comb.

Fl. & Fr. : January - March.

Very rare below Swamiar falls in Udayathan estate, along the sides of rocks bordering the stream.

2. **Hiptage parviflora** Wt. et Arn., Prodr. 107. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 1 : 419. 1872 ; Niedenz. in Engl., Pflanzenr. 91 : 79. 1928 ; Blatter, J. Indian Bot. Soc. 9 : 149. 1930 ; Dunn in Gamble, Fl. Presid. Madras 1 (1) : 128. 1915. *H. cumingii* Merr., Philipp. J. Sci. Bot. 5 : 190. 1910.

Twiggy shrubs ; branchlets yellowish pubescent. Leaves 5-7.5 × 1.5-3.2 cm, elliptical, entire, glabrous, obtuse or with a short blunt acumen at apex, acute at base ; petioles 0.3-0.5 cm long. Flowers in slender axillary or terminal pubescent racemes. Samaras 3-winged, wings 1.5-2.3 cm long, additional dorsal comb absent.

Fl. & Fr. : March.

Courtallum (*Robert Wight* 293, CAL).

80. POLYGALACEAE

- | | |
|--|-----------------------|
| 1a. Erect or prostrate herbs ; sepals unequal, 2 inner larger and sometimes petaloid ; petals 3 ; fruits 2-loculed | <i>Polygala</i> 1 |
| 1b. Large shrubs or small trees ; sepals sub-equal ; petals 4-5 ; fruits 1-loculed | <i>Xanthopyllum</i> 2 |

1. POLYGALA Linn.

- | | |
|---|----------------------|
| 1a. Flowers solitary or rarely in 2-flowered groups ; capsules hairy | <i>P. raoi</i> 3 |
| 1b. Flowers in racemes shorter or longer than the leaves ; capsules puberulous or ciliate | |
| 2b. Racemes much longer than the leaves ; capsules puberulous | <i>P. javana</i> 2 |
| 2b. Racemes shorter than the leaves ; capsules ciliate | <i>P. arvensis</i> 1 |

1. *Polygala arvensis* Willd., Sp. Pl. 3 (2) : 876. 1802 ; Burtt, Notes R. Bot. Gard. Edinb. 32 : 404. 1973. *P. chinensis auct. non* Linn. ; A. Benn. in Hook. f., Fl. Brit. Ind. 1 : 204. 1872 ; Dunn in Gamble, Fl. Presid. Madras 1 (1) : 58. 1915 ; Mukherjee, Bull. Bot. Soc. Bengal 12 : 38. 1958 ; Adema, Blumea 14 : 269. 1966. *P. telephonoides* Willd., Sp. Pl. 3 : 876. 1803 ; Wt. et Arn., Prodr. 36. 1834 ; A. Benn., loc. cit. ; Dunn, loc. cit. p. 59. *P. rothiana* Wt. et Arn., Prodr. 37. 1834.

Suberect herbs, 10-25 cm high ; rootstock woody ; branches slender, puberulous. Leaves 2-4.5 × 0.5-1.2 cm, obovate or linear-oblong, pubescent or ciliate, obtuse and apiculate at apex, narrowed at base ; petioles up to 0.2 cm long, hairy. Flowers pink in axillary or extra-axillary short, almost capitate few-flowered racemes ; bracts persistent. Capsules broadly oblong, oblique-tipped, narrowly margined, strongly ciliate.

Fl. & Fr. : August—February.

Fairly common in the dry or wet outskirts of the Reserve forest on the way to Five falls.

2. *Polygala javana* DC., Prodr. 1 : 327. 1824 ; Wt., *et* Arn., Prodr. 38. 1834 ; A. Benn. in Hook. f., Fl. Brit. Ind 1 : 201. 1872 ; Dunn in Gamble, Fl. Presid. Madras 1 (1) : 58. 1915 ; Mukherjee, Bull. Bot. Soc. Bengal 12 : 44. 1958 ; Adema, Blumea 14 : 261. 1966.

Erect or spreading herbs, 15-60 cm high ; branches few, slender. Leaves subsessile, $3.5-5 \times 0.5-1$ cm, oblong or oblong-lanceate, puberulous, rounded at apex, cuneate at base. Flowers light yellow with pink spots in axillary or leaf-opposed racemes ; bracts persistent. Capsules orbicular, slightly margined, puberulous.

Fl. & Fr. : May February.

Fairly common in the open forest floor on the way to Tekkumalai, around Shembagadevi and at Five falls.

3. *Polygala raoi* R.N. Ban. *et* L.K. Ban., Proc. Indian Acad. Sci. (sect. B) 82 (6) : 218. 1975.

Woody, much branched perennial herbs, 15-50 cm high. Leaves $0.5-1.2 \times 0.2-0.5$ cm, oblong-obovate, crispy-puberulous, variable in shape at apex, narrowly obtuse at base ; petioles 0.1-0.2 cm, long, pubescent. Flowers greenish in axillary or leaf-opposed groups of two or solitary. Capsules 0.4-0.6 cm long, emarginate, hirsute.

Fl. : September - October.

Common on the forest floor at Tekkumalai, Five falls and Shembagadevi.

2. XANTHOPHYLLUM Roxb. *nom. gen. cons.*

Xanthophyllum flavescens Roxb., (Hort. Beng. 88. 1814 *nom. nud.*) Pl. Corom. 3 : 82, t. 284. 1820 ; Wt., Ill. Ind. Bot. t. 50. 1840 ; A. Benn. in Hook. f., Fl. Brit. Ind. 1 : 209. 1872 ; Dunn in Gamble, Fl. Presid. Madras 1 (1) : 60. 1915. *Madkka* (Malayalam). *Mattei* (Tamil).

Shrubs or trees, 3-5.5 m high. Leaves $4.5-10 \times 1.5-5$ cm, oblong-lanceate, coriaceous, glabrous, obtusely acuminate at apex, narrowed at base ; petioles 0.2-0.4 cm long stout. Flowers white in axillary, supra-axillary or terminal pubescent panicles. Fruits 0.6-0.8 cm across, subglobose, rugose, greenish.

Fl. & Fr. : January March.

Rare in Udayanathan estate above Swamiar falls along the sides of the stream.

Xanthophyllum flavescens Roxb. var. **angustifolia** (Wt.) A. Benn. in Hook. f., Fl. Brit. Ind. 1 : 209. 1872. *X. angustifolium* Wt. Ill. Ind. Bot. 1 : 50, t. 23. 1840.

The variety differs from the species proper in possessing narrowly-lanceate leaves, $4.5-9.5 \times 1-2.5$ cm, glabrous, obtuse at apex, acute at base ; ovary 1-loculed, 4-ovuled, two ascending from the base and two pendulous from the apex of the locule.

Fl. : August.

Courtallum (*Robert Wight* 568, CAL).

Notes : While reinstating the varietal status this taxon here which was not recognised by Dunn (*loc cit.*), the figure and description of Wight (*loc. cit.*) which is the nomenclatural type of it is consulted. It is recorded from the 'thickets at Courtallum'. A plant deserving conservation.

81. ARALIACEAE

SCHEFFLERA Forst. et Forst. f. *nom. gen. cons.*

- | | |
|---|----------------------|
| 1a. Leaflets oblong or elliptic, coriaceous with prominent secondary veins ; fruits shallowly ridged | <i>S. venulosa</i> 2 |
| 1b. Leaflets obovate, smooth, with the main vein only prominent towards the base ; fruits deeply ridged or winged | <i>S. stellata</i> 1 |

1. **Schefflera stellata** (Gaertn.) Baill., Hist. Pl. 7 : 161. 1879 ; Gamble, Fl. Presid. Madras 1 (3) : 570. 1919. *Heptapleurum stellatum* Gaertn., Fruct. 3 : 472, t. 178. 1791 ; Clarke in Hook. f., Fl. Brit. Ind. 2 : 730. 1879. *Hedera obovata* Wt., Ic. tt. 1011, 1012. 1845.

Glabrous, straggling shrubs. Leaves digitately compound, 3-5 foliate; leaflets $4.5-11 \times 2.5-8.5$ cm, obovate, smooth, thick, entire, glabrous, rounded or rounded and bluntly apiculate at apex, narrowed or subcordate at base ; petiolules up to 5.5 cm long, sometimes fleshy. Flowers yellow, long pedicelled, umbellate in terminal lax racemose panicles. Drupes ± 0.5 cm long, subovate, deeply ridged longitudinally.

Fl. & Fr. : February August.

Courtallum (*Robert Wight s.n.*, CAL).

Notes : C.B. Clark (*loc. cit.*) doubts whether this species is only a South Indian form of *S. venulosa* (Wt. et Arn.) Harms. Studies of several specimens of the two taxa in question shows that *S. stellata* with its obovate smooth leaves, less prominent secondary veins, long, lax panicles and fruits with deep longitudinal ridges appearing as wings strongly supports the specific status of it, rather than a form under *S. venulosa*. The leaflets of *S. stellata* varies from obovate to ovate and subcordate at base.

2. ***Schefflera venulosa*** (Wt. et Arn.) Harms. in Engl. & Prantl, Pflanzenfam. (ed. 1) 3, 8 : 31. 1894 ; Gamble, Fl. Presid. Madras 1 (3) : 570. 1919 ; Mahesh., Bull. Bot. Surv. India 2 : 376. 1960. *Heptapleurum venulosum* (Wt. et Arn.) Seem., J. Bot. 3 : 80. 1865 ; Clarke in Hook. f., Fl. Brit. Ind. 2 : 729. 1874 (excl. syn. Bl., Miq. & Seem.). *Paratropia venulosa* Wt. et Arn., Prodr. 377. 1834 ; Wt., Ill. Ind. Bot. t. 118. 1840-50. *Ananacovalli* (Malayalam). *Piccukkodi*, *Vellatum* (Tamil).

Glabrous, straggling shrubs, reaching 6-10 m high. Leaves digitately compound, 3-5 foliate, up to 45 cm long ; leaflets very variable in shape and size, 4-23 × 2.5-10 cm, oblong, elliptic or elliptic-lanceate, coriaceous, entire, acuminate or bluntly apiculate at apex, acute, rounded or cordate at base ; secondary nerves very prominent ; petiolules up to 9 cm long. Flowers greenish-yellow, umbellate in terminal lax racemose panicles. Drupes subovate, longitudinally and shallowly ridged.

Fl. & Fr. : February August.

Very rare along the sides of the river Chittar in Tekkumalai at comparatively higher altitudes.

82. UMBELLIFERAE

1a. Flowers in simple umbels or heads that are often united in a more or less compound inflorescence

2a. Leaves with a pair of free stipules ; secondary ribs of the fruits not present

Hydrocotyle 2

2b. Leaves exstipulate, petioles sheathing at base ; fruits with evident secondary ribs and reticulations

Centella 1

1b. Flowers in compound umbels that are sometimes united in a more compound inflorescence

3a. Vittae 3, at intervals ; leaves trifoliate

Pimpinella 3

3b. Vittae solitary at intervals ; leaves variously pinnatifid

Trachyspermum 4

1. CENTELLA Linn.

Centella asiatica (Linn.) Urb., Mart. Fl. Bras. 11 : 287, t. 78. f. 1. 1874 ; Drude in Engl. & Prantl, Pflanzenfam. (ed. 1) 3, 8 : 119. 1898 ; Gamble, Fl. Presid. Madras 1 (3) : 556. 1919 ; Buwalda, Blumea 2 : 134. 1936 ; Nasir, Biologia 3 : 66. 1957. *Hydrocotyle asiatica* Linn., Sp. Pl. 234. 1753.

Slender trailing herbs, rooting at nodes ; stem stoloniferous. Leaves 1-4 at each node, 2-3.5 cm in diameter, reniform, crenate, cordate at base; petioles 5-15 cm long, slender, grooved. Flowers reddish, sessile in simple, axillary, 3-4 flowered umbels. Fruits with compressed and ridged mericarps.

Fl. & Fr. : July September.

Very common in the plains but rare above 1000 m elevation at Tekkumalai.

2. HYDROCOTYLE Linn.

Hydrocotyle javanica Thunb., Diss. Hydrocot. no. 7 pl. 2. 1798 & in ed. Pers. 2 : 415, pl. 3. 1800 ; Clarke in Hook. f., Fl. Brit. Ind. 2 : 667. 1879 ; Gamble, Fl. Presid. Madras 1 (3) : 556. 1919 ; Buwalda, Blumea 2 : 123. 1936 ; Nasir, Biologia 3 : 68. 1957. *H. hispida* DC., Prodr. 4 : 183. 1830. *H. nepalensis* Hook., Exot. Fl. 1 : t. 30. 1823. *H. zeylanica* DC., Prodr. 4 : 67. 1830 ; Wt. et Arn., Prodr. 366. 1834. *H. polycephala* Wt. et Arn., Prodr. 366. 1834.

Procumbent herbs. Leaves 15-45 cm long, 3.5-4.5 cm in diameter, roundish-angular in outline, slightly pubescent on both sides, cordate at base, 5-8 lobate, lobes crenate or notched ; petioles up to 40 cm high, short-hairy. Flowers greenish in simple or branched mostly terminal umbels ; involucre bracts present. Fruits with rounded, red, brown or blackish mericarps.

Fl. & Fr. : May - September.

Fairly common in the high altitudes of Tekkumalai, along the sides of rocks.

Notes : The concept of considering *H. javanica* and *H. nepalensis* as distinct species (vide, Shan & Liou, *Acta. Phytotax. Sin.* 9 : 122. 1964 ; Hara, *Fl. E. Himal.* 229. 1966) is confusing. The characters like glabrous/

hairy, roundish lobes of leaves/acute lobes of leaves, number of petiole/number of peduncle, length of petiole/length of peduncle, wide sinus/narrow sinus, which are often used to separate the two species are found to be quite unstable for specific distinction of *H. javanica* and *H. nepalensis* and hence they are considered conspecific here.

3. PIMPINELLA Linn.

Pimpinella heyneana (Wall. ex DC.) Kurz, J. As. Soc. Bengal 46 : 115. 1877 ; Wolff in Engl., Pflanzenr. 43 : 277. 1927 ; Gamble, Fl. Presid Madras 1 (3) : 560. 1919. *Helosciandium heyneanum* Wall. ex DC., Prodr. 4 : 106. 1830 ; Wt. et Arn., Prodr. 368. 1834.

Erect herbs, 60-90 cm high ; branches filiform, glabrous. Leaves trifoliate ; leaflets $2.5-5.5 \times 0.5-2$ cm, ovate-lanceate, deeply and variously serrated, glabrous, acute or acuminate at apex, narrowed at base ; rhachis up to 7.5 cm long. Flowers greenish-white, in small terminal compound umbels. Fruits subglobose, minute, glabrous.

Fl. & Fr. : October - March.

Very rare in the highest altitudes of Tekkumalai towards Kailasa parvatham side.

4. TRACHYSPERMUM Link *nom. gen. cons.*

Trachyspermum roxburghianum (DC.) Craib, Fl. Siam. Enum. 1 : 788. 1931 ; Buwalda, Blumea 2 : 184. 1936.—*Ptychotis roxburghiana* DC., Prodr. 4 : 109. 1830.—*Apium involucratum* Roxb. ex Flem., Ind. Med. Pl. in As. Research 11 : 157. 1810 ; Wt., Ic. t. 567. 1843.—*Carum roxburghianum* Kurz, J. As. Soc. Bengal 46 : 114. 1877 ; Clarke in Hook. f., Fl. Brit. Ind. 1 : 682. 1879.—*Trachyspermum roxburghianum* Wolff in Engl., Pflanzenr. 90 : 129. 1927 (*errore*).

Slender herbs, 30-90 cm high ; stem glabrous, striated, branched. Leaves variously pinnate, up to 6 cm long ; leaflets variously lobed, entire, glabrous, extreme segments upto 0.3 cm broad. Flowers greenish in terminal and axillary umbels ; bracts and bracteoles linear, up to 0.6 cm long. Mericarps 0.2-0.3 cm long, oblong.

Fl. & Fr. : October-December.

Courtallum (*M. Rama Rao* 1858, CAL).

Notes : The species is an addition to Gamble's *Flora of the Presidency of Madras*.

83. LOGANIACEAE

STRYCHNOS Linn.

- 1a. Climbing shrubs with thickened bifid tendrils *S. wallichiana* 3
- 1b. Trees without tendrils
 - 2a. Leaves 5-ribbed from almost the base ; corolla tube much longer than the lobes *S. nux-vomica* 1
 - 2b. Leaves 3-ribbed at the base with a pair of ribs ± 0.5 cm above ; corolla tube and lobes almost equal in length *S. potatorum* 2

1. *Strychnos nux-vomica* Linn., Sp. Pl. 189. 1753 ; Roxb., Pl. Corom. 7, t. 4. 1795 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 90. 1883 ; A.W. Hill, Kew Bull. 1917 : 183. 1917 ; Gamble, Fl. Persid. Madras 2 (5) : 868. 1923 ; Bisset *et al.*, Lloydia 36 (2) : 189. 1973.

Deciduous, often thorny trees, 6-10 m high ; bark thin, grey. Leaves 1-13 $\times$ 3-4.5 cm, broadly-elliptic, coriaceous, entire, shiny above, acute, obtuse or bluntly acuminate at apex rounded at base ; petioles 3.5-1.2 cm long. Flowers greenish-white in terminal pubescent compound cymes. Berries 2.5-4.4 cm in diameter, globose, orange-red when ripe ; seeds discoid, concave on one side, convex on the other, silky pubescent.

Fl. & Fr. : November-September.

Fairly common in the dry outskirts around Main falls and Tiger falls.

2. *Strychnos potatorum* Linn. f., Suppl. Pl. 148. 1781 ; Roxb., Pl. Corom. 1 : 9, t. 5. 1795 ; Wt., Ill. Ind. Bot. t. 156. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 90. 1883 ; A.W. Hill, Kew Bull. 1917 : 154. 1917 ; Gamble, Fl. Persid. Madras 2 (5) : 868. 1923 ; Bisset *et al.*, Lloydia 36 (2) : 191. 1973. *Katakam, Terra, Terramparal* (Malayalam). *Akkolam, Cillam, Illalam* (Tamil).

Unarmed trees, 8-10 m high ; bark brownish-black, corky. Leaves 2.5-8.5 $\times$ 1.3-4.2 cm, elliptic, coriaceous, entire, quintuple-nerved, the upper

pair of ribs 0.5-1 cm above the lower, acute or bluntly acuminate at apex, acute or obtuse at base ; petioles 0.1 cm long. Flowers white in axillary cymes ; corolla lobes and tube almost equal in length. Berries 1-1.5 cm in diameter, globose, 1-2 seeded.

Fl. & Fr. : January-August.

Fairly common around Tiger falls and along the forest path sides at New falls.

Notes : Regarding two specimens of this species collected from Courtallum by Robert Wight and preserved in the Herbarium at Glasgow, A.W. Hill. (*loc. cit.* p. 154) remarks 'some specimens from Courtallum in herb. Wight (nos. 639, 1836) at Glasgow have obovate leaves cuneate at the base and the twigs are unusually slender. But the specimens examined here possess uniformly elliptic leaves and thick twigs.

Strychnos wallichiana Steud. ex DC., Prodr. 9 : 13. 1845 ; Bisset *et* Philcox, Taxon 23 : 543. 1971 & Bisset *et al*, Lloydia 36 (2) : 195. 1973. *S. colubrina* Linn., Sp. Pl. 189. 1753 *non auct., nom. confusum* ; Wt., Ic. t. 434. 1843 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 87. 1883 ; A.W. Hill, Kew Bull. 1917 : 157. 1917 ; Gamble, Fl. Presid. Madras 2 (5) : 868. 1923. *S. cinnamomifolia* Thw., Enum. Pl. Zeyl. 231. 1864. *S. rheedii* Clarke in Hook. f., Fl. Brit. Ind. 4 : 87. 1883. *S. malaccensis* Clarke in Hook. f., Fl. Brit. Ind. 4 : 89. 1883 (*quod syn. tantum, non Benth.*). *S. bourdilloni* Brandis, Indian Trees 474. 1906. *S. cinnamomifolia* var. *wightii* A.W. Hill, Kew Bull. 1917 : 197. 1917 (*nom. illegit*).

Glabrous lianas with thick bifid, circinate tendrils (hooks). Leaves 6-15±2.5-6 cm, ovate-elliptic, coriaceous, entire, strongly 3-nerved from the base, acute or acuminate at apex, rounded or narrowed at base ; petioles 0.5-1.2 cm long, thick. Flowers white, small in axillary cymes. Berries 0.5-1.5 cm in diameter, globose, 1-2 seeded ; seeds discoid.

Fl. & Fr. : November-September.

Courtallum (*Robert Wight 752, CAL*).

84. POTALIACEAE

FAGRAEA Thunb.

Fagraea ceilanica Thunb., Vet. Acad. Handl. Stockh. 3 : 132, t. 4. 1782 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 83. 1883 ; Gamble, Fl. Presid.

Madras 2 (5) : 865. 1923 (as *zeylanica*).—*F. obovata* Wall. ex Roxb., Fl. Ind. 2 : 33. 1824 ; Clarke, *loc. cit.* ; Gamble, *loc. cit.* ; R.C. Brink, Blumea 5 : 382. 1950. *F. coromandelina* Wt., Ic. t. 1316. 1850. *F. malabarica* Wt., Ic. t. 1317. 1848 (*nom. illeg.*).

Spreading trees, 12-15 m high ; young branches with prominent leaf-scars. Leaves up to 22×9 cm, obovate-oblong, entire, glabrous, fleshy and spongy above, broad and rounded at apex, narrowed into the petiole at base ; petioles 0.5-1 cm long, sometimes obscure. Flowers cream-coloured in one to many-flowered cymes towards the apex of branches. Berries 2.5-4 cm long, ovoid, smooth, apiculate at apex, yellow when ripe.

Fl. & Fr. : May March.

Rare, on the way to Vaithamalai.

85. GENTIANACEAE

1a. Flowers yellow ; stigma obscurely 2 - lobed

Hoppea 2

1b. Flowers pink ; stigma drum - shaped

Canscora 1

CANSCORA Lamk.

Canscora heteroclita (Linn.) Gilg in Engl., Pflanzenr. 4, 2 : 76. 1895 ; Raizada, Indian For. 92 : 304. 1966. *Gentiana heteroclita* Linn., Mant. 2 : 560. 1771. *Canscora sessiliflora* Roem. et Schult., Syst. Veg. 3 : 230. 1827 ; Clarke, J. Linn. Soc. Lond. 14 : 430. 1875 & in Hook.f., Fl. Brit. Ind. 4 : 104. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 878. 1923. *Pladdera sessiliflora* Roxb., Fl. Ind. 1 : 416. 1820.

Semiquatic, erect herbs, up to 10 cm high ; stem 4-winged, green. Leaves sessile, upto 1.6×0.8 cm, ovate, entire, glabrous, dark green above, paler beneath, obtuse or subacute at apex, rounded at base. Flowers pink in axillary and terminal dichasial cymes. Capsules up to 1 cm long, ovate-lanceate, green.

Fl. & Fr. : August December.

Rare above the Main falls in the peaty soil along the sides of the stream.

Notes : Gamble (*loc. cit.*) recorded rose colour for the flower in this plant. But specimens from Courtallum possess deep pink flowers. The colour of the flower is retained even after the drying of the materials.

2. HOPPEA Willd.

Hoppea fastigiata (Griseb.) Clarke in Hook. f., Fl. Brit. Ind. 4 : 100. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 877. 1923. *Cicendia fastigiata* Griseb., Gentian. 158. 1839 & in DC., Prodr. 9 : 62. 1845. *Pladera ? fastigiata* Clarke, J. Linn. Soc. Lond. 14 : 429. 1875.

Erect herbs, 5-15 cm high with ascending branches ; stem 4-winged. Leaves sessile, up to 0.6×0.4 cm ovate, entire, glabrous, acuta at apex. Flowers pale yellow in terminal cymes ; bracts linear-acuminate ; calyx lobes thin with marginal nerves ; corolla tube longer than the calyx. Capsules ellipsoid, up to 0.5 cm long, larger at one end.

Fl. & Fr. : October February.

Rare in the shady, damp areas along the sides of rocks below Shembagadevi.

86. APOCYNACEAE

- 1a. Plants armed with paired thorns from the axils of leaves at alternate nodes

Carissa 3

- 1b. Plants unarmed

- 2a. Erect herbs, 30-60 cm high

Catharanthus 4

- 2b. Shrubs or trees

- 3a. Plants erect ; corolla lobes overlapping to the left as viewed from outside

- 4a. Anthers exerted from the corolla tube, adnate to the style apex ; mouth of the corolla tube with one or more series of erect scales

Wrightia 8

- 4b. Anthers included within the corolla tube, not adnate to the style apex ; mouth of the corolla tube without any scales

- 5a. Calyx lobes obtuse

- 6a. Leaves whorled or alternate

Alstonia 2

- 6b. Leaves opposite

Ervatamia 5

- 5b. Calyx lobes acute

Hunteria 6

- 3b. Plants climbing ; corolla lobes overlapping to the right as viewed from outside

- 7a. Calyx lobes 0.7-1 cm long, longer than the corolla tube ; flowers in terminal corymbose cymes *Aganosma* 1
- 7b. Calyx lobes not exceeding 0.1 cm in length, much shorter than the corolla tube ; flowers in lax axillary or terminal paniculate cymes *Ichnocarpus* 7

1. AGANOSMA G. Don

Aganosma cymosum (Roxb.) G. Don, Gen. Hist. 4 : 77. 1837 ; Hook. f. in Hook. f., Brit. Ind. 3 : 665. 1882. *Echites cymosa* Roxb., (Hort. Beng. 84. 1814 *nom. nud.*) Fl. Ind. 2 : 16. 1832. *Aganosma elegans* G. Don, Gen. Hist. 4 : 77. 1837 ; Wt., Ic. t. 1304. 1848 ; Gamble, Fl. Presid. Madras 2 (5) : 819. 1923. *A. cymosa* var. *elegans* (G. Don) Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 665. 1882. *Anakkayerrum* (Malayalam).

Climbing shrubs, 2-3 m high ; young branches glabrate. Leaves 4-12.5 × 2-5.5 cm, elliptic or elliptic-lanceate, glabrous, shortly acuminate at apex, acute at base; petioles up to 1.5 cm long. Flowers yellowish, in terminal densely tomentose corymbose cymes. Merocarps ± 8.5 × 0.6 cm, linear-lanceate, cylindrical, pointed, appressedly tomentose when young, glabrescent when ripe.

Fl. & Fr. : April August.

Fairly common in the semideciduous forests, along the way sides to Tekkumalai.

2. ALSTONIA R. Br. *nom. gen. cons.*

- 1a. Large trees, 10-15 m high ; flowers greenish white ; merocarps 20-30 cm long, straight *A. scholaris* 1
- 1b. Small shrubs, 1-2.5 m high ; flowers bright white ; merocarps 7-13 cm long, falcately curved *A. venenata* 2

1. *Alstonia scholaris* (Linn.) R. Br., Mem. Wern. Soc. 1 : 76. 1811 ; Wt., Ic. t. 422. 1841. Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 642. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 810. 1925.—*Echites scholaris* Linn., Mant. 1 : 53. 1767. *Daivapala*, *Elilampala*, *Kotapala*, *Mangalapala*, (Malayalam). *Elilaipala*, *Mukkambalai*, *Maramarali*, *Vadirachi* (Tamil).

Large evergreen trees, 10-15 m high ; branches whorled. Leaves whorled, 10-15.5 × 2-4.5 cm, elliptic-oblong, coriaceous, glabrous on both sides with numerous lateral nerves, obtuse or rounded at apex, cuneate at base ; petioles 0.5-2.5 cm long. Flowers greenish-white, fragrant in dense cymes. Merocarps pendulous, 20-30 cm long, cylindrical, glabrous when ripe ; seeds flat, obtuse at both ends with coma.

Fl. & Fr. : November June.

Near Main falls and below Shembagadevi few plants grow wild. The bark is medicinal and the wood is light and soft used in various industries.

2. *Alstonia venenata* R. Br., Mem. Wern. Soc. 1 : 77. 1811 ; Wt., Ic. t. 436. 1841 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 642. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 810. 1923.

Erect, glabrous shrubs, 2-2.5 m high ; branches opposite or whorled. Leaves in whorls, up to 21 × 3.5 cm, oblong-lanceate, membranous, acuminate at apex, cuneate at base ; petioles up to 1 cm long. Flowers showy white in subterminal corymbose cymes. Merocarps 7-13.5 cm long, linear, falcately curved, tapering at both ends, beaked.

Fl. & Fr. : May - February.

Beautiful shrubs above Shembagadevi temple.

3. CATHARANTHUS G. Don

Catharanthus roseus (Linn.) G. Don, Gen. Hist. 4 : 95. 1837 ; Stearn, Lloydia 29 : 196. 1966 ; Markgraf, Blumea 19 : 150. 1971. *Vinca rosea* Linn., Syst. ed. 10 : 944. 1759 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 640. 1882. *Lochnera rosea* (Linn.) Reich., Consp. Regni. Veg. 134. 1828 ; Gamble, Fl. Presid. Madras 2 (5) : 809. 1923.

Erect herbs, 30-60 cm high. Leaves 2.5-4.5 × 2-2.5 cm, obovate, entire, rounded at apex, narrowed at base. Flowers white or pink in axillary cymes. Merocarps 3.5-4 cm long, slender, erect; seeds many, black.

Fl. & Fr. : May February.

A common weed in the plains.

4. *CARISSA* Linn. *nom. gen. cons.*

Carissa carandas Linn., Mant. 57. 1767; Wt., Ic. t. 42 6. 1841; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 630. 1882 (*pro parte*) ; Haines, Indian For. 45 : 375. 1919; Gamble, Fl. Presid. Madras 2 (5) : 804. 1923. *Kalavu*, *Karakka* (Malayalam). *Kala*, *Kalakkay Pesungala* (Tamil).

Armed shrubs, 2-3.5 m high; branchlets with horizontal thorns, 1-3 cm long, from axils. Leaves 3-7.5 × 2-5 cm, elliptic or elliptic-oblong, coriaceous, entire, glabrous, obtuse at apex, cuneate at base, petioles very short. Flowers white or pale in terminal corymbose cymes. Berries ellipsoid, about 2 cm long, reddish-purple.

Fl. & Fr. : January July.

Fairly common in the dry outskirts of the forests between Tiger falls and Main falls and on the way to Tekkumalai.

5. *ERVATAMIA* (DC.) Stapf

Ervatamia heyneana (Wall.) Cooke, Fl. Presid. Bombay 2 : 134. 1904; Gamble, Fl. Presid. Madras 2 (5) : 813. 1923. *Tabernaemontana heyneana* Wall. in Edgw., Bot. Reg. t. 1273, no. 7. 1829 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 647. 1882.

Deciduous trees, 5-7.5 m high. Leaves 4-20 × 2.5-4.5 cm, oblong or oblong-lanceate, glabrous, shortly acuminate at apex, acute at base; petioles up to 2 cm long, dilated at base. Flowers white, fragrant in axillary or terminal dichasial cymes. Merocarps ± 3 cm long, diverging at right angles to the stalk, apex recurved into a beak, yellow when ripe.

Fl. & Fr. : March September.

Rare in the dry forests on the way to Tekkumalai and along the sides of the ravines and path sides to Vaithamalai.

6. *HUNTERIA* Roxb.

Hunteria zeylanica (Retz.) Gardner ex Thw., Enum. Pl. Zeyl. 191. 1860 var. *salicifolia* (Wall. ex DC.) Pichon, Bol. Soc. Brot. 27 : 111. 1953. *Tabernaemontana salicifolia* Wall. ex DC., Prodr. 3 : 376. 1844. *Hunteria lanceolata* DC. in DC., Prodr. 8 : 350. 1844. *H. roxburghiana* Wt., Ic. t. 1294. 1850. *H. corymbosa* Roxb. var. *salicifolia* (Wall. ex DC.)

Hallier f., Jahrb. Hamb. Wiss. Anst. 17, 3 Bieh. : 195. 1900. *H. corymbosa* Roxb. var. *roxburghiana* Gamble, Fl. Presid Madras 2 (5) : 808. 1923. *H. zeylanica* (Retz.) Gardner ex Thw., var. *lanceolata* (Wall. ex DC.) Alston in Trimen, Handb. Fl. Ceylon 6 (suppl.) : 190. 1931.

Glabrous shrubs or small trees, 1.5-4 m high ; terminal branches mostly dischotomous. Leaves 5.5-9 × 1-2.5 cm, narrow, linear-lanceate, shiny above, faint beneath, blunt or bluntly acuminate at apex, acute at base ; petioles 1-2 cm long, slender. Flowers white in terminal cymes. Merocarps 1-2.5 cm long, ovoid, yellow when ripe.

Fl. & Fr. : May-December.

Rare, above Shembagadevi and below Main falls.

7. ICHNOCARPUS R. Br. *nom. gen. cons.*

Ichnocarpus frutescens (Linn.) R. Br. in Ait. f., Hort. Kew ed. 2, 2 : 69. 1811; Wt., Ic. t. 420. 1841; Hook. f. in Hook. f., Fl. Brit. Ind. 2 : 669. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 820. 1923. *Apocynum frutescens* Linn., Sp. Pl. 213. 1753. *Paluvalli* (Malayalam). *Udagodi* (Tamil).

Much branched, twining shrubs, up to 6 m high; young branches fulvous-tomentose. Leaves 3-6.5 × 1.5-3.5 cm, elliptic or lanceate, glabrous above, pubescent or glabrous beneath, acute or acuminate at apex, cuneate or rounded at base; petioles 0.3-0.4 cm long, tomentose. Flowers greenish-white in axillary or terminal paniculate cymes. Merocarps 10-15 cm long, cylindrical, rusty-pubescent when young, more or less glabrous when ripe.

Fl. & Fr. : July February.

Common around Shembagadevi, and in the reserve forests before Tekkumalai.

8. WRIGHTIA R. Br.

Wrightia tinctoria R. Br., Mem. Wrn. Soc. 1 : 47. 1811 ; Wt., Ic. t. 444. 1841 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 653. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 815. 1923. *Ayyapala*, *Icca*, *Irumpala*, *Kotakapala*, *Tontapala* (Malayalam). *Ankudu*, *Cittankudu*, *Palabaranki*, *Palaviri* (Tamil).

Deciduous trees, 6-8 m high; bark scaly, smooth. Leaves 6-13 × 4-6.5 cm, elliptic or elliptic-oblong, glabrous, acuminate at apex, acute or rounded at base; petioles up to 5 cm long. Flowers white, fragrant in terminal dichasial cymes. Merocarps up to 40 cm long, 0.6 cm in diameter, cylindrical, green.

Fl. & Fr. : May December.

Fairly common above Shembagadevi and around Main falls in the humid areas.

87. ASCLEPIADACEAE

- | | |
|---|----------------------|
| 1a. Erect shrubs | <i>Calotropis</i> 1 |
| 1b. Climbing or trailing herbs or shrubs | |
| 2a. Plant without leaves | <i>Sarcostemma</i> 5 |
| 2b. Plant leafy | |
| 3a. Flowers in lax, dischasi ally branched or dense umbel-like cymes, but then paired at nodes | |
| 4a. Calyx lobes acute, glabrous ; corolla mostly purple-brown ; cymes shorter or longer than the leaves | <i>Tylophora</i> 7 |
| 4b. Calyx lobes obtuse, puberulous ; corolla mostly yellowish ; cymes shorter than the leaves | |
| 5a. Cymes compact, often umbel-like ; corolla-lobes about as long as the tube, acute ; leaves broadly-ovate to ovate-lanceate | <i>Gymnema</i> 4 |
| 5b. Cymes rather laxly branched, not umbel-like ; corolla lobes two to several times longer than the tube, obtuse ; leaves ovate-lanceate to lanceate | <i>Secamone</i> 6 |
| 3b. Flowers in cymes, umbellate or raceme-like, always solitary at nodes | |
| 6a. Cymes sessile or subsessile, umbel-like | <i>Tylophora</i> 7 |
| 6b. Cymes peduncled, umbel or raceme-like | |
| 7a. Corolla lobes connate at their tips | <i>Ceropegia</i> 2 |
| 7b. Corolla lobes not connate at their tips | |

- 8a. Corona cup-shaped, free from the staminal column ; leaves frequently with a pair of small roundish leaves in their axils *Cynanchum* 3
- 8b. Corona attached to the staminal column ; leaves without any roundish leaves in their axils
- 9a. Twining herbs or undershrubs ; leaves not cordate or subcordate at base ; style apex 5-lobed or pentagonal *Tylophora* 7
- 9b. Twining woody shrubs ; leaves cordate or sub-cordate at base ; style apex large, not lobed or pentagonal *Wattakaka* 8

1. CALOTROPIS R. Br.

Calotropis gigantea (Linn.) R. Br. in Ait. f., Hort. Kew (ed. 2) 2 : 78. 1911; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 17. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 832. 1923 ; Sant. *et* Irani, Univ. Bombay Bot. Men. no. 4 : 17. 1962. *Asclepias gigantea* Linn., Sp. Pl. 214. 1753. *Yerikku*, *Vellerik*, *Bukam* (Malayalam). *Arkkam*, *Arukkam*, *Erukkalai*, *Velleruku* (Tamil).

Erect shrubs with milky sap, 1-2 m high ; branches terete, woody, covered with appressed cottony pubescence towards apex. Leaves 6-18 × 3-8 cm, broadly-obovate or elliptic-oblong, fleshy, pubescent on both sides, sub-acute or obtuse at apex, cordate at base. Flowers light bluish-white in terminal and axillary cymes. Merocarps 7-10.5 × 2.5-4 cm, fleshy, glabrous.

Fl. & Fr. : Almost throughout the year.

Common in disturbed areas, outskirts of the forests, dry waste places and along roadsides on the way to old Courtallum.

2. CEROPEGIA Linn.

- 1a. Corolla lobes broad, forming a hemispherical or broadly-conical dome over the broadly funnel-shaped mouth of the curved tube *C. elegans* 2
- 1b. Corolla lobes narrow, linear, shorter than the neck of the tube forming a conical, ovoid or beaked crown over the not much dialated mouth of the tube

- 2a. Apex of the corolla lobes forming a beak in bud, later mostly with free lobes ; lobes ciliate within *C. candelabrum* 1
- 2b. Apex of the corolla lobes acute, not beaked in bud, united (rarely free) ; lobes puberulous or pubescent *C. intermedia* 3

1. *Ceropegia candelabrum* Linn., Sp. Pl. 211. 1753; Wt. Ic. t. 33. 1843; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 70. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 857. 1923 ; Huber, Mem. Soc. Brot. 12 : 58. 1958; Sant. *et* Irani, Bull. Bot. Soc. Bengal 12 9. 1958 & in Univ. Bombay Bot. Mem. no. 4 : 29. 1960. *C. biflora* Linn., Sp. Pl. 211. 1753. *C. tuberosa* Roxb., Pl. Corom. 1 : 12, t. 9 1795 ; Hook. f., *loc. cit.*; Gamble, *loc. cit.* *C. elliotii* Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 70. 1883 (*pro parte, non* Wt.). *Nattunattuvalli* (Malayalam).

Slender, twining glabrous herbs; roots tuberous. Leaves 2.5-6 × 0.5-2 cm, ovate, elliptic, obovate, oblong or lanceate, entire tapering to often apiculate at apex, subacute or rounded at base ; petioles 0.5-1.3 cm, grooved on the upper side, puberulous. Flowers greenish-white, striped purple within the tube in lateral umbellate cymes. Merocarps 10-12.5 cm long, linear, tapering to the apex, glabrous.

Fl. & Fr. : July - February.

Fairly common in the outskirts between Main falls and Five falls, on hedges.

2. *Coropegia elegans* Wall. in Crutis, Bot. Mag. t. 3015. 1830 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 68. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 857. 1923 ; Huber, Mem. Soc. Brot. 12 : 72. 1957. *C. mysorensis* Wt., Ic. t. 846. 1844-45 ; Hook. f., *loc. cit.* p. 69 ; Gamble, *loc. cit.* *C. walkeriae* Wt., Ic. t. 1266. 1848 ; Hook. f., *loc. cit.* ; Gamble, *loc. cit.*

Slender, twining, puberulous, undershrubs. Leaves 7-10 × 2.5-4.5 cm, ovate-lanceate or ovate, entire, glabrous, acute or acuminate at apex, rounded or attenuated at base ; petioles 1-2.5 cm long. Flowers blue with purplish-white spots in axillary subumbellate cymes. Merocarps up to 17 cm long, narrow, linear, glabrous, acuminate.

Fl. & Fr. : July February.

Rare along the hedges around Tiger falls in dry areas.

3. *Ceropegia intermedia* Wt. Ic. t. 1263. 1848; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 71. 1883; Gamble, Fl. Presid. Madras 2 (5) : 858. 1923.

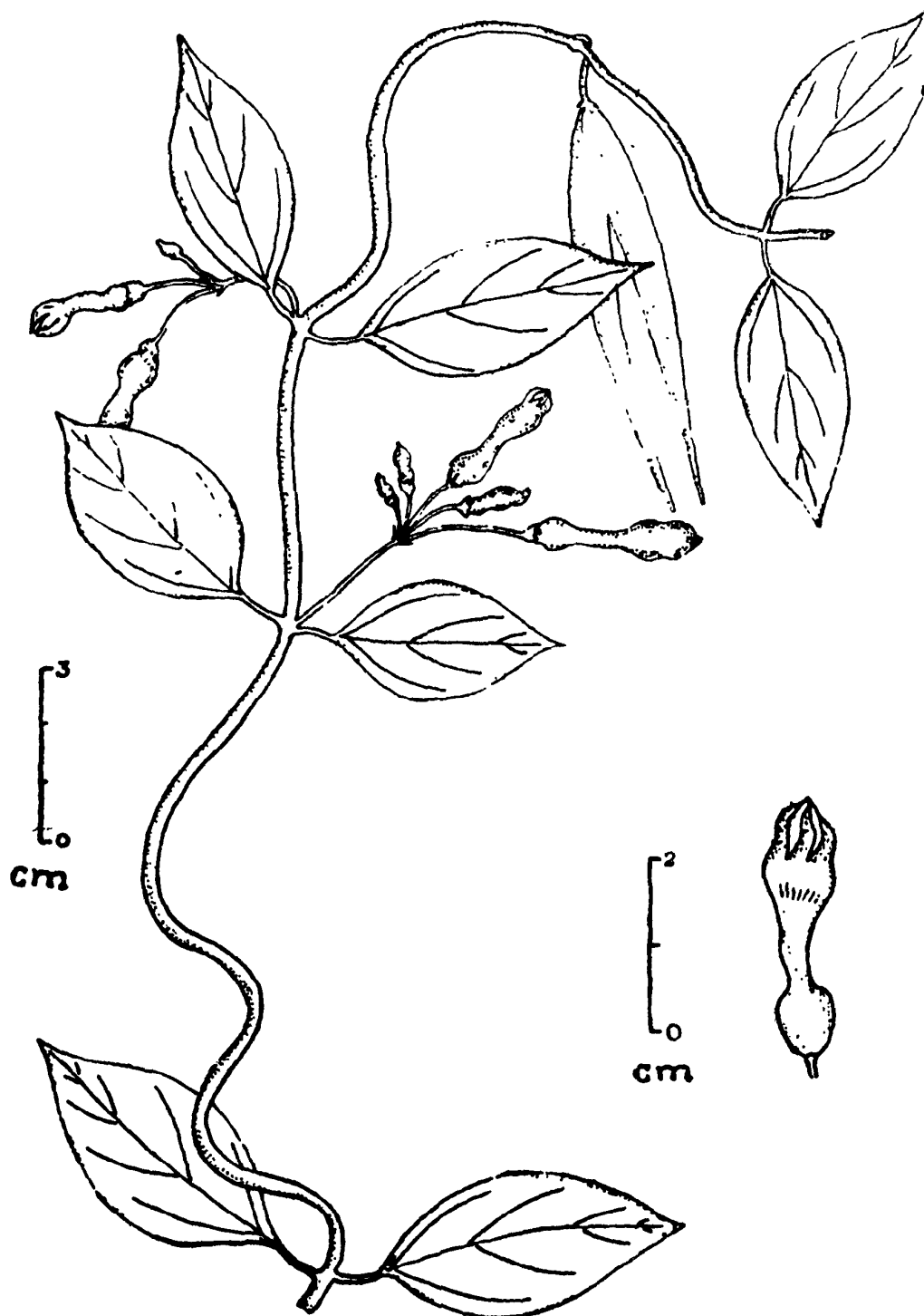


Fig. 5. *Ceropegia intermedia* Wt.

A. Habit, B. Flower.

Slender, twining, fruticose herbs. Leaves $5-12.5 \times 2.5$ cm, elliptic-lanceate or ovate, glabrous, acute or shortly acuminate at apex, obtuse at base; petioles 1-2.5 cm long, slender. Flowers greenish-yellow in few-flowered axillary peduncles. Merocarps up to 10.5 cm long, lanceate at the base.

Fl. & Fr. : July January.

Rare in the dry scattered forest areas around and above Tiger falls.

3. CYNANCHUM Linn.

Cynanchum tunicatum (Retz.) Alston in Trimen Handb. Fl. Ceylon 6 (suppl.) : 194. 1931; Sant. *et* Irani, Univ. Bombay Bot. Mem. no. 4 : 40. 1960. *Periploca tunicata* Retz., Obs. Bot. 2 : 15. 1781. *Cynanchum pauciflorum* R. Br., Mem. Wern. Soc. 1 : 45. 1811; Wt., Ic. t. 354. 1840; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 23. 1883; Gamble Fl. Presid. Madras 2 (5) : 836. 1923. *Asclepias tunicata* Roxb., (Hort. Beng. 20. 1814 *nom. nud.*) Fl. Ind. 2 : 35. 1824.

Twining glabrous herbs; internodes long, slender, terete. Leaves $1.7-5 \times 0.6-2.5$ cm, ovate-oblong, entire, sparsely puberulous above, glabrous beneath, acute or acuminate at apex, cordate at base with rounded lobes; petioles 0.5-2.5 cm long, slender, striated, glabrous. Flowers in axillary subglabrous, umbellate cymes. Merocarps 3.5-5 cm long, lanceate, slender, glabrous.

Fl. & Fr. : November March.

Courtallum (*P.F. Fyson* 5070; *M. Rama Rao's Coll.* 2017, MH).

4. GYMNEMA R. Br.

Gymnema sylvestre (Retz.) R. Br. *ex* Schult. in Roem. *et* Schult., Syst. Veg. 6 : 57. 1820; Wt., Ic. t. 349. 1840; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 29. 1883; Gamble, Fl. Presid. Madras 2 (5) : 838. 1923; Sant. *et* Irani, Univ. Bombay Bot. Mem. no. 4 : 47. 1960. *Periploca sylvestre* Retz., Obs. Bot. 2 : 15. 1781. *Adigam*, *Amudupudbam*, *Aygam*, *Kogilam* (Tamil).

Twining shrubs, up to 3 m high; young branches pubescent. Leaves $3-4.5 \times 1.5-3$ cm, broadly-ovate or ovate-lanceate, subcoriaceous, velvety-pubescent beneath, puberulous above, acute or shortly acuminate at apex, rounded at base; petioles 1-2.5 cm long. Flowers yellowish in

umbel like cymes, paired at nodes. Merocarps 3.5 6.5 × 0.3 0.5 cm, terete, glabrous, acute at apex.

Fl. & Fr. : September February.

Common in Udayathan estate, on the way to Five falls, in dry scattered forest areas on the way to Tekkumalai and along the outskirts of the forest on the way to Old Courtallum.

5. *SARCOSTEMMA* R. Br.

Sarcostemma acidum (Roxb.) Voigt, Hort. Sub. Calc. 542. 1845 ; Sant. et Irani, Univ. Bombay Bot. Mem. no. 4 : 76. 1962. *Asclepias acida* Roxb., Fl. Ind. 2 : 31. 1832. *Sarcostemma brevistigma* Wt. et Arn. in Wt., Contrib. Ind. Bot. 59. 1834 ; Wt., Ic. t. 596. 1842 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 26. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 589. 1923. *Somavalli*, *Somavallari*, *Somam*, *Vayast'ha* (Malayalam). *Kodikkali*, *Comam* (Tamil).

Much branched, leafless, straggling shrubs, 3 5 m long ; stems jointed, terete, ± 0.3 cm in diameter, green or glaucous green, glabrous. Flowers creamy white in terminal many flowered sessile umbels at the apex of short branches. Merocarps 8 11.5 cm long, lanceate, acuminate at apex.

Fl. & Fr. : August January.

Rare, confined to the dry areas at New falls and Old Courtallum.

6. *SECAMONE* R. Br.

Secamone emetica (Retz.) R. Br. ex Schult., Syst. Veg. 6 : 124. 1820 ; Wt., Contrib. Ind. Bot. 60. 1834 & Ic. t. 1283. 1848 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 36. 1883 ; Gambe, Fl. Presid. Madras 2 (5) : 829. 1923. *Periploca emetica* Retz., Obs. Bot. 2 : 14. 1781.

Much branched, twining or straggling shrubs, up to 4 m high. Leaves 3 7.5 × 0.2 0.5 cm, ovate lanceate, or lanceate, glabrous, tapering to an acute apex, acute at base ; main nerve prominent, secondary nerves obscure ; petioles ± 0.5 cm long. Flowers yellow, minute in short puberulous axillary lax cymes. Merocarps 4 - 7.5 cm long, glabrous, green.

Fl. & Fr. : July February.

Rare, confined to the dry outskirts of the forests around Main falls.

7. TYLOPHORA R. Br.

1a. Stem and branches pubescent or rarely puberulous at least when young ; corona processes gibbous below, acuminate at apex or sloping upwards from a rounded base

2a. Leaves thin ; corona lobes gibbous at base, acuminate at apex

T. indica 2

2b. Leaves leathery ; corona lobes sloping upwards from a rounded base

T. subramanii 3

1b. Stem and branches always glabrous ; corona lobes subglobose, not acuminate or narrowed at apex

T. capparidifolia 1

1. *Tylophora capparidifolia* Wt. et Arn. in Wt., Contrib. Ind. Bot. 51. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 41. 1883 ; Gambe, Fl. Presid. Madras 2 (5) : 843. 1923.

Twining shrubs ; stem glabrous, slender. Leaves 3 - 7.5 × 1 2.5 cm, elliptic oblong or lanceate, glabrous, acute or apiculate at apex ; secondary nerves 5 6 pairs, prominent ; reticulation very prominent above forming loops towards the margin ; petioles 0.5 0.8 cm long, glabrous. Flowers minute in sessile or shortly penduncled umbellate cymes with capillary pedicels.

Fl. : July.

Courtallum (*Herb. Robert Wight* 1912, CAL).

2. *Tylophora indica* (Burm. f.) Merr., Philipp. J. Sci. Bot. 19 : 373. 1921 ; Sant. et Irani, Univ. Bombay Bot. Mem. no. 4 : 88. 1962. *Cynanchum indicum* Burm. f., Fl. Ind. 70. 1768. *Asclepias asthmatica* Linn. f., Suppl. 171. 1781. *Tylophora asthmatica* Wt. et Arn. in Wt., Contrib. Ind. Bot. 51. 1834 ; Wt., Ic. t. 1277. 1848 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 44. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 843. 1923. *Vallipala* (Malayalam). *Crangam*, *Kagittam*, *Kaludippalai*, *Kodagam*, *Kuravararam*, *Nayppalai*, *Payppalai*, *Unmattadi* (Tamil).

Twining undershrubs ; roots long, fleshy ; stem pubescent or rarely puberulous. Leaves $3\ 5 \times 2\ 4.5$ cm, ovate or elliptic oblong, glabrous above, pubescent beneath especially when young, acute, obtuse or apiculate at apex, rounded or truncate at base ; petioles up to 1 cm long. Flowers greenish in axillary umbellate cymes ; corona gibbous below, abruptly narrowed at apex. Merocarps $4\ 7.5$ cm long, tapering towards apex.

Fl. & Fr. : February January.

Fairly common during monsoon, along the outskirts of the forests above Chittaruvu, on the way to Five falls and near Old Courtallum falls.

3. *Tylophora subramanii* Henry, Proc. Indian Acad. Sci. 65 (sect. B) 4 : 161. 1967.

Climbing shrubs, 2 3 m high ; stem terete, brownish, pubescent when young, at length glabrate. Leaves variable, up to 15×10 cm, ovate - oblong or ovate or ovate lanceate, entire, leathery, sparingly pubescent on both sides, at length glabrate, acute or shortly acuminate at apex, truncate or subcordate at base ; petioles up to 3.5 cm long, densely hairy to sparsely pubescent. Flowers reddish brown, many, in lateral simple or branched umbellate or racemose cymes ; peduncles stout, hairy ; corona of fleshy, small, dark purple connate lobes, rounded at base and slopping a little upwards to the top of the staminal column, completely adnate to and shorter than the column. Merocarps 10 12 cm long, lanceate, tapering to a fine point at apex, smooth, glabrous ; seeds $1 - 1.2 \times 0.7\ 0.8$ cm, ellipsoid, flattened ; coma 3 3.5 cm long, cottony.

Fl. & Fr. : September October.

Very rare climbers on the way to Old Courtallum in the dry outskirts of the forest.

8. WATTAKAKA Hassk.

Wattakaka volubilis (Linn. f.) Stapf in Curtis, Bot. Mag. sub. t. 8976. 1923. *Asclepias volubilis* Linn. f., Suppl. 170. 1781. *Wattakaka viridiflora* (R. Br.) Hassk., Flora 40 : 99. 1857. *Hoya viridiflora* R. Br., Mem. Wern. Soc. 1 : 27. 1809 ; Wt., Ic. t. 586. 1842. *Dregea volubilis* (Linn. f.) Benth. ex Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 46. 1883 ; Sant. et Irani, Univ. Bombay Bot. Mem. no. 4 : 42. 1960. *Marsdenia volubilis* (Linn. f.) Cooke, Fl. Presid. Bombay 2 : 166. 1904 ; Gamble, Fl. Presid.

Madras 2 (5) : 846. 1923. *Vattakakkakkoti* (Malayalam). *Kurinca*, *Cingittam*, *Kodippalai* (Tamil).

Climbing shrubs, 2-3 m high ; branches glabrous or minutely hairy, pale olive green in younger parts. Leaves $8.5-14 \times 4-10$ cm, broadly-ovate, glabrous or minutely pubescent on both sides, acuminate at apex, rounded or cordate at base ; petioles 0-4.5 cm long. Flowers greenish, in many flowered lateral drooping, pubescent umbellate cymes. Merocarps $6-8 \times 2.5-3$ cm, ovoid, tapering to a blunt apex, brownish yellow tomentose.

Fl. & Fr. : July - February.

Rather common in dry outskirts of the forests above the teak plantations on the way to Five falls.

88. PERIPLOCACEAE

CRYPTOLEPIS R. Br.

- | | |
|--|-------------------------|
| 1a. Main nerves of the leaves many, nearly horizontal and parallel meeting in an intramarginal vein | <i>C. buchananii</i> 1 |
| 1b. Main nerves of the leaves comparatively few (5-6 pairs), curved upwards ; intramarginal veins absent | <i>C. grandiflora</i> 2 |

1. *Cryptolepis buchananii* Roem. et Schult., Syst. Veg. 4 : 409. 1819 ; Wt., Ic. t. 494. 1841 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 5. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 826. 1923 ; Sant. et Irani, Univ. Bombay Bot. Mem. 4 : 91. 1960. *C. reticulata* (Roxb.) K. Schum. in Engl. & Prantl, Pflanzenfam. (ed. 1) 4 (2) : 219. 1895. *Nerium reticulatum* Roxb. (Hort. Beng. 19. 1814 *nom. nud.*) Fl. Ind. 2 : 8. 1821.

Twining shrubs, 3-4 m long ; stem glabrous, bark peeling off as thin flakes. Leaves $4.5-15 \times 3-6$ cm, elliptic-oblong, coriaceous, glabrous, whitish beneath, shortly acuminate at apex, acute or rounded at base ; main nerves numerous, at right angles to the midrib uniting in an intramarginal vein ; petioles 0.5-1 cm long. Flowers greenish-yellow in short axillary paniculate cymes. Merocarps 3-9 cm long, glabrous, tapering to the apex ; seeds with silvery coma.

Fl. & Fr. : March - January.

Rather common in the dry areas of the forest below New falls and in the Teak plantations on the way to Five falls.

2. **Cryptolepis grandiflora** Wt., Ic. t. 831. 1844 45 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 5. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 826. 1924.

Slender, twining, undershrubs ; stem and branches glabrous. Leaves 4 11.5×2.5 cm, oblong or elliptic, glabrous above, pale beneath, obtuse and shortly mucronate at apex, ovate or rounded at base ; main nerves of the leaves 5-6 pairs, usually curved upwards ; intramarginal veins absent. Flowers yellow, large in long axillary cymes. Merocarps up to 10 cm long, linear-lanceate ; seeds with silky coma.

Fl. & Fr. : July - February.

Rare in the Tiger falls area, often climbing on hedge plants.

89. SOLANACEAE

- 1a. Berries enveloped in an enlarged bladder-like calyx ;
anthers not connivent into a cone

Physalis 2

- 1b. Berries not enveloped in an enlarged bladder-like calyx ;
anthers connivent into a cone

- 2a. Calyx usually 10, rarely 5-partite often truncate
without lobes ; apical pores of the anther-thecae
facing inwards and often oblique ; anthers ellipsoid

Lycianthes 1

- 2b. Calyx always 5-teethed ; apical pores of the anther-
thecae facing upwards or outwards ; anthers
elongated

Solanum 3

1. LYCIANTHES (Dun.) Hassl. *emend.* Bitter

Lycianthes bigeminata (Nees) Bitter, Abh. Naturw. Ver. Bermen 24 : 480. 1920 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 656. 1948. *Solanum bigeminata* Nees, Trans. Linn. Soc. Lond. 17 : 42. 1834 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 231. 1883. *S. laeve sensu* Clarke in Hook. f., Fl. Brit. Ind. 4 : 231. 1883 (*non* Dunal, 1816) ; Gamble, Fl. Presid. Madras 2 (5) : 936. 1923.

Straggling undershrubs ; branches quadrangular, zig-zag, pubescent when young. Leaves 10 - 25 $\times$ 3 - 7.5 cm, elliptic-lanceate, thin, entire, setose-hairy on both sides, acuminate at both ends ; petioles 2 - 2.5 cm long, longitudinally striated. Flowers in axillary sessile umbels ; flowering calyx cup-shaped, setulose. Berries up to 1 cm in diameter, globose, glabrous.

Fl. & Fr. : February.

Courtallum (*Robert Wight s.n.*, CAL).

2. *PHYSALIS* Linn.

Physalis minima Linn., Sp. Pl. 183. 1753 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 238. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 939. 1923. *Physalis pubescens* Wt., Ic. t. 1 : 166. 1838.

Erect, suberect or prostrate succulent herbs, 15-40 cm high ; branches hispid, striated, mostly dichotomous. Leaves 1.5-3.5 × 0.7-2.5 cm, ovate or narrowly elliptic, entire or distantly and shallowly serrate, glabrous, acute at apex, acute or obtuse at base ; petioles 9.5-10.5 cm long, glabrous. Flowers light yellow, solitary, axillary. Berries up to 1 cm long, bladder-like, enclosed in an inflated calyx.

Fl. & Fr. : August January.

A weed, common in the waste places at Tiger falls.

3. *SOLANUM* Linn.

1a. Plants armed with prickles

2a. Leaves sinuately or pinnatifidly lobed

3a. Flowers white ; stem densely hairy or fulvous tomentose

4a. Berries up to 1 cm in diameter ; cymes corymbose, many-flowered

S. torum 8

4b. Berries 2-3.5 cm in diameter ; cymes not corymbose, few-flowered

S. ferox 2

3b. Flowers blue, bluish-violet or purple ; stem pubescent or somewhat glabrate when mature

5a. Prickles yellow, long and straight

S. surattense 7

5b. Prickles not yellow, short and recurved

6a. Calyx lobes lanceate ; racemes few flowered

S. melongena 5

6b. Calyx lobes triangular ; racemes many flowered

S. indicum 4

2b. Leaves not lobed

S. giganteum 3

1b. Plants unarmed

- 7a. Annual herbs ; branches glabrous *S. nigrum* 6
- 7b. Perennial shrubs or undershrubs ; branches pubescent or densely stellate-hairy
- 8a. Plants densely stellate-hairy ; leaves entire ; flowers interterminal dichotomous corymbose cymes *S. erianthum* 1
- 8b. Plants sparsely stellate-pubescent ; leaves repand-sinuate ; flowers in extra-axillary racemose cymes. *S. vagum* 9

1. *Solanum erianthum* D. Don, Prodr. Fl. Nep. 96. 1825 ; Roe, Taxon 17 : 176. 1968 & in Brittonia 24 : 251. 1972. *S. verbascifolium* auct. non Linn. 1753 ; Wt., Ic. t. 1398. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 230. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 936. 1923 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 653. 1948 ; Adelbert, Blumea 6 : 330. 1948. *Cunta*, *Ericunta*, *Malankunda* (Malayalam). *Anaicundai*, *Cundai* (Tamil).

Unarmed, stellate-hairy shrubs or trees. Leaves 10-20 × 5-15 cm, elliptic-lanceate, entire velvety-pubescent above, densely woolly beneath, acuminate at apex, acute or subrounded at base ; petioles 2-3.5 cm long. Flowers in terminal dichotomous corymbose cymes. Berries. 0.5-1 cm in diameter, globose, stellate-hairy.

Fl. & Fr. : November March.

Courtallum (*Robert Wight* 1570, 2014, CAL).

2. *Solanum ferox* Linn., Sp. pl. ed. 2 : 267. 1762 ; Wt., Ic. t. 1399. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 233. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 937. 1923 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 653. 1948 ; Adelbert, Blumea 6 : 328. 1948.

Armed, erect or straggling herbs ; stems densely clothed with long, stalked, stellate hairs. Leaves 15-40 × 10-20 cm, broadly-elliptic with few triangular lobes, softly stellate-hairy on both sides, prickly on the nerves beneath, cordate, acute or unequally sided at base ; petioles 3.5-6.5 cm long, prickly and densely fulvous hairy. Flowers solitary or in 2-6 flowered, leaf-opposed, densely hairy cymes. Berries up to 3.5 cm in diameter, globose, densely long fulvous hairy.

Fl. & Fr. : November - August.

Courtallum (*Robert Wight* 585, CAL).

3. **Solanum giganteum** Jacq., Collect. 4 : 125. 1790 ; Wt., Ic. t. 893. 1844-45 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 233. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 937. 1923 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 653. 1948. *Peyccundai*, *Anaiccundai* (Tamil).

Armed shrubs ; branches stellate-tomentose. Leaves $12.5-23 \times 3-5$ cm, oblong-lanceate, entire glabrous above when mature, tomentose beneath, acute at apex, tapering into the petiole at base ; petioles 2.5-3.5 cm long. Flowers bluish-purple in paniculately corymbose cymes. Berries up to 1 cm in diameter, globose, glabrous, red.

Fl. & Fr. : October March.

Courtallum (*Robert Wight* 583, CAL).

4. **Solanum indicum** Linn., Sp. Pl. 187. 1753 ; Wt., Ic. t. 346. 1840 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 234. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 938. 1923 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 653. 1948. *Cherukunda*, *Cheruvazhuthanai* (Malayalam). *Ciruvalludalai*, *Kondal*, *Karimulli* (Tamil).

Armed, deciduous shrubs or undershrubs up to 3 m high ; branches minutely stellate-hairy in young parts, glabrate when mature. Leaves up to $13.5-8.5$ cm, ovate or ovate-oblong, sinuately to deeply lobed, sparsely stellate-hairy above, stellate-woolly beneath, acute at apex, rounded or unequal at base, prickly on the nerves. Flowers bluish-violet in extra-axillary racemes. Berries 0.6-1 cm in diameter, globose, orange yellow when ripe.

Fl. & Fr. : Greater part of the year.

Rare, along the roadsides to Five falls and around Courtallum township.

5. **Solanum melongena** Linn., Sp. pl. 186. 1753 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 235. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 937. 1923.

Very prickly herbs, prostrate or erect, 30-60 cm high ; stems grey-pubescent, slender. Leaves $6.5-8 \times 3.5-7$ cm, ovate or ovate-oblong, unequally lobed, hairy on both sides, acute at apex, rounded at base ; petioles 2.5-5 cm long. Flowers blue in extra-axillary racemes. Berries up to 1 cm in diameter, globose, yellow.

Fl. & Fr. : October March.

Wild, in the scrub and waste places around Tiger falls.

6. **Solanum nigrum** Linn., Sp. Pl. 186. 1753 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 229. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 936. 1923 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 652. 1948.

Unarmed herbs, 1-1.5 m high ; branches glabrous. Leaves 2.5×1.3 cm, ovate-lanceate, slightly lobed or entire, glabrous, acute at both ends ; petioles 1.5-2 cm long. Flowers white, in axillary long peduncled umbellate cymes. Berries ±0.5 cm in diameter, globose, deep blue when ripe.

Fl. & Fr. : September - March.

Common in the cleared areas of Tekkumalai and also around Main falls.

7. **Solanum surattense** Burm. f., Fl. Ind. 57. 1768 (excl. syn. Pluk. *et* Raj.) ; Sant., Bull. Bot. Surv. India 3 : 20. 1961 ; Venkatareddi, Bull. Bot. Surv. India 11 : 209. 1969. *S. xanthocarpum* Schard. ex Wendl., Sert. 1 : 8, t. 2. 1795 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 236. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 938. 1923 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 654. 1948.

Prostrate or diffuse armed herbs, up to 60 cm high ; branches pubescent ; prickles yellow, 1-2 cm long, straight. Leaves 10-15×3-5 cm, pinnatifid, prickly, acute at both ends ; petioles 1-2 cm long, pubescent, grooved. Flowers blue in short racemes. Berries 1-2 cm across, globose.

Fl. & Fr. : December - June.

A weed in the outskirts and waste places, more common on the way to Five falls.

8. **Solanum torvum** Sw., Prodr. Deser. Veg. 47. 1788 ; Wt., Ic. t. 345. 1838 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 234. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 937. 1923 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 654. 1948.

Armed shrubs, 2-3 m high ; branches stellate-tomentose. Leaves 5.5-13.5 × 3-8.5cm, subovate, shallowly lobed, stellate-hairy above, fulvous-tomentose beneath, acute or shortly acuminate at apex, acute, rounded or subcordate at base. Flowers white in axillary or extra-axillary, many flowered, stellate-tomentose, corymbose cymes. Berries 0.6-0.8 cm in diameter, globose, smooth, deep yellow when ripe.

Fl. : October - June.

Fairly common in the cleared areas of the forests at Takkumalai and along the forest boundaries on the way to Five falls.

9. *Solanum vagum* Heyne ex Nees, Trans. Linn. Soc. Lond. 17 : 48. 1834 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 230. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 936. 1923.

Unarmed spreading shrubs, 1-2.5 m high ; branches sparsely white stellate-pubescent. Leaves 6.5-14×2-5 cm, elliptic-lanceate, repand-sinuate, glabrescent above, sparsely stellate-pubescent beneath, acute or shortly acuminate at apex, acute or narrowed at base. Flowers white in extra-axillary pedunculate racemose cymes. Berries 0.6-0.7 cm in diameter, globose, red when ripe.

Fl. & Fr. : September January.

Common on the way to Five falls, above Shembagadevi and at Tekkumalai.

90. CONVOLVULACEAE

1a. Pollen spinulose

2a. Calyx much enlarged in fruit, completely enclosing it when ripe ; leaf blades with minute black dots (glands) beneath

Stictocardia 7

2b. Calyx enlarged or not enlarged in fruit, but not completely enclosing the ripe fruits ; leaf blades without black dots (glands) beneath

3a. Capsules thin-walled, valvular, or irregularly dehiscent

Ipomoea 4

3b. Capsules leathery, fleshy or woody, indehiscent

Argyreia 1

1b. Pollen not spinulose

4a. Styles absent ; stigma 1, conical or subglobose, 5-10 rayed

Erycibe 2

4b. Styles present, sometimes very short ; stigma(s) not conical, or subglobose or 5-10 rayed

5a. Styles 2, free or united at base

Evolvulus 3

5b. Style 1, entire or with 2 minute branches

6a. Corolla without a purple centre ; capsules circumscissile, the upper part of the pericarp separating from the lower part and from the endocarp

Operculina 6

6b. Corolla with a purple centre ; capsules valvular or more or less irregularly dehiscent

Merremia 5

1. ARGYREIA LOUR.

1a. Stem yellowish-tomentose ; petioles 2.5-4 cm long *A. osyrensis* var. *aggregata* 2

1b. Stem silky-hairy ; petioles 10-12 cm long

A. nervosa 1

i. *Argyreia nervosa* (Burm. f.) Bojer, Hort. Maurit. 224. 1837 ; Ooststr., Blumea 5 : 304. 1943 & ibid. 6 : 338. 1950 ; Hoogland, Blumea 7 : 181. 1952. *Convolvulus nervosus* Burm. f., Fl. Ind. 48, t. 20. f. 1. 1768. *Argyreia speciosa* Sweet, Hort. Brit. 284. 1827 ; Wt., Ic. t. 851. 1844-45 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 185. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 907. 1923. *Samudrapacha Samudrapala* (Malayalam). *Anbagar, Kamuttiracogi* (Tamil).

Twining herbs or undershrubs ; stem cylindrical, silky-hairy. Leaves 10-25 × 8-22 cm, ovate, entire, glabrous above, villous beneath, acute at apex, cordate at base ; petioles 10-12 cm long, hairy, glandular at the tip. Flowers large, purple, in axillary few-fid cymes. Capsules $\pm$ 2 cm across, spheroid.

Fl. & Fr. : August October.

Fairly common along the hedges in the forest outskirts on the way to Five falls.

2. *Argyreia osyrensis* (Roth) Choisy var. *aggregata* (Roxb.) K.K.N. Nair *comb. et stat. nov.* *Lettsomia aggregata* Roxb. (Hort. Beng. 13. 1814 *nom. nud.*) Fl. Ind. 2 : 75. 1824 ; Wt., Ic. t. 1359. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 191. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 910. 1923. *Argyreia aggregata* (Roxb.) Choisy, Mem. Soc. Phys. Geneve 6 : 427. 1893.

Climbing shrubs ; stems yellowish tomentose. Leaves 4.5-8.5 × 2.5-5 cm, ovate, glabrous above, white or yellowish tomentose beneath, obtuse at apex, cordate at base ; main nerves prominent beneath ; petioles 2.5-4 cm long, tomentose, grooved. Flowers pink in terminal or axillary capitate cymes. Berries $\pm$ 1 cm in diameter, globose, smooth, red, surrounded by persistent, silky tomentose calyx.

Fl. & Fr. : October March.

Fairly common in the dry outskirts of the forest on the way to Old Courtallum, below Shembagadevi and Five falls.

Notes : van Ooststrom (Blumea 5 : 380. 1943) treated the species *Argyreia osyrensis* (Roth) Choisy as a synonym of *Argyreia aggregata* (Roxb.) Choisy. But the latter name refers to the Peninsular Indian species with fully glabrous upper surface of the leaves whereas in *A. osyrensis* plants the leaves are tomentose on their upper surface. Later Ooststrom (Fl. Males. 1, 4 : 508. 1953) segregated the typical *A. aggregata* from *A. osyrensis* with a note : They are, most probably, not specifically distinct. Examination of the specimens belonging to both the taxa at Central

National Herbarium and a critical study of the protologue of *A. aggregata* (i.e. *Lettsomia aggregata* Roxb.) shows that van Ooststrom (*loc. cit.* 1953) is quite reasonable in giving the comment on the doubtful status of the taxon and that the separate specific rank of *A. aggregata* is not justifiable ; the only character by which the species *A. aggregata* differs from *A. osyrensis* is the fully glabrous upper surface of the leaves. Hence the species *A. aggregata* is reduced here to a variety under *A. osyrensis*.

2. ERYCIBE Roxb.

Erycibe paniculata Roxb., Pl. Corom. 2 : 31, t. 159. 1798 ; Wt., Ill. Ind. Bot. t. 226. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 180. 1883 (excl. syn. *E. rheedii* Bl.) ; Gamble, Fl. Presid. Madras 2 (5) : 930. 1923 ; Hoogland, Blumea 7 : 352. 1953. *E. wightiana* Garh., Cat. Pl. Bombay & Vicin. 137. 1839 ; Gamble, *loc. cit.* *E. paniculata* Roxb. var. *wightiana* Clarke in Hook. f., Fl. Brit. Ind. 4 : 181. 1883. *Irumpiyathali* (Malayalam).

Twining shrubs or lianas : branches flexuose, reddish-brown tomentose when young. Leaves 7-12.5 × 3-5 cm, elliptic-oblong, entire, glabrous, leathery when dry, acuminate at apex, acute at base ; petioles ± 0.5 cm long, stout. Flowers yellowish, fragrant in mostly terminal tomentose panicles. Berries ± 1 cm long, pulpy when ripe.

Fl. & Fr. : November - March.

Rare at Main falls, along the sides of the stream.

3. EVOLVULUS Linn.

Evolvulus alsinoides (Linn.) Linn., Sp. Pl. ed. 2 (1) : 392. 1762 ; Wt., Ill. Ind. Bot. t. 168. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 220. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 923. 1923. *Convolvulus alsinoides* Linn., Sp. Pl. 157. 1753.

Spreading herbs ; branches slender, densely hairy. Leaves 0.6-1.5 × 0.5-0.8 cm, oblong-lanceate, ovate or sub-orbicular, entire, densely silky-hairy, apiculate at apex, acute at base. Flowers light blue, solitary or in pairs, axillary. Capsules 0.3-0.4 cm in diameter, globose.

Fl. & Fr. : October - February.

A weed in the T.B. Campus at Courtallam.

4. *IPOMOEA* Linn.

- 1a. Corolla salver-shaped ; sepals aristate *I. hederifolia* 2
- 1b. Corolla campanulate ; sepals not aristate
 - 2b. Leaves pedate with 5-7 lobes *I. cairica* 1
 - 2b. Leaves not pedate, sometimes lobed
 - 3a. Leaves lobed
 - 4a. Leaves deeply and equally bilobed at apex ;
venation prominently parallel *I. pescaprae* 5
 - 4b. Leaves palmately 3-lobed ; venation digitate
at the base and reticulate *I. nil* 3
 - 3b. Leaves not lobed
 - 5a. Stem slender ; calyx lobes acute or apiculate,
ovate ; seeds velvety *I. obscura* 4
 - 5b. Stem robust ; calyx lobes not acute or apicu-
late, but linear or orbicular ; seeds villous
with long hairs
 - 6a. Branches yellowish hairy ; sepals linear *I. sinensis* 6
 - 6b. Branches glabrous ; sepals orbicular *I. staphylina* 7

1. *Ipomoea cairica* (Linn.) Sweet, Hort. Brit. 287. 1827 ; Gamble, Fl. Presid. Madras 2 (5) : 918. 1923 ; Ooststr., Blumea 3 : 542. 1939 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 348. 1947. *Convolvulus cairicus* Linn., Syst. ed. 10. 922. 1759. *Ipomoea palmata* Forssk., Fl. Aegypt. Arab. 43. 1775 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 214. 1883.

Twining herbs, up to 2.5 m high ; branches wiry, glabrous. Leaves palmately pedate, 5-7 lobed, the middle one largest, elliptic-lanceate, up to 3 × 1 cm, mucronate at apex, narrowed at base ; petioles 3-4.5 cm long, slender. Flowers pinkish, solitary axillary. Capsules 1-1.5 cm long, ovoid, glabrous.

Fl. & Fr. : October-April.

Common in the outskirts of the forest above Courtallum township.

2. *Ipomoea hederifolia* Linn., Syst. ed. 10 : 925. 1759 ; O. Donell, Lilloa 29 : 45. 1959. *Quamoclit phoenicea* (Roxb.) Choisy, Convol. Orient. 51, t. 1, f. 1. 1833 & in DC., Prodr. 9 : 336. 1845 ; Gamble, Fl. Presid. Madras 2 (5) : 919. 1923. *Ipomoea phoenicea* Roxb., Fl. Ind. 2 : 92. 1824. *I. coccinea* Clarke in Hook. f., Fl. Brit. Ind. 4 : 199. 1883 (*non* Linn.). *Suryakanti* (Malayalam).

Twining herbs, 3-4 m high ; branches slender, glabrous. Leaves 5-7.5 × 3-4.5 cm, ovate cordate, entire, acute at apex ; petioles 3-5 cm long, slender, glabrous. Flowers scarlet in axillary few flowered cymes. Capsules ± 0.5 cm in diameter with persistent, thin, transparent septa.

Fl. & Fr. : November - March.

Very common along the sides of Chittar in Tekkumalai at higher altitudes.

3. *Ipomoea nil* (Linn.) Roth, Cat. Bot. 1 : 36. 1797 ; Ooststr., Blumea 3 : 497. 1940 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 347. 1947 ; Shinnars, Taxon 14 : 231. 1965. *Convolvulus nil* Linn., Sp. Pl. ed. 2 : 219. 1762. *Ipomoea hederacea auct. plur. (non Jacq.)* ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 199. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 919. 1923. *Cirikki, Kakattom* (Tamil).

Slender, creeping or climbing herbs ; stem sparsely villous. Leaves palmately 3-lobed, up to 14 cm long, sparsely hairy above and beneath, cordate at base : lobes ovate acuminate ; petioles up to 9 cm long, slender, scattered hairy. Flowers blue or pink, solitary, axillary.

Fl. : November - December.

Common creepers in the waste places.

4. *Ipomoea obscura* (Linn.) Ker. Gawl., Bot. Reg. 3 : t. 239. 1817 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 207. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 916. 1923. *Convolvulus obscurus* Linn., Sp. Pl. ed. 2 : 220. 1762.

Twining herbs, 2-3 m high ; stem slender, sparsely hairy. Leaves 2.5-6 × 1.5-5 cm, ovate, thin, entire, glabrous, subacute at apex, cordate at base. Flowers greenish violet in axillary cymes. Capsules ± 0.8 cm in diameter, ovoid, subacute, glabrous.

Fl. & Fr. : November - January.

Rare, in the plains of Courtallum and also along hedges in Tekkumalai.

5. *Ipomoea pes-caprae* (Linn.) R. Br., Tuckey Narr. Exped. Zaire 477. 1818 ; Gamble, Fl. Presid. Madras 2 (5) : 917. 1923 ; Ooststr., Blumea 3 : 532. 1940 ; Sant., J. Bombay Nat. Hist. Soc. 47 : 347. 1947 ; William T. Stearn, Taxon 10 : 238. 1961. *Convolvulus pes-caprae* Linn., Sp. Pl. 1 : 159. 1753. *Ipomoea biloba* Forssk., Aegypt. Arab. 44. 1775 ;

Clarke in Hook. f., Fl. Brit. Ind. 4 : 212. 1883. *Atampa*, Cuvattampu (Malayalam). *Adambu*, *Adappangodi*, *Attukal* (Tamil).

Prostrate herbs, rooting at nodes ; stem green glabrous. Leaves 3 5.5 × 5 6.5 cm, deeply bilobed, thick, fleshy, glabrous, deep green above, pale beneath, prominently parallel veined with two glands at the base ; petioles 3 8 cm long, hollow or spongy inside. Flowers pink in small axillary cymes. Capsules ovoid, glabrous.

Fl. & Fr. : March - July.

Very gregarious on the deltas below Main falls.

6. *Ipomoea sinensis* (Desr.) Choisy, Mem. Soc. Phys. Geneve 6 : 459. 1833 ; Verdcourt. Kew Bull. 1958 : 204. 1958. *Convolvulus sinensis* Desr. in Lamk., Enc. Meth. Bot. 3 : 557. 1791. *Ipomoea calycina* (Choisy) Clarke in Hook. f., Fl. Brit. Ind. 4 : 201. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 915. 1923.

Twining shrubs ; stem slender, yellowish hairy. Leaves 6 10.5 × 4 8.5 cm, ovate, hairy on both sides, acuminate at apex, cordate at base ; petioles 2.5 7.5 cm long, slender, hairy. Flowers deep lilac in few flowered axillary cymes. Capsules up to 1.5 cm long, ovoid, deflexed.

Fl. & Fr. : August - December.

Common on rocks at Five falls.

7. *Ipomoea staphylina* Roem. et Schult., Syst. Veg. 4 : 249. 1819 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 210. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 917. 1923 ; Sanj., J. Bombay Nat. Hist. Soc. 47 : 347. 1947.

Stout, straggling or climbing shrubs, 3 - 4 m high ; branches glabrous. Leaves 7 10.5 × 5.5 7 cm, ovate or ovate deltoid, entire, glabrous, obtusely acute at apex, truncate or cordate at base ; petioles 4 - 7.5 cm long. Flowers white and purple in the tube, in axillary lax panicles shorter than the leaves. Capsules up to 1 cm long, ovoid with persistent sepals.

Fl. & Fr. : October - March.

Fairly common on the way to Old Courtallum along the dry outskirts.

5. *MERREMIA* Dennst. *emend.* Hallier f. *nom. gen. cons.*

- 1a. Leaves digitate with 5-leaflets, entire *M. aegyptica* 1
 1b. Leaves entire, crenate or at the most 3-lobed
 2a. Corolla pilose at the upper portion of the mid petaline bands *M. umbellata* 3
 2b. Corolla fully glabrous, sometimes with minute glands *M. tridentata* 2

1. *Merremia aegyptica* (Linn.) Urb., Symb. Antill. 4 : 505. 1910 ; Gamble, Fl. Presid. Madras 2 (5) : 928. 1923 ; Ooststr., Blumea 3 : 329. 1939. *Ipomoea aegyptica* Linn., Sp. Pl. 162. 1753. *I. pentaphylla* (Linn.) Jacq., Collect. 2 : 287. 1788 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 202. 1883. *Convolvulus pentaphyllus* Linn., Sp. Pl. 223. 1762.

Climbing herbs ; branches thinly hirsute. Leaves digitate ; leaflets 5, 4.5 - 7.5 × 1.5 - 3 cm, lanceate, entire, hirsute, acute at both ends ; petioles 3 - 5 cm long. Flowers in long lax dichotomous cymes with yellow strigose hairs. Capsules 0.5 - 0.8 cm long, ovoid, papery.

Fl. & Fr. : December.

Courtallum (*Roma Rao's Coll.* 2071, CAL).

2. *Merremia tridentata* (Linn.) Hallier f., Bot. Jahrb. 16 : 552. 1893 ; Gamble, Fl. Presid. Madras 2 (5) : 928. 1923 ; Ooststr., Blumea 3 : 315. 1939. *Convolvulus tridentatus* Linn., Sp. Pl. 157. 1753. *Ipomoea tridentata* Roth ex Roem. et Schult., Arch. Bot. 1 (3) : 38. 1798 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 205. 1883.

Prostrate herbs, 15 - 30 cm long ; base woody ; branches slender, angular, glabrous. Leaves up to 2.5 × 0.7 cm, linear hastate, glabrous, acute at apex, deeply emarginate, 3 - toothed, basal tooth auricled. Flowers pale yellow, solitary, axillary. Capsules 0.4 cm in diameter, globose ; seeds 4, trigonous.

Fl. & Fr. : March - October.

Common in the dry rocky areas around Main falls.

3. *Merremia umbellata* (Linn.) Hallier f., Bot. Jahrb. 16 : 552. 1893 ; Gamble, Fl. Presid. Madras 2 (5) : 928. 1923 ; Ooststr., Blumea 3 : 333. 1939. *Convolvulus umbellatus* Linn., Sp. Pl. 155. 1753. *Ipomoea cymosa* Roem. et. Schult., Syst. Veg. 4 : 241. 1819 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 211. 1883. *Vayaravalli* (Malayalam).

Twining undershrubs, reaching 3-4 m high ; branches soft hairy or glabrous. Leaves 3-6 × 2.5-3.5 cm, ovate or oblong-lanceate, entire, glabrous above, pubescent beneath, acute at apex, rounded, cordate or hastate at base ; petioles 2-4.5 cm long. Flowers white, showy in axillary umbellate cymes. Capsules up to 0.8 cm long, subglobose.

Fl. & Fr. : September - March.

Fairly common in the dense forests at New falls and along the sides of the ravines at Vaithamali.

6. OPERCULINA Silva Manso

Operculina turpethum (Linn.) Silva Manso, Enum. Subst. Bras. 16. 1836 ; Gamble, Fl. Presid. Madras 2 (5) : 929. 1923 ; Ooststr., Blumea 5 : 383. 1943. *Convolvulus turpethum* Linn., Sp. Pl. 155. 1753. *Ipomoea turpethum* (Linn.) R. Br., Prodr. 485. 1810 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 212. 1883.

Twining shrubs ; stem much twisted, pubescent, angled and winged. Leaves 4.5-10 × 1-4.5 cm, ovate or oblong, entire or lobed, pubescent on both sides, subacute or mucronate at apex, truncate or cordate at base ; petioles 1-2 cm long, pubescent. Flowers white in axillary few flowered cymes. Capsules ± 1 cm in diameter, globose, glabrous or slightly pubescent.

Fl. & Fr. : November - March.

Common along the hedgs on the way to Five falls.

7. STICTOCARDIA Hallier f.

Stictocardia tillifolia (Desr.) Hallier. f., Bot. Jahrb. 18 : 159. 1894 ; Gamble, Fl. Presid. Madras 2 (5) : 904. 1923 ; Ooststr., Blumea 5 : 346, f. 1. g h. 1943. *Convolvulus tiliifolius* Desr. in Lamk., Enc. Meth. Bot. 3 : 544. 1789. *Argyreia tiliifolia* (Desr.) Wt., Ic. t. 1358. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 184. 1883.

Climbing shrubs ; branches pubescent. Leaves 2.5-9 cm in diameter, ovate-cordate, glabrous above, glabrescent or hairy beneath, apiculate, obtuse or emarginate at apex ; petioles 3-5.5 cm long. Flowers on 1-3 flowered axillary peduncles. Fruits indehiscent, enclosed within the accrescent calyx.

Fl. & Fr. : February.

Courtallum (*Herb. Robert Wight Proper s. n.*, CAL).

91. HYDROPHYLLACEAE

HYDROLEA Linn. *nom. gen. cons.*

Hydrolea zeylanica (Linn.) Vahl, Symb. Bot. 2 : 46. 1791 ; Wt., Ic. t. 601. 1843 ; Dalz. *et* Clarke in Hook. f., Fl. Brit. Ind. 4 : 133. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 884. 1923 ; Subr., Aquat. Angio. 27. 1962. *Nama zeylanica* Linn., Sp. Pl. 226. 1753.

Aquatic or semi aquatic herbs, up to 45 cm high ; stem succulent, slender, rooting at lower nodes. Leaves $2.5 - 6.5 \times 0.3 - 1.6$ cm, lanceate, membranous, entire, glabrous, acute at apex, tapering at base ; petioles very short. Flowers blue in terminal racemes or cymes. Capsules about 1.5×1 cm, ellipsoid, enclosed in the calyx.

Fl. & Fr. : November - February.

Common along the sides of the stream below Main falls.

92. BORAGINACEAE

- 1a. Flowers in spikes which are sometimes 1-sided ; styles 2,
distinct from base or slightly cohering upwards

Coldenia 1

- 1b. Flowers in scorpioid cymes ; style single

Hellotropium 2

1. COLDENIA Linn.

Coldenia procumbens Linn., Sp. Pl. 125. 1753 ; Clarke in Hook. f., Fl. Brit. Ind. 152. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 893. 1923 ; Kazmi, J. Arnold Arb. 51 : 148. 1970.

Procumbent herbs ; stems trailing, white - silky. Leaves $1 - 3 \times 0.5 - 2$ cm, ovate - oblong, crenate - serrate, crispid, shaggy, obtuse at apex, obtuse or acute at base ; petioles $0.5 - 1.2$ cm long, hairy. Flowers white, sessile in axillary spikes, the upper sometimes 1 - sided. Drupes pyramidal of 4 subconnate, 1 - seeded pyrenes.

Fl. & Fr. : April - July.

Common on the way to Five falls in the dried bottom of the ponds during summer.

2. HELIOTROPIUM Linn.

Heliotropium scabrum Retz., Obs. Bot. 2 : 8. 1781 ; Wt., Ic. t. 1392. 1848 ; Clarke in Hook. f., Brit. Ind. 4 : 152. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 897. 1923.

Erect or procumbent herbs, up to 30 cm long ; branches green, hairy. Leaves $0.5 \times 1.5 \times 0.4 - 0.6$ cm, linear - lanceate, strigosely - hairy, margins reflexed, acute at apex, narrowed at base ; petioles obscure. Flowers white in axillary or more commonly terminal scorpioid cymes. Nuts 2 - 4 lobed, hairy.

Fl. & Fr. : April - September.

A weed, common in the waste places.

93. EHRETIACEAE

CARMONA Cav.

Carmona retusa (Vahl) Masamune, Trans. Nat. Hist. Soc. Formosa 30 : 61. 1940. *Cordia retusa* Vahl, Symb. Bot. 2 : 42. 1791. *Carmona microphylla* (Lamk.) G. Don, Gen. Syst. 4 : 391. 1837. *Ehretia microphylla* Lamk., Enc. Meth. Bot. 2 : 425. 1792 ; Gamble, Fl. Presid. Madras 2 (5) : 891. 1923. *E. buxifolia* Roxb., Pl. Corom. 1 : 42, t. 57. 1795 & Fl. Ind. 2 : 343. 1824 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 141. 1883. *Karuvngi*, *Kottuvellilai* (Tamil).

Erect or rarely subscandent shrubs, 1 - 2 m high ; branches numerous, slender, divaricated, minutely hispid. Leaves up to 2.5×1 cm, obovate, margins recurved, toothed or crenate towards apex, lustrous with impressed veins and appressed hairy above, dull and hispidulous beneath, cuneate or obtuse at apex. Flowers greenish in scarcely branched open cymes. Drupes ± 0.5 cm in diameter, globose, apiculate.

Fl. & Fr. : June - January.

Fairly common in the dry outskirts of the forest around Tiger falls, at Shembagadevi and also on the way to Old Courtallum.

94. VERBENACEAE

1a. Leaves 3-5 foliate

Vitex 9

1b. Leaves simple

2a. Plants arborescent

3a. Corolla regular, 4 or more lobed

- 4a. Flowers white ; calyx accrescent in fruit *Tectona* 8
- 4b. Flowers reddish-purple ; calyx not accrescent in fruit *Callicarpa* 1
- 3b. Corolla oblique, 2-lipped
 - 5a. Inflorescence pyramidal ; flowers small *Premna* 5
 - 5b. Inflorescence not pyramidal ; flowers large *Gmelina* 3
- 2b. Plants shrubaceous
 - 6a. Erect or straggling shrubs
 - 7a. Plants armed with stout axillary thorns *Gmelina* 3
 - 7b. Plants unarmed or prickly
 - 8a. Flowers in corymbose panicles ; fruits with 4 pyrenes *Clerodendrum* 9
 - 8b. Flowers in dense spikes ; fruits with 2 pyrenes
 - 9a. Spikes capitate ; plants prickly or strigose-hairy *Lantana* 4
 - 9b. Spikes long, slender ; plants unarmed, glabrous *Stachytarpheta* 7
 - 6b. Climbing shrubs *Sphenodesme* 6

1. *CALLICARPA* Linn.

Callicarpa tomentosa (Linn.) Murr., Syst. Veg. ed. 13 : 130. 1774; Meeuse, Blumea 5 : 71. 1942. *Tomex tomentosa* Linn., Sp. Pl. 118. 1753. *Callicarpa lanata* Linn. Mant. 2 : 331. 1771 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 567. 1885; Gamble, Fl. Presid. Madras 2 (6) : 1092. 1924; Fletch., Kew Bull. 1938 : 413. 1938. *Thinperivelam*, *Vennthekku* (Malayalam). *Vettilaipatta*, *Kattukumil* (Tamil).

Trees; branches stout, felt with grey fulvous-stellate-hairs. Leaves crowded towards the apex of branchlets, 15-30 × 10-18 cm, ovate, elliptic-lanceate, entire or toothed, glabrous above, densely stellate tomentose beneath, acuminate at apex, rounded or cuneate at base ; petioles up to 6 cm long, stout, tomentose. Flowers sessile in axillary or terminal cymes. Drupes 0.2-0.4 cm in diameter, globose, black.

Fl. & Fr. : January - August.

Courtallum (*Robert Wight s. n.*, *Robert Wight Kew Dist.* No. 2314, CAL).

2. CLERODENDRUM Linn.

Clerodendrum viscosum Vent., Jard. Malm. t. 25. 1803; Sant., Bull. Bot. Surv. India 3 : 14. 1961. *C. infortunatum* Lour. Fl. Cochinch. ed. 1, 2 : 387. 1790 (*auct. mult. non* Linn. 1753) ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 594. 1885 (*pro parte*); Gamble, Fl. Presid. Madras 2 (6) : 1100. 1924. *Peruvu*, *Vattaperuvalam* (Malayalam). *Karukkanni*, *Penigilai* (Tamil).

Large shrubs, 3-6 m high ; branchlets silky yellow pubescent. Leaves up to 15 × 14 cm, ovate or suborbicular, almost entire, villous above, tomentose beneath, acuminate at apex, truncate or subcordate at base. Flowers white, tinged rosy with in, fragrant, in large terminal panicles. Drupes 0.6 - 0.8 cm across, subglobose, seated on the enlarged, pinkish calyx.

Fl. & Fr. : October - March.

Common in the waste places at New falls, along the sides of the stream around Tiger falls and below Shembagadevi.

3. GMELENA Linn.

1a. Armed, straggling shrubs ; leaves glaucous beneath *G. asiatica* 2

1b. Unarmed trees ; leaves stellately fulvous-tomentose beneath *G. arborea* 1

1. **Gmelina arborea** Roxb. (Hort. Beng. 46. 1814 *nom. nud.*) Pl. Corom. 3 : 42. t. 246. 1819 & in Fl. Ind. 3 : 84. 1832 ; Wt., Ic. t. 1470. 1849 ; Clarke in Hook. f., Fl. Brit. Ind 4 : 581. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1097. 1924. *Kumil*, *Kumala* (Malayalam). *Kattenam*, *Kumil* (Tamil).

Unarmed deciduous trees, 10 - 14 m high; bark smooth, corky; branchlets yellowish-mealy-pubescent. Leaves 5 - 22.5 × 7.5-20 cm, broadly-ovate, entire, glabrous above, stellately fulvous-tomentose beneath, acuminate at apex cordate or truncate and slightly decurrent at base; petioles up to 5.5 cm long, puberulous. Flowers brownish-yellow in terminal corymbose panicles. Drupes up to 2 cm long, ovoid or pyriform, fleshy, yellow when ripe.

Fl. & Fr. : March - June.

Rather rare along the ridges and outskirts of the forest around Main falls.

Gmelina asiatica Linn., Sp. Pl. 626. 1753 ; Wt., Ill. Ind. Bot. t. 174. 1840 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 582. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1098. 1924 ; Fletch., Kew Bull. 1938 : 423. 1938. *Kumil* (Malayalam). *Anueavira*, *Nilakkumil* (Tamil).

Armed, straggling shrubs, 3-4 m high; branchlets horizontal, puberulous with recurved axillary thorns. Leaves 2.5 × 1-2.5 cm, ovate, entire, glabrous above, glaucous beneath, obtuse at apex, acute at base ; petioles up to 1.5 cm long. Flowers yellowish in axillary or terminal densely pubescent racemes or panicles. Drupes up to 2 cm long, obovoid, yellow when ripe.

Fl. & Fr. : Almost throughout the year.

Fairly common in the dry outskirts around Chittaruvi and on the way to Old Courtallum.

4. LANTANA Linn.

Lantana camara Linn. var. *aculeata* (Linn.) Mold., Torreyia 34 : 9. 1934. *L. aculeata* Linn., Sp. Pl. 627. 1753 ; Gamble, Fl. Presid. Madras 2 (6) : 1087. 1924. *L. camara auct. non* Linn. ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 562. 1885. *Aruppu*, *Kongini*, *Semapacha* (Malayalam).

Straggling shrubs, 1-2.5 m high ; stem angular, prickly. Leaves 2.5-5.5 × 1.5-3.5 cm, ovate or ovate-lanceate, crenate-serrate, scabrid on both sides, acuminate at apex, obtuse or cuneate at base ; petioles 2-4 cm long, prickly. Flowers red or orange-coloured with a lighter tube, in terminal capitate spikes. Drupes 0.4-0.5 cm in diameter, globose, black when ripe.

Fl. & Fr. : August - December.

An exotic weed, often gregarious in the outskirts and waste places.

5. PREMNA Linn. *nom. gen. cons.*

Premna tomentosa Willd., Sp. Pl. 3 : 314. 1800; Wt., Ic. t. 1468. 1849; Clarke in Hook. f., Fl. Brit. Ind. 4 : 576. 1885; Gamble, Fl. Presid. Madras 2 (6) : 1095. 1924. *Kallithekku* *Kolikkattu* *Thekku* (Malayalam) *Pinari*, *Kolakkatta* (Tamil).

Deciduous trees, 10-15 m high ; branchlets yellowish, stellate-woolly. Leaves 9-20 × 3-10.5 cm, ovate, coriaceous, entire or with slightly wavy margins, glandular, scabrous above, stellate-woolly beneath, acuminate at

apex, truncate or cordate at base ; petioles 2.5-4.5 cm long, yellowish-stellate-woolly. Flowers greenish-yellow in terminal densely-woolly, corymbose, pyremidal panicles. Drupes up to 0.5 cm across, subglobose, tomentose when young.

Fl. & Fr. : March - January.

Scarce, in the outskirts of the reserve forest around Tiger falls.

6. SPHENODESME Jack

Sphenodesme involucrata (Pers.) C.B. Robins. var. *paniculata* (Clarke) Munir, Gard. Bull. Singapore 21 (3) : 338, pl. 3. 1966. *S. paniculata* Clarke in Hook. f., Fl. Brit. Ind. 4 : 600. 1885 ; Gamble, Fl. Presid. Madras 2(6) : 1104. 1924 (*pro parte*).

Large climbing shrubs; branches stellately villous. Leaves 7.5-16.5 × 5-7.5 cm, ovate or elliptic, entire, pubescent beneath, acute at apex, rounded at base ; petioles ± 1 cm long, stout. Flowers greenish, 3-7 in capitate cymes ; bracts foliaceous, spatulate, tomentose.

Fl. : December March.

Rare in the dense forests along the sides of the stream above Five falls.

7. STACHYTARPHETA Vahl *nom. gen. cons.*

Stachytarpheta indica (Linn.) Vahl, Enum. 1 : 206. 1805 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 564. 1885 ; Woodr., J. Bombay Nat. Hist. Soc. 12 : 356. 1899 ; Gamble, Fl. Presid. Madras 2 (6) : 1090. 1924 ; Meeuse, Blumea 5 : 70. 1942. *Seemakongini* (Malayalam). *Cimainaivirunci* (Tamil).

Erect, glabrous shrubs, 1-2.5 m high; stem dichotomously branched, quadrangular when young. Leaves 8-10 × 2-4 cm, elliptic, glabrous, serrate, obtuse at apex, decurrent at base. Flowers blue, sessile in 15-35 cm long slender spikes. Drupes oblong, ribbed enclosed in the persistent calyx.

Fl. & Fr. : August - January.

An exotic weed, naturalized along hedges around Tiger falls and Five falls.

8. *TECTONA* Linn. f., *nom. gen. cons.*

Tectona grandis Linn. f., Suppl. 151. 1781 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 570. 1885; Gamble, Fl. Presid. Madras 2 (6) : 1092. 1924; Fletch., Kew Bull. 1938 : 415. 1938. *Thekku* (Malayalam & Tamil).

Deciduous trees, 10-20 m high ; trunk straight; bark rough, thick. Leaves 25-65 × 12-30 cm, obvate, coriaceous, entire, scabrid above, tomentose beneath, cuncate at both ends. Flowers greenish-white in large terminal panicles. Drupes ± 1 cm across, subglobose, enclosed in the persistent calyx.

Fl. & Fr. : May - November.

Both cultivated and running wild on the way to Five falls, above Tiger falls and on the way to Old Courtallum.

9. *VITEX* Linn.

1a. Flowers bluish-purple ; inflorescence lax

V. negundo 2

1b. Flowers pale-blue or white ; inflorescence congested

V. altissima 1

1. ***Vitex altissima*** Linn. f., Suppl. 294. 1781 ; Wt., Ic. t. 1466. 1849 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 584. 1885 ; Gamble, Fl. Presid. Madras 2 : (6) 1105. 1924. *V. alata* Heyne ex Clarke in Hook. f., Fl. Brit. Ind. 4 : 584. 1885. *Kattumayila*, *Mayila* (Malayalam). *Maila* (Tamil).

Trees, 10-12 m high; branchlets quadrangular, grey-pubescent. Leaves 3-foliate ; leaflets up to 15 × 5 cm, sessile, lanceate or ovate-lanceate, glabrous above. Flowers pale blue or white in grey-pubescent cymes forming panicles. Drupes 0.3-0.7 cm in diameter, globose.

Fl. & Fr. : July - October.

Fairly common in the dry areas on the way to Tekkumalai.

2. ***Vitex negundo*** Linn., Sp. Pl. 638. 1753; Wt., Ic. t. 519. 1840-43; Clarke in Hook. f., Fl. Brit. Ind. 4 : 583. 1885; Gamble, Fl. Presid. Madras 2 (6) : 1102. 1924 ; Fletch., Kew Bull. 1938 : 433. 1938. *Nocchi*, *Vellannocchi*, *Vennocchi* (Malayalam). *Nirkundi*, *Nocchi*, *Vellainocchi* (Tamil).

Much branched shrubs or trees, 2-5 m high; branchlets quadrangular, hairy. Leaves 3-5 foliate; leaflets 5-12 × 2-3.5 cm, terminal one largest of

all, ovate-lanceate, glabrous above, grey-pubescent beneath, acuminate at apex, acute or rounded at base. Flowers bluish-purple in terminal lax panicles. Drupes $\pm$ 0.5 cm in diameter, globose.

Fl. & Fr. : July October.

Common, in the outskirts and along hedges around Tiger falls and rarely around Shembagadevi.

95. LABIATAE

- 1a. Stamens declinate, lying upon or enclosed in the lower lip of the corolla
 - 2a. Lower lip of the corolla flat or nearly so
 - 3a. Calyx deflexed in fruit ; upper lip recurved
 - 4a. Upper lip of the corolla emarginate ; style unequally 2-fid *Endostemon* 5
 - 4b. Upper lip of the corolla 3-4 lobed ; style entire or equally divided
 - 5a. Corolla exerted and much longer than the calyx lobes ; style entire *Orthosiphon* 9
 - 5b. Corolla not exerted and not much exceeding the calyx lobes ; style 2-fid *Ocimum* 8
 - 3b. Calyx not deflexed in fruit ; upper lip not recurved
 - 6a. Calyx suberect or declinate in fruit
 - 7a. Flowers in terminal or axillary globose heads *Acrocephalus* 1
 - 7b. Flowers in terminal or axillary spicate clusters of 6-10 whorls *Basilicum* 4
 - 6b. Calyx widely campanulate in fruit *Platostoma* 10
 - 2b. Lower lip of the corolla conspicuously concave or boat-shaped
 - 8a. Corolla 2-lipped, lower lip longer than the upper *Anisochilus* 2
 - 8b. Corolla 5-lobed, the lower lobe shorter or equalling the other lobes *Hyptis* 6
- 1b. Stamens erect or ascending or spreading
 - 9a. Anthers 1-loculed ; filaments pubescent *Pogostemon* 11
 - 9b. Anthers 2-loculed ; filaments glabrous

- 10a. Calyx deeply 2-lipped, lips entire *Scutellaria* 12
- 10b. Calyx tubular or campanulate, 5-10 toothed
- 11a. Upper lip of the corolla glabrous ; flowers pinkish *Anisomeles* 3
- 11b. Upper lip of the corolla densely white or tawny-villous ; flowers white *Leucas* 7

1. ACROCEPHALUS Benth.

Acrocephalus indicus (Brum. f.) O. Ktze., Rev. Gen. Pl. 2 : 511. 1891 ; Gamble, Fl. Presid. Madras 2 (6) : 1115. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 29. 1940 ; Keng, Gard. Bull. Singapore 24 : 26. 1969. *Prunella indica* Burm. f., Fl. Ind. 130. 1768 *Acrocephalus capitatus* (Roth) Benth., Bot. Reg. tt. 1282, 1300. 1829 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 611. 1885. *Ocimum capitatum* Roth, Nov. Sp. Pl. Ind. Or. 276. 1821.

Slender erect herbs, up to 30 cm high ; stem obtusely quadrangular, glabrous. Leaves 2-4 × 0.5-1 cm, ovate or lanceate, serrate, glabrous, acute at apex, decurrent into the petiole at base; petioles short. Flowers violet in terminal or axillary globose or ovoid heads; bracts ± 0.2 cm across, ovate, acuminate. Nutlets minute, oblong-ellipsoid, brownish-black.

Fl. & Fr. : October - November.

Rare, in the moist places and along roadsides.

2. ANISOCHILUS Benth. ex Wall.

Anisochilus carnosus (Linn. f.) Wall. ex Benth. in Wall., Pl. As. Rar. 2 : 18. 1831 ; Wt., Ill. Ind. Bot. t. 1766, f. 1. 1850 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 627. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1126. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 58. 1940. *Lavandula carnosus* Linn. f., Suppl. 273. 1781.

Erect herbs, 30-50 cm high ; stem 4-angled, often red-tinged, glabrous or puberulous. Leaves 3-8 × 3.5-5 cm, broadly-ovate, deeply crenate, glabrous or villous above, puberulous beneath, obtuse at apex, cordate or rounded at base ; petioles up to 4.5 cm long, villous. Flowers pale-purple in 2-7 cm long peduncled spikes. Nutlets suborbicular, compressed, brown.

Fl. & Fr. : June - October.

Rare, in the isolated patches of soil between rocks above Chittaruvu.

3. ANISOMELES R. Br.

Anisomeles malabarica (Linn.) R. Br. ex Sims, Bot. Mag. 46 : t. 2071. 1819 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 673. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1140. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 153. 1940 ; Keng, Gard. Bull. Singapore 24 : 37. 1969. *Nepta malabarica* Linn., Mant. 2 : 556. 1771. *Karimtumpa*, *Perumtumpa* (Malayalam). *Cudambai*, *Peyyerutti*, *Paymarutti* (Tamil).

Erect undershrubs, up to 1 m high ; branches terete or obtusely 4-angled, densely-tomentose or thickly-wooly with white appressed hairs. Leaves 3.5-7.5 × 0.5-2.2 cm, lanceate or oblong-lanceate, crenate-serrate, tomentose on both sides, pale above, whitish beneath, acute or acuminate at apex, rounded at base ; petioles 1-2 cm long, softly hairy. Flowers pinkish, fragrant in dense whorls on terminal spikes ; bracts ± 0.8 cm long, linear. Netlets ± 0.2 cm long, ellipsoid, compressed.

Fl. & Fr. : September - January.

Common in the dry waste places between Main falls and Tiger falls.

4. BASILICUM Moench

Basilicum polystachyon (Linn.) Moench, Menth. Suppl. 143. 1802 ; Ben., Indian For. 95 : 629. 1967 ; Keng, Gard. Bull. Singapore 24 : 39. 1969. *Ocimum polystachyum* Linn., Mant. 567. 1767. *Moschosma polystachyum* (Linn.) Benth. in Wall. Pl. As. Rar. 2 : 13. 1831 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 612. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1117. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 35. 1940.

Herbs, up to 90 cm high ; stem 4-angled, slender, almost glabrous. Leaves 1-2.5 × 1-1.5 cm, ovate, crenate-serrate, glabrous, acute at apex, rounded or subcordate at base ; petioles up to 2.5 cm long. Flowers white in close or distant whorls of 6-10 forming slender, axillary or terminal spicate clusters ; bracts small. Netlets minute, broadly-ellipsoid, compressed, brown.

Fl. & Fr. : July - October.

Rare, in the humus soil behind the forest Rest House.

5. ENDOSTEMON N.E. Br.

Endostemon viscosus (Roth) M. Ashby, J. Bot. 74 : 126. 1936. *Ocimum viscosum* Roth, Nov. Sp. Pl. Ind. Or. 274. 1821 (as *Ocimum*). *Plectranthus viscosus* (Roth) Spreng., Syst. 2 : 691. 1825. *Ocimum diffusum* Benth.

in Wall., Pl. As. Rar. 2 : 14. 1831 & in DC., Prodr. 12 : 52. 1848 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 613. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 113. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 22. 1940. *O. diffusum* var. *hispida* (Benth. ex DC.) Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 613. 1885. *O. hispidus* Benth. in DC., Prodr. 12 : 50. 1848.

Branched herbs, 30-45 cm high ; stem terete, viscidly tomentose. Leaves up to 1.5×0.8 cm, ovate or elliptic, crenate, viscidly-hairy on both sides, obtuse at apex, rounded at base ; petioles up to 1 cm long. Flowers blue or bluish-green, fragrant in distantly whorled racemes. Nutlets ovoid, brown.

Fl. & Fr. : July October.

A weed, in the cleared forest areas above Five falls.

6. *HYPTIS* Jacq. *nom. gen. cons.*

Hyptis suaveolens (Linn.) Poit., Ann. Mus. Hist. Nat. Paris 7 : 472, t. 29. f. 2. 1806 ; Hook. f. in Hook. f., Brit. Ind. 4 : 630. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1129. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 63. 1940 ; Keng, Gard. Bull. Singapore 24 : 96. 1969. *Ballota suaveolens* Linn., Syst. ed. 10 : 1100. 1759.

Erect undershrubs, 30-90 cm high ; branches 4-angled, hispid. Leaves 2.5-8.5×1.5-5 cm, broadly-ovate, serrulate, densely pubescent beneath, sparsely pilose above, acuminate at apex, acute at base ; petioles 2-4.5 cm long, hispid. Flowers blue in lax, 2-5 flowered secund cymes arranged racemosely towards the ends of branches in the axils of smaller leaves ; calyx teeth aristate. Nutlets ovoid, flat, emarginate at apex, faintly rugose, brown.

Fl. & Fr. : August January.

Gregarious in the waste places around Tiger falls and inside the Chettiar palace Campus.

7. *LEUCAS* R. Br.

1b. Calyx tube bent, mouth oblique ; leaves entire

L. aspera 1

1b. Calyx tube straight, mouth not oblique ; leaves distantly serrate

L. biflora var. *procumbens* 2

1. **Leucas aspera** (Willd.) Link, Enum. Hort. Berol. 2 : 112. 1822 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 690. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1150. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 166. 1940 ; Keng, Gard. Bull. Singapore 24 : 101. 1969. *Phlomis aspera* Willd., Enum. Hort. Berol. 2 : 621. 1809.

Erect herbs, 30-60 cm high ; branches 4-angled, hispid. Leaves 4-9 × 0.5-1.5 cm, linear or narrowly lanceate, entire, pubescent on both sides, obtuse at apex, tapering at base ; petioles up to 1.3 cm long. Flowers white in dense terminal or axillary false whorls. Nutlets ± 0.3 cm long, oblong, rounded at apex.

Fl. & Fr. : July March.

A common weed of the waste palces in the plains.

2. **Leucas biflora** (Vahl) R. Br. var. **procumbens** (Desf.) Gamble, Fl. Presid. Madras 2 (6) : 1151. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (!) : 180. 1940. *Leucas procumbens* Desf., Mem. Mus. Paris 11 : 7, t. 3. 1824 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 683. 1885.

Slender herbs, up to 30 cm high ; branches 4-angled, almost glabrous, often ascending from an woody base. Leaves up to 2.8 × 1.2 cm, ovate-lanceate, or elliptic-lanceate, coarsely-serrate or crenate, pubescent or mostly glabrous, obtuse at apex, rounded or cuneate at base. Flowers white, 2-6 or rarely more, in axillary whorls. Nutlets ovoid, triquetrous, brown, smooth.

Fl. & Fr. : June October.

Rare in the rocky slopes around Main falls and also above Five falls.

8. OCIMUM Linn.

1a. Leaves strongly serrate ; whorls of flowers ± 0.6 cm apart on the inflorescence axis

O. gratissimum 2

1b. Leaves strongly serrate ; whorls 1-2 cm apart on the inflorescence axis

O. adscendens 1

1. **Ocimum adscendens** Willd., Sp. Pl. 3 : 166. 1802 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 609. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 112. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 21. 1940. *O. cristatum* Roxb., (Hort. Beng. 45. 1814 *nom. nud.*) Fl. Ind. 3 : 19. 1832.

Erect herbs. 30-45 cm high ; stem pubescent. Leaves $1.5-2.5 \times 0.5-1$ cm, oblong-ovate, entire or shallowly toothed, glabrous, obtuse at apex, tapering at base ; petioles 0.5-1 cm long, pubescent. Flowers white or greenish in lax whorls on terminal racemes. Nutlets subglobose, reddish-brown.

Fl. & Fr. : June October.

Fairly common in the dry outskirts of the forests and plains around Tiger falls and Main falls.

2. *Ocimum gratissimum* Linn., Sp. Pl. 832. 1753 (as *Ocimum*) ; Roxb., Fl. Ind. 3 : 17. 1882 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 608. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1111. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 20. 1940 ; Keng, Gard. Bull. Singapore 24 : 128. 1969. *Ramatulasi* (Malayalam). *Erumiccandulasi*, *Peryndulasi* (Tamil).

Much branched shrubs, 1-1.5 m high ; young parts pubescent. Leaves $4-11 \times 1.5-6$ cm, ovate, coarsely crenate-serrate, pubescent on both sides, acute at apex, cuneate at base ; petioles up to 10 cm long, slender, pubescent. Flowers greenish-yellow in whorls forming terminal racemes ; bracts ovate, acuminate. Nutlets ± 0.1 cm long, subglobose, brown.

Fl. & Fr. : July October.

A weed above Chittaruvi in the rocky soil.

9. ORTHOSIPHON Benth.

1a. Leaves viscid-pubescent ; petioles up to 1.2 cm in length *O. thymiflorus* 2

1b. Leaves glabrous ; petioles more than 2.5 cm in length *O. glabratus* 1

1. *Orthosiphon glabratus* Benth. in Wall., Pl. As. Rar. 2 : 14. 1831 & in DC., Prodr. 12 : 50. 1847 ; Gamble, Fl. Presid. Madras 2 (6) : 1114. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 24. 1940. *O. tomentosus* Benth. var. *glabratus* (Benth.) Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 614. 1885.

Erect herbs, 30-50 cm high ; stem 4-angled, glabrous. Leaves 1-2 cm long, broadly ovate-cordate, coarsely serrate, glabrous, acute at apex ; petioles up to 2 cm long. Flowers bluish in whorls forming terminal racemes. Nutlets ellipsoid, or subglobose.

Fl. & Fr. : August - October.

An undergrowth in the moist deciduous forest floor above Shembagadevi.

2. **Orthosiphon thymiflorus** (Roth) Sleesen, Reinwardtia 5 : 42. 1959. *Ocimum thymiflorum* Roth, Nov. Sp. Pl. Ind, or. 269. 1821. *Orthosiphon viscosus* Benth. in Wall., Pl. As. Rar. 2 : 14. 1831 ; Gamble, Fl. Presid. Madras 2 (6) : 1114. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 23. 1940. *O. tomentosus* var. *viscosa* (Benth.) Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 614. 1885.

Erect herbs, 30-45 cm high ; stem viscidly-pubescent. Leaves up to 5.5 cm long, ovate, crenate, viscidly-pubescent, obtuse or subacute at apex, rounded or subcordate at base ; petioles 1-1.2 cm long, pubescent. Flowers purplish in long racems. Nutlets subglobose, compressed, pale brown.

Fl. : July October.

Rare, above Five falls and in the Agricultural estate, in the cleared forest areas as a secondary growth.

10. PLATOSTOMA Beauv.

Platostoma africanum Beauv., Fl. Owar. t. 95, f. 2. 1804 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 34. 1940. *P. flaccidum* Benth., Gen. Pl. 2 : 1173. 1876 ; Hook. f. in Hook, f., Fl. Brit. Ind. 4 : 611. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1117. 1924.

Erect undershrubs, up to 1 m high ; stem angular, slightly pubescent. Leaves 1.5-3.5 × 1-1.5 cm, ovate, serrate, glabrous, acute at apex, narrowed at base ; petioles up to 4.5 cm long. Flowers greenish in terminal whorled racemes. Nutlets ovoid, brownish, minutely reticulated.

Fl. & Fr. : July - December.

Rare on the way to Tekkumalai along forest pathsides.

11. POGOSTEMON Desf. *nom. gen. cons.*

Pogostemon heyneanus Benth. in Wall., Pl. As. Rar. 2 : 16. 1831 & in DC., Prodr. 12 : 153. 1848 ; Wt., Ic. t. 1440. 1849 ; Gamble, Fl. Presid. Madras 2 (6) : 1133. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 71. 1940 ; Keng, Gard. Bull. Singapore 24 : 152. 1969. *P. patchouli* Hook. f.

in Hook. f., Fl. Brit. Ind. 4 : 653. 1885 (non *P. patchouly* Pellet., excl. var. *suavis* Hook. f.).

Erect herbs, 60-90 cm high ; stem 4-angled, softly hairy. Leaves 5-8 × 2.5-5.5 cm, ovate, crenate or double-crenate, glabrous above, pubescent beneath, acute at apex, cuneate at base ; petioles 1.5-3.5 cm long, puberulous. Flowers white, fragrant in false whorls on terminal or axillary paniculate inflorescence. Nutlets ovoid or ellipsoid.

Fl. & Fr. : August September.

Rather common in the humus soil of Tekkumalai as an undergrowth along the fringes of shola forests.

12. SCUTELLARIA Linn.

Scutellaria violacea Heyne ex Benth. in Wall., Pl. As. Rar. 1. 66. 1831 & in DC., Prodr. 12 : 418. 1847 ; Wt., Ic. t. 1446. 1849 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 668. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1142. 1924 ; Mukerjee, Rec. Bot. Surv. India 14 (1) : 145. 1940.

Straggling herbs, 30-45 cm high ; branches slender, flaccid and flexuous, finely-pubescent. Leaves 2.5-5.5 × 1-3.5 cm, ovate, crenate, slightly hairy, subacute at apex, rounded or shallowly cordate at base ; petioles 2-6 cm long, slender. Flowers white with a light smell in terminal lax racemes. Nutlets subglobose, tuberculate.

Fl. & Fr. : June - October.

Common in the humus soil of Tekkumalai along the fringes of shola forests.

96. BUDDLEJACEAE

Buddleja asiatica Lour., Fl. Cochinch. 72. 1790 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 82. 1883 ; Gamble, Fl. Presid. Madras 2 (5) : 865. 1923. *B. discolor* Roth, Nov. Sp. Pl. Ind. Or. 83. 1821 ; Wt., Ic. t. 894. 1843.

Shrubs ; young branches tomentose. Leaves 5-12 × 0.6-2 cm, lanceate, entire, glabrous above, mealy-tomentose beneath, blackening on drying, acuminate at apex, acute at base ; petioles upto 0.7 cm long. Flowers white, fragrant, in terminal or axillary dense tomentose spikes. Capsules ±0.4 cm long, ellipsoid, dehiscent.

Fl. & Fr. : May.

Courtallum (*Robert Wight 597, CAL*).

97. OLEACEAE

- 1a. Climbing shrubs ; petals united into a corolla tube *Jasminum* 2
- 1b. Trees or erect shrubs ; petals free or almost so *Chionanthus* 1

1. CHIONANTHUS Linn.

- 1a. Flowers in panicles
 - 2a. Leaves obovate, rounded or obtuse at apex ; veins of the leaves obscure ; panicles less than 3 cm long *C. zeylanicus* 5
 - 2b. Leaves elliptic-oblong, acute or shortly acuminate at apex ; veins of the leaves distinct ; panicles more than 3 cm long *C. ramiflorus* 4
- 1b. Flowers in axillary cymes or racemes
 - 3a. Flowers in axillary cymes
 - 4a. Leaves elliptic or elliptic-oblong, obtuse or with a short acumen at apex ; main lateral nerves 10 pairs *C. malabaricus* 3
 - 4b. Leaves elliptic, caudate acuminate at apex ; main lateral nerves 8 pairs *C. linocieroides* 2
 - 3b. Flowers in axillary racemes *C. leprocarpus* var. *courtallensis* 1

1. *Chionanthus leprocarpus* Thw. var. *courtallensis* (Bedd.) K.K.N. Nair et Janardh., J. Bombay Nat. Hist. Soc. 78 : 330. 1981 ; Panigrahi, Ind. J. For. 8 : 59. 1985. *C. courtallensis* Bedd. Fl. Sylvat. 155. 1871. *Linociera leprocarpa* (Thw.) Clarke var. *courtallensis* (Bedd.) Clarke in Hook. f., Fl. Brit. Ind. 3 : 609. 1882. *L. courtallensis* (Bedd.) Bourd., Trav. Trees 260. 1908 ; Gamble, Fl. Presid. Madras 2(5) : 795. 1923. *Mancari, Kal idalei* (Tamil).

Trees ; branchlets glabrous. Leaves upto 16×6 cm, elliptic-oblong, thick, glabrous, drying reddish brown, shortly and abruptly acuminate at apex, narrowed at base ; petioles $\pm$ 0.8 cm long, thick, grooved above. Flowers in short axillary racemes, 2-3 in an axil. Drupes $\pm$ 2 cm long, ovoid, brownish-purple.

Fl. & Fr. : March.

Courtallum (*Robert Wight s.n.*, CAL).

2. ***Chionanthus linoceroides* (Wt.) Bennett et Raizada**, Ind. J. For. 4 : 69. 1981 ; K.K.N. Nair et Janardh., J. Bombay Nat. Hist. Soc. 78 : 330. 1981. *Olea linocieroides* Wt., Ic. t. 1241. 1848. *Linociera wightii* Clarke in Hoak. f., Fl. Brit. Ind. 3 : 608. 1882 ; Gamble, Fl. Presid. Madras 2(5) : 794. 1923.

Trees, 3-5 m high. Leaves 6.5-10×2.5-4 cm, elliptic, glabrous, caudate-acuminate at apex, narrowed into the petiole at base ; petioles up to 1 cm long. Flowers white in small axillary cymes. Drupes ± 1.5 cm long, ellipsoid, longitudinally ridged.

Fl. & Fr. : January March.

Rather common in the thick Shola below Karuppuswami Kovil on the way to Vaithamalai.

3. ***Chionanthus mala-elengi* (Dennst.) P.S. Green** in Bull. Bot. Surv. India 26 : 123-124. 1985. *Forsythia mala-elengi* Dennst. Schlusel Hort. Malab. 12, 21 & 31. 1818. *Chionanthus malabaricus* (Wall. ex G. Don) Bedd., For. Man. 154. 1871 & Fl. Sylvat. t. 239. fig. in corner, 1872 ; K.K. N. Nair et Janardh., J. Bombay Nat. Hist. Soc. 78 : 331. 1981 ; Panigrahi, Ind. J. For. 8 : 56. 1985. *Linociera malabarica* Wall. ex G. Don, Syst. 4 : 53. 1838 ; Wt., Ic. t. 1246. 1848 ; Clarke in Hook. f., Fl. Brit Ind. 3 : 607. 1882 ; Gamble, Fl. Presid. Madras 2(5) : 794. 1923. *Kaletala* (Malayalam).

Trees, 4-8 m high ; bark smooth. Leaves 5-12.5×2-4.5 cm, elliptic or elliptic-oblong, coriaceous, glabrous, margins often revolute, obtuse or narrowed into a blunt acumen at apex, cuneate at base ; petioles up to 1 cm long, channelled above. Flowers white turning yellowish, fragrant in axillary cymes. Drupes up to 1 cm long, ellipsoid, black when ripe, persistent on the parent tree for long time.

Fl. & Fr. : January September.

Common at New falls, below Shembagadevi and along the slopes of Tekkumalai towards Kailasa Mottai side.

4. ***Chionanthus ramiflorus* Roxb.** (Hort. Beng. 3. 1814 *nom. nud.*) Fl. Ind. 1 : 106. 1820 ; Clarke in Hook. f., Fl. Brit. Ind. 3 : 611. 1882 (*pro syn.*) ; Kew, Mal. For. 4 : 274. 1979. *Olea roxburghii* Spreng., Syst. 1. 34 : 1824 ;

Wt., Ic. t. 735. 1843. *Linociera intermedia* Wt., Ic. t. 1245. 1848 ; Clarke, *loc. cit.* p. 609 ; Gamble, Fl. Presid. Madras 2 (5) : 794. 1923.

Trees ; branchlets glabrous. Leaves 12-14.5 × 3.5-5 cm, elliptic-oblong, glabrous, acute or shortly acuminate at apex, acute and running down into the petiole at base ; main nerves about 10 pairs, prominent beneath ; petioles up to 1.5 cm long, grooved above. Flowers in axillary lax panicles, almost opposite on the peduncle. Drupes ±1 cm long, ellipsoid.

Fl. & Fr. : August October.

Courtallum (*Robert Wight* 488, CAL).

5. *Chionanthus zeylanicus* Linn., Sp. Pl. 8. 1753; Panigrahi, Ind. J. For. 8 : 58. 1985. *Linociera purpurea* Vahl, Enum. 1 : 47. 1805 ; Clarke in Hook. f., Fl. Brit. Ind. 3 : 608. 1882. *L. zeylanica* (Linn.) Gamble, Fl. Presid. Madras 2 (5) : 794. 1923.

Trees, 3-6 m high ; young branches minutely pubescent with prominent leaf scars. Leaves 4-9 × 2-4 cm, obovate, glabrous, thick, obtuse or rounded at apex, cuneate at base ; secondary veins often obscure ; petioles less than 0.5 cm long, thick. Flowers white, fragrant in short panicles often from the axils of fallen leaves. Drupes oblong.

Fl. & Fr. : February May.

Above and around Main falls and on the way to Tiger falls, common along the sides of rocks.

2. JASMINUM Linn.

1a. Leaves simple

2a. Calyx lobes long, linear, subulate

3a. Leaves sessile, subsessile or petioled 0.1-0.3 cm long ; cymes 1-3 flowered

J. sessiliflorum 5

3b. Leaves petioled 0.5-1.2 cm long ; cymes many flowered

J. rottlerianum 4

2b. Calyx lobes minute, triangular

J. trichotomum 6

1b. Leaves 3-foliate

4a. Terminal leaflet larger than the paired lower ones (which may be wanting sometimes)

J. auriculatum 1

4b. All 3 leaflets equal or subequal

- 5a. Cymes paniculate ; leaves obtusely acuminate
at apex

J. flexile 3

- 5b. Cymes strictly trichotomous ; leaves obtuse or
subacute at apex

J. calophyllum 2

1. *Janminum auriculatum* Vahl, Symb. Bot. 3 : 1. 1794; Wt., Ic. t. 700. 1843 ; Clarke in Hook. f., Fl. Brit. Ind. 3 : 600. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 790. 1923. *J. ovalifolium* Wt., Ic. t. 1296. 1848. *J. affine* Wt., Ic. t. 1255. 1848. *Bolidda* (Malayalam). *Udigai*, *Uccimalligai* (Tamil).

Climbing shrubs, 2-3 m high ; branches pubescent. Leaves 3-foliate ; terminal leaflet up to 3.5×1.3 cm, ovate, subglabrous, obtusely acute and mucronate at apex, rounded at base ; the lower 2 leaflets small and frequently wanting. Flowers white in compound, trichotomous or paniculate cymes. Berries ± 0.5 cm in diameter, globose, black when ripe.

Fl. & Fr. : November - March.

Rare in the dry outskirts of the forest on the way to Five falls and around Tiger falls.

2. *Jasminum calophyllum* Wall. (Cat. No. 2889. 1831 *nom. nud*) ex DC., Prodr. 8 : 310. 1844 ; Clarke in Hook. f., Fl. Brit. Ind. 3 : 502. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 791. 1923. *J. courtallense* Wt., Ic. t. 1252. 1848. *Kudmalagai* (Tamil).

Scandent shrubs, reaching 3-4 m in height ; stem green, glabrous. Leaves subequally 3-foliate ; leaflets petiolulate, up to 6.5×4.5 cm, broadly ovate, glabrous, obtuse or acute at apex, rounded or truncate at base. Flowers white, fragrant in trichotomous cymes ; calyx lobes minute truncate.

Fl. & Fr. : December - March.

A hedge plant common along the sides of the forest path to Tekkumalai and below New falls.

3. *Jasminum flexile* Vahl, Symb. Bot. 3 : 1. 1794 ; Wt., Ic. t. 1253. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 3 : 601. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 791. 1923.

Climbing shrubs, 2-3 m high ; branches glabrous. Leaves 3-foliate ; leaflets equal or subequal, $6.5-10 \times 2.2-4$ cm, ovate or oblong, glabrous, obtusely acuminate at apex, rounded or acute at base ; rachis 2.5-3 cm

long. Flowers white, fragrant in axillary and terminal paniculate cymes. Berries 0.6-1 cm long, ovoid, truncate at base, acute at apex, purple.

Fl. & Fr. : November March.

Beautiful scandents, fairly common along the sides of the stream at the higher altitudes of Tekkumalai.

3a. *Jasminum flexile* Vahl var. *travancorenses* Gamble, Fl. Presid. Madras 2 (5) : 791. 1923. *J. travancorenses* Klein in Wall. Cat. no. 2881. 1831 (*nom. nud.*).

Differs from the species proper in having elliptic oblong leaves with prominently arched nerves (about 8 pairs) and the caudate acuminate apex of the leaves.

Fl. & Fr. : November January.

Rare, in the dense shola forests along the sides of the ravines on the way to Vaithamalai opposite to Ammathottam.

4. *Jasminum rottlerianum* Wall. (Cat. no. 2865. 1831. *nom. nud.*) ex DC., Prodr. 8 : 805. 1844 ; Wt., Ic. t. 1249. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 3 : 593. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 789. 1923. *Uyyakondan, Erumaimullai* (Tamil).

Climbing shrubs, 3-4 m high ; branchlets tawny villous or sometimes nearly glabrous. Leaves 5-9.5 × 3.5-4.5 cm, elliptic lanceate, villous or subglabrous, acuminate at apex, rounded or subcordate at base. Flowers white in bracteate, congested cymes, formed usually by 3 peduncles each bearing a fascicle of flowers at the apex. Berries 0.6-1.2 cm long, ellipsoid, green, with persistent calyx.

Fl. & Fr. : August March.

Rare in the outskirts of the forest around Five falls.

5. *Jasminum sessiliflorum* Vahl, Enum. 1 : 29. 1804 ; DC., Prodr. 8 : 307. 1844 ; Clarke in Hook. f. Fl. Brit. Ind. 3 : 597. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 790. 1923. *Pei-atthi* (Tamil).

Scandent shrubs, 3-4 m high ; branches stiff, branchlets minutely pubescent. Leaves 1.5-2.5 × 0.6-1.5 cm, ovate, glabrous, acute or obtuse at apex, rounded at base ; secondary nerves obscure ; petioles 0.1-0.2 cm long, slender, often wanting. Flowers white, fragrant in 1-3 flowered cymes ; calyx lobes linear, 0.5-1.5 cm long, subulate. Berries ± 1 cm long, ovoid, smooth.

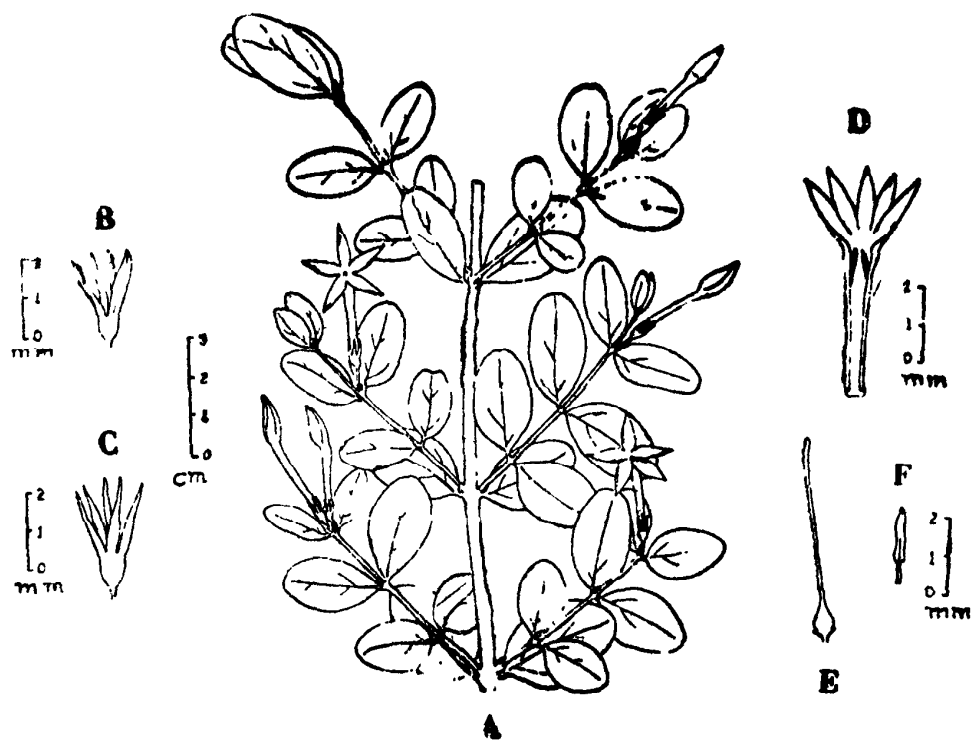


Fig. 6. *Jasminum sessiliflorum* Vahl

A. Habit, B. & C. Calyx,
D. Corolla, E. Pistil,
F. Anther

Fl. & Fr. : March September.

Fairly common in the outskirts of the forest and as an undergrowth in the Teak plantations at Five falls.

6. *Jasminum trichotomum* Heyne ex Roth, Nov. Sp. Pl. Ind. Or. 6. 1821 ; Clarke in Hook. f., Fl. Brit. Ind. 3 : 599. 1882 ; Gamble, Fl. Presid. Madras 2 (5) : 790. 1923.

Stiff, scandent shrubs ; branchlets glabrous. Leaves 1.5 5 × 1 2.5 cm, ovate lanceate, glabrous, subacute at apex, obtuse or rounded at base ; petioles 1 - 2 cm long, slender. Flowers white, fragrant in terminal, trichotomous cymes ; calyx lobes minute or absent. Berries up to 1 cm long, ovoid, smooth.

Fl. & Fr. : March September.

Occasional, in the dry scattered forest areas on the way to Tekkumalai.

98. SCROPHULARIACEAE

1a. Corolla with the upper lobes external, overlapping in bud

2a. Corolla rotate, 4-lobed, pilose in the throat ; stamens and stigma exserted

Scoparia 5

2b. Corolla bilabiate or 5-lobed, not pilose in the throat ; stamens and stigma not exserted

3a. Anther locules parallel

4a. Calyx 5-partite ; sepals unequal in width

Bacopa 1

4b. Calyx united below ; sepal lobes subequal in width

5a. Perfect stamens 2 ; staminodes 2, minute

Dopatrium 2

5b. Perfect stamens 4 ; staminodes absent

Limnophila 3

3b. Anther locules divergent

6a. Calyx 3-5 winged, gamosepalous

Torenia 8

6b. Calyx not winged, polysepalous or nearly so

Lindernia 4

1b. Corolla with the lower lobes external, overlapping in bud

7a. Corolla bilabiate ; upper lip unequally nouched or 2-fid, the lower lip 3-lobed

Striga 7

7b. Corolla infundibuliform, 5-lobed, lobes subequal

Sepubia 6

1. *BACOPA* Audub. *nom. gen. cons.*

Bacopa monnieri (Linn.) Wettst. in Engl. & Prantl, *Pflanzenfam.* (ed. 1) 4, 3b : 77. 1891 (as *monniera*) ; Pennell, *Proc. Nat. Sci. Philad.* 98 : 94. 1946 ; Chatterjee *et* Bharadwaja, *Bull. Bot. Soc. Bengal* 9 : 133. 1955. *Lysimachia monnieri* Linn., *Cent. Pl.* 2 : 9. 1756 & *Syst. Nat.* 10 : 851. 1759. *Monniera cuneifolia* Michx., *Fl. Bor. Amer.* 2 : 22. 1803 ; Gamble, *Fl. Presid. Madras* 2 (5) : 953. 1923. *Herpestis monniera* (Linn.) H.B.K., *Nov. Gen. et Sp.* 2 : 366. 1818 ; Benth., *Scroph. Ind.* 30. 1835 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 4 : 272. 1884 (as *H. monniera*). *Bramia monnieri* (Linn.) Pennell, *Proc. Acad. Nat. Sci. Philad.* 75 : 10. 1923 & in *Acad. Nat. Sci. Philad. Mon.* 5 : 23. 1943. *Brammi* (Malayalam). *Sambrane elai* (Tamil).

Prostrate or suberect herbs, up to 30 cm long ; stem rooting at nodes, glabrous or nearly so. Leaves sessile, $0.5 \times 0.3-0.4$ cm, obovate-oblong or spatulate, entire, dotted on the lower surface, obtuse at apex, narrowed towards base. Flowers white, solitary, axillary. Capsules ± 0.4 cm long, ovoid, acute.

Fl. & Fr. : Almost throughout the year.

Semiaquatic or marshy plants above Main falls and in Thippakkulam during summer. A highly medicinal herb.

2. *DOPATRIUM* Buch. Ham. *ex* Benth.

Dopatrium junceum (Roxb.) Buch. Ham. in Benth., *Scroph. Ind.* 30. 1835 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 4 : 274. 1884 ; Gamble, *Fl. Presid. Madras* 2 (5) : 954. 1923 ; Pennell, *Proc. Acad. Nat. Sci. Philad. Mon.* 5 : 24. 1943 ; Chatterjee *et* Bharadwaja, *Bull. Bot. Soc. Bengal* 9 : 135. 1955 ; Subr., *Aquat. Angio.* 31. 1862. *Gratiola juncea* Roxb., *Pl. Corom.* 2 : 16, t. 129. 1798.

Erect herbs, 20 - 40 cm high ; branches arising from the base, striate, swollen and spongy below, slender above. Leaves sessile, gradually reduced upwards, $1.3 \times 0.3-0.5$ cm, oblong, entire, rounded at apex, narrowed towards the base. Flowers light purple or violet in slender racemes. Capsules ± 0.15 cm in diameter, globose, glabrous.

Fl. & Fr. : July - December.

Common marsh plants around ponds and along the sides of wet fields on the way to Five falls.



Fig. 7. *Bacopa monnieri* (Linn.) Wettst.

A. Habit, B. Flower, C. Sepal,
D. Stamens, E. Pistil

3. LIMNOPHILA R. Br. *nom. gen. cons.*

Limnophila heterophylla (Roxb.) Benth., Scroph. Ind. 25. 1835 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 270. 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 952. 1923 ; Subr., Aquat. Angio. 30. 1962 ; Philcox, Kew Bull. 24 : 124. 1970. *Columnea heterophylla* Roxb., Fl. Ind. 3 : 97. 1832. *Limnophila roxburghii* G. Don, Syst. 4 : 543. 1837. (excl. descr., *pro parte*). *L. heterophylla* (Roxb.) Benth. var. *reflexa* (Benth.) Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 270. 1884. *Antirrhinum gratissimum* Roxb. ex Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 266. 1884 (in syn.).

Erect herbs, 30–90 cm high ; stems slender, glabrous. Leaves very variable and dimorphic ; aerial leaves sessile, up to 2 × 0.4 cm, entire or crenulate ; submerged leaves multifid with capillary segments. Flowers light rose coloured, solitary and axillary or in terminal spikes ; cleistogamous flowers often present on the submerged stem. Capsules orbicular.

Fl. & Fr. : August–January.

Submerged or amphibian hydrophytes in Thippakkulam and above Main falls.

4. LINDERNIA All.

1a. Capsules almost equal in length to the calyx or shorter

2a. Leaves petioled (petioles 0.3 to 0.5 cm long) ; flowers violet in axillary or terminal racemes

L. crustacea 3

2b. Leaves sessile or subsessile ; flowers white, solitary or in pairs

L. pusilla 5

1b. Capsules twice as long as the calyx or longer

3a. Leaves entire

L. parviflora 4

3b. Leaves serrate

4a. Serrations of the leaves spinous ; flowers white

L. ciliata 2

4b. Serrations of the leaves not spinous (distant and shallow) ; flowers blue or pinkish

L. antipoda 1

1. **Lindernia antipoda** (Linn.) Alston in Trimen, Handb. Fl. Ceylon 6 (suppl.) : 214. 1931 ; Pennell, J. Arnold Arbor. 20 : 81. 1939 & *ibid.* 24 : 253. 1943 (*pro parte*) ; Philcox, Kew Bull. 17 : 484. 1964 & *ibid.* 22 : 57. 1968. *Ruellia antipoda* Linn., Sp. Pl. 635. 1753. *Bonnaya veronicifolia* (Retz.) Spreng., Syst. 1 : 41. 1825 ; Benth., Scroph. Ind. 33. 1835 ;

Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 285. 1884. *Gratiola veronicifolia* Retz., Obs. Bot. 4 : 8. 1786. *Lindernia veronicifolia* (Retz.) F. Muell., Fragm. 6 : 101. 1867 (excl. syn.); Pennell, Brittonia 2 : 182. 1936. *Illysanthes veronicifolia* (Retz.) Urb., Ber. Deutsch. Bot. Ges. 2 : 436. 1884 (excl. syn.) ; Gamble, Fl. Presid. Madras 2 (5) : 962. 1923. *Lindernia anagallis* (Burm. f.) Pennell var. *grandiflora* (Retz.) Mukerjee, J. Indian Bot. Soc. 24 : 133. 1945. *Gratiola grandiflora* Retz., Obs. Bot. 4 : 8. 1786 ; Roxb., Pl. Corom. 2 : 42. t. 179. 1789.

Erect or decumbent herbs, rooting at lower nodes ; branches almost quadrangular, glabrous, up to 25 cm long. Leaves sessile or subsessile, up to 3.5×1.2 cm, oblong, elliptic or oblanceolate, distantly and shallowly serrate, acute or obtuse at apex, narrowed towards base. Flowers blue or pinkish in terminal or axillary racemes. Capsules up to 1.5 cm long, linear or linear subulate, septicidal.

Fl. & Fr. : November March.

Aquatic or amphibian hydrophytes common around Five falls, Chittaruvi and Main falls.

2. *Lindernia ciliata* (Colsm.) Pennell, Brittonia 2 : 182. 1936 & in J. Arnold Arbor. 24 : 253. 1943 & in Acad. Nat. Sci. Philad. Mon. 5 : 32. 1943 ; Mukerjee, Bull. Bot. Soc. Bengal 9 : 145. 1955 ; Philcox, Kew Bull. 22 : 51. 1968. *Gratiola ciliata* Colsm., Prodr. Desc. Grat. 14. 1793. *Bonnaya brachiata* Link et Otto, Ic. Pl. Select. 25 : t. 11. 1820 ; Benth., Scroph. Ind. 32. 1835 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 284. 1884. *Illysanthes serrata* (Roxb.) Urb., Ber. Deutsch. Bot. Ges. 2 : 436, 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 962. 1923. *Gratiola serrata* Roxb., Fl. Ind. 140. 1820.

Erect herbs, 7.5-25 cm high ; stems quadrangular, decumbent at base. Leaves sessile, up to 3.5×1.5 cm, broadly oblong, sharply aristate-serrate, glabrous, obtuse or subacute at apex, rounded at base. Flowers white in lax terminal racemes. Capsules up to 1.2 cm long, linear-oblong, glabrous.

Fl. & Fr. : July December.

Marsh plants in the moist soil around rocks at Swamiar falls and along the sides of the stream below Shembagadevi falls.

3. *Lindernia crustacea* (Linn.) F. Muell., Syst. Cens. Austrl. Pl. 97. 1882 ; Pennell, Acad. Nat. Sci. Philad. Mon. 5 : 29. 1943 ; Mukerjee, J. Indian Bot. Soc. 24 : 130. 1945 ; Chatterjee et Bharadwaja, Bull. Bot.

Soc. Bengal 9 : 142. 1945 ; Philcox, Kew Bull. 22 : 17. 1968. *Capraria crustacea* Linn., Mant. 87. 1767. *Torenia varians* Roxb., Fl. Ind. 96. 1832. *Vandellia crustacea* (Linn.) Benth., Scroph. Ind. 35. 1835 ; Wt., Ic. t. 863. 1844-45 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 279. 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 959. 1923. *V. alba* Benth., Scroph. Ind. 35. 1835.

Creeping herbs, 10-20 cm long, rooting at lower nodes ; stems quadrangular, pubescent or glabrous. Leaves 1-2 × 0.5-1.5 cm, suborbicular, ovate or lanceate, serrate, slightly, pubescent on both sides or glabrous, obtuse at apex, rounded or narrowed at base ; petioles 0.3-0.5 cm long. Flowers violet in axillary or terminal racemes, long pedicelled. Capsules upto 0.5 cm long, ovoid or oblong, equalling the calyx in length.

Fl. & Fr. : August-January.

Common around Swamiar falls and Main falls towards Chittaruvu side where the soil becomes marshy during monsoon.

4. *Lindernia parviflora* (Roxb.) Haines, Bot. Bih. & Orissa. 4 : 635. 1922 ; Pennell, Acad. Nat. Sci. Philad. Mon. 5 : 29. 1943 ; Mukerjee, J. Indian Bot. Soc. 24 : 132. 1945 ; Chatterjee *et* Bharadwaja, Bull. Bot. Soc. Bengal 9 : 144. 1955. *Gratiola parviflora* Roxb., Pl. Corom. 3 : 3, t. 203. 1819 & in Fl. Ind. 140. 1820. *Illysanthes parviflora* Benth. in DC. Prodr. 10 : 419. 1846 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 283. 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 961. 1923. *Bonnaya hyssopoides* Wt., Ic. t. 857. 1844-45 (*non* Benth. 1835).

Erect herbs up to 18 cm high ; stems quadrangular, glabrous. Leaves sessile or subsessile, 0.5-1.8 × 0.4-1.2 cm, ovate-lanceate, or lower ones elliptic, entire, acute or obtuse at apex, attenuate at base. Flowers bluish-white in axillary or terminal racemes. Capsules up to 3 cm long, cylindric-ellipsoid, longer than the calyx.

Fl. & Fr. : August.

Courtallum (*Robert Wight 714, CAL*).

5. *Lindernia pusilla* (Willd.) Boldingh, Zakfl. Landbouwster. Java 165. 1916 ; Philcox, Kew Bull. 22 : 41. 1968. *Gratiola pusilla* Willd., Sp. Pl. 1 : 105. 1797. *Vandellia crustacea* (Willd.) Yamazaki in Hara, Fl. E. Himal. 294. 1966. *Lindernia hirta* (Cham. *et* Schult.) Pennell, J. Arnold Arbor. 24 : 250. 1943 ; Mukerjee, J. Indian Bot. Soc. 24 : 131. 1945. *L. scabra* (Benth.) Wettst. in Engl. & Prantl, Pflanzenfam. (ed. 1) 4, 3b : 79. 1891. *Vandellia scabra* Benth., Scroph. Ind. 36. 1835 ; Hook. f. in

Hook. f., Fl. Brit. Ind. 4 : 281. 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 959. 1923. *Torenia globosa* Buch. Ham. ex Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 281. 1884 (*nom. in syn.*).

Diffuse herbs ; branches many, glabrous. Leaves up to 1.5×0.8 cm, ovate or ovate - cordate, entire, serrate or wavy, hairy on both sides, obtuse at apex, rounded or subcordate at base ; petioles obscure. Flowers white, axillary, solitary or in pairs on long pedicels. Capsules ± 0.3 cm across, subglobose, equalling the calyx in length.

Fl. & Fr. : August November.

Aquatic or semiaquatic and spreading on the wet soil along the sides of the pond in front of Courtallum temple.

5. SCOPARIA Linn.

Scoparia dulcis Linn., Sp. Pl. 116. 1753 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 289. 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 964. 1923 ; Pennell, Acad. Nat. Sci. Philad. Mon. 5 : 22. 1943 ; Chatterjee *et* Bhara-dwaja, Bull. Bot. Soc. Bengal 9 : 132. 1955.

Erect, much branched undershrubs, 30-90 cm high ; stem 4-6 angled, glabrous or pubescent. Leaves opposite or whorled, $2.5-6 \times 1.5-3$ cm, elliptic or elliptic-lanceate, serrate and rounded at apex, narrowed towards base ; petioles short. Flowers white, solitary or in axillary racemes. Capsules 0.2-0.25 cm in diameter, globose.

Fl. & Fr. : August February.

A weed, common along road sides and waste places in the plains of Courtallum.

6. SOPUBIA Buch.-Ham. ex D. Don.

Sopubia delphinifolia (Linn.) G. Don, Syst. 4 : 460. 1837 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 302. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 970. 1923 ; Chatterjee *et* Bharadwaja, Bull. Bot. Soc. Bengal 9 : 150. 1955. *Gerardia delphinifolia* Linn., Cent. 1 : pl. 21. 1756 Roxb., Pl. Corom. 1 : 66, t. 90. 1795 & in Fl. Ind. 99. 1832.

Much branched erect herbs, 30-60 cm high ; branches grooved, green, glabrous. Leaves 2.5-4.5 cm long, pinnatisect, segments filiform, often

ciliate, the upper most ones passing into bracts. Flowers purple or rose-coloured, solitary or in few-flowered axillary racemes. Capsules up to 0.5 cm long, oblong.

Fl. & Fr. : September December.

Marshy plants in the wet soil between rocks above Chittaruvi to Main falls.

7. STRIGA Lour.

- 1a. Calyx 9 to 17 ribbed (usually 11 to 13), one running to the apex of each of the five sepal lobes and 6-8 ending in the sinus between the lobes

S. asiatica 2

- 1b. Calyx 16 ribbed, three running to near the apex of each lobe and one ending at the sinus between the front 2 lobes

S. angustifolia 1

1. **Striga angustifolia** (D. Don) Saldanha, Bull. Bot. Surv. India 5 : 70. 1963. *Buchnera angustifolia* D. Don, Fl. Nep. 91. 1825. *B. euphrasioides* Benth., Scroph. Ind. 41. 1835 (*non* Vahl). *Striga euphrasioides* (Benth.) Benth. in Hook, Comp. Bot. Mag. 1 : 364. 1836 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 299. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 967. 1924 ; Chatterjee *et* Bharadwaja, Bull. Bot. Soc. Bengal 9 : 152. 1955.

Erect herbs, 5-10 cm high ; stem terete, strigose. Leaves 2.5-5 × 0.2-0.3 cm, linear, entire or 1-2 toothed along the margins, glabrous. Flowers white in axillary spikes. Capsules up to 0.6 cm long, oblong-ovoid or subglobose.

Fl. & Fr. : October December.

Common in the rocky forest floor on the way to Tekkumalai.

2. **Striga asiatica** (Linn.) O. Ktze., Rev. Gen. Pl. 2 : 466. 1891 ; Chatterjee *et* Bharadwaja, Bull. Bot. Soc. Bengal 9 : 152. 1955 ; Hepper, Rhodora 76 (805) : 47. 1974. *Buchnera asiatica* Linn., Sp. Pl. 630. 1753. *Striga lutea* Lour., Fl. Cochinch. 22. 1790 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 299. 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 968. 1924 ; Pennell, Acad. Nat. Sci. Philad. Mon. 5 : 96. 1943 ; Saldanha, Bull. Bot. Surv. India 5 : 69. 1963. *S. hirsuta* (Benth.) Benth. in Hook., Comp. Bot. Mag. 1 : 363. 1836. *Buchnera hirsuta* Benth., Scroph. Ind. 41. 1835.

Erect, scabrous herbs, 5-10 cm high ; stem covered with stiff hairs. Leaves sessile, 0.5-1 cm long, linear, hairy. Flowers yellow in axillary or terminal bracteate spikes. Capsules ellipsoid.

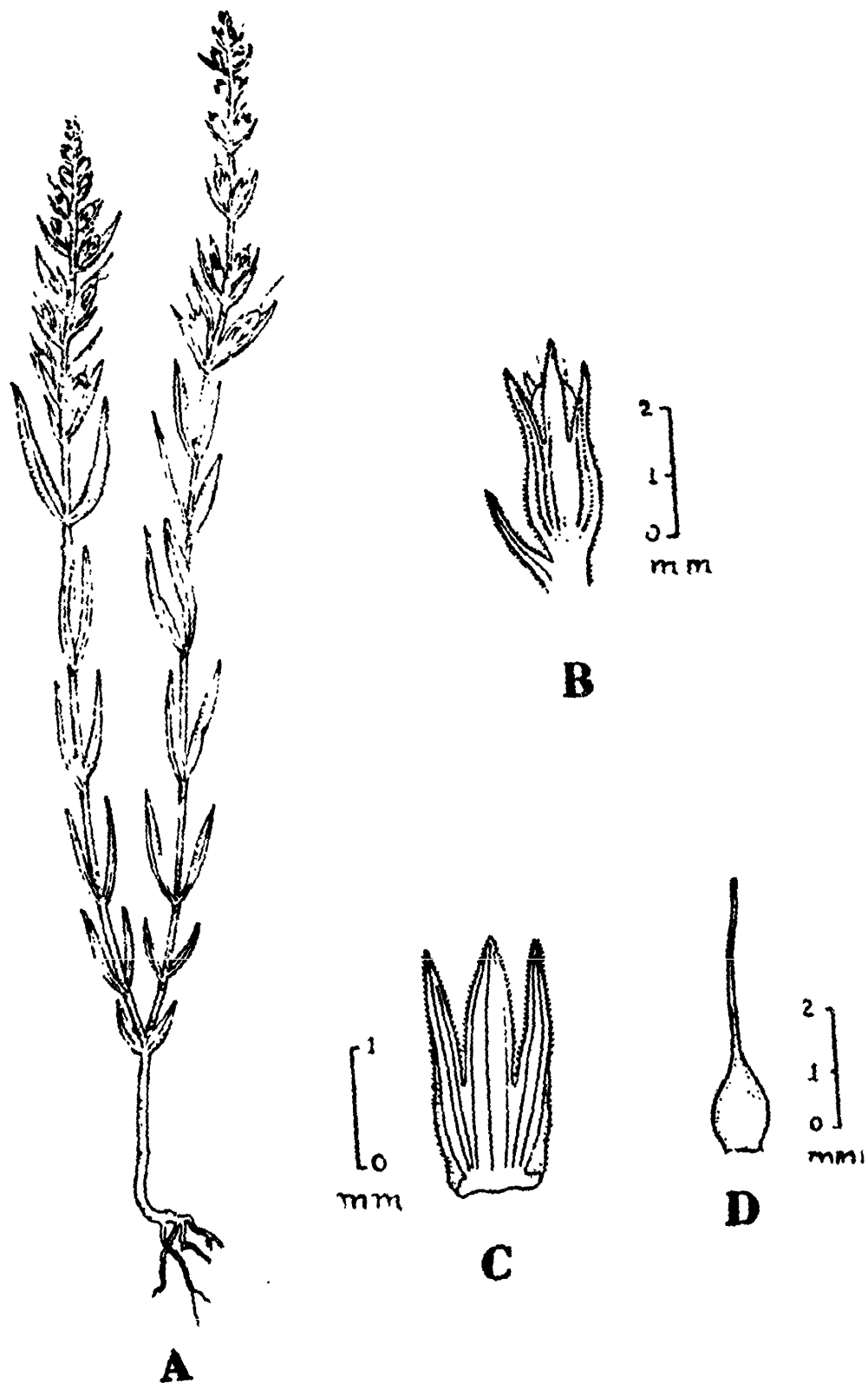


Fig. 8. *Striga angustifolia* (D. Don) Saldanha
A. Habit, B. Flower, C. Calyx, D. Pistil

Fl. & Fr. : August - November.

A root parasite on grasses in the rocky soil around and above Main falls, Chittaruvi and on the way to Five falls.

8. TORENIA Linn.

- 1a. Fruiting calyx ribbed ; petioles almost equal to the length of the lamina

T. bicolor 1

- 1b. Fruiting calyx not ribbed ; petioles much shorter than the lamina

T. travancorica 2

1. *Torenia bicolor* Dalz., Kew J. Bot. 3 : 38. 1851 ; Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 278. 1884 ; Gamble, Fl. Presid. Madras 2 (5) : 957. 1924 ; Saldanha, Bull. Bot. Surv. India 8 : 129. 1966.

Creeping herbs, 30-60 cm long ; stem profusely branched, angled, rooting at nodes. Leaves 2.5-5 × 1-2.5 cm, deltoid-ovate, crenate-serrate, sparsely hairy, acute at apex, subcordate or truncate at base. Flowers violet, solitary or in groups of 2 or 3, axillary. Capsules up to 2 cm long, narrowly-oblong.

Fl. & Fr. : July - February.

Courtaillum (*Robert Wight* 598, CAL).

2. *Torenia travancorica* Gamble, Fl. Presid, Madras 2 (5) : 957. 1923 ; Saldanha, Bull. Bot. Surv. India 8 : 130-131. 1966. *T. asiatica* Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 277. 1884 (*pro parte*). *T. leucosphon* Alston in Trimen, Handb. Fl. Ceylon 6 (suppl.) : 212. 1931.

Prostrate herbs, 15-45 cm long ; stems 4-angled, glabrous, rooting at lower nodes. Leaves 1.5-3.5 cm long, ovate-lanceate, serrate, glabrous or pubescent, acuminate at apex, obtuse at base ; petioles ± 1 cm long. Flowers yellow or white, solitary. Capsules narrow.

Fl. & Fr. : September - February.

Common around Shembagadevi and above Main falls in the moist soil.

99. GESNERIACEAE

- 1a. Inflorescence simple or compound dichasium, sometimes reduced to 1-2 axillary flowers

- 2a. Fruits dehiscent, oblong or oblong-linear ; pericarp thin, dry ; inflorescence reduced to 1-2 flowers ; leaves opposite or in rosettes

- 3a. Fertile stamens 4 ; seeds with hair like appendages *Aeschynanthus* 1
- 3b. Fertile stamens 2 ; seeds without hair like appendages *Didymocarpus* 2
- 2b. Fruits indehiscent, ovoid ; pericarp fleshy ; inflorescence in small axillary dichasial cymes ; leaves alternate borne at the ends of erect stems *Rhynchothecum* 4
- 1b. Inflorescence pseudoracemose or congested and subcapitate with a large solitary bract
- 4a. Inflorescence pseudoracemose ; bracts inconspicuous, linear ; leaves unequal sided at base ; corolla with oblique limb, personate ; fertile stamens 4 *Rhynchoglossum* 3
- 4b. Inflorescence congested and subcapitate ; bract large, leafy ; leaves equal sided at base ; corolla obscurely 2 lipped ; fertile stamens 2 *Epithema* 5

1. *AESCHYNANTHUS* Jack. *nom. gen. cons.*

Aeschynanthus perrottetii A. DC. in DC., Prodr. 9 : 261. 1845 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 339. 1884 (incl vars.) ; Gamble, Fl. Presid. Madras 2 (6) : 985. 1924 ; Subr. et Henry, Bull. Bot. Surv. India: 12 : 1. 1970. *A. planiculmis* (Clarke) Gamble, Fl. Presid. Madras 2 (6) 985. 1924. *A. perrottetii* var. *planiculmis* Clarke in DC., Mon. Phan. 5 (1) : 26. 1883 & in Hook. f., Fl. Brit. Ind. 4 : 340. 1884 (as '*platyculmis*'). *A. ceylanica sensu* Wt., Ic. t. 1347. 1848 (*non* Gardner).

Epiphytic herbs or undershrubs ; branches smooth, swollen at nodes. Leaves 5-9.5 × 1.5-3 cm, lanceate, subfleshy, entire, glabrous, bluntly acuminate at apex, narrowed, acute or obtuse at base ; petioles up to 1 cm long, stout. Flowers long pedicelled, solitary and axillary ; corolla pubescent outside towards apex. Capsules up to 20 cm long, linear, glabrous ; seeds narrowly oblong-ellipsoid, acute with a long hair like appendage at each end.

Fl. & Fr. : August February.

Courtallum (Robert Wight 651, CAL).

2. *DIDYMOCARPUS* Wall. *ex* Buch. Ham. *nom. gen. cons.*

Didymocarpus innominatus Burt, Notes R. Bot. Gard. Edinb. 21 : 201. 1954. *D. rottlerianus sensu* Clarke in DC., Mon. Phan. 5 : 101. 1883

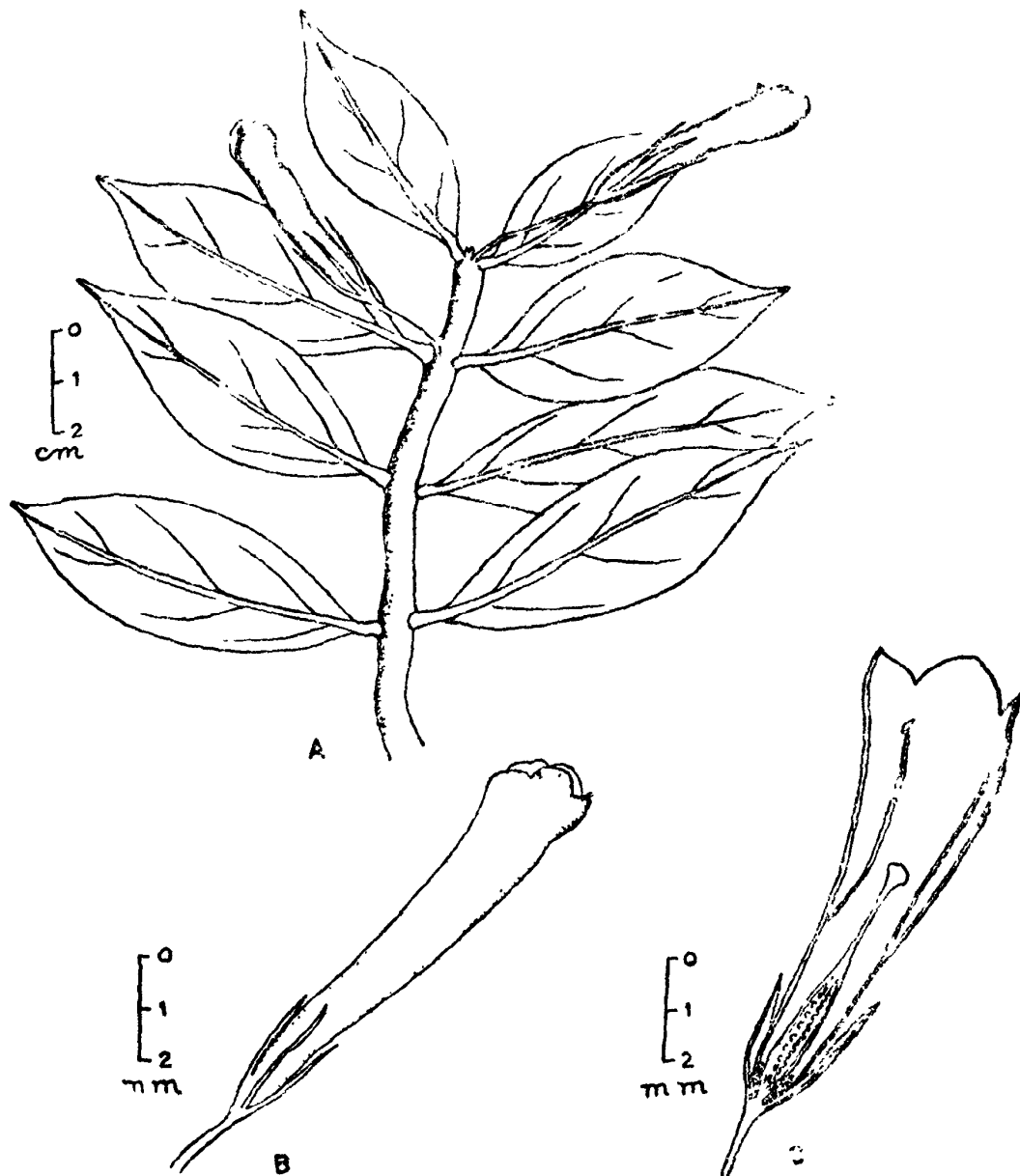


Fig. 9. *Aeschynanthus perrottetii* A.DC

A. Habit, B. Flower,
C. L.S. of Flower

(excl. vars.) & in Hook. f., Fl. Brit. Ind. 4 : 353. 1884 (excl. vars, non Wall.) ; Gamble, Fl. Presid. Madras 2 (6) : 989. 1924. *D. tomentosa* Wt., Ic. t. 1349. 1848 ; Clarke, *loc. cit.* p. 353. 1884 ; Gamble, *loc. cit.*

Scapigerous herbs. Leaves subsessile, in basal rosettes, 3-9.5 × 1.5-4.5 cm, spatulate, irregularly and deeply crenated, bullate, white villous on both surfaces, obtuse or rounded at apex, broadly decurrent to the petiole at base. Flowers pinkish in lax dichasia, on scapes up to 10.5 cm long. Capsules 1.5-2.2 cm long, lanceate, villous.

Fl. & Fr. : July December.

Common along the sides of rocks in wet humus soil at Shembagadevi where it acquires a semi-aquatic habit during monsoon. Very rarely the plant is seen in the reserve forest around Main falls in dry, rocky, soil.

3. EPITHEMA BL.

Epithema carnosum (G. Don) Benth., Scroph. Ind. 57 : 665. 1835 ; Clarke in DC., Mon. Phan. 5 : 177. 1883 & in Hook. f., Fl. Brit. Ind. 4 : 369. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 992. 1924. *Aikinia carnosus* G. Don, Gen. Syst. 4 : 665. 1838. *Epithema zeylanicum* Gardner, Calcutta J. Nat. Hist. 6 : 492. 1846 ; Wt., Ic. t. 1354. 1848 (not representative). *E. carnosum* vars. *zeylanicum* & *hispida* Clarke in DC., Mon. Phan. 5 : 178. 1883 & in Hook. f., Fl. Brit. Ind. 4 : 369. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 992. 1924 (only var. *hispida*).

Erect herbs, 15-20 cm high ; stems stiff, hairy. Leaves membranous, very variable in shape and size, lower ones very large, up to 13.5 × 8.5 cm, ovate-cordate, serrate or doubly dentate-serrate, hispid all over, acute or obtuse at apex, cordate, ovate or truncate at base ; upper leaves much smaller ; petioles of the basal large leaves 4-6.5 cm long, hispid ; upper leaves almost sessile. Flowers bluish in terminal congested and subcapitate scorpioid cymes (monochasia) ; bracts broadly ovate to suborbicular, serrate-dentate. Capsules globose, minute, enclosed in the calyx.

Fl. & Fr. : August December.

Very curious and rare plants in the wet humus soil on both sides of Swamiar falls in Udayathan estate.

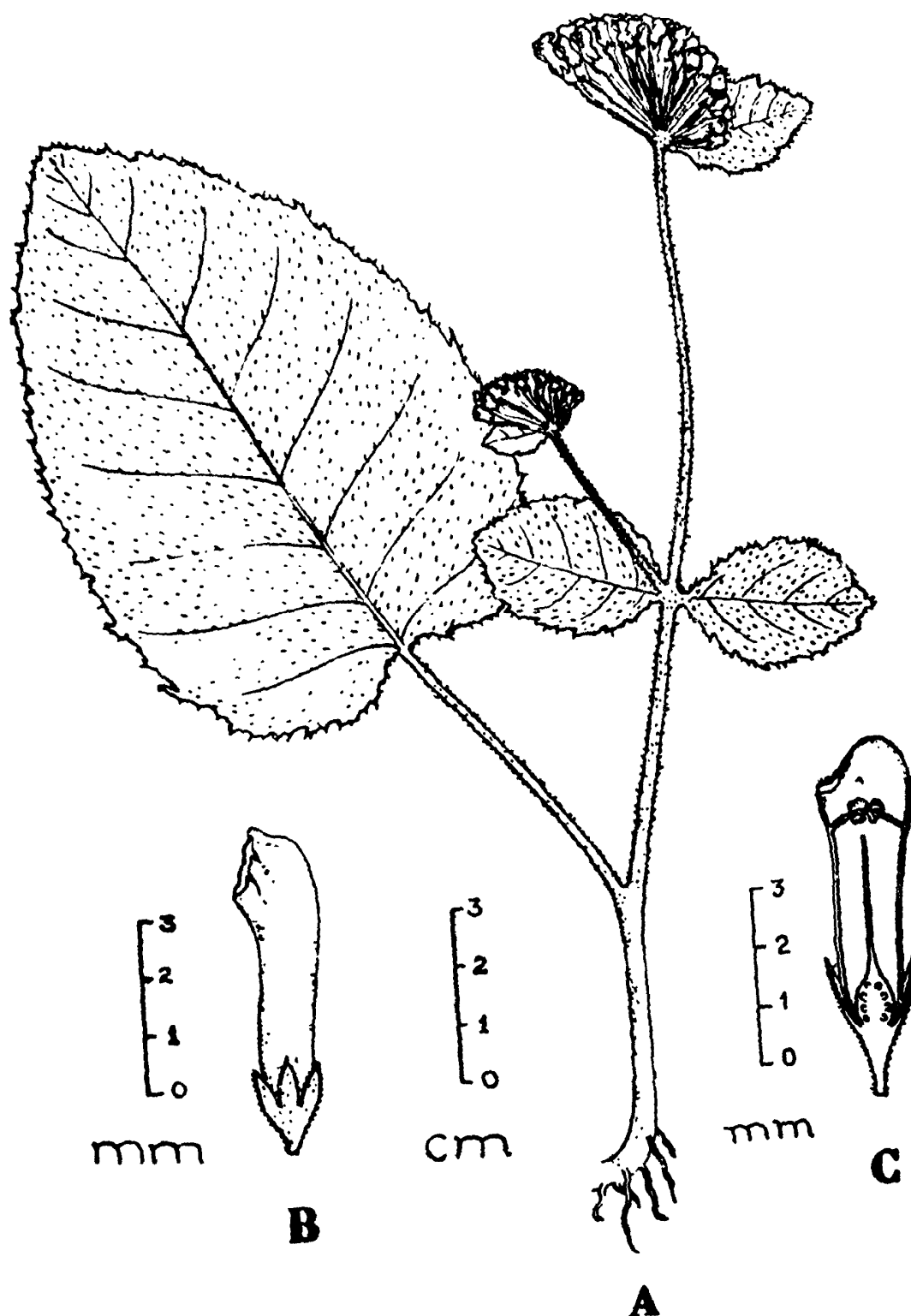


Fig. 10. *Epithema carnosum* (G. Don) Benth.

A. Habit, B. Flower,
C. L.S. of Flower.

4. RHYNCHOGLOSSUM Bl.

Rhynchoglossum notonianum (Wall.) Burtt, Notes R. Bot. Gard. Edinb. 24 (2) : 170. 1962. *Wulfenia notoniana* Wall., Tent. Fl. Nep. 46. 1826. *Klugia notoniuna* (Wall.) DC., Prodr. 9 : 276. 1845 ; Wt., Ic. t. 1353. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 467. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 990. 1924. *K. notoniana* var. *glabra* (Gardner) Clarke in DC., Mon. Phan. 159. 1883 & in Hook. f., Fl. Brit. Ind. 4 : 466. 1884. *K. notoniana* var. *scabra* (Dalz.) Clarke in DC., Mon. Phan. 160. 1883 & in Hook. f., Fl. Brit. Ind. 4 : 467. 1884.

Succulent herbs, 30 - 60 cm high ; stem terete, glabrous or hispid with short bristly hairs. Leaves few, 5 - 20 × 2.5 - 10 cm, ovate - oblong, very unequal sided, often minutely denticulate, glabrous or scabrid, acuminate at apex, larger side semi cordate and smaller side acute at base ; petioles 2 - 3.5 cm long, stout. Flowers bright blue, numerous in psuedo-racemes. Capsules ovoid, small with persistent calyx.

Fl. & Fr. : September - February.

Rare in the shady, damp areas below Shembagadevi along the sides of the stream.

5. RHYNCHOTECHUM Bl.

Rhynchotechum permolle (Nees) Burtt, Notes R. Bot. Gard. Edinb. 24 (1) : 39 1962. *Isanthera permollis* Nees, Trans. Linn. Soc. Lond. 17 : 82. 1834 ; Wt., Ic. t. 1355. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 372. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 992. 1924.

Tawny silky shrubs, 20 - 50 cm high. Leaves up to 30 × 11 cm, oblanceate, entire, glabrous above, somewhat tawny wooly beneath, acuminate at apex, acute at base ; petioles up to 7 cm long, slender. Flowers small in axillary cymes, towards the apex of branches ; calyx lobes linear.

Fl. : July - August.

Courtallum (*Robert Wight* 384, 2035, 2351, CAL).

100. BIGNONIACEAE

- 1a. Corolla 5-lobed, lobes almost equal ; calyx spathaceous, cleft to the base on the side ; seeds almost rectangular

Dolichandrone 1

- 1b. Corolla 2-lipped, the upper lip 2 and the lower lip 3-lobed ; calyx not spathaceous (complanate, truncate or shotrly 5-lobed) ; seeds trigonous

Sterospermum 2

1. DOLICHANDRONE (Fenzl) Seem.

Dolichandrone atrovirens (Heyne ex Roth) Sprague, Kew Bull. 1919 : 307. 1919 ; Gamble, Fl. Presid. Madras 2 (6) : 996. 1924 ; Chatterjee, Bull. Bot. Soc. Bengal 2 : 66. 1948. *Bignonia atrovirens* Heyne ex Roth, Nov. Sp. Pl. Ind. Or. 284, 402. 1821. *Dolichandrone crispa* Seem., J. Bot. 8 : 381. 1870 (*pro parte*) ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 379. 1884. *Bignonia crispa* Buch. Ham. in Roxb., Fl. Ind. 3 : 103. 1832. *Perudi, Pumbadiri, Vattalapu* (Tamil).

Trees, 3–5.5 m high ; branches almost glabrous. Leaves imparipinnate, leaflets $3.5–7.5 \times 1.5–4$ cm, obovate or suborbicular, subcoriaceous, glabrous, obtuse or with a blunt acumen at apex, obtuse at base ; petiolules 1–1.5 cm long. Flowers greenish white in terminal pubescent racemes. Capsules 20–40 cm long, subcylindrical, pubescent.

Fl. & Fr. : January–June.

Common in the higher altitudes between Tiger falls and Old Courtallum.

2. STEROSPERMUM Cham.

Sterospermum personatum (Hassk.) Chatterjee, Bull. Bot. Soc. Bengal 2 : 70. 1948 ; Santisuk, Kew Bull. 28 : 178. 1973. *Bignonia chelonoides sensu* Roxb., Fl. Ind. 3 : 106. 1832 (*pro parte, non* Linn. f.). *Sterospermum chelonoides sensu* DC., Bibl. Univ. Genev 2, 17 (Rev. Bign. 8) : 125. 1838 & in DC., Prodr. 9 : 210. 1845 (*pro parte, quod deser.*) ; Wt., Ic. t. 1341. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 382. 1884 ; K. Schum. in Engl. & Prantl, Pflanzenfam. (ed 1) 4, 3b : 242. 1895 ; Burk., Rec. Bot. Surv. India 10 : 331. 1925 ; Steenis, Rec. Trav. Bot. Neerl. 24 : 951. 1927 & in Bull. Jard. Bot. Buitenz. 3. 10 : 237. 1928. *Dipterosperma personatum* Hassk., Flora 25 (2) : Bieb. 28. 1842. *Sterospermum tetragonum* DC., Prodr. 9 : 210. 1845 ; Gamble, Fl. Presid. Madras 2 (6) : 998. 1924. *Begonia caudata* DC., Prodr. 9 : 166 1845 (Type : *Lescheunault s. n.* from Mts. de Coottalam).

Deciduous trees, 10–20 m high ; branchlets finely puberulous. Leaves imparipinnate ; leaflets 3–5 pairs, the terminal one $10–12.5 \times 2.5–5$ cm, elliptic, entire, glabrous when mature, caudate acuminate at apex, acute or rounded at base. Flowers yellow in lax drooping panicles ; filaments of the stamens with a tuft of woolly hairs at the base. Capsules 30–60 cm long, subquadrangular, ridged ; ridges sharp, twisted.

Fl. & Fr. : April–August.

Fairly common around Shembagadevi.

101. ACANTHACEAE

- 1a. Leaves subradical forming rosettes on the ground ; seeds not supported on retinacula *Elytraria* 7
- 1b. Leaves not subradical or radical and not forming rosettes on the ground ; seeds supported on a hard retinacula
 - 2a. Corolla lobes twisted to the left in bud
 - 3a. Ovules more than two in each locule of the ovary ; capsules normally with 6 or more seeds
 - 4a. Corolla distinctly 2-lipped ; inflorescence spinous (except in *H. salicifolia*) *Hygrophila* 11
 - 4b. Corolla subequally 5-lobed ; inflorescence not spinous
 - 5a. Capsules seed bearing from the base to the tip ; flowers in glandular hairy spikes forming panicles *Stenosiphonium* 21
 - 5b. Capsules with a thick clavate base, bearing seeds above the clavate portion to the apex ; flowers in axillary cymes *Ruellia* 20
 - 3b. Ovules two in each locule of the ovary ; capsules with 4 or fewer seeds
 - 6a. Placenta separating elastically from the base of the ripe capsule *Phaulopsis* 16
 - 6b. Placenta not separating elastically from the base of the ripe capsule
 - 7a. Corolla tube long, linear, slender ; stamens 2 *Eranthemum* 8
 - 7b. Corolla tube narrow below, usually infundibuliform upwards ; stamens 4 *Nilgirianthus* 14
 - 2b. Corolla lobes imbricate in bud
 - 8a. Ovules 3-10 in each locule of the ovary
 - 9a. Capsules compressed at right angles to the septum ; seeds not compressed *Andrographis* 1
 - 9b. Capsules subterete ; seeds much compressed *Gymnostachyum* 10
 - 8b. Ovules 2 or rarely 1 in each locule of the ovary
 - 10a. Corolla lobes 5, subequal
 - 11a. Anthers 1-loculed *Crossandra* 4
 - 11b. Anthers 2-loculed
 - 12a. Calyx 4-partite, the two outer sepals much larger than the inner *Barleria* 3

- 12b. Calyx 4-partite, the sepals subequal, small
 - 13a. Stamens 4 ; corolla-tube inflated above *Asystasia* 2
 - 13b. Stamens 4 ; corolla-tube not inflated above but long and slender *Pseuderanthemum* 17
- 10b. Corolla lobes 2, unequal
 - 14a. Anthers 1-loculed *Monothecium* 13
 - 14b. Anthers 2-loculed
 - 15a. Placentas separating elastically from the valves
 - 16a. Bracts unilateral on the peduncle *Rungia* 19
 - 16b. Bracts paired on the peduncle *Dicliptera* 5
 - 15b. Placentas not separating elastically from the valves
 - 17a. Anther locules parallel, subequal *Ecbolium* 6
 - 17b. Anther locules one higher than the other
 - 18a. Anther locules, at least the lower one, with a white spur like appendage at the base
 - 19a. Calyx 5-partite, the lobes equal or subequal
 - 20a. Large shrubs ; spikes not condensed ; bracts white with green veins *Justicia* 12

- 20b. Herbs or undershrubs ; spikes condensed ; bracts green *Gendarussa* 9
- 19b. Calyx 4-partite or if 5, then the posterior one much smaller than the others *Rostellularia* 18
- 18b. Anther locules without any spur or spur-like appendage at the base *Peristrophe* 15

1. ANDROGRAPHIS Nees

- 1a. Procumbent herbs with woody root-stock ; branches, terete, pubescent *A. lobelioides* 2
- 1b. Erect herbs without woody root-stock ; branches quadrangular, winged or grooved, glabrous or with spreading hairs
- 2a. Branches winged towards apex, glabrous *A. paniculata* 3
- 2b. Branches not winged, but grooved towards apex, clothed with spreading hairs *A. echioides* 1

1. *Andrographis echioides* (Linn.) Nees in Wall., Pl. As. Rar. 3 : 117. 1832 ; Wt., Ic. t. 467. 1840 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 505. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1051. 1924 ; Sant., Uni. Bombay Bot. Men. no. 2 : 51. 1951. *Justicia echioides* Linn., Sp. Pl. 16. 1753 ; Roxb., Fl. Ind. 1 : 118. 1832.

Erect, villous herbs, 20-30 cm high ; stems quadrangular, grooved towards apex. Leaves sessile, 2.5-4.5 × 1-1.5 cm, oblong, sparsely hairy, ciliate along the margins, obtuse at apex, cuneate at base. Flowers white in slender, axillary, unilateral racemes, shorter than the leaves ; anthers slightly bearded. Capsules elliptic-lanceate, hairy, 4-seeded.

Fl. & Fr. : July - September.

Rather common in the dry areas bordering the stream below Shembagadevi.

2. *Andrographis lobelioides* (Nees) Wt., Sp. Nilgh. t. 181. 1846-50 & in Ic. t. 1557. 1850 ; T. Anders., J. Linn. Soc Lond. 9 : 503. 1867 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 505. 1885 ; Gamble, Fl. Presid. Madras 2 (6) : 1050. 1924. *Eriantha lobelioides* Nees in Wall. Pl. As. Rar. 3 : 115. 1832 & in DC., Prodr. 11 : 514. 1847.

Much branched, procumbent herbs, 5-20 cm long ; root-stock woody ; stems wiry, pubescent. Leaves subsessile, 0.1-1.5 cm across, ovate, pubescent on both sides. Flowers in terminal paniced racemes ; anthers copiously white bearded.

Fl. : April.

Courtallum (*Robert Wight* 675, CAL).

3. *Andrographis paniculata* (Burm. f.) Wall. ex Nees in Wall., Pl. As. Rar. 3 : 116. 1832 ; Wt., Ic. t. 518. 1840 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 501. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1048. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 50. 1951. *Justicia paniculata* Burm. f., Fl. Ind. 9. 1768.

Erect herbs, upto 90 cm high ; branches quadrangular, narrowly winged towards apex. Leaves 4-7.5 × 1-2.5 cm, lanceate, margine slightly undulate, glabrous, acute at both ends ; petioles obscure, or up to 0.5 cm long. Flowers white with a dark lower lip, in axillary and terminal unilateral racemes forming panicles ; anthers bearded, filaments hirsute.

Capsules up to 2 cm long, oblong, acute at both ends.

Fl. & Fr. : June August.

A common weed in waste places and plains at Tiger falls and on the way to Five falls.

2. *ASYSTASIA* Bl.

1a. Plants glabrate ; leaves narrowed at base

A. chelonoides 1

1b. Plants grey-puberulous ; leaves rounded, subcordate or abruptly narrowed at base

A. gangetica 2

1. *Asystasia chelonoides* Nees in Wall., Pl. As. Rar. 3 : 89. 1832 ; Clarke in Hook.f., Fl. Brit. Ind. 4 : 493. 1885. *A. chelonoides* Nees var. *quadrangularis* Clarke in Hoof. f., Fl. Brtt. Ind. 4 : 494. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1063. 1924.

Herbs or undershrubs, 30-60 cm high ; branches somewhat straggling, glabrate. Leaves 4-18 × 1-4.5 cm, elliptic or elliptic-lanceate, membranous, glabrate, acuminate at apex, narrowed at base. Flowers pale-purple in slender bracteate racemes forming panicles. Capsules elliptic with a contracted and solid base.

Fl. & Fr. : February - November.

Occasional, by the side of Five falls near flowing water.

2. *Asystasia gangetica* (Linn.) T. Anders. in Thw., Enum. Pl. Zeyl. 235. 1859-64 ; Sant., Univ. Bomb. Bot. Mem. no. 2 : 68. 1951. *Justicia gangetica* Linn., Amoen. Acad. 4 : 299. 1759 ; Gamble, Fl. Presid Madras 2 (6) : 1063. 1924. *Asystasia coromandeliana* Wt. ex Nees in Wall., Pl. As. Rar. 3 : 89. 1832 ; Wt., Ic. t. 1506. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 493. 1884.

Straggling herbs or undershrubs, 30-90 cm high ; branches quadrangular, grey-pubescent. Leaves 2.5-6 × 1.5-4.5 cm, ovate, glabrous above, pubescent beneath, acute at apex, rounded, subcordate or abruptly narrowed at base. Flowers yellow in terminal and axillary lax racemes. Capsules 2.5-3 cm long, elliptic, pubescent.

Fl. & Fr. : August - December.

Common in the lower altitudes of Tekkumalai and also on the way to Five falls.

3. *BARLERIA* Linn.

- | | |
|--|-------------------------|
| 1a. Plants armed with interpetiolar spines | <i>B. cuspidata</i> 3 |
| 1b. Plants unarmed (i.e. without interpetiolar spines) | |
| 2a. Flowers in large, glandular-hairy, tawny spikes | <i>B. courtallica</i> 2 |
| 2b. Flowers in loose, leafy panicles of solitary flowers | |
| 3a. Outer calyx lobes with spinescent teeth | <i>B. pilosa</i> 4 |
| 3b. Outer calyx lobes without spinescent teeth
(acute or cuspidate) | <i>B. acuminata</i> 1 |

1. *Barleria acuminata* Wt. ex Nees in Wall., Pl. As. Rar. 3 : 93. 1832 ; Wt., Ic. t. 450. 1843-43 ; Gamble, Fl. Presid. Madras 2 (6) : 1059. 1924. *B. tomentosa* Roth var. *acuminata* Clarke in Hook. f., Fl. Brit. Ind. 4 : 485. 1884.

Spreading herbs, 32-60 cm long; branches hirsute with white hairs. Leaves $2.5-5.5 \times 1-2.5$ cm, ovate, entire with a row of marginal hairs, subglabrous above when mature, hirsute beneath, acute at apex, rounded at base; petioles 0.5-2 cm long, hirsute. Flowers blue in few-flowered leafy panicles. Capsules up to 1.5 cm long, elliptic, thick.

Fl. & Fr. : January May.

Occasional, in the Shola forests below Honey falls.

2. *Barleria courtallica* Nees in DC., Prodr. 11 : 226. 1847; Wt., Ic. t. 1529. 1850; Clarke in Hook. f., Fl. Brit. Ind. 4 : 489. 1884; Gamble, Fl. Presid. Madras 2 (6) : 1060. 1924; Sant., Univ. Bombay Bot. Mem. no. 2 : 61. 1951.

Erect shrubs, 90-120 cm high; branches glabrous. Leaves $4.5-17.5 \times 3-5$ cm, elliptic-lanceate, glabrous, long acuminate at apex, tapering acutely into the petiole at base; petioles 1-2 cm long. Flowers blue in the limb, yellow in the tube, subsecund in terminal or axillary large dense spikes; bracts and bracteoles linear-lanceate, glandular-hairy. Capsules 1.5-2.5 cm long, oblong, pointed at the tip.

Fl. & Fr. : February September.

Rare, along the sides of the stream in Udayathan estate and above Five falls.

3. *Barleria cuspidata* Heyne ex Nees in Wall., Pl. As. Rar. 3 : 93. 1832; Wt., Ic. t. 451. 1841; Clarke in Hook. f., Fl. Brit. Ind. 4 : 483. 1884; Gamble, Fl. Presid. Madras 2 (6) : 1059. 1924; Sant., Univ. Bombay Bot. Mem. no. 2 : 58. 1951. *Mancadcurulle, Vellaimuli, Kadanculi* (Tamil).

Armed low shrubs; stems 4-gonous, glabrous. Leaves $3.5-6 \times 0.5-1$ cm, oblong-lanceate, entire, glabrous, bristle-tipped, acute at apex; thorns axillary, up to 2 cm long. Flowers yellowish, sessile, solitary and axillary towards the apex of branches; bracteoles absent or reduced to bristles. Capsules ± 2 cm long, ovoid, beaked; seeds with appressed hairs.

Fl. & Fr. : Almost throughout the year.

Occasional in the outskirts of the forests and rather common in the plains.

4. *Barleria pilosa* Heyne ex Nees in Wall., Pl. As. Rar. 3 : 93. 1832 & in DC., Prodr. 11 : 234. 1847; Bedd., Ic. Pl. Ind. Or. t. 256. 1874; Clarke in Hook. f. Fl. Brit. Ind. 4 : 486. 1884; Gamble, Fl. Presid. Madras 2 (6) : 1060. 1924.

Unarmed undershrubs ; stems softly pilose. Leaves up to 6×1.5 cm, ovate, entire, softly villous, acuminate at apex ; petioles up to 5 cm long. Flowers blue, solitary, axillary; outer calyx lobes ± 1 cm long, ovate-orbicular, reticulately veined with spinescent teeth ; corolla tube ± 2.5 cm long, slender. Capsules ± 1 cm long, 4-seeded ; seeds shaggy.

Fl. & Fr. : February - November.

Rather common in the black humus soil at Honey falls, as an undergrowth in the evergreen forests.

4. *CROSSANDRA* Salisb.

Crossandra infundibuliformis (Linn.) Nees in Wall., Pl. As. Rar. 3 : 98. 1832. & in DC., Prodr. 11 : 280. 1847 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 55. 1951. *Justicia infundibuliformis* Linn., Sp. Pl. 21. 1753. *Crossandra undulaefolia* Salisb., Parad. Lond. t. 12. 1805 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 492. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1055. 1924. *C. axillaris* Nees in Wall., Pl. As. Rar. 3 : 98. 1832 ; Wt., Ic. t. 460. 1841.

Erect shrubs, up to 1 m high ; branches terete, glabrous or nearly so. Leaves up to 15×5 cm, ovate or lanceate, entire or undulate, glabrous, acute at apex, attenuate at base. Flowers saffron coloured in axillary spikes. Capsules 1 - 1.3 cm long, oblong, subacute ; seeds clothed with appressed, fringed scales.

Fl. & Fr. : September - March.

Rare, below New falls along the sides of the stream.

5. *DICLIPTERA* Juss. *nom. gen. cons.*

Dicliptera cuneata Nees in Wall., Pl. As. Rar. 3 : 111. 1832 & in DC., Prodr. 11 : 481. 1847 ; Wt., Ic. t. 1552. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 552. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1073. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 82. 1951.

Suberect herbs, 30 - 60 cm high ; stem glabrous, green. Leaves $2.5 - 10.5 \times 1.3 - 4.5$ cm, ovate or elliptic, entire, glabrous, acuminate at apex, acute or rounded at base ; petioles 0.5 - 4 cm long, slender. Flowers pink in subcapitate peduncled clusters ; bracts paired, up to 1.5 cm long, ovate - oblong, green. Capsules clavate.

Fl. & Fr. : September - February.

Occasional, as part of the ground flora in the Agricultural estate above Five falls.

6. ECBOLIUM Kurz

Ecbolium viride (Forssk.) Alston in Trimen, Handb. Fl. Ceylon 6 (suppl.) : 229. 1931 ; Sant., Univ. Bomb. Bot. Mem. no. 2 : 82. 1951. *Justicia viridis* Forssk., Fl. Aeg. Arab. 5. 1775. *Ecbolium linneanum* Kurz, J. Asiat. Soc. Bengal 2 : 75. 1871 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 544. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1074. 1924. *Karinkurunni*, *Kuranta* (Malayalam), *Nilambari* (Tamil).

Erect shrubs or undershrubs, 1 - 1.5 m high ; branches terete, thickened above nodes. Leaves 4 - 10 × 2 - 3 cm, lanceate or elliptic - lanceate, entire, pubescent, acuminate at apex, acute at base ; petioles up to 1 cm long. Flowers greenish - blue in short terminal spikes ; bracts up to 2 cm long, foliaceous, green. Capsules ± 1 cm long, ovoid compressed and narrowed at base with a short stalk, pointed at apex.

Fl. & Fr. : July - February.

Fairly common in the Sholas above Swamiar falls along the sides of the stream, below Five falls and along the forest pathsides to Tekkumalai.

7. ELYTRARIA Mich. *nom. gen. cons.*

Elytraria acaulis (Linn. f.) Lindau in Engl. & Prantl, Pflanzenfam. (ed. 1) 1 : 304. 1897 ; Gamble, Fl. Presid. Madras 2 (6) : 1009. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 11. 1951 ; Bremek., Reinwardtia 3 : 250. 1955. *Justicia acaulis* Linn. f., Suppl. 84. 1781 ; Roxb., Pl. Corom. 15, t. 127. 1819. *Elytraria crenata* Vahl, Enum. 1 : 106. 1804 ; Nees in Wall., Pl. As. Rar. 3 : 79. 1832 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 394. 1884.

Erect herbs, 10 - 15 cm high ; stem rhizome - like, 3 - 4 cm long. Leaves radical, forming rosettes on the ground, 7 - 11.5 × 2.5-5 cm, oblanceate, oblong or obovate, crenate, glabrous above, hairy beneath, obtuse at apex, acute at base. Flowers white in slender radical scapes, 10 - 15 cm long. Capsules ± 0.5 cm long, ovoid.

Fl. & Fr. : September - December.

Common on the way to Tekkumalai.

8. *ERANTHEMUM* Linn. *emend.* Radlk.

Eranthemum capense Linn., Sp. Pl. 9. 1753 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 33. 1951. *E. montanum* Roxb., (Hort. Beng. 80. 1814 *nom. nud*) Fl. Ind. 1 : 100. 1824 ; Wt., Ic. t. 466. 1841 ; Gamble, Fl. Presid. Madras 2 (6) : 1025. 1924. *Daedalacanthus montanus* T. Anders. in Thw., Enum. Pl. Zeyl. 229. 1859 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 421. 1884.

Shrubs, 0.5 - 1 m high. Leaves 5 - 12.5 × 2.5 - 5 cm, elliptic lanceate, glabrous, acuminate at apex, attenuated or sometimes rounded at base ; petioles 1 - 3 cm long. Flowers pale blue in terminal interrupted spikes forming panicles ; bracts green, lanceate to linear, acuminate, viscidly glandular hispid. Capsules up to 2 cm long, clavate, pointed.

Fl. & Fr. : March - December.

Fairly common in Tekkumalai at comparatively lower altitudes.

9. *GENDARUSSA* Nees *ex* Wall.

- 1a. Erect shrubs with brown or bluish branches ; flowers pale white

G. vulgaris 2

- 1b. Procumbent herbs with green branches ; flowers light violet

G. tranquebariensis 1

1. ***Gendarussa tranquebariensis*** (Linn. f.) Nees in Wall., Pl. As Rar. 3 : 105. 1832 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 530. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1079. 1924. *Justicia tranquebariensis* Linn. f., Suppl. 85. 1781.

Procumbent herbs, up to 90 cm long ; branches slender, stiff, green, puberulous. Leaves up to 1.8 × 1.5 cm, ovate or orbicular, glabrous, acute or obtuse at apex, acute at base ; petioles ± 0.5 cm long. Flowers light violet in mostly terminal spikes ; bracts orbicular, green. Capsules 0.5 - 0.7 cm long, obovoid, glabrous.

Fl. & Fr. : August - November.

Occasional, in the crevices of rocks above Chittaruvu.

2. ***Gendarussa vulgaris*** Nees in Wall., Pl. As. Rar. 3 : 104. 1832 & in DC., Prodr. 11 : 410. 1847 ; Wt., Ic. t. 468. 1840. *Justicia gendarussa* Burm. f., Fl. Ind. 10. 1768 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 532.

1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1079. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 91. 1951. *Karuneechii* (Malayalam & Tamil).

Evergreen, glabrous shrubs, 1 - 1.5 m high ; stem brown or bluish, glabrous. Leaves 5 - 14 × 0.5 - 3 cm, linear - lanceate, glabrous, acute at both ends ; petioles ± 1 cm long, glabrous. Flowers pale white with brownish dots in terminal spikes forming panicles. Capsules ± 1 cm long, glabrous.

Fl. & Fr. : April - November.

A common hedge plant in the gardens and plains of the area but naturalized in the deltas of the river below Shembagadevi.

10. GYMNSTACHYUM Nees *emend.* Benth.

Gymnostachyum canescens (Nees) T. Anders., J. Linn. Soc. Lond. 9 : 905. 1867 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 509. 1884 ; Gamble Fl. Presid. Madras 2 (6) : 1053. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 55. 1951. *Cryptophragmium canescens* Nees in Wall., Pl. As. Rar. 3 : 100. 1832 ; Wt., Ic. t. 1495. 1849.

Erect undershrubs, 30 - 90 cm high ; branches glandular - pubescent. Leaves up to 18 × 7.5 cm, ovate, serrulate, pubescent, acute or acuminate at apex, decurrent at base ; petioles 1 - 2 cm long. Flowers bluish or pale violet, crowded in axillary and terminal glandular hairy cymes. Capsules 1-1.5 cm long, linear, glandular - hairy.

Fl. & Fr. : November - March.

Rare, along the steep slopes of Kailasa Parvatham at the highest altitudes of Tekkumalai in the dense Shola forest.

11. HYGROPHILA R. Br.

Hygrophila salicifolia (Vahl) Nees in Wall., Pl. As. Rar. 3 : 81. 1832 ; Wt., Ic. t. 1490. 1849 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 407. 1884 ; Bremek., Verh. K. Ned. Akad. Wet. 2, 45 (2) : 13. 1948 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 20. 1951. *Ruellia salicifolia* Vahl, Symb. Bot. 3 : 84. 1794. *Hygrophila angustifolia* R. Br., Prodr. 479. 1810 ; Gamble, Fl. Presid. Madras 2 (6) : 1016. 1924.

Unarmed herbs, 30 - 90 cm high ; stem often rooting at lower nodes, subquadrangular, appressedly - pubescent. Leaves 1.5 - 4.5 × 0.5 - 1.5

cm, linear to linear lanceate, glabrous, entire, acute or obtuse at apex ; petioles 0–0.5 cm long. Flowers purplish blue in sessile axillary whorls. Capsules $\pm$ 1.5 cm long, narrow.

Fl. & Fr. : March–December.

Rather rare, in the valleys below Shembagadevi.

12. JUSTICIA Linn. (*sensu stricto*)

Justicia betonica Linn., Sp. Pl. 15. 1753 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 525. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1078. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 85. 1951. *Adathoda betonica* Nees in Wall., Pl. As. Rar. 3 : 103. 1832 & in DC., Prodr. 11 : 385. 1847. *Justicia ramosissima* Roxb., Fl. Ind. 1 : 129. 1832. *J. betonica* Linn. var. *ramosissima* (Roxb.) Clarke in Hook. f., Fl. Brit. Ind. 4 : 525. 1884.

Decumbent or erect shrubs, 60–120 cm high ; stems swollen at nodes. Leaves 5–10 $\times$ 1.5–3.5 cm, ovate or lanceate, entire or subcrenulate, glabrous, acute or acuminate at apex, shortly attenuated at base ; petioles up to 2 cm long. Flowers in large terminal panicle spikes ; bracts $\pm$ 1.5 $\times$ 1 cm, foliaceous with green veins. Capsules up to 1 cm long, clavate, softly pubescent.

Fl. & Fr. : March–December.

Fairly common in the open forest floor in the lower altitudes of Tekkumalai.

13. MONOTHECIUM Hochst.

Monothecium aristatum (Nees) T. Anders. in Thw., Enum. Pl. Zeyl. 234. 1860 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 524. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1068. 1924. *Anthocometes aristatus* Nees in Wall., Pl. As. Rar. 3 : 88. 1832.

Diffuse, procumbent herbs, up to 30 cm long. Leaves 2.5–3.5 $\times$ 1–1.5 cm, ovate or ovate lanceate, entire, glabrous or pubescent beneath, cuneate at both ends ; petioles up to 1 cm long. Flowers white in sessile, dense, oblong spikes. Capsules up to 0.5 cm long, oblong.

Fl. & Fr. : August–December.

An undergrowth in the drier areas of the forest around Five falls.

14. NILGIRIANTHUS Bremek.

- 1a. Flowers in capitate heads ; bracts ovate, cuspidate with recurved tips *N. barbatus* 1
- 1b. Flowers in erect or deflexed spikes ; bracts large, elliptic decurrent *N. decurrens* 2

1. *Nilgirianthus barbatus* (Nees) Bremek., Verh. K. Ned. Akad. Wet. 41 (1) : 174. 1944 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 39. 1951. *Strobilanthes barbatus* Nees in Wall., Pl. As. Rar. 3 : 85. 1832 ; Bedd., Ic. Pl. Ind. Or. t. 212. 1874 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 437. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1037. 1924.

Erect shrubs, 30–60 cm high ; stems tetragonous, grooved. Leaves up to 15 × 8 cm. elliptic lanceate, or oblanceate, subentire or crenate, glabrous, acuminate at apex, decurrent at base ; petioles 2.5–7.5 cm long, swollen at the base. Flowers white in capitate heads. Capsules 1–1.5 cm long, clavate, 2-seeded.

Fl. & Fr. : December–April.

Common in the humid areas along the sides of the stream in Udaya than estate, among rocks.

2. *Nilgirianthus decurrens* (Nees) Bremek., Verh. K. Ned. Akad. Wet. 41 (1) : 174. 1944. *Strobilanthes decurrens* Nees in DC., Prod. 11 : 189. 1847 ; Clake in Hook. f., Fl. Brit. Ind. 4 : 440. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1040. 1924. *Goldfussia decurrens* Wt., Ic. t. 1522. 1850.

Shrubs ; stems quadrangular, pubescent. Leaves 12–18 × 5–7 cm, elliptic, entire with uniformly arranged cystoliths on the upper surface, glabrous below, acuminate at both ends ; petioles 1–2 cm long, pubescent. Flowers in erect or rarely deflexed spikes ; floral bracts foliaceous with cystoliths.

Fl. : September.

Courtallum (Robert Wight 669, CAL).

15. PERISTROPHE Nees ex Wall.

- 1a. Stem angular, hairy ; corolla tube up to 1 cm long *P. bicalyculata* 1
- 1b. Stem almost terete, glabrous ; corolla tube ± 5 cm long *P. montana* 2

1. *Peristrophe bicalyculata* (Retz.) Nees in Wall., Pl. As. Rar. 3 : 113. 1832 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 554. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1084. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 93. 1951. *Dianthera bicalyculata* Retz., Vet. Akad. Handl. Stockh. 297, t. 9. 1775.

Much branched herbs or undershrubs 0.5-1 m high ; branches hexangular, grooved, hairy. Leaves 2-5 × 0.3-3 cm, ovate, entire, hairy on both sides, acuminate at apex, rounded at base ; petioles 1-1.5 cm long. Flowers pink in axillary and terminal trichotomous cymes. Capsules minute, ellipsoid, beaked.

Fl. & Fr. : September—January.

Rather common on the way to Five falls along the hedges and outskirts of the forests.

2. *Peristrophe montana* Nees in Wall., Pl. As. Rar. 3 : 113. 1832 & in DC., Prodr. 11. 493. 1847 (excl. f. *hasianus*) ; Wt., Ic. t. 1553. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 556. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1084. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 93. 1951.

Herbs or undershrubs, 30-90 cm high ; branches almost terete, glabrous. Leaves 10-19 × 4-6.5 cm, elliptic, thin, entire, subglabrous, long acuminate at apex, narrowed at base ; petioles up to 2.5 cm long. Flowers bluish-pink in terminal or axillary branched cymes ; bracts up to 2.5 × 1 cm, elliptic, glabrous. Capsules minute, ellipsoid, stalked.

Fl. & Fr. : September-February.

A very common species of the lower altitudes of Tekkumalai, towards the end of monsoon.

16. *Phaulopsis* Willd. *emend.* Spreng. *nom. gen. cons.*

Phaulopsis densiflora (Retz.) Sant., Kew Bull. 1948 : 276. 1948 & in Univ. Bombay Bot. Mem. no. 2 : 30. 1951. *Ruellia densiflora* Retz., Obs. Bot. 6 : 31. 1791. *Micranthus oppositifolius* Wendl., Bot. Boebacht. 39. 1798 ; Gamble, Fl. Presid. Madras 2 (6) : 1022. 1924. *Phaylopsis parviflora* Willd., Sp. Pl. 3 : 342. 1801 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 417. 1884.

Much branched herbs, 30-60 cm high, often prostrating and rooting at lower nodes. Leaves in unilateral pairs, very variable in size, up to 7.5

× 3 cm, ovate, entire or obscurely-crenate, acuminate at apex, tapering at base ; petioles 1-3.5 cm long. Flowers white in dense terminal one-sided spikes ; bracts reniform, orbicular. Capsules up to 0.5 cm long, clavate.

Fl. & Fr. : March—January.

A weed in the humus soil of Tekkumalai.

17. PSEUDERANTHEMUM Radlk.

Pseuderanthemum malabaricum (Clarke) Gamble, Fl. Presid. Madras 2 (6) : 1064. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 70. 1951. *Eranthemum malabaricum* Clarke in Hook. f., Fl. Brit. Ind. 4 : 497. 1884.

Undershrubs ; stem terete, glabrous. Leaves 4.5-12.5 × 2.5-5 cm, ovate or elliptic, entire or slightly crenulated, glabrous, shortly acuminate at apex, narrowed into the petiole at base ; petioles up to 1 cm long. Flowers in terminal spikes. Capsules ± 0.4 cm long, narrow, cylindric

Fl. & Fr. : March November.

Courtallum (Robert Wight 670, CAL).

18. ROSTELLULARIA Reich.

1a. Spikes cylindric ; bracts and bracteoles as long as or longer than the calyx lobes

2a. Bracts and bracteoles linear

R. procumbens 2

2b. Bracts elliptic-ovate, bracteoles still narrower, but similar

R. procumbens var.
simplex 3

1b. Spikes linear ; bracts and bracteoles shorter than the calyx-lobes

3a. Bracts and bracteoles about 0.2 cm long, lanceate ; prostrate herbs with pink flowers

R. prostrata 4

3b. Bracts and bracteoles about 0.1 cm long, elliptic-lanceate ; suberect herbs with yellow flowers

R. hedyotidifolia 1

1. **Rostellularia hedyotidifolia** Nees in Wall., Pl. As. Rar. 3 : 100. 1832 & in DC. Prodr. 11 : 370. 1847 ; Wt., Ic. t. 1540. 1850. *Justicia diffusa* (Willd.) Nees var. *hedyotidifolia* (Nees) Clarke in Hook. f., Fl. Brit. Ind. 4 : 538. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1081. 1924.

Suberect herbs, 30-45 cm high ; stems woody below, slender and pubescent above. Leaves 1.5-4.5 $\times$ 0.5-2 cm, ovate, pubescent on both sides, black on drying, obtuse at both ends ; petioles up to 1 cm long, pubescent. Flowers yellow in distant whorls on terminal linear spikes. Capsules $\pm$ 0.5 cm long, pointed.

Fl. & Fr. : May December.

Common in the dry, rocky forest floor of Udayathan estate and Main falls.

2. *Rostellularia procumbens* (Linn.) Nees in Wall., Pl. As. Rar. 3 : 101. 1832 & in DC., Prodr. 11 : 371. 1847. *Justicia procumbens* Linn. Sp. Pl. 15. 1753 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 539. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1080. 1924 ; Sant, Univ. Bombay Bot. Mem. no. 2 : 90. 1951.

Procumbent herbs, 15-40 cm long, rooting at lower nodes. Leaves 3-5.5 $\times$ 1.5-3 cm, elliptic or ovate, softly pubescent on both sides, obtuse at both ends ; petioles 1-1.5 cm long, slender, pubescent. Flowers pink in dense terminal cylindrical spikes ; bracts ciliate along the margins. Capsules up to 0.5 cm long, oblong, pubescent at the tip.

Fl. & Fr. : March December.

A common weed in all dry areas.

3. *Rostellularia procumbens* (Linn.) Nees var. *simplex* (D. Don) Yamazaki in Hara, Fl. E. Himal. 302. 1966. *Justicia simplex* D. Don, Prodr. Fl. Nep. 118. 1825 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 539. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1080. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 89. 1951.

Erect herbs, 20-40 cm high ; stems softly hairy or glabrate, almost quadrangular. Leaves 2.5-3.5 $\times$ 1-2.5 cm, ovate or oblong, glabrate sub-obtuse at apex, acute at base ; petioles $\pm$ 0.5 cm long. Flowers pale pink or rose-coloured in dense terminal cylindric spikes ; bracts and bracteoles with scarious margins. Capsules oblong.

Fl. & Fr. : February-December.

Common in the rocky soil around Main falls.

4. *Rostellularia prostrata* (Roxb. ex Clarke) K.K.N. Nair *comb. nov.* *Justicia diffusa* Willd. var. *prostrata* Roxb. ex Clarke in Hook. f., Fl. Brit. Ind. 4 : 538. 1884. *J. prostrata* (Clarke) Gamble, Fl. Presid. Madras 2 (6) : 1081. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 88. 1951.

Erect or suberect herbs, 15-45 cm high ; rootstock woody ; branches swollen at nodes, hairy. Leaves $2-3 \times 0.4-1.5$ cm, orbicular or ovate, hairy on both sides, obtuse or acute at apex, acute at base ; petioles 0.2-1 cm long, slender. Flowers violet or pinkish in axillary and terminal short spikes. Capsules small, minutely puberulous.

Fl. & Fr. : March January.

Rare, along the sides of the dried stream from Shembagadevi to Tiger falls.

19. *RUNGIA* Nees *ex* Wall.

- | | |
|---|------------------------|
| 1a. Upper lip of the corolla emarginate ; barren bracts and flowering bracts similar or almost so | <i>R. repens</i> 2 |
| 1b. Upper lip of the corolla acute ; barren bracts and flowering bracts dissimilar | |
| 2a. Erect herbs or undershrubs ; all bracts prominently white-scarious margined | <i>R. wightiana</i> 3 |
| 2b. Prostrate herbs ; barren bracts narrowly margined, flowering bracts hyaline-margined | <i>R. parviflora</i> 1 |

1. *Rungia parviflora* Nees in Wall., Pl. As. Rar. 3 : 110. 1832 & in DC., Prodr. 11 : 469. 1847 (excl. syn.) ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 550. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1071. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 76. 1951. *R. repens* T. Anders., J. Linn. Soc. Lond. 9 : 518. 1867 (*pro parte, non* Nees).

Diffuse herbs, 30-40 cm long ; branches glabrous. Leaves $1.5-3.5 \times 0.7-2.3$ cm, ovate or lanceate, subglabrous, entire, acute or obtuse at apex, acute or rounded at base ; petioles 0.3-1.2 cm long, filiform. Flowers white in terminal spikes ; fertile bracts acute, ciliate along the margins. Capsules ovoid, small.

Fl. & Fr. : October-February.

Occasional, around Swamiar falls in Udyathan estate along the sides of rocks in humus soil.

2. *Rungia repens* (Linn.) Nees in Wall., Pl. As. Rar. 3 : 110. 1832 & in DC., Prodr. 11 : 472. 1847 ; Wt., Ic. t. 465. 1841 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 549. 1884 ; Gamble, Fl. Presid Madras. 2 (6) : 1070. 1924 ;

Sant., Uni. Bombay Bot. Mem. no. 2 : 78. 1951. *Justicia repens* Linn., Sp. Pl. 15. 1753.

Diffuse, procumbent herbs, 30-40 cm long, rooting at lower nodes ; young branches hairy. Leaves 4-8 × 2-3.5 cm, elliptic-oblong or lanceate, hairy on both sides, acute or obtuse at apex, rounded or attenuate at base. Flowers white in terminal spikes ; bracts broadly-elliptic, cuspidate. Capsules ± 0.5 cm long, ovoid, compressed, hairy.

Fl. & Fr. : March-November.

Rather common in the Tekkumalai in wet areas forming dense patches on the ground.

3. *Rungia wightiana* Nees in Wall., Pl. As. Rar. 3 : 110. 1832 ; Wt., Ic. t. 1549. 1849 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 546. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1071. 1924. *R. arnottiana* Wt., Ic. t. 1550. 1850.

Erect herbs or undershrubs, 30-60 cm high ; branches slightly pubescent towards apex. Leaves 9-15 × 1.5-4 cm, elliptic-lanceate to ovate-lanceate, thin, entire, glabrous, subacuminate at apex, narrowed into the petiole at base ; petioles 2-4.5 cm long, slender. Flowers white in terminal elongate spikes, often paniced. Capsules 0.5-0.8 cm long, oblong.

Fl. & Fr. : May-February.

Rare, along the sides of the stream below Courtallum Peak in the highly humid, shaded areas.

20. RUELLIA Linn. *emend.* Bremek.

Ruellia tuberosa Linn., Sp. Pl. 635. 1753 ; Gamble, Fl. Presid. Madras 2 (6) : 107. 1924 ; Bremek., Verh. K. Ned. Akad. Wet. 45 (1) : 11. 1948 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 23. 1951.

Erect stout herbs, 20-35 cm high ; roots fasciculated, tuberous. Leaves 2-6.5 × 1-3 cm, oblong or linear-lanceate, glabrous, rounded or obtuse at apex, tapering at base ; petioles 0.5-0.8 cm long. Flowers blue in axillary cymes. Capsules 2-2.5 cm long, clavate.

Fl. & Fr. : September.

A weed or an escape from gardens, in the dry forest floor and outskirts.

21. STENOSIPHONIUM Nees *ex* Wall.

Stenosiphonium russelianum Nees in Wall., Pl. As. Rar. 3 : 84. 1932 ; Wt., Ic. t. 1503. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 427. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 1021. 1924 ; Bremek., Verh. K. Ned. Akad. Wet. 2, 41 (1) : 153. 1944.

Undershrubs, up to 1 m high ; stems often viscid with glandular hairs. Leaves up to 15 × 7.5 cm, rhomboid, elliptic or ovate, crenate-serrate, rough, glabrous above, white silky beneath, acuminate at apex, cordate at base. Flowers blue, in glandular-hairy spikes forming panicles. Capsules clavate, seed bearing from almost the base.

Fl. & Fr. : September-March.

Rare, in the humus soil on the way to Five falls and in Tekkumalai.

102. THUNBERGIACEAE

THUNBERGIA Retz. *nom. gen. cons.*

1a. Erect shrubs ; flowers purple

T. erecta 1

1b. Climbing shrubs or undershrubs ; flowers white

T. fragrans 2

1. **Thunbergia erecta** (Benth.) T. Anders., J. Linn. Soc. Lond. 7 : 18. 1864 ; Gamble, Fl. Presid. Madras 2 (6) : 1068. 1924 ; Sant., Univ. Bombay Bot. Mem. no. 2 : 10. 1951. *Meyesua erecta* Benth. in Hook., Niger Fl. 476. 1849 & in Bot. Mag. t. 4013. 1857.

Erect shrubs, 30-100 cm high ; branches woody, glabrous ; bark white. Leaves 3.5-6.5 × 1.5-4 cm, ovate or ovate-lanceate, entire, glabrous, acuminate at apex, rounded or acute at base ; petioles 0.5-1 cm long. Flowers purple in axillary, few-flowered racemes ; bracts foliaceous. Capsules 1.5-2 cm long, globose below, suddenly narrowed into a barren, sword-shaped beak.

Fl. & Fr. : August-December.

An undergrowth in the shola forests of Tekkumalai.

2. **Thunbergia fragrans** Roxb., Pl. Corom. 1 : 47, t. 67. 1795 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 390. 1884 ; Gamble, Fl. Presid. Madras 2

(6) : 1007. 1924 ; Bremek., Rec. Trav. Bot. Neerl. 35 : 142, t. 130. 1938 ; Sant., Uni. Bombay Bot. Mem. no. 2 : 8. 1951. *Indrapushpam* (Tamil).

Climbing shrubs or undershrubs, up to 3 m high ; stem slender, glabrous. Leaves 4-10.5 × 2-5.5 cm, ovate or oblong, entire angularly lobed or not at apex, cordate or hastate at base ; petioles 1-3.5 cm long, slender. Flowers white, solitary, axillary, on long pedicels. Capsules 1-1.8 cm long. globose below, suddenly narrowed into a barren sword-shaped beak.

Fl. & Fr. : September-February.

Common in the cleared areas of the forest in Tekkumalai.

103. PEDALIACEAE

PEDALIUM D. Royen *ex* Linn.

Pedaliium murex Linn., Syst. Nat. ed. 10 (2) : 1123. 1759 ; Wt., Ic. t. 1615. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 386. 1865 ; Gamble, Fl. Presid. Madras 2 (6) : 1001. 1924. *Peru-nerinchi*, *Anai-neringjii* (Tamil).

Subfleshy, spreading herbs, 10-20 cm long ; stem glandular-hairy. Leaves 2-4 × 0.5-2 cm, ovate, repand, glabrous above, minutely scaly beneath ; petioles 1-2 cm long, glandular. Flowers yellow, axillary, solitary. Fruits 2-loculed, indehiscent, tetragonous below with sharp spines along the angles.

Fl. & Fr. : August-December.

A weed along the sandy deltas of the stream below Main falls and in other moist areas in the plains.

104. LENTIBULARIACEAE

UTRICULARIA Linn.

1a. Leaves long, filiform, linear or linear-spathulate

2a. Pedicels recurved in fruits ; scapes erect, stout or slender ; flowers yellow or blue

3a. Flowers blue ; scapes stout, 4-8 cm high

U. polygaloides 3

3b. Flowers yellow ; scapes slender, 10-15 cm high

U. bifida 1

2b. Pedicels not recurved in fruits ; scapes often straggling among themselves, wiry ; flowers rose-coloured

U. graminifolia 2

1b. Leaves short, orbicular or reniform

U. striatula 4

1. *Utricularia bifida* Linn., Sp. Pl. 26. 1753 ; Wt., Ic. t. 1584. 1850 (right hand side figure) ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 332. 1884 ; Gamble, Fl. Presid. Madras 2 (6) : 982. 1924. *U. wallichiana* Benj., Bot. Zeit. 213. 1845 (*non* Wt. 1850).

Semiaquatic herbs, 10–15 cm high. Leaves filiform, 3–5 cm long. Flowers yellow, in 2–5 flowered erect scapes ; pedicels recurved in fruit ; spur slightly curved ; bracts and scales attached by the middle or above the base. Capsules ovate, pointed.

Fl. & Fr. : November.

Courtallum (*M. Rama Rao* 1976, CAL).

2. *Utricularia graminifolia* Vahl, Enum. 1 : 195, no. 3. 1805 ; Gamble, Fl. Presid. Madras 2 (6) : 981. 1924. *U. caerulea sensu* Clarke in Hook. f., Fl. Brit. Ind. 4 : 331. 1884 (*non* Linn. 1753).

Semiaquatic, often straggling herbs, up to 20 cm high ; roots numerous from filiform stolons. Leaves up to 4.5 cm long, linear - spatulate, obtuse at apex. Flowers rose coloured on erect or twining scapes, 15–20 cm long ; scales few, basifixed ; spur narrowly conical, curved. Capsules ovoid ; seeds numerous ellipsoid, reticulate.

Fl. & Fr. : January–May.

Fairly common at New falls, in the crevices of rocks in humus soil soaked by water trickling from the falls.

3. *Utricularia polygaloides* Edgew., Proc. Linn. Soc. Lond. 1 : 351. 1847 ; Basak, Taxon 25 : 189. 1976. *U. reticulata* Sm. var. *uliginosa* Clarke in Hook. f., Fl. Brit. Ind. 4 : 331. 1884 (*non* Vahl, 1804). *U. stricticaulis* (Koen. ex Oliv.) Stapf ex Gamble, Fl. Presid. Madras 2 (6) : 981. 1924. *U. reticulata* Sm. var. *stricticaulis* Koen. ex Oliv., J. Linn. Soc. Lond. 3 : 180. 1859. *U. humilis* Wt., Ic. t. 1542. 1850 (*non* Vahl, 1804).

Semiaquatic herbs ; stem thick. Leaves linear, narrow. Flowers blue on stout, 3–6 flowered erect scapes, 6–15 cm high, fruiting calyx up to 0.7 cm long, ovate, acute. Capsules on recurved pedicels, acute.

Fl. & Fr. : September.

Common along the water courses below Tiger falls.

4. *Utricularia striatula* Sm., Rees Cyclop. 37, no. 7. 1819 ; Gamble, Fl. Presid. Madras 2 (6) : 983. 1924 ; P. Taylor, Kew Bull. 18 : 91, f. 30

& 31. 1964. *U. peltatifolia* Chev. et Pellegrin, Excell Cat. Vasc. Pl. S. Tome. 258. 1944 ; Sant., J. Bombay Nat. Hist. Soc. 49 : 220. 1950. *U. orbiculata* Wall. ex DC., Prodr. 8 : 18. 1844 ; Clarke in Hook. f., Fl. Brit. Ind. 4 : 334. 1884. *U. glochidiata* Wt. in Hook., Kew J. Bot. 1 : 373. 1849 & Ic. t. 1581. 1850.

Epiphytic herbs ; stolons and rhizoids not differentiated, up to 8 cm long. Leaves numerous and inconspicuous, rostrate from the base of the scapes, obovate, orbicular or reniform, petiolate, 0.3 - 1 × 0.1 - 0.6 cm including petioles ; traps numerous on stolons, globose or obliquely ovoid, up to 0.8 cm in diameter, stalked. Flowers rose - coloured, on 6 - 8 cm long scapes. Capsules almost globose.

Fl. & Fr. : December - March.

Abundant at New falls, attached to the rocks below the cascade.

105. CAMPANULACEAE

LOBELIA Linn. *emend.* K.K.N. Nair

- | | |
|---|---|
| 1a. Anthers glabrous ; calyx lobes distantly dentate | <i>L. courtallensis</i> 1 |
| 1b. Anthers hairy on the back ; calyx lobes not dentate | <i>L. nicotianaefolia</i> var.
<i>trichandra</i> 2 |

Lobelia courtallensis K.K.N. Nair, Proc. Ind. Acad. Sci. 87B (5) (Pl. Sci.) : 106. fig. 1. 1978.

Erect shrubs with milky latex, 1.5 - 3 m high ; stem terete, green, sparsely pubescent when young, at length glabrate. Leaves alternate, subsessile, ovate lanceate, membranous, glabrous, 7 - 9.5 cm long, 2 - 3.5 cm broad, margins distantly and shallowly serrate, shortly acuminate at apex, ovate to narrowed or acute at base ; petiole obscure. Inflorescence terminal, racemose ; peduncle, terete, sparsely pilose. Flowers bisexual, pedicels 1 - 2.5 cm long, slender, glabrous ; bracts foliaceous, 0.2 - 0.7 cm long, margins serrate. Calyx 0.3 - 0.5 cm long, 5 partite ; sepal lobes linear - lanceate, 2.5 - 3.8 cm long, margins distantly dentate. Corolla white, gamopetalous, oblique, up to 8 cm long, cleft into 2 lobes, the lower lobe further divided into 3 lanceate 0.2 - 0.3 cm long glabrous secondary lobes and the upper lobe divided into 2 lanceate 0.4 - 0.5 cm long secondary lobes. Stamens 5, connate by their filaments and anthers into a free staminal column ; anthers linear, up to 0.2 cm long, glabrous, often curved. Ovary subglobose, 2 - loculed ; style 0.3 - 0.4 cm long, slender, glabrous ;

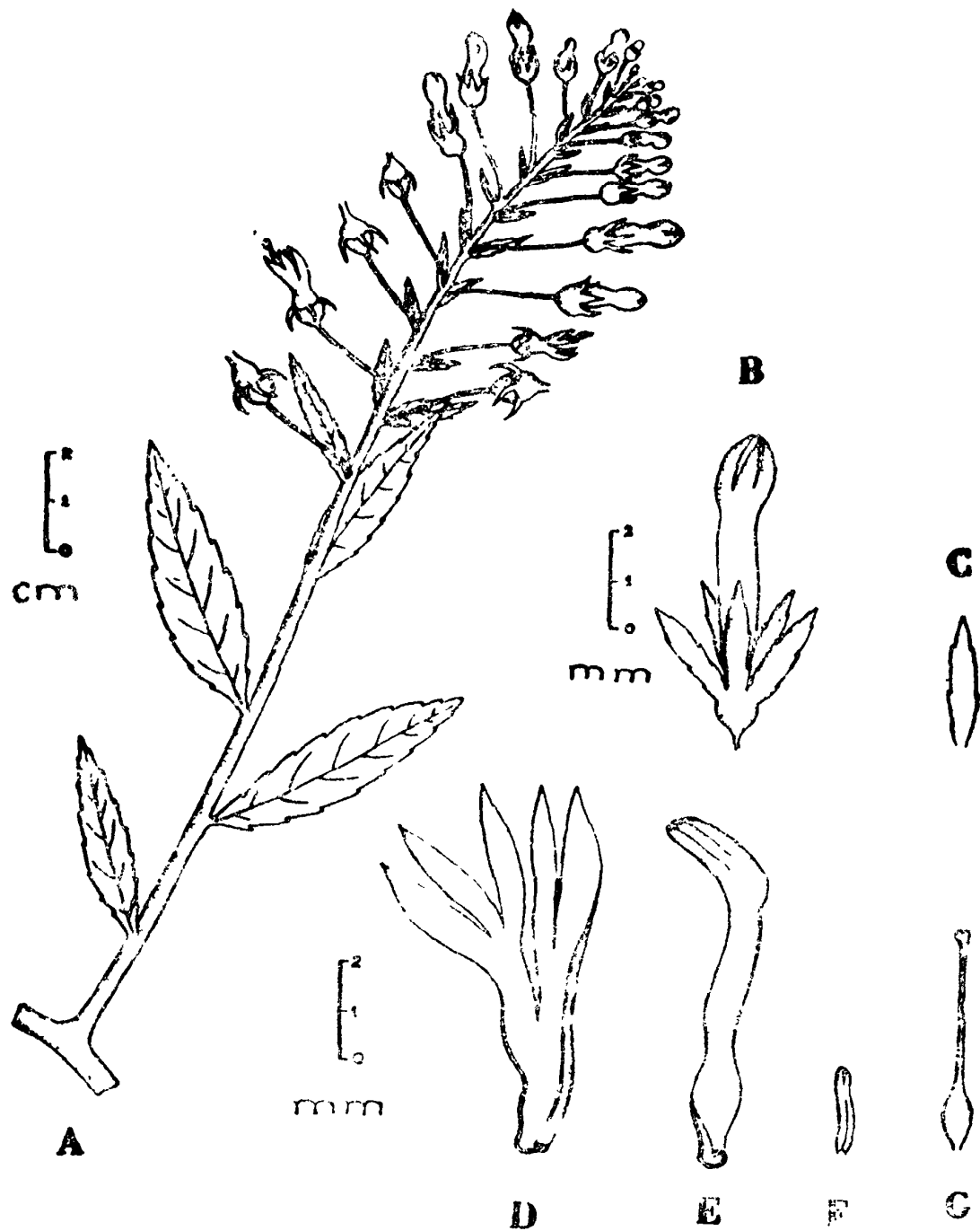


Fig. 11. *Lobelia courtallensis* K.K.N. Nair

A. Habit, B. Flower, C. Sepal
D. Corolla, E. Stamens, F. Anther,
G. Pistil.

stigma bifid, lobes erect, glabrous. Capsules subglobose, 0.4–0.5 cm across with persistent calyx.

Fl. & Fr. : April - July.

Very rare in the humid forests of the higher altitudes of Tekkumalai.

Notes : It is observed that Robert Wight (Ic. Pl. Ind. Or. 4 : 2. 1771. 1848) came across a similar plant probably at Sisparah on the western slopes of Nilgiris (Tamil Nadu) as understood from the note he had given under *Lobelia trichandra* Wt. which reads as follows. "I have specimens of what appears to be a variety with glabrous anthers and corolla lobes less deeply divided". It is probable that the plant described here may be the same which Robert Wight had noticed in the Western Ghats of Tamil Nadu.

2. *Lobelia nicotianaefolia* Roth ex Roem. et Schult. var. *trichandra* (Wt.) Clarke in Hook. f., Fl. Brit. Ind. 3 : 427. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 518. 1921 ; Wimer in Engl., Pflanzenr. 107 : 644. 1957. *L. trichandra* Wt., Ic. t. 1171. 1850.

Erect, leafy undershrubs, 2–3 m high ; stems hollow, cylindric, minutely pubescent. Leaves sessile, 6–10.5 × 1.5–4 cm, oblong lanceate, finely serrulate, glabrous or nearly so, acute or subacuminate at apex, cuneate or rounded at base. Flowers large, white tinged with lilac, in long, terminal, cylindric, stout, pubescent racemes ; anthers with hairs on their back. Capsules 0.5–0.8 cm across, subglobose with 2 valves.

Fl. & Fr. : May–July.

Fairly common in the shola forest floor at Tekkumalai and Vaithamalai below Karuppuswamy Kovil.

106. RUBIACEAE

1a. Fruits fleshy

2a. Hispid herbs ; leaves whorled

Rubia 16

2b. Glabrous or pubescent shrubs or trees ; leaves opposite

3a. Flowers in groups forming an inflorescence

4a. Inflorescence terminal

5a. Calyx lobes with one of them forming a coloured leaf

Mussaenda 10

- 5b. Calyx lobes without any coloured leaf
 - 6a. Corolla tube glabrous inside ; shrubs *Tarenna* 18
 - 6b. Corolla tube with scattered hairs inside ; trees *Randia* 15
- 4b. Inflorescence axillary
 - 7a. Inside of the corolla tubes with a distinct band of hairs *Xeromphis* 19
 - 7b. Inside of the corolla tubes with scattered hairs *Randia* 15
- 3b. Flowers solitary and axillary towards the apex of branches *Gardenia* 3
- 1b. Fruit not fleshy
 - 8a. Fruits capsular
 - 9a. Flowers in globose heads *Mitragyna* 8
 - 9b. Flowers not in globose heads
 - 10a. Calyx lobes with intermediate bristles in between *Spermacoce* 17
 - 10b. Calyx lobes without any intermediate bristles or teeth in between
 - 11a. Calyx lobes 2 to 4
 - 12a. Seeds few, plano-convex ; testa with a ventral cavity *Neanotis* 11
 - 12b. Seeds numerous, angular ; testa without any ventral cavity *Hedyotis* 5
 - 11b. Calyx lobes 5 *Ophiorrhiza* 12
 - 8b. Fruits drupes or drupaceous
 - 13a. Slender prostrate herbs *Geophila* 4
 - 13b. Woody shrubs or trees
 - 14a. Plants armed *Canthium* 1
 - 14b. Plants unarmed
 - 15a. Flowers in terminal inflorescence
 - 16a. Inflorescence of umbellate heads *Morinda* 9
 - 16b. Inflorescence cymose, corymbose or racemiform
 - 17a. Corolla lobes valvate in bud *Psychotria* 14

- 17b. Corolla lobes twisted in bud
 - 18a. Stigma 2-branched ;
anthers sagitate *Ixora* 6
 - 18b. Stigma entire ; anthers
linear *Pavetta* 13
- 15b. Flowers axillary, solitary or fascicled
 - 19a. Drupes with two plano-convex
pyrenes *Coffea* 2
 - 19b. Drupes with 4 to 9 triquetrous
pyrenes *Lasianthus* 7

1. CANTHIUM Lamk.

- 1a. Flowers pentamerous ; corolla-lobes lanceate *C. angustifolium* 1
- 1b. Flowers tetramerous ; corolla-lobes ovate *C. parviflorum* 2

1. **Canthium angustifolium** Roxb., Fl. Ind. 2 : 169. 1824 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 135. 1880 ; Sant. et Merch., Bull. Bot. Surv. India 3 : 108. 1961. *Canthium rheedii* DC., Prodr. 4 : 474. 1830. *C. leschenaultii* Wt. et Arn., Prodr. 426. 1834. *Plectronia leschenaultii* (DC.) Bedd., Fl. Sylvat. 134, 5. 1872. *P. rheedii* var. *angustifolia* (Roxb.) Gamble, Fl. Presid. Madras 2 (4) : 625. 1921.

Thorny shrubs, 2-4 m high ; young branches appressedly pubescent. Leaves 2.5-10 × 1.5-4.5 cm, ovate or ovate lanceate, glabrous above, slightly pubescent beneath, acute or bluntly acuminate at apex, rounded at base ; petioles 0.3-0.6 cm long. Flowers greenish white in short axillary fascicles or cymes ; buds acute at apex. Drupes obcordate, compressed, 2-lobed, rugose.

Fl. & Fr. : February-August.

Rare around Sbembagadevi as an undergrowth in the moist deciduous forests and on the way to Five falls around forest T.B.

2. **Canthium parviflorum** Lamk., Enc. Meth. Bot. 5 (1) : 602. 1783 ; Wt. et Arn., Prodr. 426. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 136. 1880. *Plectronia parviflora* Bedd., For. Man. in Fl. Sylvat. 134-35. 1874 ; Gamble, Fl. Presid. Madras 2 (4) : 625. 1921. *Cerukara*, *Katankarai*, *Niruri* (Malayalam). *Cenkarai*, *Kadalathal*, *Kudiram* (Tamil).

Thorny shrubs, 2-3.5 m high ; branches glabrous. Leaves 2-3.5 × 1-2.5 cm, ovate, obovate or suborbicular, glabrous above, whitish beneath, obtuse at apex, cuneate at base. Flowers greenish in axillary cymes. Drupes oblong - ellipsoid yellowish when ripe ; pyrenes furrowed.

Fl. & Fr. : May - August.

Common in the reserve forest before Tekkumalai, in the dry deciduous areas.

2. COFFEA Linn.

- | | |
|--|----------------------------|
| 1a. Leaves subsessile, ovate, obtuse at apex | <i>C. wightiana</i> 2 |
| 1b. Leaves petioled (petioles 0.5 cm long), elliptic-lanceate, acuminate at apex | <i>C. travancorensis</i> 1 |

1. *Coffea travancorensis* Wt. et Arn., Prodr. 435. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 154. 1880 ; Froehner, Bot. Jahrb. 25 : 256. 1898 ; Gamble, Fl. Presid. Madras 2 (4) : 637. 1921.

Shrubs ; branches woody, glabrous. Leaves 5-10.5 × 1.5-5 cm, elliptic or elliptic lanceate, thin, bluntly acuminate at apex, acute at base ; petioles ± 0.5 cm long ; stipules triangular, pointed. Flowers subsessile in axillary fascicles of 2-4. Drupes ± 0.5 cm in diameter, obovoid ; pyrenes thick, bony.

Fl. & Fr. : March - August.

Courtallum (*Robert Wight* 432, CAL).

2. *Coffea wightiana* Wall. (Cat. no. 6246. 1832 *nom. nud.*) ex Wt. et Arn., Prodr. 436. 1834 ; Wt., Ic. t. 1598. 1850 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 154. 1880 ; Froehner, Bot. Jahrb. 25 : 256. 1898 ; Gamble, Fl. Presid. Madras 2 (4) : 636. 1921. *Kaddumallikai* (Tamil).

Shrubs ; branches twiggy, glabrous. Leaves subsessile, 2-4.5 × 0.7-2.2 cm, ovate, subcoriaceous, obtuse at apex, slightly narrowed and rounded at base ; petioles obscure ; stipules subulate, rigid. Flowers subsessile, solitary or in groups, axillary. Drupes almost globose, shortly stalked.

Fl. & Fr. : March - August.

Courtallum (*Robert Wight* 386, CAL).

3. *GARDENIA* Ellis *nom. gen. cons.*

Gardenia resinifera Roth, Nov. Sp. Pl. Ind. Or. 150. 1821 ; Sant. *et* Panthki, J. Bombay Nat. Hist. Soc. 53 : 500. 1956. *G. lucida* Roxb. (Hort. Beng. 15. 1814 *nom. nud.*) Fl. Ind. 1 : 707. 1832 ; Wt. *et* Arn., Prodr. 395. 1834 ; Wt., Ic. t. 575. 1840 - 43 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 115. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 618. 1921. *Kumbil, Kumbai, Tikkam Alli* (Tamil).

Trees, 4 - 6 m high ; branches glabrous, resiniferous. Leaves 4.5 - 11.5 × 3 - 5.5 cm, elliptic, glabrous, shiny, subacute or acuminate at apex, narrowed at base ; nerves parallel ; petioles ± 0.3 cm long. Flowers greenish yellow or white, fragrant, axillary and solitary towards the apex of branches. Berries 1 - 2 cm in diameter, ellipsoid or globose, green, crowned by the calyx.

Fl. & Fr. : March - August.

Fairly common in the dry deciduous forest areas on the way to Tekkumalai and also below New falls.

4. *GEOPHILA* D. Don. *nom. gen. cons.*

Geophila repens (Linn.) Johnst., Sargentia 8 : 281. 1949 ; Brennan, Mem. N. Y. Bot. Gard. 8 : 453. 1954 ; Steyerl., Mem. N.Y. Bot. Gard. 23 : 395. 1972. *Rondeletia repens* Linn., Syst. ed. 10, 2 : 928. 1759. *Geophila herbacea* (Linn.) K. Schum. in Engl. & Prantl, Pflanzenfam. (ed.1) 4, 4 : 199. 1891 ; Sant. *et* Merch., Bull. Bot. Surv. India 3 : 108. 1961. *Psychotria herbacea* Linn., Sp. Pl. ed. 2 : 245. 1762 (*non*. Jacq.). *Geophila reniformis* D. Don, Prodr. Fl. Nep. 136. 1825 ; Wt. *et* Arn., Prodr. 436. 1834 ; Wt., Ic. t. 54. 1838 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3. 178. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 643. 1921.

Slender, prostrate herbs, 15-25 cm long ; branches pubescent, rooting at nodes. Leaves 1-2.5 cm in diameter, orbicular, glabrous above, slightly pubescent beneath, deeply cordate at base ; petioles 1.5-3.5 cm long, pubescent. Flowers solitary or in 2-3 flowered terminal umbels. Drupes up to 1 cm in diameter, globose, crowned by the persistent calyx.

Fl. & Fr. : August.

Courtallum (*Robert Wight* 426, CAL).

5. *HEDYOTIS* Linn.

- 1a. Flowers in sessile subsessile or panicled cymes
 - 2a. Flowers in sessile or subsessile cymes
 - 3a. Capsules dehiscent at the top ; stipules with many long bristles *H. nitida* 6
 - 3b. Capsules indehiscent ; stipules without bristles *H. auricularia* 2
 - 2b. Flowers in panicled cymes
 - 4a. Stipules pinnatisect and filiform *H. eulata* 4
 - 4b. Stipules not pinnatisect or filiform
 - 5a. Leaves petioled
 - 6a. Petioles 1-1.5 cm long ; stipules long toothed *H. pruinosa* 8
 - 6b. Petioles less than 0.5 cm long ; stipules not toothed (triangular) *H. purpurascens* 7
 - 5b. Leaves sessile *H. affinis* 1
- 1b. Flowers in umbels, racemose panicles or on 1-4 flowered peduncles
 - 7a. Flowers in umbels
 - 8a. Calyx teeth short, subulate ; leaves narrow *H. umbellata* 9
 - 8b. Calyx teeth long, lanceate ; leaves broad *H. wightii* 10
 - 7b. Flowers in racemose panicles or 1-4 flowered peduncles
 - 9a. Flowers in racemose panicles *H. biflora* 3
 - 9b. Flowers on 1-4 flowered umbellate peduncles *H. herbacea* 5

1. *Hedyotis affinis* Roem. et Schult., Syst., Veg. 3 : 194. 1818. *Oldenlandia affinis* (Roem. et Schult.) DC., Prodr. 4 : 429. 1830 ; Bremek., Verh. K. Ned. Akad. Wet. 2, 48 (2) : 226. 1952 ; Sant. et Merck., Bull. Bot. Surv. India 3 : 109. 1962. *O. dichotoma* (Koen. ex Roth) Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 67. 1880 (*non* Spreng. 1815) ; Gamble, Fl. Presid. Madras 2 (4) : 601. 1931.

Slender herbs, 30-40 cm high ; stem glabrous, terete, filiform. Leaves sessile, 2.5-3 cm long, linear-lanceate, lower ones longer than the upper ; stipules small, truncate. Flowers in lax terminal or axillary panicled cymes. Capsules globose.

Fl. & Fr. : May.

Courtallum (*Robert Wight* 377, CAL).

2. *Hedyotis auricularia* Linn., Sp. Pl. 101. 1753 ; Wt. et Arn., Prodr. 412. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 58. 1880. *Oldenlandia-auricularia* (Linn.) K. Schum. in Engl. & Prantl, Pflanzenfam. (ed. 1) 4, 4 : 25. 1891 ; Gamble, Fl. Presid. Madras 2 (4) : 597. 1921. *Exallange auricularia* (Linn.) Bremek., Verh. K. Ned. Akad. Wet. 2 : 48 (2) : 142. 1952 ; Sant. et Merch., Bull. Bot. Surv. India 3 : 108. 1962.

Trailing or suberect herbs ; branches copiously hirsute at nodes, less so in internodes. Leaves subsessile, $3-5.5 \times 1-3$ cm, ovate or lanceate, pubescent on both sides, acuminate at apex, narrowed at base. Flowers in axillary subsessile cymes. Capsules hispid, indehiscent.

Fl. & Fr. : March-April.

Courtallum (*Robert Wight* 374, CAL).

3. *Hedyotis biflora* (Linn.) Lamk., Enc. Meth. Bot. 3 : 80. 1789 ; Wt. et Arn., Prodr. 413. 1834. *Oldenlandia biflora* Linn., Sp. Pl. 219. 1753 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 70. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 602. 1921. *O. paniculata* Burm. f., Fl. Ind. 15. 1768 ; Hook. f. loc. cit. p. 69. *Hedyotis racemosa* Lamk., Enc. Meth. Bot. 3 : 80. 1789 ; Wt. et Arn. loc. cit. p. 414 ; Wt., Ic. t. 312. 1840.

Erect herbs upto 30 cm high ; stem almost succulent. Leaves up to 2.5 cm long, ovate-lanceate, smooth, acute at apex, tapering towards base. Flowers white in racemes. Capsules 0.4-0.5 cm across, angular.

Fl. & Fr. : February-May.

Scarce in the plains of Courtallum.

4. *Hedyotis eulata* (Gamble) Henry et Subr., Proc. Indian Acad. Sci. (sect. B) 76 (1) : 28. 1972. *Oldenlandia eulata* Gamble, Kew Bull. 1919 : 404. 1919 & in Fl. Presid. Madras 2(4) : 598. 1921. *Hedyotis eulata* Bedd. ex Gamble, Kew Bull. 1919 : 405. 1919 (*pro syn.*).

Erect shrubs, 50-80 cm high ; branches subtrigonous, glabrous. Leaves $4-7.5 \times 1.5-2.5$ cm, oblong-lanceate, membranous, acuminate at apex, attenuated or rather rounded at base ; petioles ± 1 cm long, slightly enlarged towards base ; stipules pinnatisect, filiform. Flowers in terminal corymbose panicles. Capsules ± 0.2 cm long, depressed globose.

Fl. & Fr. : July-September.

Courtallum (*Robert Wight* 370, 371, CAL).

5. *Hedyotis herbacea* Linn., Sp. Pl. 102. 1753. *Oldenlandia herbacea* (Linn.) Roxb., (Hort. Beng. 11. 1814 *nom. nud.*) Fl. Ind. 1 : 424. 1820 ;

Gamble, Fl. Presid. Madras 2 (4) : 601. 1921 ; Bremek., Verh. K. Ned. Akad. Wet. 2, 48 (2) : 226. 1952. *O. heynii* G. Don, Gen. Syst. 3 : 531. 1934 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 65. 1880.

Erect herbs up to 30 cm high ; branches tetragonous, winged. Leaves $1.3 \times 0.1-0.3$ cm, linear-lanceate, glabrous, acute at apex, clasping at base. Flowers violet in axillary, 2-4 flowered peduncles. Capsules ± 2.5 cm long, subglobose, glabrous ; valves protruding beyond the sepals ; seeds many, ellipsoid.

Fl. & Fr. : March-April.

Fairly common in the dry patches of soil between rocks above Chittaruvi.

6. *Hedyotis nitida* Wt. et Arn., Prodr. 412. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 61. 1880. *Oldenlandia nitida* (Wt. et Arn.) Gamble, Fl. Presid. Madras 2 (4) : 597. 1921. *H. glabella* R. Br. ex Bedd., Ic. Pl. Ind. Or. t. 36. 1869.

Prostrate or ascending herbs ; branches 4-angled, somewhat rough along the angles. Leaves $3.5-6.5 \times 0.6-1.8$ cm, linear-lanceate or lanceate, rigid, subsessile, glabrous and shiny above, pale white beneath, acute or acuminate at apex, narrowed at base ; margins recurved ; stipules bristled. Flowers white in axillary sessile or subsessile cymes. Capsules ± 0.5 cm long, ovoid, crustaceous.

Fl. & Fr. : March-June.

Scarce, in the plains of Courtallum.

7. *Hedyotis purpurascens* Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 50. 1880. *H. purpurea* Bedd., Ic. Pl. Ind. Or. t. 5. 1869 (*non* Torr. et Gray). *Oldenlandia purpurascens* (Hook. f.) O. Ktze., Rev. Gen. Pl. 292. 1891 ; Gamble, Fl. Presid. Madras 2 (4) : 597. 1921.

Woody shrubs, yellowish when dry ; branches tortuous and nodose, glabrous. Leaves $2.5-6 \times 1-2.5$ cm, ovate to ovate-lanceate, glabrous, obtusely acuminate at apex, rounded or narrowed at base ; stipules membranous, pubescent. Flowers in terminal paniced cymes. Capsules ± 0.5 cm long, narrowly-ellipsoid.

Fl. & Fr. : August.

Courtallum (*Robert Wihgt* 368, CAL).

8. *Hedyotis pruinosa* Wt. et Arn., Prodr. 408. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 51. 1880. *Oldenlandia pruinosa* (Wt. et Arn.)

O. Ktze., Rev. Gen. Pl. 292. 1891 ; Gamble, Fl. Presid. Madras 2(4) : 598. 1921. *Hedyotis lentiginosa* Bedd., Ic. Pl. Ind. Or. t. 6. 1869.

Shrubs, yellowish when dry. Leaves 2.5-5 × 1-2.8 cm, ovate-lanceate, glabrous, acuminate at apex, narrowed at base ; petioles 1-1.5 cm long ; stipules free, pectinate. Flowers in terminal spreading paniculate cymes ; calyx lobes recurved. Capsules obovoid, small.

Fl. & Fr. : August.

Courtallum (*Robert Wight* 369, CAL).

9. *Hedyotis umbellata* (Linn.) Lamk., Enc. Meth. Bot. 1 : 272. 1789 ; Wt. et. Arn., Prodr. 413. 1834. *Oldenlandia umbellata* Linn., Sp. Pl. 174. 1753 ; Hook.f. in Hook. f., Fl. Brit. Ind. 3 : 66. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 601. 1921.

Erect or suberect herbs, 10-25 cm high ; stem much branched from the base, filiform, glabrous. Leaves sessile, 1-3 × 0.1-0.2 cm, linear, flat, acute at apex ; margins narrowly recurved. Flowers white, 3-5 in axillary umbels ; calyx-lobes acute, persistent. Capsules globose, ± 0.3 cm in diameter, crowned by the persistent calyx.

Fl. & Fr. : April-September.

Fairly common in the plains of Courtallum.

10. *Hedyotis wightii* (Hook.f.) K.K.N. Nair, J. Bomb. Nat. Hist. Soc. 79 : 453. 1922. *Oldenlandia wightii* Hook.f. in Hook. f., Fl. Brit. Ind. 3 : 66. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 601. 1921.

Stunted herbs with woody base ; stems stiff, scabrid. Leaves sessile, upto 2.5 × 0.3 cm long, linear-lanceate, scabrid on both sides, acuminate at apex ; margins revolute ; stipules short, bristly. Flowers white in axillary umbels ; calyx teeth long, lanceate. Capsules depressed-hemispherical, scabrid, crowned by the calyx.

Fl. & Fr. : May-July.

Rare, near Main falls in the crevices of rocks and in dry soil.

6. IXORA Linn.

1a. Calyx lobes distinct, not reduced to short teeth

2a. Calyx lobes longer than the tube, linear-lanceate or lanceate

I. malabarica 3

2b. Calyx lobes shorter than the tube, triangular, acute

I. nigricans 4

1b. Calyx lobes reduced to short teeth or even the teeth absent

- 3a. Flower buds globose ; corolla tube up to 0.6 cm long *I. brachiata* 2
 3b. Flower buds ellipsoid ; corolla tube 0.8-1.2 cm long *I. arborea* 1

1. *Ixora arborea* Roxb. ex Smith, Rees Cycl. 19, no. 5. 1811 ; Bremek., Bull. Jard. Bot. Buitenz. 3, 14 : 208. 1937. *I. parviflora* Vahl, Symb. Bot. 3 : 11, t. 52. 1794 (*non* Lamk.) ; Wt. et Arn., Prodr. 429. 1834 ; Wt. Ic. t. 711. 1840 ; Hook. f. in Hook.f., Fl. Brit. Ind. 3 : 142. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 631. 1921. *Shulundu*, *Korivi*, *Koran* (Tamil).

Much branched shrubs, 1-2.5 m high ; bark thick, brown. Leaves 5.5-10.5 × 2.5-3.5 cm, oblong or elliptic, thickly coriaceous, glabrous, obtuse at apex, rounded at base ; petioles ± 0.8 cm long, rugose ; stipules broadly-ovate, cuspidate. Flowers white, fragrant in terminal cymes. Fruits ± 3.5 cm across, globose, didymous, green.

Fl. & Fr. : January-April.

Common, both in the outskirts and thick sholas at higher elevations.

2. *Ixora brachiata* Roxb., Fl. Ind. 1 : 391. 1820 ; Wt. et Arn., Prodr. 429. 1834 ; Wt., Ic. t. 710. 1840 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 142. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 631. 1921.

Small trees, 3-4.5 m high ; bark smooth, grey. Leaves 6.5-15 × 3.5-5.5 cm, elliptic-oblong or lanceate, glabrous, obtuse at apex, attenuate at base ; petioles up to 1.5 cm long, stout. Flowers white, fragrant in sessile or shortly peduncled terminal cymes. Fruits 0.5-1 cm across, globose or didymous, purplish-black.

Fl. & Fr. : November-March.

Fairly common along the sides of the stream below New falls, in the dry outskirts of the reserve forest from Tiger falls to Old Courtallum and around Main falls.

3. *Ixora malabarica* (Dennst.) Mabberley, Taxon 26 : 539. 1977. *Chiococca malabarica* Dennst., Schlüssel zum Hort. Malab. 12, 19, 37. 1818 & in Forts. Allg. Tuetsch. Garten.-Mag. 3 : 31, 37, 85. 1818. *Ixora lanceolaria* Colebr. ex Roxb., Fl. Ind. 1 : 397. 1820 ; Wt. et Arn., Prodr. 429. 1834 ; Wt., Ic. t. 827. 1844-45 ; Hook.f. in Hook. f., Fl. Brit. Ind. 3 : 198. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 630. 1921.

Erect shrubs, up to 1 m high ; branches glabrous. Leaves 5.5-15.5 × 1.2-3.5 cm, lanceate, entire, glabrous on both sides, acute or acuminate at

apex, acute or rounded at base ; secondary nerves distinctly looped towards the margins ; petioles 0.2-0.3 cm long, stout. Flowers white in terminal lax corymbs. Fruits didymous.

Fl. & Fr. : July-October.

Common in the open forest floor of Tekkumalai and around Shembagadevi falls.

4. *Ixora nigricans* R. Br ex Wt. et Arn., Prodr. 428. 1834 ; Wt., Ic. t. 318. 1840 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 148. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 631. 1921 ; Bremek., Bull. Jard. Bot. Buitenz. 3, 14 : 282. 1937. *Maccaguni*, *Udappu* (Tamil).

Large shrubs, 1-3.5 m high ; branches pale, glabrous, black when dry. Leaves 4-14 × 1.5-3.5 cm, elliptic-oblong, lanceate or oblanceate, membranous, glabrous, acuminate at apex, narrowed or tapering at base. Flowers white or pinkish in terminal cymes. Fruits 0.2-0.4 cm across, globose or subdidymous.

Fl. & Fr. : March-August.

Common in the moist deciduous and shola forests but very rare in the outskirts like Chittaruvi.

7. *LASIANTHUS* Jack *nom. gen. cons.*

- | | |
|--|--------------------------|
| 1a. Leaves caudate-acuminate at apex ; nerves 4-5 pairs | <i>L. blumeanus</i> 1 |
| 1b. Leaves lanceate-acuminate at apex ; nerves 7-8 pairs | <i>L. strigillosus</i> 2 |

1. *Lasianthus blumeanus* Wt., Calcutta J. Nat. Hist. 4 : 507. 1846 ; Bedd., Ic. Pl. Ind. Or. 22. 1869 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 184. 1880 ; Gamble, Fl. Presid. Madras 2(4) : 646. 1921.

Glabrous shrubs. Leaves 13.5-17.5 × 3.5-6 cm, elliptic-lanceate, entire, glabrous, caudate-acuminate at apex, subacute at base ; secondary nerves 4-5 pairs ; petioles ± 0.5 cm long, thick ; stipules triangular, pubescent when young. Flowers in axillary sessile cymes ; calyx ± 0.7 cm long, 4-lobed, lobes narrow, erect.

Fl. : July.

Courtallum (*Robert Wight* 360, CAL).

2. *Lasianthus strigillosus* Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 185. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 646. 1921.

Shrubs ; branches appressed hairy. Leaves $9.5-13.5 \times 3-4$ cm, narrowly oblong-lanceate, coriaceous, entire, glabrous above with prominent nerves, hairy beneath, acuminate at apex, rounded at base ; secondary nerves 7-8 pairs ; petioles 1-1.5 cm long, appressed hairy ; stipules triangular at base, linear above, hairy. Flowers in axillary fascicles.

Fl. : July.

Courtallum (*Robert Wight* 361, CAL).

8. MITRAGYNA Korth. *nom. gen.cons.*

Mitragyna parvifolia (Roxb.) Korth., Obs. Naocl. Ind. 19. 1839 ; Gamble, Fl. Presid. Madras 2 (4) : 585. 1921. *Nauclea parvifolia* Roxb., Pl. Corom. 1 : 40, t. 52. 1795 ; Wt. et Arn., Prodr. 396. 1834. *Stephegyne parvifolia* Korth., Verh. Ges. Bot. 161. 1840 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 25. 1880. *Vimba* (Malayalam). *Chinnakadambu* (Tamil).

Large trees, 10-12 m high ; bark light grey, smooth. Leaves $5-10.5 \times 2.5-6.5$ cm, elliptic or ovate, entire, glabrous, rounded, obtuse or bluntly-acuminate at apex, rounded at base ; petioles 1-1.5 cm long ; stipules large, oblong-spathulate, pink. Flowers greenish-yellow, fragrant, crowded in axillary or terminal solitary heads. Capsules ± 0.3 cm long, oblong, ribbed, blunt at apex.

Fl. & Fr. : May-December.

Deciduous trees along the forest outskirts on the way to Five falls.

9. MORINDA Linn.

Morinda umbellata Linn., Sp. Pl. 176. 1753 ; Wt. et Arn., Prodr. 420. 1834 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 157. 1880 ; Gamble, Fl. Presid. Madras 2(4) : 652. 1921. *Curinci*, *Manganarikodi*, *Connainuna* (Malayalam). *Cirasiji*, *Madaitige*, *Tella* (Tamil).

Diffuse, straggling shrubs 30-90 cm high ; branches rusty-tomentose. Leaves variable, often $5.5-14 \times 1-4.5$ cm, elliptic-lanceate, oblanceate or obovate, entire, coarse above, pubescent beneath, abruptly acuminate at apex, narrowed into the petiole at base ; petioles ± 1 cm long, slender. Flowers greenish-white in terminal umbellate heads. Drupes connate, ± 1 cm long, irregularly lobed, green.

Fl. & Fr. : June-September.

Common in the dry outskirts of the forest at Tiger falls and in the sholas of Tekkumalai and Honey falls along the sides of the stream.

10. MUSSAENDA Linn.

- 1a. Leaves glabrous except slightly on the nerves beneath ;
berries glabrous

M. glabrata 1

- 1b. Leaves loosely pubescent on both surfaces ; berries
sparsely hirsute

M. laxa 2

1. *Mussaenda glabrata* (Hook.f.) Hutch. ex Gamble, Fl. Presid. Madras 2 (4) : 610. 1921 ; Jayaweera, J. Arnold Arbor. 44 : 241. 1963. *M. frondosa* var. *glabrata* Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 90. 1880. *Vellila*, *Vellimalaythali* (Malayalam). *Velliyilai*, *Vellimadandai* (Tamil).

Straggling shrubs, up to 3.5 m high ; branches almost glabrous. Leaves 4.5-12.5 × 3.5-7.5 cm, broadly-elliptic, entire, glabrous above, sparsely pubescent along the nerves beneath, shortly acuminate at apex, somewhat cuneate at base ; petioles 0.6-2.5 cm long. Flowers brick-red in terminal spreading dichotomous cymes ; petaloid sepals 3-8.5 × 3-5.5 cm, shortly acuminate. Berries 1-1.2 cm long, obovoid, glabrous.

Fl. & Fr. : May-March.

Common in the dry areas on the way to Tekkumalai and near Five falls.

2. *Mussaenda laxa* (Hook.f.) Hutch. ex Gamble, Fl. Presid. Madras 2 (4) : 610. 1921 ; Jayaweera, J. Arnold Arbor. 44 : 242. 1963. *M. frondosa* var. *laxa* Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 89. 1880.

Straggling shrubs, 2-3 m high ; branches hirsute. Leaves 4-11 × 2.5-4.5 cm, broadly-ovate, entire, sparsely pubescent on both the surfaces, more densely so along the veins, abruptly short acuminate at apex, cuneate or rounded at base ; petioles 0.5-2.5 cm long, subglabrous or hirsute. Flowers brick-red in terminal lax dichotomous or trichotomous cymes ; petaloid sepals 7.5-10 × 3.5-6.5 cm, shortly acuminate at apex. Berries up to 1 cm long, obovoid, sparsely hirsute.

Fl. & Fr. : April-March.

Fairly common below Shembagadevi.

11. NEANOTIS W.H. Lewis

Neanotis monosperma (Wt. et Arn.) W.H. Lewis, Ann. Mo. Bot. Gard. 53 : 39. 1966. *Hedyotis monosperma* Wt. et Arn., Prodr. 410. 1834. *Anotis monosperma* Wt. et Arn., Prodr. 410. 1834 ; Wt., Ic. t. 1031. 1845 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 75. 1880 ; Gamble, Fl. Presid. Madras 2(4) : 605. 1921.

Slender herbs ; branches rooting at lower nodes, hairy. Leaves up to 1-2.8 cm long, ovate or ovate-lanceate, sparsely hairy on both sides, subacute at apex, tapering a little at base ; petioles 0.5-1.5 cm long. Flowers in terminal trichotomous corymbs. Capsules didymous, dehiscent.

Fl. & Fr. : August.

Courtallum (*Robert Wight* 382, CAL).

12. OPHIORRHIZA Linn.

1a. Bracteoles present, filiform in nature ; inflorescence villous

O. eriantha 1

1b. Bracteoles absent ; inflorescence rusty-puberulous

O. mungos 2

1. Ophiorrhiza eriantha Wt., Ic. t. 1097. 1846 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 81. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 607. 1921.

Erect herbs or undershrubs ; branches pubescent or villous. Leaves 5.5-16.5 × 1.5-6.5 cm, elliptic-lanceate, glabrous above, puberulous along the nerves beneath, acuminate at apex, narrowed into the petiole at base ; petioles 1-2 cm long, pubescent. Flowers in terminal, contracted, villous cymes. Capsules hairy.

Fl. : August.

Courtallum (*Robert Wight* 366, CAL).

2. Ophiorrhiza mungos Linn., Sp. Pl. 150. 1753 ; Wt. et Arn., Prodr. 404. 1834 ; Hook.f. in Hook. f., Fl. Brit. Ind. 3 : 77. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 608. 1921. *Avilpori* (Malayalam). *Cidaissi, Kirippundu* (Tamil).

Erect herbs up to 60 cm high ; branches glabrous or puberulous. Leaves up to 14.5 × 4.5 cm, elliptic or elliptic-lanceate, membranous, glabrous, acuminate at apex, narrowed into the petiole at base ; petioles

1.5-2.5 cm long. Flowers white in minutely rusty-pubescent terminal cymes. Capsules obcordate, compressed.

Fl. & Fr. : April-September.

Common as undergrowth in the shady areas below Shembagadevi and Tekkumalai.

13. PAVETTA Linn.

- | | |
|--|--------------------|
| 1a. Leaves black when dry ; corolla tube $\pm$ 0.6 cm long | <i>P. blanda</i> 1 |
| 1b. Leaves brown when dry ; corolla tube 1.2-1.8 cm long | <i>P. indica</i> 2 |

1. *Pavetta blanda* Bremek., Fedde Repert. Sp. Nov. Beih. 37 : 94. 1934. *P. breviflora* DC. var. *subcoriacea* Gamble, Fl. Presid. Madras 2 (4) : 634. 1921.

Glabrous shrubs ; branches stout. Leaves up to 7.8×3 cm, elliptic-oblong or oblanceate, coriaceous, obtuse or shortly acuminate at apex, narrowed at base. Flowers white in terminal dense corymbs.

Fl. : April-May.

Rare, along the streambeds of Chittar in Tekkumalai.

2. *Pavetta indica* Linn., Sp. Pl. 110. 1753 ; Wt. et Arn., Prodr. 431. 1834 ; Wt., Ic. t. 148. 1838 ; Hook.f. in Hook.f., Fl. Brit. Ind. 3 : 150. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 633. 1921. *Pavatta*, *Mallikamutti* (Malayalam). *Araniya*, *Karana*, *Pavattai* (Tamil).

Bushy shrubs, 1.5-2.5 m high ; branches twiggy, glabrous. Leaves $7.5-17.5 \times 1.5-4.5$ cm, elliptic-oblong or elliptic-lanceate, membranous, acute or acuminate at apex, tapering at base ; petioles 0.5-2.5 cm long. Flowers white, fragrant, in small, pubescent terminal corymbose cymes. Berries $\pm$ 0.5 cm in diameter, globose, black.

Fl. & Fr. : March-June.

Scarce, along the sides of the stream in Tekkumalai.

14. *PSYCHOTRIA* Linn. *nom. gen. cons.*

- 1a. Interpetiolar stipules deciduous and absent in the mature specimens
 - 2a. Flowers in branched cymes or racemiform inflorescence
 - 3a. Flowers in branched cymes
 - 4a. Leaves sessile or subsessile *P. connata* 2
 - 4b. Leaves petioled, petioles 1-1.5 cm long
 - 5a. Cymes congested ; branches of it whorled *P. congesta* 1
 - 5b. Cymes not congested, corymbose ; branches of it not whorled
 - 6a. Leaves elliptic-lanceate ; fruits globose, not grooved, acuminate *P. subintegra* 7
 - 6b. Leaves obovate and abruptly acuminate ; fruits obovoid, ridged, blunt *P. octosulcata* 5
 - 3b. Flowers in long racemiform inflorescence *P. elongata* 3
 - 2b. Flowers capitate at the tip of inflorescence branches *P. nigra* 4
 - 1b. Interpetiolar stipules persistent, present in the mature specimens *P. ophioxylodes* 6

1. *Psychotria congesta* (Wt. et Arn.) Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 162. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 640. 1921.—*Grumilea congesta* Wt. et Arn., Prodr. 432. 1834 ; Wt., Ic. t. 1037. 1845.

Trees ; branches glabrous. Leaves 6-11 × 2-4 cm, oblanceate, coriaceous, greenish when dry, glabrous, rounded and then acute at apex, narrowed into the petiole at base ; petioles ± 1 cm long. Flowers shortly pedicelled in terminal congested cymes. Drupes ellipsoid, smooth with persistent calyx at apex.

Fl. & Fr. : July-August.

Courtallum (Robert Wight 407, 408, 413, 414, CAL).

2. *Psychotria connata* Wall. ex Roxb., Fl. Ind. 2 : 163. 1824 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 171. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 641. 1921. *P. laevigata* Wt. et Arn., Prodr. 433. 1834 ; Wt., Ic. t. 828. 1844-45.

Shrubs, 2-3 m high ; branches glabrous. Leaves sessile, 5-14.5 × 1.5-4 cm, oblanceate, coriaceous, glabrous, broad and acuminate at apex, tape-

ring towards base. Flowers white in terminal branched cymes ; bracts connate, foliaceous, boat-shaped. Drupes ovoid, green, angular when dry with the persistent calyx.

Fl. & Fr. : July-March.

Common in the outskirts of the forests above Main falls and around Shembagadevi up to Honey falls.

3. *Psychotria elongata* (Wt.) Hook. f. in Hook. f., *Fl. Brit. Ind.* 3 : 163. 1880 ; Gamble, *Fl. Presid. Madras* 2 (4) : 641. 1921. *Grumilea elongata* Wt., *Ic. t.* 1036. 1845.

Shrubs ; branches glabrous. Leaves 5-11.5 × 2.5-5 cm, elliptic or obovate, glabrous, obtuse or subobtuse at apex, narrowed into the petiole at base ; secondary nerves 10-14 pairs ; petioles 1-1.5 cm long. Flowers sessile or shortly pedicelled in terminal racemiform inflorescence. Drupes ± 0.5 cm in diameter, globose with minute, persistent calyx limbs.

Fl. & Fr. : February-May.

Courtallum (*Robert Wight* 405, CAL).

4. *Psychotria nigra* (Gaertn.) Alston in Trimen, *Handb. Fl. Ceylon* 6 (suppl.) : 152. 1931 ; Henry *et* Roy, *Bull. Bot. Surv. India* 10 : 275. 1968. *Grumilea nigra* Gaertn., *Fruct.* 1 : 138, t. 28, f. 2. 1788. *Psychotria thwaitesii* Hook. f. in Hook. f., *Fl. Brit. Ind.* 3 : 162. 1880 ; Gamble, *Fl. Presid. Madras* 2 (4) : 640. 1921.

Shrubs ; branches compressed, glabrous. Leaves 6.5-13.5 × 3.5-7.5 cm, elliptic-lanceate or ovate-oblong, subcoriaceous, acute or shortly acuminate at apex, narrowed into the petioles at base ; petioles 0.5-1 cm long, stout. Flowers sessile in small rounded heads at the tip of the peduncle. Drupes ±0.6 cm in diameter, subglobose, smooth with minute calyx-limbs at the apex.

Fl. & Fr. : November-July.

Rare below Courtallum peak in the deeply shaded areas.

5. *Psychotria octosulcata* Talbot, *J. Bombay Nat. Hist. Soc.* 11 : 237. 1897 ; Gamble, *Fl. Presid. Madras* 2 (4) : 642. 1921.

Shrubs, 2-3.5 m high ; branches green, glabrous. Leaves 7.5-15 × 2.5-5 cm, obovate or oblanceate, submembranous, glabrous, abruptly acuminate at apex, tapering at base ; petioles 0.5-1 cm long. Flowers white in short terminal corymbose cymes. Drupes 0.4-0.7 cm long, obovoid, prominently ridged, rugose.

Fl. : July-August.

Rare in the rocky soil of the outskirts above Main falls.

6. ***Psychotria ophioxyloides*** Wall. *ex* Roxb., Fl. Ind. 2 : 168. 1832. *Chassalia ophioxyloides* (Wall. *ex* Roxb.) Craib, Gard. Bull. Straits Settl. 6 : 474. 1930 ; Sant. *et* Merch., Bull. Bot. Surv. India 3 : 108. 1962. *Psychotria ambigua* Wt. *et* Arn., Prodr. 433. 1834 ; Wt., Ill. Ind. Bot. t. 127. 1840. *Chassalia curviflora auct non* (Wall.) Thw. ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 176. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 643. 1921.

Erect shrubs, 1-1.5 m high ; branches compressed, glabrous. Leaves 7.5-16.5 × 2.5-4.5 cm, ovate-lanceate, elliptic-lanceate, oblanceate or obovate, submembranous to thinly coriaceous, glabrous, acute or shortly acuminate at apex, tapering at base. Flowers white with a pinkish tinge in trichotomously branched terminal cymes. Drupes depressed-globose or didymous.

Fl. & Fr. : April-September.

Rare in the sholas of Tekkumalai at comparatively lower altitudes.

7. ***Psychotria subintegra*** (Wt. *et* Arn.) Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 163. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 641. 1921. *Grumileia subinteger* Wt. *et* Arn., Prodr. 432. 1834.

Shrubs ; branches glabrous. Leaves 8.5-16.5 × 3-5.5 cm, elliptic-lanceate, glabrous, broader and acute or obtusely acuminate at apex, narrowed into the petiole at base ; petioles ± 1.5 cm long. Flowers in terminal lax cymes. Drupes less than 0.5 cm long, obovoid.

Fl. : September.

Courtallum (Robert Wight 411, CAL).

15. *RANDIA* Linn.

1a. Plants armed ; flowers in umbel-like corymbs

R. malabarica 2

1b. Plants unarmed ; flowers in typical cymes

R. cochinchinensis 1

1. ***Randia cochinchinensis*** (Lour.) Merr., Trans. Ann. Phil. Soc. n. s. 24 (2) : 365. 1935. *Adina cochinchiensis* Lour., Fl. Cochinch. 365. 1790. *Randia densiflora* (Wall.) Benth., Fl. Hongk. 155. 1861 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 112. 1880 ; Corner, Gard. Bull. Straits Settl. 10 : 50. 1935.

Unarmed trees ; branches glabrous. Leaves $5-10.5 \times 1-3.5$ cm, elliptic-oblong, coriaceous, subacuminate at apex, narrowed at base ; petioles ± 0.5 cm long. Flowers in terminal cymes. Berries ± 0.5 cm long, subglobose or globose ; seeds many, rugose.

Fl. & Fr. : July-September.

Courtallum (*Robert Wight 354, CAL*).

2. *Randia malabarica* Lamk., Enc. Meth. Bot. 3 : 25. 1794 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 111. 1880 ; Gamble, Fl. Presid. Madras 2 (4) : 616. 1921. *Gardeneria fragrans* Koen. ex Roxb., Pl. Corom. t. 137. 1800. *Griffithia fragrans* Wt. et Arn., Prodr. 400. 1834 ; Wt., Ic. t. 310. 1840 (except fruit section). *Tumpakara* (Malayalam). *Mulpavattai*, *Pidavu* (Tamil).

Thorny shrubs or trees, 3.5-5.5 m high ; branches glabrous. Leaves $2.5-7.5 \times 2-4.5$ cm, elliptic-oblong or oblong-lanceate, coriaceous, glabrous, acute at apex, tapering at base. Flowers white, fragrant in umbel-like corymbs. Berries globose.

Fl. & Fr. : July-October.

Common in the sholas below Honey falls and at Tekkumalai.

16. RUBIA Linn.

Rubia cordifolia Linn., Syst. ed. 12, 3 (app.) : 229. 1768 & in Mant. 197. 1771 ; Wt. et Arn., Prodr. 442. 1834 ; Wt., Ill. Ind. Bot. t. 128. 1840 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 202. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 655. 1921 ; Deb et Malick, Bull. Bot. Surv. India 10 : 7. 1968. *R. munjista* Roxb., (Hort. Beng. 10. 1814 *nom. nud.*) Fl. Ind. 1 : 384. 1820 & *ibid.* 1 : 374. 1832.

Diffuse, climbing herbs, 2-3 m long ; stem much branched, quadrangular, sharply angled, prickly or hispid. Leaves in whorls, of 2-8, $1.5-5.6 \times 0.5-2$ cm, ovate, elliptic or ovate-lanceate, entire, scabrid, hairy or strigose on the surface, acute or acuminate at apex, cordate or rounded at base ; petioles 3.5-10 cm long, scabrid or prickly. Flowers white in terminal or axillary panicles of cymes. Fruits up to 0.5×0.4 cm, globose, dark blue.

Fl. & Fr. : August-February.

Rare at the highest altitudes of Tekkumalai towards the Kailasa Parvatham side.

17. SPERMACOCE Linn.

- 1a. Procumbent herbs ; stem purplish, hispid *S. hispida* 1
 1b. Erect bushy herbs ; stem greenish, almost glabrous *S. ocymoides* 2

1. *Spermacoce hispida* Linn., Sp. Pl. 102. 1753 ; Wt. et Arn., Prodr. 438. 1834 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 200. 1881. *Borreria hispida* (Linn.) K. Schum. in Engl. & Prantl, Pflanzenfam. ed. 1, 4 (4) : 144. 1891 (*non* Spruce ex K. Schum. 1888) ; Gamble, Fl. Presid. Madras 2 (4) : 654. 1921. *Spermacoce articularis* Linn. f., Suppl. 119. 1789. *Borreria articularis* (Linn. f.) F.N. Will., Bull. Herb. Boiss. 2, 5 : 956. 1905 ; Sant. et Merch., Bull. Bot. Surv. India 3 : 107. 1961. *Nuttichoori* (Tamil).

Procumbent herbs, 20-40 cm long ; branches quadrangular, hispid, purplish. Leaves subsessile, 1-5 × 0.8-1.5 cm, oblong or elliptic, scabrid, ciliate along the margins, acute at apex, tapering at base. Flowers light violet or blue in terminal or axillary fascicles. Capsules 0.2-0.5 cm long, ovoid, grooved centrally.

Fl. & Fr. : August-September.

A common weed on the way to Five falls in waste places.

2. *Spermacoce ocymoides* Burm. f., Fl. Ind. 34. 1768 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 200. 1881. *Borreria ocymoides* (Burm. f.) DC., Prodr. 4 : 544. 1830 ; Gamble, Fl. Presid. Madras 2 (4) : 654. 1921.

Bushy herbs ; stem glabrous. Leaves up to 5 x 1.2 cm, linear or lanceate, membranous, acute or shortly acuminate at apex, narrowed at base. Flowers white, in axillary fascicles. Capsules small, crowned by the calyx-teeth.

Fl. & Fr. : August-September.

Common weed in the open forest floor above Chittaruvi and on the way to Shembagadevi.

18. TARENNA Gaertn.

Tarenna asiatica (Linn.) O. Ktze. in K. Schum., Bot. Tidsskr. 24 : 332. 1902. *Rondeletia asiatica* Linn., Sp. Pl. 172. 1753. *Tarenna zeylanica* Gaertn., Fruct. 1 : 139. t. 28. 1788. *Werbera corymbosa* Willd., Sp. Pl. 1 : 1224. 1798 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 102. 1880. *Chomelia asiatica* (Linn.) O. Ktze., Rev. Gen. Pl. 1 : 278. 1891 ; Gamble, Fl. Presid. Madras 2 (4) : 613. 1921. *Stylocoryne werbera* Wt. et Arn., Prodr. 401. 1834 ; Wt., Ic. t. 309, 354. 1840. *Tarenna asiatica* (Linn.) Sant. et Merch., Bull. Bot. Surv. India 3 : 110. 1962 ; Raju, Sci. & Cult. 32 : 554. 1966. *Puliyani*, *Pavattachedi* (Malayalam). *Kodilam*, *Kura*, *Komi*, *Kottam* (Tamil).

Shrubs, 1-3 m high ; young branches quadrangular, glabrous. Leaves 7.5-14.5 x 1.5-3.5 cm, oblong-lanceate, coriaceous, shiny above, glaucous beneath, acute or acuminate at apex, narrowed at base ; petioles 1-1.5 cm long, stout. Flowers white in terminal corymbose cymes. Berries up to 0.8 cm in diameter, globose, with persistent calyx.

Fl. & Fr. : August-December.

Very common in the lower altitudes and interior open areas of the forest.

19. XEROMPHIS Raf.

Xeromphis spinosa (Thunb.) Keay, Bull. Jard. Bot. Etat. Brux. 28 : 37. 1958 ; Mahesh., Bull. Bot. Surv. India 3 : 91. 1961. *Gardenia spinosa* Thunb., Diss. Gard. no. 7. 1780. *Randia longispina* Wt. et Arn., Prodr. 398. 1834 ; Gamble, Fl. Presid. Madras 2 (4) : 616. 1921. *R. dumetorum* (Retz.) Poir. in Lamk., Enc. Meth. Bot. Suppl. 2 : 829. 1811 ; Wt. et Arn., *loc. cit.* p. 397 ; Wt., Ic. t. 580. 1842 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 110. 1880 ; Gamble, *loc. cit.* p. 615. *Kara*, *Karalikkaya* (Malayalam). *Cirratagalagam*, *Kadudam*, *Karai* (Tamil).

Armed trees, 3-4.5 m high ; branches horizontal with short internodes. Leaves 3-5.5 x 1.5-3.2 cm, obovate, shiny above, obtuse at apex, cuneate at base ; petioles up to 1 cm long. Flowers white, light fragrant in axillary cymes. Berries ± 2 cm in diameter, globose, smooth, crowned by the calyx.

Fl. & Fr. : July-October.

Fairly common in the dry outskirts of the forests around Tiger falls.

107. COMPOSITAE

1a. Pappus setose or paleaceous

2a. Anthers with a tail at their base

3a. Heads rayed

4a. Pappus double rowed, outer row scaly

Pulicaria 16

4b. Pappus double rowed, scanty

Vicoa 22

3b. Heads not rayed

5a. Heads collected in dense globose clusters

- 6a. Shrubs, 1-2.5 m high ; leaves entire *Blepharispermum* 4
- 6b. Herbs, 30-40 cm high ; leaves toothed *Sphaeranthus* 17
- 5b. Heads corymbose, paniced or fascicled
 - 7a. Plants cottony cob-webby *Helichrysum* 15
 - 7b. Plants glabrous, pubescent or villous *Blumea* 5
- 2b. Anthers without a tail at their base
 - 8a. Anthers cleft at their base
 - 9a. Heads many-flowered
 - 10a. Pappus long, copious, often with an outer row of short bristles or paleae *Vernonia* 21
 - 10b. Pappus short, fugaceous *Centratherum* 6
 - 9b. Heads few-flowered *Elephantopus* 10
 - 8b. Anthers subentire, obtuse or blunt at their base
 - 11a. Flowers never yellow ; heads always homogamous *Eupatorium* 13
 - 11b. Flowers yellow or variously coloured, heads homogamous or heterogamous
 - 12a. Style arms glabrous, flattened or plano-convex
 - 13a. Ray florets ligulate, not yellow *Erigeron* 12
 - 13b. Ray florets tubular, yellow *Conyza* 7
 - 12b. Style arms penicillate or hairy at tip, acute, truncate or recurved
 - 14a. Style arms long, tapering, hairy
 - 15a. Flowers yellow or orange-coloured *Gynura* 14
 - 15b. Flowers brick-red at apex, white on the tube below *Crassocephalum* 8
 - 14a. Style arms short, truncate tipped with a conical tuft of hairs *Emilia* 11
 - 1b. Pappus of minute teeth, spines or bristles, rarely absent, but never setose or paleaceous
 - 16a. Achenes with pappus
 - 17a. Pappus more than 5 *Tridax* 20
 - 17b. Pappus 5 or less than 5

- 18a. Pappus of 2 slender awns *Synedrella* 19
- 18b. Pappus of more than 2 scaly bristles or
retrosely barbellate awns
- 19a. Achenes triquetrous ; pappus as short
bristles *Blainvillea* 3
- 19b. Achenes 4-gonous or dorsally comp-
ressed ; pappus of retrosely barbellate
awns *Bidens* 2
- 16b. Achenes without pappus
- 20a. Fruits spiny *Acanthospermum* 1
- 20b. Fruits not spiny
- 21a. Achenes hairy *Spilanthes* 18
- 21b. Achenes glabrous *Eclipta* 9

1. ACANTHOSPERMUM Schrank

***Acanthospermum hispidum* DC.**, Prodr. 5. 522. 1836 ; Gamble, Fl. Presid. Madras 2 (4) : 704. 1921 ; Sant., J. Bombay Nat. Hist. Soc. 45 : 445. 1945 ; N.C. Nair. *et* M.B. Deshpande, J. Bombay Nat. Hist. Soc. 57 : 441, f. 1. 1960.

Erect herbs, 20 - 40 cm high ; branches dichotomous, terete, hairy ; hairs stiff. Leaves sessile, 1.5 - 3.5 × 1 - 2.5 cm, obovate or nearly so, serrate, hairy on both sides, subacute at apex, narrowed towards base. Heads yellow, solitary on dichotomously forked branches, heterogamous. Achenes with two horn like spines at the apex, pappus absent.

Fl. & Fr. : August - March.

A gregarious weed of the waste places around Five falls.

2. BIDENS Linn.

***Bidens bipinnata* Linn.**, Sp. Pl. 832. 1753 ; Gamble, Fl. Presid. Madras 2 (4) : 702. 1921. *B. pilosa* Linn., Sp. Pl. 832. 1753 var. *bipinnata* Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 309. 1881. *B. pilosa* Linn. var. *decomposita* Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 310. 1881.

Erect, glabrous herbs, 30 - 40 cm high. Leaves very variable, lobed or 1 - 2 pinnatisect, up to 15 cm long ; leaflets 2.5-8.5 × 1.5-4.5 cm, elliptic or ovate lanceate, deeply toothed, acute or shortly acuminate at apex,

ovate at base. Heads yellowish white, heterogamous, in terminal corymbose panicles or subsolitary. Achenes 4 gonous with two persistent stiff pappus as barbellate awns.

Fl. & Fr. : August February.

Common in Tekkumalai.

3. BLAINVILLEA Cass.

Blainvillea acmella (Linn.) Philips, *Blumea* 6 : 350. 1950. *Verbesina acmella* Linn. Sp. Pl. 901. 1753. *B. latifolia* (Linn. f.) DC., *Prodr.* 5 : 492. 1836 ; Clarke, *Comp. Ind.* 135. 1876 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 3 : 305. 1881. *Eclipta latifolia* Linn. f., *Suppl.* 378. 1781. *Blainvillea rhomboidea* Cass., *Dict. Nat.* 29 : 493. 1823 ; Gamble, *Fl. Presid. Madras* 2 (4) : 706. 1921.

Erect, scabrous herbs, 30 60 cm high ; stems striate, subterete, hispidly hairy. Leaves 2 4.5 × 1 3 cm, ovate or ovate lanceate, serrate, hispidly hairy, acute at apex, cuneate at base ; petioles 1 1.5 cm long, hairy. Heads white, terminal or axillary, heterogamous ; involucral bracts scarious, ovate. Achenes triquetrous, cuneiform, slightly curved ; pappus of short bristles.

Fl. & Fr. : August - November.

A weed, common in the dry forest floor on the way to Tekkumalai.

4. BLEPHARISPERMUM Wt. ex DC.

Blepharispermum petiolare Wt. ex DC. in Wt., *Contrib. Ind. Bot.* 12. 1834 ; Wt., *Ic. t.* 1092. 1846 ; Clarke, *Comp. Ind.* 98. 1876 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 3 : 276. 1881 ; Gamble, *Fl. Presid. Madras* 2 (4) : 692. 1921.

Straggling shrubs, 1 - 2.5 m high ; branches glabrous. Leaves 3 10.5 × 2.5 4.5 cm, ovate, entire, glabrous above, yellowish pubescent beneath especially along the nerves, acuminate at apex, rounded at base ; petioles 1.5 1.7 cm long, slender. Heads globose in terminal corymbs. Achenes up to 0.4 cm long, obcompressed, ciliate along the margins and apex.

Fl. & Fr. : October - March.

Rather rare towards the interior dry areas of the forests on the way to Old Courtallum.

5. BLUMEA DC. *nom. gen. cons.*

- 1a. Heads only 1 or 2 *B. obliqua* 2
- 1b. Heads many
 - 2a. Heads yellow ; shrubs 0.4-1.5 m high *B. spectabilis* 3
 - 2b. Heads white ; herbs 15-60 cm high *B. mollis* 1

1. *Blumea mollis* (D. Don) Merr., Philipp. J. Sci. 5 : 395. 1910 ; Randeria, *Blumea* 10 : 261. 1960. *Erigeron molle* D. Don, Prodr. Fl. Nepal. 172. 1825. *Blumea wightiana* DC. in Wt., Contrib. Ind. Bot. 14. 1834 & in Prodr. 5 : 435. 1836 ; Clarke, Comp. Ind. 74. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 261. 1882 ; Gamble, Fl. Presid. Madras 2 (4) : 686. 1921.

Erect herbs, 15 60 cm high ; branches, striate, villous. Leaves sessile or petiolate, 1.5 9.5 × 1 4 cm, elliptic or obovate, irregularly toothed, rounded or obtuse at apex, acute or obtuse at base ; petioles up to 20 cm long. Heads white, numerous, crowded or fasciculated, terminal ; involucre herbaceous to purple tinged, linear, soft villous. Achenes 4 5 angled, hairy ; pappus 1 seriate, white.

Fl. & Fr. : July January.

Common in the shady areas at Five falls and Main falls.

2. *Blumea obliqua* (Linn.) Druce, Rep. Bot. Soc. Exch. Club Brit. Isles 4 : 609. 1916 (1917) ; Randeria, *Blumea* 10 : 286. 1960. *Erigeron obliqua* Linn., Mant. 2 : 573. 1771. *Blumea amplexans* DC. in Wt., Contrib. Ind. Bot. 13. 1834 ; Clarke, Comp. Ind. 71. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 260. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 686. 1921.

Erect herbs, 15 60 cm high ; branches dichotomous, villous. Leaves sessile, 1.5 5 × 0.5 1 cm, elliptic oblong to lanceate oblong, serrate or dentate to subentire, scabrous or villous when young, apiculate at apex, obtuse at base. Heads white, terminal or axillary, peduncled. Achene oblong, pubescent, not ribbed ; pappus sparsely hairy, yellowish white.

Fl. & Fr. : November March.

A fairly common weed in the waste places, wet areas and plains.

3. *Blumea spectabilis* DC., Prodr. 5 : 445. 1836 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 269. 1881 ; Dunn in J. Linn. Soc. Lond. 39 : 424. 1911 ; Gamble, Fl. Presid. Madras 2 (4) : 688. 1921.

Erect undershrubs or shrubs, 0.5 - 1.5 m high ; branches pubescent towards apex. Leaves up to 26 × 7.5 cm, lanceate or oblanceate, glabrous or sparsely pubescent, distantly serrate, acuminate at apex, narrowed into the petiole at base ; petioles 2 - 4 cm long. Heads yellow, in terminal pyramidal panicles, homogamous. Achenes ± 0.1 cm long, ribbed ; pappus up to 0.5 cm long, white.

Fl. & Fr. : December - May.

Rare, in the dense forests of the higher altitudes at Kailasa Parvatham and on the way to Vaithamalai above Karuppuswamy Kovil.

6. CENTRATHERUM Cass.

1a. Pappus reddish ; plants aromatic

C. anthelminticum 1

1b. Pappus yellowish ; plants not aromatic

C. tenue 2

1. *Centratherum anthelminticum* (Linn.) O. Ktze., Rev. Gen. Pl. 1 : 320. 1891 ; Gamble, Fl. Presid. Madras 2 (4) : 667. 1921. *Conyza anthelmintica* Linn., Sp. Pl. 1207. 1753. *Vernonia anthelmintica* (Linn.) Willd., Sp. Pl. 5 : 1634. 1800 ; Clarke, Comp. Ind. 10. 1876 ; Hook. f. in Hook. f. Fl. Brit. Ind. 3 : 236. 1881.

Erect aromatic herbs, 30 - 90 cm high ; stems longitudinally striated, pubescent. Leaves 3.5 - 7.5 × 1.5 - 3.5 cm, elliptic lanceate, coarsely serrate, pubescent on both sides, acute or subacuminate at apex, tapering into the petiole at base ; petioles 1 - 2 cm long, pubescent. Heads subcorymbose, many - flowered ; peduncles stouter towards apex ; involucre in 2 - 3 rows, the outer most row smaller than the others, linear with a hairy tip. Achenes oblong - cylindric, 10 ribbed, pubescent ; pappus reddish, short, deciduous.

Fl. & Fr. : February.

Courtallum (Robert Wight 506, CAL).

2. *Centratherum tenue* (Wt.) Clarke, Comp. Ind. 4. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 228. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 666. 1921. *C. mole* Benth., var. *tenue* Wt. ex Clarke, Comp. Ind. 4 1876.

Undershrubs, 30 - 60 cm high ; branchlets villous. Leaves up to 4.5×3.2 cm, elliptic, serrate, pilose above, tomentose beneath, acuminate at apex, acute at base ; petioles up to 0.5 cm long, villous. Heads solitary, lilac blue ; involucral bracts foliaceous, villous. Achenes linear with short pappus.

Fl. & Fr. : September - February.

Common on the way to Tekkumalai as an undergrowth in dense forests.

7. CONYZA Less.

Conyza leucantha (D. Don) F. Ludlow *et* Raven, Kew Bull. 17 : 71. 1963. *C. viciidula* Wall. ; Clarke, Comp. Ind. 63. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 258. 1882 ; Gamble, Fl. Presid. Madras 2 (4) : 683. 1921. *Erigeron leucanthum* D. Don, Prodr. Fl. Nepal. 171. 1825.

Erect herbs, 30 - 100 cm high ; branches pubescent or viscid. Leaves 3.5 - 9 cm long, lanceate, entire or shallowly serrate, viscid, narrowed at both ends. Heads yellow, in loose terminal corymbs, heterogamous not rayed. Achenes compressed, minutely villous.

Fl. & Fr. : September - December.

Rare, in the outskirts of the reserve forests near Five falls.

8. CRASSOCEPHALUM Moench

Crassocephalum crepidioides (Benth.) More, J. Bot. Lond. 50 : 211. 1912 ; Steenis, J. Indian Bot. Soc. 46 : 463. 1967. *Gynura crepidioides* Benth., Hook. Niger Fl. 438. 1849 ; Alston in Trimen, Handb. Fl. Ceylon 6 (suppl.) : 171. t. 283. 1931 ; Mooney, Suppl. Bot. Bih. & Orissa. 80. 1950 ; Raju, Bull. Int. Soc. Trop. Ecol. 7 : 172. 1966.

Erect herbs 30 - 40 cm high ; stems hispid hairy on younger parts. Leaves $5.5 - 10.5 \times 1.5 - 4$ cm, irregularly toothed, almost glabrous, or sparsely puberulous, acute at both ends ; terminal leaves spatulate ; petioles 1 - 2.5 cm long, slender. Heads brick red, terminal, characteristically drooping, homogamous.

Fl. & Fr. : August - October.

Common in the Sholas at the highest altitudes of Tekkumalai towards the side of Kailasa Parvatham.

9. *ECLIPTA* Linn. *nom. gen. cons.*

Eclipta alba (Linn.) Hassk., Pl. Jav. Rar. 528. 1848 ; Clarke, Comp. Ind. 134. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 304. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 705. 1921. *Verbesina alba* Linn., Sp. Pl. 902. 1753. *Eclipta prostrata* (Linn.) Linn., Mant. 2 : 286. 1753, ed. 2 : 1227. 1763 ; Sant., J. Bombay Nat. Hist. Soc. 54 : 475 76. 1957 & Bull. Bot. Surv. India 3 : 16. 1961. *Verbesina prostrata* Linn., Sp. Pl. 902. 1753.

Erect or prostrate herbs, 20 80 cm long, often rooting at lower nodes ; stem and branches with appressed hairs. Leaves 2.5×1 2.5 cm, oblong - lanceate, subentire, appressed hairy on both sides, acute at apex, tapering at base ; petioles obscure. Heads white, axillary, heterogamous ; involucre bracts about 8, ovate, hairy. Achenes cuneate, compressed, minutely toothed at apex ; pappus absent.

Fl. & Fr. : August - December.

Common weed around Main falls.

10. *ELEPHANTOPUS* Linn.

Elephantopus scaber Linn., Sp. Pl. 814. 1753 ; Wt., Ic. t. 1086. 1846 ; Clarke, Comp. Ind. 28. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 242. 1882 ; Gamble, Fl. Presid. Madras 2 (4) : 676. 1921 ; Koster, Blumea 1 : 457. 1935. *Anachuvadi* (Malayalam). *Anashovadi* (Tamil).

Erect herbs, 15 35 cm high ; stem often dichotomously branched, strigose with appressed hairs. Leaves basal, forming a rosette on the ground, 12×3 5.5 cm, ovate oblong, entire, or serrate, slightly hairy on both surfaces, rounded or subacute at apex, tapering into an obscure petiole at base. Heads violet, numerous, terminal forming a group, homogamous. Achenes small, truncate, finely 10 ribbed, slightly pubescent.

Fl. & Fr. : September - February.

Fairly common in Tekkumalai and other waste places.

11. *EMILIA* Cass.

Emilia sonchifolia (Linn.) DC. in Wt., Contrib. Ind. Bot. 24. 1834 & in Prodr. 6 : 302. 1838 ; Clarke, Comp. Ind. 174. 1876 ; Hook. f. in

Hook. f., Fl. Brit. Ind. 3 : 336. 1882 ; Gamble, Fl. Presid. Madras 2 (4) : 716. 1924 ; Garabedian, Kew Bull. 1924 : 141. 1924. *Cacalia sonchifolia* Linn., Sp. Pl. 835. 1753. *Emilia rigidula* DC., Prodr. 6 : 302. 1838. *Muyalchevian* (Malayalam).

Erect herbs, 15-30 cm high. Leaves variable, sessile, $3.5 \times 1-2$ cm, pinnatifid or spatulate, glabrous, auricled at base. Heads pinkish in terminal umbellate peduncles, homogamous. Achenes ± 0.5 cm long, ribbed, hispid along the margins, brown.

Fl. & Fr : August February.

A common weed in the plains, particularly around Tiger falls.

12. ERIGERON Linn.

- 1a. Leaves distantly serrate ; heads in short peduncled groups towards the apex of branches

E. crispus 1

- 1b. Leaves entire ; heads long peduncled and solitary at the apex of branches

E. karvinskianus 2

1. *Erigeron crispus* Pourr., Mem. Acad. Sci. Toulouse 3 : 318. 1788. *E. sumatrensis* Retz., Obs. Bot. 5 : 28. 1788. *E. linifolius* Willd., Sp. Pl. 3 : 1855. 1803 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 254. 1881. *Conyza leucodasys* Miq., J. Bot. Neerl. 1 : 103. 1861. *C. ambigua* DC., Fl. Fr. (suppl.) 468. 1815 ; Gamble, Fl. Presid. Madras 2 (4) : 693. 1921.

Erect herbs, 30-60 cm high ; branches pubescent or hirsute, leafy. Leaves subsessile, $3.5-7.5 \times 0.4-1.5$ cm, distantly serrate, pubescent or hirsute on both the surfaces, acute at apex, narrowed at base. Heads white, terminal or axillary, short peduncled, towards the apex of branches, homogamous. Achenes up to 0.5 cm long, cylindrical, glabrous ; pappus white.

Fl. & Fr. : October-February.

Common below the third wooden bridge in Tekkumalai.

2. *Erigeron karvinskianus* DC., Prodr. 5 : 285. 1836. *E. mucronatus* DC., Prodr. 5 : 285. 1836 ; Gamble, Fl. Presid. Madras 2 (4) : 682. 1921. *E. gaudichaudii* DC., Prodr. 7 : 274. 1838. *E. karvinskianum* var. *mucronatum* (DC.) Hieron., Bot. Jahrb. 28 : 585. 1901.

Herbs, 30-60 cm high ; young branches slightly pubescent. Leaves cauline, sessile, $1.2-2.5 \times 0.2-0.4$ cm, linear or narrowly-lanceate, entire,

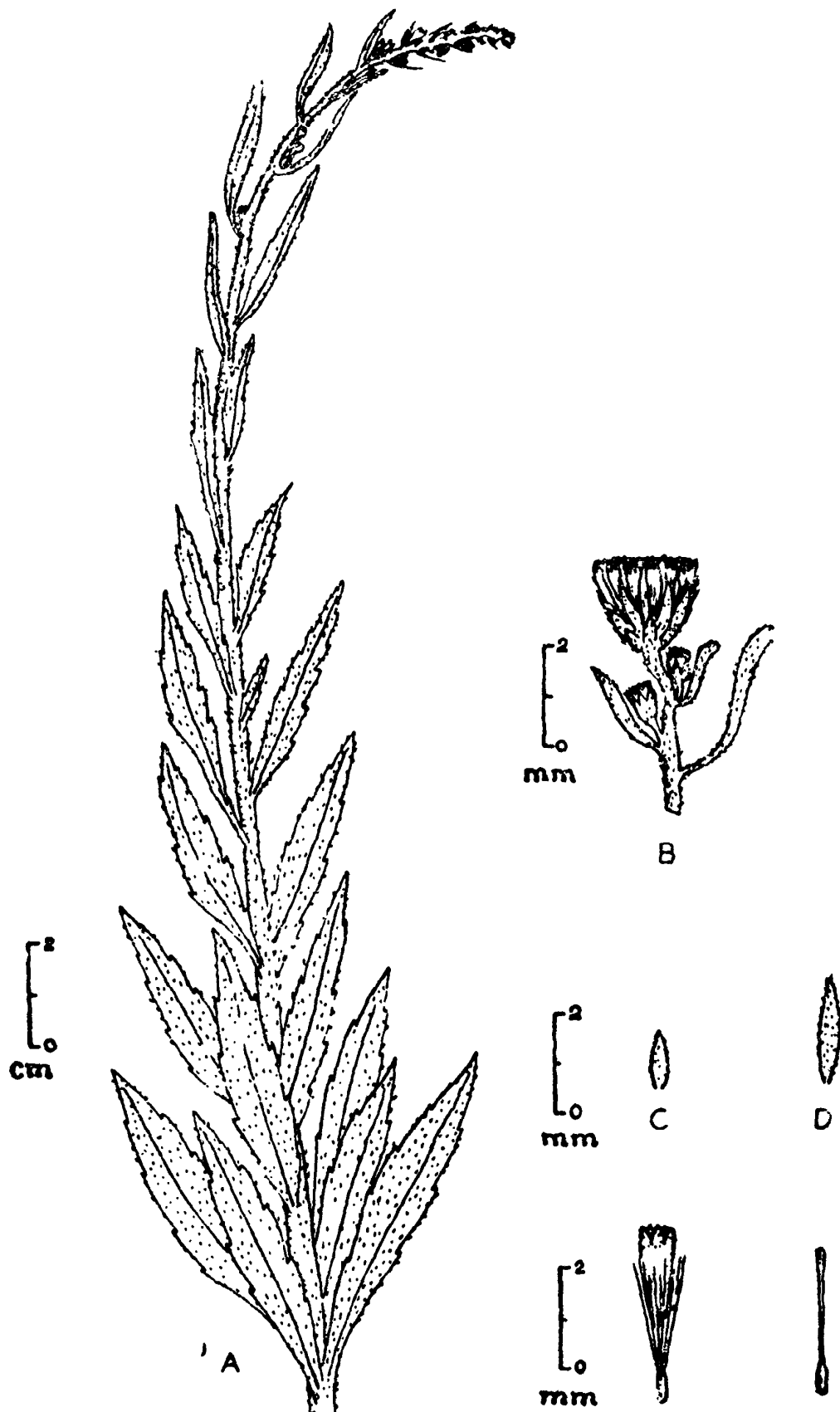


Fig. 12. *Erigeron crispus* Pourr.

A. Habit, B. Inflorescence unit, C. Bract, D. Bracteole, E. Flower, F. Pistil.

glabrous, acute at apex. Heads white, solitary, terminal, heterogamous. Achenes narrow, linear, minutely villous ; pappus white.

Fl & Fr. : December-May.

Very common in the shady, wet areas of Tekkumalai along the sides of rocks.

13. EUPATORIUM Linn.

Eupatorium adenophorum Spreng., Syst. 3 : 420. 1826 ; Koster, Fl. Java 2 : 378. 1965. *E. glandulosum* H.B.K., Nov. Gen. et Sp. 4 : 122. 1820 (*non* Michx.) ; Bailey, Man. Cult. Plants 1025. 1960.

Diffuse or decumbent shrubs ; stem glandular-hairy. Leaves 4-10 × 3.5-5.5 cm, rhomboid-ovate, crenate-dentate, pubescent along the nerves below, acute at apex, tapering at base ; petioles slender, glandular. Heads pale-violet. Achenes 5-angled, crowned with a tuft of hairs.

Fl. & Fr. : October-February.

A gregarious weed, common along hedges almost throughout the plains.

14. GYNURA Cass. *nom. gen. cons.*

- | | |
|--|------------------------------|
| 1.a Leaves thick, coarsely and remotely toothed | <i>G. nitida</i> 2 |
| 1b. Leaves thin, deeply and irregularly pinnatifid or lyrate | <i>G. lycopersicifolia</i> 1 |

1. **Gynura lycopersicifolia** DC., Prodr. 6 : 300. 1838 ; Clarke, Comp. Ind. 172. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 374. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 714. 1921.

Erect fleshy herbs, 30-60 cm high ; stem simple, glabrous, green. Leaves up to 18 × 10 cm, thin, deeply and irregularly pinnatifid or lyrate, hoary with white hispid pubescence on both sides, auricled at base. Heads orange coloured, few in terminal panicles. Achenes oblong, narrow, many ribbed, sparsely hispid between ribs ; pappus of bright white soft hairs.

Fl. & Fr. : September March.

Very rare, by the side of Honey falls.

2. *Gynura nitida* DC. in Wt., Contr. Ind. Bot. 24. 1834 ; Wt., Ic. t. 1121. 1846 ; Clarke, Comp. Ind. 171. 1876 ; Hook. f. in Hook. f. Fl., Brit. Ind. 3 : 333. 1882 ; Gamble, Fl. Presid. Madras 2 (4) : 714. 1921.

Erect, fleshy herbs ; stem simple or sparingly branched, glabrous or nearly so. Leaves $2.5-8.5 \times 1-2.5$ cm, crowded towards the base of branches, oblanceate, thick, coarsely and remotely toothed, glabrous, acute or obtuse at apex, narrowed and semi-amplexicaul at base. Heads. 1-1.3 cm broad, in long peduncled branched corymbs. Achenes oblong, narrow, many-ribbed, sparsely-hispid between ribs, brownish ; pappus of many white soft hairs.

Fl. & Fr. : May-September.

Courtallum (*Robert Wight* 1641, CAL).

15. *HELICHRYSUM* Mill. *ex Pers. nom. gen. cons.*

Helichrysum hookerianum Wt. et Arn. in DC., Prodr. 6 : 201. 1838 ; Clarke, Comp. Ind. 116. 1876 ; Gamble, Fl. Presid. Madras 2 (4) : 699. 1921. *H. buddleioides* DC. var. *hookeriana* (Wt. et Arn.) Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 291. 1881.

Undershrubs ; branches cottony. Leaves sessile, up to 7×1.3 cm, linear-lanceate entire, white-cottony above, brown-cottony beneath, acute at apex. Heads terminal, corymbose, homogamous ; bracts yellow. Achenes small, subcompressed, scabrid.

Fl. & Fr. : February.

Courtallum (*Robert Wight* 540, CAL).

16. *PULICARIA* Gaertn.

Pulicaria wightiana (DC. *ex* Wt.) Clarke, Comp. Ind. 118. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 298. 1882 ; Gamble, Fl. Presid. Madras 2 (4) : 702. 1921. *Poloa wightiana* DC. *ex* Wt., Contrib. Ind. Bot. 10. 1834. *Callistephus wightianus* DC., Prodr. 5 : 275. 1836 ; Wt., Ic. t. 1089. 1846.

Much branched, leafy herbs, 30-60 cm high ; branches ascending, slender, pubescent. Leaves sessile, $2.5-4.5 \times 0.2-1$ cm, linear-oblong, serrate, pubescent. Heads yellow, homogamous or heterogamous ; peduncles leafy,

thickened upwards. Achenes oblong, terete, glabrous, brown ; pappus in two rows, reddish.

Fl. & Fr. : September-February.

Common in the plains, especially around Tiger falls.

17. SPHAERANTHUS Linn.

Sphaeranthus indicus Linn., Sp. Pl. 1314. 1753 ; Clarke, Comp. Ind. 97. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 275. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 692. 1921 ; Robyns, Kew Bull. 1924 : 197. 1924. *S. hirtus* Willd., Sp. Pl. 3 : 2394, 2395. 1804 ; Wt. Ic. t. 1094. 1852.

Aromatic herbs, 30-40 cm high; branches with toothed wings. Leaves 3.5-5 × 1-2.5 cm, obovate or oblong, toothed, glandular-hairy, subacute or obtuse at apex, narrowed at base. Heads bright violet, globose or ovoid, terminal. Achenes oblong or obovate, subglabrous.

Fl. & Fr. : September-March.

A weed common along the sides of the fields on the way to Old Courtallum and Five falls.

18. SPILANTHUS Jacq.

Spilanthus paniculata Wall. (Cat. no. 3186. 1828 *nom. nud.*) ex DC., Prodr. 5 : 625. 1836 ; Koster & Philips., Blumea 6 : 350. 1950. *S. acmella* auct. (*non* Murr. 1774) ; Clarke, Comp. Ind. 138. 1876 ; Hook.f. in Hook. f., Fl. Brit. Ind. 3 : 307. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 708. 1921. *S. clava sensu* Wt., Ic. t. 1109. 1846.

Slender herbs, 20-60 cm high ; branches erect or decumbent, hairy or glabrous. Leaves up to 4.8 × 2.6 cm, ovate, irregularly crenate or serrate, membranous, glabrous or nearly so, acute at apex, narrowed at base. Heads yellowish, ovoid solitary on axillary or terminal peduncles. Achenes ±0.2 cm long, hairy, oblong, compressed ; pappus absent.

Fl. & Fr. : May-October.

Common in the plains as a weed.

19. *SYNEDRELLA* Gaertn. *nom. gen. cons.*

Synedrella nodiflora (Linn.) Gaertn., Fruct. 2 : 456, t. 171, f. 7. 1791 ; Clarke, Comp. Ind. 139. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 308. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 708. 1921. *Verbesina nodiflora* Linn., Cent. Pl. 1 : 28. 1755 *et* Amoen. Acad. 4 : 290. 1759.

Erect herbs, 30-60 cm high ; branches dichotomous, pubescent or villous. Leaves subsessile or petiolate, $3.5-8 \times 2-4.5$ cm, ovate-lanceate, slightly pubescent beneath, subacuminate at apex, narrowed at base ; petioles if present, less than 1 cm long. Heads yellow, axillary or terminal, homo or heterogamous. Achenes dimorphic ; the outer ones winged and spinous on the wings ; the inner, black, slender, not winged.

Fl. & Fr. : August-November.

A common weed in the plains, especially around Tiger falls.

20. *TRIDAX* Linn.

Tridax procumbens Linn., Sp. Pl. 900. 1753 ; Clarke, Comp. Ind. 142. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 311. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 711. 1921.

Erect or straggling herbs, 30-50 cm high ; branches hispid. Leaves $6.5-12 \times 1.5-4.5$ cm, pinnatifid, lobed or deeply serrate, acute at apex, narrowed at base. Heads yellowish, terminal, heterogamous. Achenes oblong ; pappus of feathery bristles.

Fl. & Fr. : Almost throughout the year.

A weed of waste places at low altitudes.

21. *VERNONIA* Schreb. *nom. gen. cons.*

- | | |
|---|------------------------|
| 1a. Slender herbs | <i>V. cinerea</i> 1 |
| 1b. Shrubs or undershrubs | |
| 2a. Leaves entire or crenulate, very rugose above | <i>V. salvifolia</i> 3 |
| 2b. Leaves serrate, not rugose above | |
| 3a. Achenes 10-ribbed ; leaves distantly serrate | <i>V. divergens</i> 2 |
| 3b. Achenes 4-5 ribbed ; leaves closely serrated | <i>V. setigera</i> 4 |

1. *Vernonia cinerea* (Linn.) Less., *Linnaea* 4 : 291. 1829 ; Clarke, *Comp. Ind.* 20. 1876 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 3 : 233. 1881 ; Gamble, *Fl. Presid. Madras* 2 (4) : 676. 1921 ; Koster, *Blumea* 1 : 410. 1935. *Conyza cinerea* Linn., *Sp. Pl.* 862. 1753.

Erect or decumbent herbs, up to 45 cm high ; stems slender, appressedly greyish pubescent. Leaves variable in shape and size, up to 5 × 2.5 cm, elliptic, ovate or lanceate, undulate, glabrous above, somewhat pubescent beneath, acute or obtuse at apex, attenuate at base. Heads pinkish in terminal, paniculate cymes, homogamous. Achenes ± 0.2 cm long, slightly obovate, covered with appressed silky hairs ; pappus white.

Fl. & Fr. : Almost throughout the year.

Fairly common on the way to Five falls and in the crevices of rocks in Tekkumalai.

2. *Vernonia divergens* (Roxb.) Edgew., *J. Asiat. Soc. Bengal* 21 : 172. 1853 ; Clarke, *Comp. Ind.* 14. 1876 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 3 : 234. 1881 ; Gamble, *Fl. Presid. Madras* 2 (4) : 673. 1921. *Eupatorium divergens* Roxb., *Fl. Ind.* 3 : 414. 1832. *Decaneurum divergens* (Roxb.) DC., *Prodr.* 5 : 68. 1836 ; Wt., *Ic. t.* 1084. 1846.

Shrubs, branches yellowish pubescent. Leaves 4.5 7.5 × 3 7.5 cm, elliptic, distantly serrate, scabrid above, pubescent beneath, acuminate at apex, narrowed at base ; terminal leaves very small ; petioles 1 1.5 cm long. Heads purple in terminal short peduncled corymbs, homogamous. Achenes truncate at apex, tapering at base, ten ribbed ; pappus yellow.

Fl & Fr. : December February.

Courtallum (*Robert Wight* 509, CAL).

3. *Vernonia salvifolia* Wt., *Ic. t.* 1079. 1846 ; Clarke *Comp. Ind.* 20. 1876 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 3 : 237. 1881 ; Gamble, *Fl. Presid. Madras* 2 (4) : 675. 1921.

Shrubs ; branches terete, thick, white woolly towards apex. Leaves sessile, 4.5 15 × 1 - 2.5 cm, linear lanceate entire or crenulate, very rugose above, silky woolly beneath, obtuse at apex, narrowed at base. Heads yellow in terminal corymbs, homogamous. Achenes somewhat 4 angled, glabrous smooth ; pappus 1 rowed, yellowish.

Fl. & Fr. : November -February.

Courtallum (*Robert Wight* 510, CAL).

4. *Vernonia setigera* Arn., Pugill. Pl. Ind. Orient. 94. 1836 ; DC., Prodr. 7 : 263. 1839 ; Clarke, Comp. Ind. 18. 1876 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 235. 1881 ; Gamble, Fl. Presid. Madras 2 (4) : 674. 1921.

Shrubs or undershrubs ; stems yellowish pubescent, obscurely striated. Leaves $3.5-7.5 \times 0.5-2.5$ cm, ovate lanceate, closely serrateed, stiff - hairy above, soft - hairy beneath, acuminate at apex, narrowed into the petiole at base ; petioles 1-2 cm long, pubescent. Heads yellow in terminal corymbose panicles, homogamous. Achenes very small, brown, 4-5 ribbed, white hairy ; pappus copious, white.

Fl. & Fr. November - February.

Courtallum (*Robert Wight* 513, CAL).

22. *VICOA* Cass.

Vicoa indica (Willd.) DC., in Wt., Contrib. Ind. Bot. 10. 1834 ; Wt. Ic. t. 1148. 1846 ; Clarke, Comp. Ind. 127. 1876 ; Gamble, Fl. Presid. Madras 2 (4) : 701. 1921. *Inola indica* Willd., Sp. Pl. 3 : 2092. 1804. *Vicoa auriculata* Cass., Ann. Sci. Nat. (ser. 1) 17 : 418. 1829 ; Hook. f. in Hook. f., Fl. Brit. Ind. 3 : 297. 1882.

Leafy erect herbs, up to 30 cm high. Leaves variable, sessile, $3-5 \times 0.5-2$ cm, linear lanceate, wrinkled, hairy on both sides, acute at apex, auricled at base. Heads bright yellow, solitary or in terminal panicles, homo or heterogamous. Achenes terete, rounded at apex, hairy ; pappus single-rowed.

Fl. & Fr. : October - March.

Common in the wet soil between rocks above Chittaruvi.

MONOCOTYLEDONS

108. HYDROCHARITACEAE

HYDRILLA Rich.

Hydrilla verticillata (Linn. f.) Royle, Ill. Bot. Himal. t. 376. 1839 ; Hook. f. in Hook. f., Fl. Brit. Ind. 5 : 659. 1888 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1396. 1928 ; Subr., Aquat. Angio. 55. 1962 ; Naik, Bull. Bot. Surv. India 6 : 302. 1964 ; Rao *et* Verma, Bull. Bot. Surv. India 12 : 140. 1970. *Serpicula verticillata* Linn. f., Suppl. 416. 1781.

Aquatic, leafy, caulescent herbs. up to 45 cm long. Leaves 3-8 in whorls, $0.5-1.5 \times 0.1-0.2$ cm, linear or oblong linear, serrulate or entire, sheathing at base. Flowers white, dioecious in axillary subsessile spadix; male flowers minute in subsessile spathes; female flowers in cylindrical bifid long stalked spathes. Fruits up to 1.5 cm long, sub-cylindrical.

Fl. & Fr. : October - January.

Common submerged water plants forming large masses in the still water of Thamarakulam on the way to Five falls.

109. APONOGETONACEAE

APONOGETON Linn. f.

Aponogeton natans (Linn.) Engl. et E. Krause in Engl. Pflanzenr. 24 : 11. 1906; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1589. 1931; Subr., Aquat. Angio. 92, f. 54. 1962; van Bruggen, Blumea 18 : 477. 1970. *Saururus natans* Linn., Mant. 2 : 227. 1771. *Aponogeton monostachyon* Linn. f., Suppl. 214. 1781; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 564. 1893. *Paruva kilanga* (Malayalam). *Paruva kilangu* (Tamil).

Aquatic herbs; rootstock stoloniferous. Leaves free floating $15-20 \times 2.5-5$ cm, oblong to linear lanceate, acute or obtuse at apex, rounded or cordate at base; petioles with sheathing base. Flowers pale blue in 2-4 branched spikes. Follicles up to 0.5 cm long, subglobose, beaked.

Fl. & Fr. : Almost throughout the year, but mostly from June to February.

Abundant, on the way to Five falls either floating or in the marshy soil along the banks of ponds.

110. XYRIDACEAE

XYRIS Linn.

Xyris pauciflora Willd., Phytogr. 1 : 2, t. 1. 1794; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 365. 1892; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1532. 1928.

Erect tufted herbs, up to 20 cm high. Leaves much shorter than the scape, up to 6.5×0.2 cm, linear, flat acuminate at apex, acute or trun-

cate at base. Flowers in ovoid or globose heads ; bracts orbicular, shining, chestnut brown in colour, acute at apex. Capsules 0.5 cm long, 3 valved.

Fl. & Fr. : November December.

Common in the marshy soil above Main falls and in other wet localities.

111. COMMELINACEAE

1a. Fertile stamens 3 or rarely 2

2a. Inflorescence with spathe

Commelina 3

2b. Inflorescence without spathe

3a. Anterior 3 stamens fertile, the posterior 3 staminodes ; capsules 2-valved

Anellema 2

3b. Fertile stamens 3, alternating with 3 staminodes ; capsules subequally 3-valved

Murdannia 5

1b. Fertile stamens 6

4a. Inflorescence embedded in the hollow axil of the leaf ; bracteoles transparent, inconspicuous

Amischophacelus 1

4b. Inflorescence exerted from the axil of the leaf ; bracteoles prominently foliaceous

Cyanotis 4

1. AMISCHOPHACELUS Rolla Rao *et* Kammathy

Amischophacelus axillaris (Linn.) Rolla Rao *et* Kammathy, J. Linn. Soc. Lond. 59 : 306. 1966. *Commelina axillaris* Linn., Sp. Pl. 42. 1753. *Tradescantia axillaris* (Linn.) Linn., Syst. Nat. ed. 13 : 260. 1774. *Cyanotis axillaris* (Linn.) Schult. *et* Schult. f., Syst. Veg. 7 (2) : 1154. 1830 ; Clarke in DC., Mon. Phan. 3 : 244. 1881 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 388. 1894 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1550. 1931. *Zygomene axillaris* (Linn.) Salisb., Trans. Hort. Soc. 1 : 271. 1872 ; Rolla Rao, Notes R. Bot. Gard. Edinb. 25 : 187. 1965.

Suberect or creeping glabrous herbs, 20 - 45 cm long ; stems reddish-brown, striated, rooting at lower nodes. Leaves sessile, 4 - 12.5 × 0.3 - 1 cm, linear lanceate, acute at both ends ; sheaths about 1 cm long, inflated, ciliated at mouth. Flowers blue in axillary fascicles. Capsules 0.3 - 0.5 cm long, oblong, pointed at apex.

Fl. & Fr. : July December.

Fairly common creepers in the open areas above Main falls and also along the sides of gutters on the way to Five falls.

2. ANEILEMA R. Br.

Aneilema montanum (Wt.) Clarke in DC., Mon. Phan. 3 : 217. 1881 ; Hook. f. in. Hook. f., Fl. Brit. Ind. 6 : 381. 1894 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1546. 1931 ; Rolla Rao, Notes R. Bot. Gard. Edinb. 25 : 182. 1964. *Dictyospermum montanum* Wt., Ic. t. 2069. 1853.

Stout stoloniferous herbs, up to 1 m high ; stem glabrous, often creeping and rooting at lower nodes. Leaves $6-18 \times 2.5-5$ cm, elliptic-lanceate, somewhat scaberulous, acuminate at apex, narrowed into a short petiole at base ; leaf sheath puberulous, usually ciliate at mouth. Flowers white in long slender puberulous panicles. Capsules 0.3-0.4 cm across, subglobose, glossy.

Fl. & Fr. : July-December.

Rare below the slandering rocks in shady wet soil at Shembagadevi.

3. COMMELINA Linn.

- | | |
|--|--------------------------|
| 1a. Capsules 3-loculed ; spathe funnel-shaped, solitary or crowded in terminal heads | <i>C. paludosa</i> 3 |
| 1b. Capsules 2-loculed ; spathe auricled on one side or ovate and cucullate, in axillary peduncles | |
| 2a. Leaves ovate, oblong or suborbicular ; spathe auricled on one side | <i>C. benghalensis</i> 1 |
| 2b. Leaves linear to linear-lanceate ; spathes ovate, cucullate | <i>C. ensifolia</i> 2 |

1. **Commelina benghalensis** Linn., Sp. Pl. 41. 1753 ; Wt., Ic. t. 2066. 1853 ; Clarke in DC., Mon. Phan. 3 : 159. 1881 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 370. 1894 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1539. 1931.

Diffuse, creeping herbs, 30-60 cm long ; stem slender, pubescent or glabrous, rooting at lower nodes. Leaves $1.8-6.5 \times 1.5-4.5$ cm, ovate, oblong or suborbicular, pubescent on both sides, obtuse or acute at apex, unequal at base. Flowers aerial and underground ; aerial flowers blue in spathe auricled at one side ; underground flowers in solitary, pear-shaped spathes. Capsules about 0.5 cm long, pyriform, 2-loculed membranous.

Fl. & Fr. : April November.

Common, spreading on dry or wet soil around Main falls and Tiger falls.

2. *Commelina ensifolia* R. Br., Prodr. 269. 1810 ; Clarke in DC., Mon. Phan. 3 : 188. 1881 (incl. var. *pubescens* R. Br. ex Clarke) ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 374. 1894 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1540. 1931 ; Rolla Rao et Kammathy, J. Bombay Nat. Hist. Soc. 59 : 65. 1962 ; Rolla Rao, Blumea 14 : 352. 1966. *C. undulata* Clarke (non R. Br.) var. *setosa* Clarke in DC., Mon. Phan. 3 : 188. 1881 ; Fischer loc. cit. p. 1539 ; Rolla Rao, Notes R. Bot. Gard. Edinb. 26 : 351. 1966.

Erect or often prostrate herbs, 30-90 cm long; stem slender, rooting at lower nodes. Leaves 4.5-10.5 × 0.5-1 cm, linear to linear-lanceate, minutely hairy, acute or subacute at apex ; leafsheath long, often inflated. Flowers white or light bluish, in ovate, cucullate spathes, which are minutely hairy, acute at apex and truncate at base on one side. Capsules 2-loculed, each locule 1-seeded.

Fl. & Fr. : July October.

Fairly common above Chittaruvi, in Tekkumalai and on the way to Five falls.

3. *Commelina paludosa* Bl., Enum. Pl. Jav. 1 : 2. 1827 ; Rolla Rao et Kammathy, J. Bombay Nat. Hist. Soc. 59 : 60. 1962 & Rolla Rao, Notes R. Bot. Gard. Edinb. 25 : 181. 1964 excl. var. *viscida* (Clarke) Rolla Rao et Kammathy. *C. obliqua* Buch. Ham. ex D. Don, Prodr. Fl. Nep. 45. 1825 (non Vahl) ; Clarke in DC., Mon. Phan. 3 : 178. 1881 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 372. 1894 ; Fischer in Gamble Fl. Presid. Madras 3 (9) : 1539. 1931 (*pro parte*).

Suberect herbs, 30-90 cm high ; branches thick. Leaves 6-15 × 2-4.5 cm, elliptic-lanceate or lanceate, glabrous above, hairy beneath, acute or caudate-acuminate at apex; leaf sheaths 2-2.5 cm long, villous at the mouth. Flowers white or light blue in sessile or subsessile spathes, crowded at the apex of branches. Capsules 3-lobed, 3-loculed.

Fl. & Fr. : July - December.

Common in the highest altitudes of Tekkumalai below the Courtallum Peak.

4. *CYANOTIS* D. Don *nom. gen. cons.*

- 1a. Plants cottony or silky cob-webby *C. arachnoidea* var.
thwaitesii 1
- 1b. Plants glabrous or pilose
- 2a. Bracts much longer than the inflorescence ; leaves ovate-oblong or elliptic, glabrous on both sides or hairy along the margins *C. cristata* 2
- 2b. Bracts shorter than or rarely equalling in length with the inflorescence ; leaves lanceate or ovate-lanceate, silky-villous on both sides or rarely glabrous above *C. villosa* 3

1. *Cyanotis arachnoidea* Clarke var. *thwaitesii* (Hassk.) Rolla Rao *et* Kammathy, Bull. Bot. Surv. India 6 : 2. 1964; Rolla Rao, Notes R. Bot. Gard. Edinb. 25 : 186. 1965. *C. thwaitesii* Hassk., Commel. Ind. 136. 1870. *C. fasciculata* (Heyne ex Roth) Roem. *et* Schult. f. var. *thwaitesii* (Hassk.) Clarke in DC., Mon. Phan. 3 : 254. 1881; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 387. 1892.

Suberect herbs, 15-20 cm high ; stems and branches white-cottony, rooting at lower nodes. Leaves 1-2.5 × 0.5-1 cm, narrowly-linear, cottony on both sides, obtuse at apex. Flowers pinkish in axillary and terminal cymes. Capsules ± 0.3 × 0.2 cm, oblong, trigonous, pilose at the apex.

Fl. & Fr. : September December.

Rare, in the rockhill area above Tiger falls.

2. *Cyanotis cristata* (Linn.) D. Don, Prodr. Fl. Nep. 46. 1825 ; Wt., Ic. t. 2082. 1853 ; Clarke in DC., Mon. Phan. 3 : 247. 1881; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 385. 1892; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1549. 1931. *Commelina cristata* Linn., Sp. Pl. 42. 1753.

Spreading herbs, 30-60 cm long ; stem mostly unbranched or dichotomously branched, red-tinged, striated, rooting at nodes. Leaves 1.5-4.5 × 0.5-1.2 cm, elliptic-lanceate, glabrous or hairy near margins, obtuse, acute or apiculate at apex; leaf-sheaths ± 0.5 cm long. Flowers blue in scorpioid cymes ; spathes 1-1.5 cm long, glabrous. Capsules trilobed.

Fl. & Fr. : August December.

Very rare, above Chitaruvi in the silt deposited below rocks during monsoon.

3. *Cyanotis villosa* Schult. f., Syst. Veg. 7 : 1155. 1830 ; Clarke in DC., Mon. Phan. 3 : 251. 1881; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 387. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1550. 1931. *C. lanceolata* Wt., Ic. t. 2085. 1853.

Prostrate, trailing herbs, 30-90 cm long, rooting at lower nodes ; stem glabrous with reddish bracts towards the apex. Leaves 3-8.5×0.8-2 cm, lanceate or ovate-lanceate, often glabrous or rarely silky-villous beneath. Flowers pink or blue, in axillary or terminal cymes ; bracts much longer than the cymes. Capsules 3-loculed, each locule 2 seeded.

Fl. & Fr. : July to December.

Fairly common in the lower altitudes of Tekkumalai but rare above, in the thick Sholas.

5. *MURDANNIA* Royle *nom. gen. cons.*

- 1a. Flowers capitate on the inflorescence branches ; petals blue *M. loriformis* 4
- 1b. Flowers in terminal panicles, not capitate but lax at the tip of the inflorescence branches ; petals pink or white
- 2a. Leaves ovate-lanceate ; petals white
 - 3a. Capsules ellipsoid ; leaf-apex acuminate *M. zeylanicum* var. *longicapsa* 3
 - 3b. Capsules ovate ; leaf-apex acute *M. dimorpha* 1
- 2b. Leaves linear ; petals pink *M. esculenta* 2

1. *Murdannia dimorpha* (Dalz.) Bruck. in Engl. & Prantl, Pflanzenfam. (ed. 2) 15a : 173. 1930 ; Rolla Rao et Kammathy, Bull. Bot. Surv. India 3 : 394. 1961. *Aneilema dimorpha* Dalz. in Hook., Kew. J. Bot. 3 : 138. 1851; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 377. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1545. 1931. *A. paniculata* Wt., Ic. t. 2075. 1853.

Erect herbs, 20-25 cm high, rarely rooting at lower nodes. Leaves 1-2×0.3-0.6 cm, ovate-lanceate, acute at apex ; sheaths short, glabrous. Flowers greenish-white in terminal sub-dichotomous panicles. Capsules 0.2-0.4 cm long, oval.

Fl. & Fr. : April June.

Fairly common above Main falls in marshy areas.

2. *Murdannia esculenta* (Wall. *ex* Clarke) Rolla Rao *et* Kammathy, Bull. Bot. Surv. India 3 : 394. 1961. *Aneilema esculentum* Wall. *ex* Clarke in DC., Mon. Phan. 3 : 206. 1881; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 377. 1892; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1545. 1931. *A. pulneyense* Fyson, Kew Bull. 1914 : 332. 1914. *A. dimorpha sensu* Fyson, Pl. South Ind. Hill Stat. 1 : 616, t. 553. 1932 (*non* Dalz. 1851).

Erect herbs, 20-40 cm high; stem often unbranched, not rooting at lower nodes. Leaves 4-8.5 × 0.5-1.2 cm, linear, acute at apex; sheath short, glabrous. Flowers pink in terminal spreading panicles. Capsules 0.3-0.4 cm long, trigonous, 3-loculed.

Fl. & Fr. : July August.

Courtallum (Robert Wight 966, CAL).

3. *Murdannia loriformis* (Hassk.) Rolla Rao *et* Kammathy, Bull. Bot. Surv. India 3 : 393. 1961 & Rolla Rao, Notes R. Bot. Gard. Edinb. 25 : 184. 1964. *Aneilema loriforme* Hassk., Pl. Jungh. 143. 1852. *A. terminalis* Wt., Ic. t. 2076. 1853 (*non* Haines, 1824). *A. nudiflorum* R. Br. var. *terminalis* (Wt.) Clarke, Comm. *et* Cyrt. Beng. 211. 1874; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 379. 1883; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1545. 1931. *Murdannia malabarica* (Linn.) Bruck. var. *terminalis* (Wt.) Sant. *et* Jain, Indian For. 92 : 643. 1966.

Procumbent herbs, 30-90 cm long; stems simple or rarely branched, often rooting at lower nodes. Leaves 15-20 × 1-1.5 cm, linear-lanceate, glabrous or sparsely hairy, acute or acuminate at apex; sheath hairy. Flowers bluish, in terminal capitate cymes forming panicles. Capsules 0.3-0.4 cm long, subglobose, mucronate, greenish.

Fl. & Fr. : April July.

Semiaquatic, in the clayey silt along the sides of the stream below Shembagadevi.

4. *Murdannia zeylanicum* (Clarke) Bruck. var. *longicapsa* (Clarke) Rolla Rao *et* Kammathy, Bull. Bot. Surv. India 3 : 394. 1961. *Aneilema zeylanicum* Clarke var. *longicapsa* Clarke in DC., Mon. Phan. 3 : 204. 1881; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 376. 1883; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1544. 1931.

Erect or suberect herbs, 20-30 cm high. Leaves 7.5-13 × 1.8-3.2 cm, ovate-lanceate or lanceate, entire, glabrous, acuminate at apex; sheath up to 3 cm long, glabrous. Flowers white in terminal and sub-terminal panicles. Capsules narrowly ellipsoid.

Fl. & Fr. : November February.

Rare, above Swamiar falls in Udayathan estate along the sides of the stream.

112. ERIOCAULACEAE

ERIOCAULON Linn.

- 1a. Leaves attenuate at base ; heads globose or ovoid; seeds smooth

E. quinquangulare 1

- 1b. Leaves broadest at the base ; heads hemispherical ; seeds longitudinally ridged

E. truncatum 2

1. *Eriocaulon quinquangulare* Linn., Sp. Pl. 87. 1753 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 582. 1893 ; Fyson, J. Indian Bot. 2 : 204, pl. 9. 1923 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1620. 1931.

Erect herbs, 10-15 cm high; stem obscure. Leaves radical forming a rosette, 2.5-10 × 0.3-0.7 cm, linear, glabrous, green above, purplish beneath, acute at apex, attenuated and 5-11 nerved at base. Flowers greenish-white in globose or ovoid heads, 0.4-0.6 cm in diameter. Capsules membranous, 3-loculed.

Fl. & Fr. : August February.

Aquatic or semiaquatic below Shembagadevi and at New falls.

2. *Eriocaulon truncatum* Ham. ex Mart., Wall. Pl. As. Rar. 3 : 29. 1830 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 578. 1893 ; Fyson, J. Indian Bot. 2 : 199. 1923 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1619. 1931.

Herbs, 6-15 cm high ; stem short, obscure. Leaves radical, 2.5-6.5 × 0.2-0.5 cm, ensiform, thin, glabrous, subacute at apex, broad and many nerved at base. Flowers greenish-white in hemispherical heads, up to 0.6 cm in diameter. Capsules membranous.

Fl. & Fr. : August-December.

Fairly common above Main falls and below Shembagadevi in the marshy soil.

113. CYPERACEAE

- 1a. Spikelets distinctly flattened ; flowers bisexual ; all glumes above the bracteole fertile
 - 2a. Spikelets at maturity falling entire from the rhachis leaving the subtending bracts and surrounding the rhachilla scar, often very numerous, sessile, crowded on short rhachioides generally composed of only a few glumes
 - 3a. Stigmas 3 ; nuts more or less distinctly trigonous *Mariscus* 7
 - 3b. Stigmas 2 ; nuts laterally (i.e. in the plane of the rhachilla) compressed *Kyllinga* 6
 - 2b. Spikelets at maturity break off into several pieces or remain attached to the rhachis whilst the lower mature glumes and achenes are shed, exposing the more or less deeply pitted rhachilla generally composed of a large number of glumes
 - 4a. Stigmas 3, rarely 1 or 2 ; nuts trigonous *Cyperus* 3
 - 4b. Stigmas 2 ; nuts laterally compressed *Pycnus* 8
- 1b. Spikelets rounded, sometimes flattened at the base but then with the lowest two glumes empty ; flowers unisexual or bisexual
 - 5a. Flowers (at least some) bisexual with stamens and ovary within the same subtending glume
 - 6a. Nuts with a terminal hypogynous appendage at maturity formed by the thickened persistent style base
 - 7a. Plants with at least one well developed leaf ; sheaths often with hairs at the mouth *Bulbostylis* 1
 - 7b. Plants without well developed leaf-blades ; sheaths devoid of any hairs at the mouth *Eleocharis* 4
 - 6b. Nuts without any terminal hypogynous appendage at maturity
 - 8a. Base of the style enlarged, but generally falling off with the rest of the style ; bristles absent *Fimbristylis* 5
 - 8b. Base of style not enlarged ; bristles present (simple) or absent at the base of the nut *Scirpus* 9
 - 5b. Flowers unisexual, i.e. ovary and stamens not enclosed within the same subtending glume
 - 9a. Ovary completely enclosed in a flask-shaped urticel *Carex* 2
 - 9b. Ovary not completely enclosed in an urticel *Scleria* 10

1. *BULBOSTYLIS* Kunth *nom. gen. cons.*

Bulbostylis barbata (Rottb.) Clarke in Hook. f., Fl. Brit. Ind. 6 : 651. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1662. 1931 ; Kern, Reinwardtia 6 : 51. 1961. *Scirpus barbatus* Rottb., Progr. 27. 1772. *Mukuttikorei* (Tamil).

Erect herbs, 15-25 cm high ; culms filiform, striated. Leaves up to 15 cm long, linear ; sheath hairy around the mouth. Spikelets green or brownish, linear-oblong in dense terminal globose heads ; glumes lanceate. Nuts trigonous, minutely stipitate.

Fl. & Fr. : September-February.

Common in the dry soil around Main falls and on the way to Tekkumalai.

2. *CAREX* Linn.

Carex filicina Nees in Wt., Contrib. Ind. Bot. 123. 1834 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 717. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1686. 1931 ; Kuk. in Engl., Pflanzenr. 38 : 276. 1936 ; Nelves, Reinwardtia 1 : 304. 1951 ; Koyama, J. Fac. Sci. Tokyo Univ. 3, 8 : 152. 1962.

Erect herbs, 50-90 cm high ; culms somewhat stout. Leaves shorter or longer than the culms, up to 0.8 cm broad, broadest in the middle, passing into the long sheathing bracts above. Spikelets brown in decompound slender panicles. Nuts ellipsoid or lanceate, narrowed into a slender, often bent beak with a rounded or rarely shortly bifid mouth.

Fl. & Fr. : September-March.

Rare, below Courtallum peak in the humid areas.

3. *CYPERUS* Linn.

1a. Culms spongy below ; rhachilla winged

2a. Spikelets linear ; leaves less than half the length of the stem

C. pangorei 4

2b. Spikelets compressed ; leaves longer than the stem

C. exaltatus 2

1b. Culms not spongy below ; rhachilla not winged

3a. Glumes aristate or prominently mucronate

C. castaneus 1

3b. Glumes not aristate or mucronate but obtuse, acute or apiculate

4a. Spikelets distichously arranged on the inflorescence branches ; spikelets linear or linear-lanceate

5a. Culms robust ($\pm$ 0.4 cm broad on each side) ; spikelets lanceate

C. pilosus 5

5b. Culms filiform or slender ; spikelets linear, filiform

C. tenuispica 6

4b. Spikelets irregularly arranged on the inflorescence branches ; spikelets ovate

C. iria 3

1. *Cyperus castaneus* Willd., Sp. Pl. 1 : 278. 1793 ; Roxb., Fl. Ind. 1 : 195. 1832 ; Nees in Wt., Contrib. Ind. Bot. 76. 1834 ; Clarke, J. Linn. Soc. Lond. 21 : 87. 1884 & in Hook. f., Fl. Brit. Ind. 6 : 598. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1639. 1931 ; Kuk. in Engl., Pflanzenr. 101 : 264. 1936.

Tufted herbs, 10-15 cm high. Leaves up to 10.5×0.2 cm, filiform. Spikelets brownish, oblong or linear in umbels ; glumes ovate, plicate, aristate, with hyaline margins ; bracts 3-5, narrowly-linear, leaf-like. Nuts oblong, trigonous, spiculate ; rhachilla not winged.

Fl. & Fr. : September-December.

Fairly common in the humus soil, along the sides of the stream around Swamiar falls in Udayathan estate.

2. *Cyperus exaltatus* Retz., Obs. Bot. 5 : 11. 1789 ; Clarke, J. Linn. Soc. Lond. 21 : 186. 1884 & in Hook. f., Fl. Brit. Ind. 6 : 617. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1642. 1931 ; Kuk. in Engl., Pflanzenr. 101 : 64. 1936 ; Kern, Reinwardtia 2 : 52. 1952.

Erect herbs, 1-2 m high ; culm often solitary, spongy below. Leaves longer than the stems, 0.5-1 cm broad, linear, margins scabrid. Spikelets brownish, compressed in lax umbellate spikes ; glumes ovate-oblong, imbricate. Nuts ellipsoid, small.

Fl. & Fr. : September-November.

Common around and above Main falls in the marshy soil.

3. *Cyperus iria* Linn., Sp. Pl. 45. 1753 & in ed. 2 : 67. 1762 (excl. tab. Rheede) ; Clarke, J. Linn. Soc. Lond. 21 : 137. 1884 & in Hook. f.,

in Fl. Brit. Ind. 6 : 606. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1640. 1931 ; Kuk. in Engl., Pflanzenr. 101 : 150. 1936 ; Kern, Reinwardtia 2 : 55. 1952.

Erect herbs, 30-60 cm high ; culms solitary or tufted. Leaves mostly shorter than the stem, 0.3-0.5 cm wide, flaccid. Spikelets yellowish-green in terminal interrupted decompound umbels, appearing irregular, ovate ; glumes obtuse. Nuts 0.2-0.3 cm long, trigonus.

Fl. & Fr. : August-January.

Semiaquatic in the marshy soil around Swamiar falls in Udayathan estate.

4. *Cyperus pangorei* Rottb., Descr. et Ic. 31, t. 7. f. 3. 1773 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1641. 1931 ; Kuk. in Engl., Pflanzenr. 101 : 76. 1936. *C. tegetum* Roxb., Fl. Ind. 1 : 208. 1832 ; Clarke, J. Linn. Soc. Lond. 21 : 106. 1884 & in Hook. f., Fl. Brit. Ind. 6 : 613. 1893 & Illustr. Cyper. t. 17, f. 1. 1909.

Erect herbs with short creeping rhizomes, 1-1.5 m high ; culms often solitary, spongy below. Leaves short or absent, rarely 30×1 cm, linear, acuminate ; sheaths long, lax. Spikelets grey, linear, 10-30 flowered, in compound umbels, the secondary rays bearing corymbs or spikes ; rhachilla winged. Nuts ± 0.2 cm long, trigonous, black.

Fl. & Fr. : September-February.

Fairly common at New falls in the crevices of rocks.

5. *Cyperus pilosus* Vahl, Enum. 2 : 354. 1806 ; Clarke, J. Linn. Soc. Lond. 21 : 148. 1884 & in Hook. f., Fl. Brit. Ind. 6 : 609. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1641. 1931 ; Kuk. in Engl., Pflanzenr. 101 : 92. 1936.

Stoloniferous herbs, 30-60 cm high. Leaves as long as or shorter than the stem, $30-50 \times 0.5-1.2$ cm, linear, acuminate at apex. Spikelets brown, lanceate, pedicelled, in compound umbels. Nuts trigonous, subglobose-ovate, black.

Fl. & Fr. : September-December.

Fairly common above Old Courtallum falls in semiaquatic conditions.

6. *Cyperus tenuispica* Steud., Synops. Cyper. 11. 1855 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1660. 1931 ; Kuk. in Engl., Pflanzenr. 101 : 245. 1956 ; Kern, Reinwardtia 2 : 116. 1952 & ibid. 3 : 38. 1954 &

ibid. 6 : 59. 1961. *C. flavidus* Clarke, J. Linn. Soc. Lond. 20 : 287. 1882 & ibid. 21 : 189. 1884 & in Hook. f., Fl. Brit. Ind. 6 : 600. 1893 (*non* Retz.).

Erect tufted herbs, 10-15 cm high ; stem slender, weak, obtusely trigonous. Leaves shorter or longer than the stem, 0.2-0.3 cm broad, linear, acute. Spikelets brownish, linear, filiform in compound or decompound umbels ; glumes oblong, rounded at apex with hyaline margins. Nuts obscurely 3-sided, white when ripe.

Fl. & Fr. : November-February.

Below New falls in the red soil along the sides of rocks.

4. ELEOCHARIS R. Br.

Eleocharis capitata (Linn.) R. Br., Prodr. 225. 1810 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 629. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1648. 1931. *Scirpus capitatus* Linn., Sp. Pl. 48. 1753.

Erect, slender herbs ; culms tufted, trigonous. Leaves reduced to sheaths enclosing the base of the stem, rarely with a short herbaceous limb. Spikelets brownish, globose or conical-ovoid with 4-7 hypogynous bristles. Nuts obovoid, apiculate, dark brown or black.

Fl. & Fr. : August-February.

Semiaquatic, along the sides of the fields on the way to Five falls.

5. FIMBRISTYLIS Vahl *nom. gen. cons.*

- | | |
|---|--------------------------|
| 1a. Spikelets in compound or decompound umbels, up to 0.6 cm long | |
| 2a. Slender herbs, up to 10 cm high ; spikelets echinate | <i>F. dipsacea</i> 3 |
| 2b. Robust herbs, more than 20 cm high ; spikelets not echinate | |
| 3a. Spikelets subglobose | <i>F. miliacea</i> 4 |
| 3b. Spikelets lanceate, elliptic-lanceate or ovate | |
| 4a. Spikelets sparsely arranged on the inflorescence ; nuts flattened | <i>F. bisumbellata</i> 1 |
| 4b. Spikelets more or less compactly arranged on the inflorescence ; nuts trigonous | <i>F. complanata</i> 2 |
| 1b. Spikets solitary at the apex of the stems, more or less 1 cm long | <i>F. ovata</i> 6 |

1. ***Fimbristylis bisumbellata*** (Forssk.) Bubani, *Dedecanth.* 30. 1860 ; Fischer, *Kew Bull.* 1935 : 145. 1935 ; Kern, *Reinwardtia* 6 : 47. 1961 ; Koyama, *J. Fac. Sci. Tokyo Univ.* 3, 8. 113. 1961. *Scirpus bisumbellatus* Forssk., *Fl. Aegypt. Arab.* 1 : 15. 1775. *Fimbristylis dichotoma auct.* (non Vahl, 1806) : Clarke in Hook. f., *Fl. Brit. Ind.* 6 : 635. 1893 ; Fischer in Gamble, *Fl. Presid. Madras* 3 (9) : 1658. 1931. *Kadukorai* (Tamil).

Tufted herbs, 20-25 cm high ; stem flattened, filiform, striated, smooth. Leaves 15-18 cm long, coriaceous, narrow, linear. Spikelets brownish, up to 0.3 cm long, ovate in decompound umbels ; glumes closely imbricate, apiculate. Nuts obovoid, flattened, tuberculated, brown.

Fl. & Fr. : September-December.

Aquatic, semiaquatic or mesophytic sedges fairly common in the outskirts and wet places around Main falls and on the way to Five falls.

2 ***Fimbristylis complanata*** (Retz.) Link, *Enum. Hort. Berol.* 1 : 292. 1827 ; Clarke in Hook. f., *Fl. Brit. Ind.* 6 : 466. 1893 ; Fischer in Gamble, *Fl. Presid. Madras* 3 (9) : 1659. 1931 ; Kern, *Reinwardtia* 6 : 38. 1961. *Scirpus complanatus* Retz., *Obs. Bot.* 5 : 14. 1789.

Erect herbs, 30-90 cm high, with a thick, woody base ; culms flattened towards apex, usually 2-edged. Leaves crowded at the base of the culms, 10-20 × 0.3-0.5 cm, flat, linear, margins scabrous near the base, subacute at apex. Spikelets brownish, ovoid or lanceate on decompound umbels ; glumes strongly keeled, shortly mucronate. Nuts obovoid, trigonous, minutely tubercled.

Fl. & Fr. : August-February.

Fairly common in the crevices of rocks at New falls, where humus is accumulated.

3. ***Fimbristylis dipsacea*** (Rottb.) Clarke in Hook. f., *Fl. Brit. Ind.* 6 : 635. 1893 ; Fischer in Gamble, *Fl. Presid. Madras* 3 (9) : 1658. 1931 ; Kern, *Reinwardtia* 6 : 50. 1961. *Scirpus dipsaceus* Rottb., *Descr. et Ic.* 56, t. 12, f. 1. 1773.

Slender erect herbs, up to 10 cm high ; culms filiform, often tufted at base. Leaves shorter or as long as the culms, filiform. Spikelets subglobose or oblong-cylindric, dense, echinate with curved awns on the glumes. Nuts almost cylindrical with few thick capitate hairs.

Fl. & Fr. : April-August.

In the rocky soil on the way to Tekkumalai this sedge is common.

4. *Fimbristylis miliacea* (Linn.) Vahl, Enum. 2 : 287. 1806 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 644. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1660. 1931 ; Kern, Reinwardtia 6 : 40. 1961. *Scirpus miliaceus* Linn., Syst. Nat. ed. 10 : 868. 1759.

Tufted herbs, about 30 cm high ; culms filiform. Leaves shorter than the culms, 0.2-0.4 cm wide, narrow, smooth, tapering to a fine point. Spikelets subglobose, obtuse, in compound or decomposed umbels. Nuts obovoid, yellowish, tuberculate, transversely striate.

Fl. & Fr. : September-December.

Rare, in the rocky soil around Main falls.

5. *Fimbristylis ovata* (Burm. f.) Kern, Blumea 15 : 126. 1967. *Carex ovata* Burm. f., Fl. Ind. 194. 1768 ; Kuk. in Engl., Pflanzenr. 38 : 103. 1909. *Abildgardia monostachya* (Linn.) Vahl, Enum. 2 : 296. 1806. *Cyperus monostachyos* Linn., Mant. 2 : 180. 1771. *Fimbristylis monostachya* (Linn.) Hassk., Pl. Jav. Rar. 61. 1848 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 649. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1660. 1931.

Erect herbs, 30-40 cm high ; culms slender, tufted at base. Leaves 20-40 × 0.3-0.4 cm, filiform, setaceous. Spikelets whitish ± 1 cm long, ovoid, solitary at the tip of each culm ; glumes ovate, keeled, cuspidate. Nuts pyriform, tuberculated.

Fl. & Fr. : September-December.

Rare in the humus soil along the sides of the stream in Udayathan estate, mostly around Swamiar falls.

6. KYLLINGA Rottb. *nom. gen. cons.*

1a. Rhizomes short ; plants tufted

K. melanosperma 2

1b. Rhizomes long ; plants not tufted

2a. Basal leaves reduced to mere sheaths ; rhizomes short when compared to the next species ; culms more than 30 cm high

K. nemoralis 3

2b. Basal leaves with well-developed lamina ; rhizomes long, creeping, sending up culms up to 20 cm high

K. brevifolia 1

1. *Kyllinga brevifolia* Rottb., Descr. et Ic. 13, t. 4, f. 3. 1773 ; Nees in Wt., Contrib. Ind. Bot. 91. 1834 (*pro parte*) ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 588. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) :

1624. 1931. *Cyperus brevifolius* (Rottb.) Hassk., Cat. Hort. Bogor. 24. 1844 ; Kuk. in Engl., Pflanzenr. 101 : 600. 1936 ; Kern, Reinwardtia 6 : 66. 1961.

Erect herbs, up to 20 cm high ; rhizomes long, creeping, sending up culms from the nodes. Leaves shorter than the culms, 0.2-0.4 cm broad, linear. Spikelets in greenish heads at the apex of culms, ± 0.6 cm long, subglobose or ovoid. Nuts elongate, smooth, yellowish brown.

Fl. & Fr. : August-March.

Rare in the rocky forest floor around Main falls.

2. *Kyllinga melanosperma* Nees in Wt., Contrib. Ind. Bot. 91. 1834 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 588. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1624. 1931 *Cyperus melanospermus* (Nees) Suring., Het. Gesl. Cyp. Mal Archip. 50, t. 2, f. 8. 1898 ; Kuk. in Engl., Pflanzenr. 101 : 583. 1936.

Erect tufted herbs ; rhizome short, thick, horizontal ; culms tall, robust. Leaves shorter than the culms, ± 0.4 cm broad, linear. Spikelets in whitish heads at the apex of culms, ovoid, up to 1 cm long. Nuts obovoid, compressed.

Fl. & Fr. : August-December.

Scarce in the open forest floor on the way to Tekkumalai.

3. *Kyllinga nemoralis* (Forst. ex Forst. f.) Dandy ex Hutch., Fl. West Trop. Africa ed. 1, 2 : 487. 1936. *Thyrocephalon nemorale* Forst. ex Forst. f., Char. Gen. 130. 1776. *Kyllinga monocephala* Rottb., Descr. et Ic. 13, t. 4, f. 4. 1773 (excl. syn. illeg) ; Nees in Wt., Contrib. Ind. Bot. 91. 1834 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 588. 1893 & in J. Linn. Soc Lond. 36 : 224. 1903 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1624. 1931. *Cyperus kyllingia* Endl., Cat. Bot. Vindob. 1 : 94. 1842 ; Kuk. in Engl., Pflanzenr. 101 : 606. 1936.

Erect herbs, up to 30 cm high ; rhizomes short. Leaves with linear blades at the base. Spikelets in white subglobose heads at the apex of culms, lanceate, 1-flowered. Nuts obovoid, much compressed, pale reddish-brown.

Fl. & Fr. : October-March.

Rare in the dry rocky forest floor on the way to Tekkumalai.

7. *MARISCUS* Vahl *nom. gen. cons.*

- 1a. Spikelets in solitary or 2-4 umbellate heads *M. dubius* 2
- 1b. Spikelets in simple or compound umbels
 - 2a. Umbels simple or subsimple
 - 3a. Spikelets 1-flowered, subulate *M. paniceus* 3
 - 3b. Spikelets 6-26 flowered, compressed *M. squarrosus* 4
 - 2b. Umbels compound (with globose spikes) *M. compactus* 1

1. *Mariscus compactus* (Retz.) Druce, Rep. Bot. Soc. Exch. Club. Brit. Isles 1916 : 634. 1917 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1645. 1931. *Cyperus compactus* Retz., Obs. Bot. 5 : 10. 1789 ; Clarke, J. Linn. Soc. Lond. 21 : 193. 1884 ; Kuk. in Engl., Pflanzenr. 101 : 423. 1936. *Mariscus microcephalus* Persl., Reliq. Haenk. 1 : 182. 1830 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 624. 1893 & in J. Linn. Soc. Lond. 36 : 221. 1903.

Erect, rhizomatous herbs, 20-90 cm high. Leaves up to 85×1 cm, smooth or scabrous, tapering to a fine point. Spikelets brownish in compound umbels of globose heads, 0.5-1 cm long, linear-subulate. Nuts 1-1.5 cm long, oblanceate-oblong, beaked.

Fl. & Fr. : September-February.

Rare below Main falls in the marshy soil.

2. *Mariscus dubius* (Rottb.) Kuk. ex Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1644. 1931. *Cyperus dubius* Rottb., Descr. et Ic. 20. 1773. *Mariscus drageanus* Kunth, Enum. Pl. 2 : 120. 1850 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 620. 1893.

Erect herbs, 30-60 cm high ; culms slender, glabrous. Leaves flaccid, shorter or longer than the culms. Spikelets white in solitary or 2-4 umbellate heads, ovoid, 2-6 flowered ; fertile glumes ovate, blunt. Nuts oblong or subovoid.

Fl. & Fr. : August-November.

Very rare above Chittaruvi.

3. *Mariscus paniceus* (Rottb.) Vahl, Enum. 2 : 373. 1806 (*pro parte*) ; Nees in Wt., Contrib. Ind. Bot. 89. 1834 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 620. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1644.

1931. *Kyllinga panicea* Rottb., Descr. et Ic. 15, t. 4, f. 1. 1773. *Cyperus paniceus* (Rottb.) Boeck., Linnaea 36 : 311. 1870. (*pro maxim parte*) ; Kuk. in Engl., Pflanzenr. 101 : 526. 1936.

Slender, glabrous herbs, up to 60 cm high ; stolons clothed with brown scales. Leaves as long as the stem. Spikelets greenish, subulate, ± 0.4 cm long in simple umbels of cylindric spikes ; fertile glume only one, ovate with scarious margins. Nuts oblong-ellipsoid, slightly curved.

Fl. & Fr. : August February.

Common at Main falls along the sides of the stream.

4. *Mariscus squarrosus* (Linn.) Clarke in Hook. f., Fl. Brit. Ind. 6 : 623. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1645. 1931. *Cyperus squarrosus* Linn., Cent. Pl. 2 : 6. 1756 ; Nees in Wt., Contrib. Ind. Bot. 75. 1834 ; Clarke, J. Linn. Soc. Lond. 20 : 284. 1883 & ibid. 21 : 94. 1884 ; Kuk. in Engl., Pflanzenr. 101 : 605. 1936.

Erect herbs, 10 15 cm high ; culms tufted. Leaves 6 10 cm long, narrow, flaccid. Spikelets grey, oblong, 6 - 26 flowered in subsimple umbels of spikes or racemes ; glumes oblong, awned, nerved along the margins. Nuts ovoid, minute.

Fl. & Fr. : September February.

Semiaquatic, along the banks of the stream from Shembagadevi to Tiger falls or rarely in the rocky soil around Main falls.

8. PYCREUS Beauv.

1a. Spikelets in umbels of 3-5 spikes ; nuts broadly-ellipsoid

P. globosus 1

1b. Spikelets in capitate spikes ; nuts narrowly-oblong

P. polystachyos 2

1. *Pycnus globosus* (All.) Reich., Fl. Germ. Excurs. 2 : 140. 1830 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1627. 1931 ; Blatter et McCann, J. Bombay Nat. Hist. Soc. 37 : 29. 1935. *Cyperus globosus* All., Auctur. Fl. Pedem. 49. 1789 ; Kuk. in Engl., Pflanzenr. 101 : 352. 1936 ; Kern, Reinwardtia 6 : 61. 1961 ; Koyama, Quart. J. Taiwan Mus. 14 : 184. 1961. *Pycnus cappillaris* (Koen. ex Roxb.) Nees in Linnaea 9 : 283. 1834 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 591. 1893.

Erect herbs, 45 60 cm high ; stem glabrous, tufted. Leaves shorter than the culms, filiform. Spikelets brownish in simple umbel of 3 - 5

spikes, compressed, linear, subacute at apex, 2-50 flowered. Nuts broadly-ellipsoid, rounded or apiculate at apex.

Fl. & Fr. : October-March.

Aquatic or semiaquatic in the marshy soil on the way to Five falls.

2. ***Pycreus polystachyos*** (Rottb.) Beauv., Fl. Owar. 2 : 48, t. 86, f. 2. 1807 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 592. 1893. *Cyperus polystachyos* Rottb., Progr. 21. 1772 & Descr. et Ic. 39, t. 11, f. 1. 1773 ; Nees in Wt., Contrib. Ind. Bot. 75. 1834 ; Kuk. in Engl., Pflanzenr. 101 : 367. 1936 ; Kern, Reinwardtia 3 : 48. 1954 & ibid. 6 : 61. 1961. *Pycreus odoratus* Urb., Symb. Antill. 2 : 164. 1900 & ibid. 4 : 110. 1903 (*non* Linn.) ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1627. 1931.

Tufted herbs, 30-60 cm high. Leaves shorter than the culms, 0.2-0.3 cm wide. Spikelets brownish in capitate spikes, 1-1.5 cm long, narrowly linear, many flowered ; glumes closely imbricate, minutely mucronate. Nuts narrowly oblong, minutely apiculate.

Fl. & Fr. : September-March.

In the humus soil along the side of the stream in Udayathan estate and in the rocky soil near Main falls the sedge is rather common.

9. SCIRPUS Linn.

Scirpus supinus Linn., Sp. Pl. 49. 1753 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 655. 1893 ; Fischer in Gamble, Fl. Presid Madras 3 (9) : 1666. 1931 ; Koyama, J. Fac. Sci. Univ. Tokyo Sec. 3, 7 (6) : 302. 1958.

Tufted herbs, 15-20 cm high ; stem slender. Leaves reduced to sheaths except the few filiform ones subtending the inflorescence. Spikelets brownish, 2-7 in groups forming a head, ovoid to oblong. Nuts obovoid, trigonous, up to 0.2 cm long, transversally undulate rugose, shortly pointed.

Fl. & Fr. : October-February.

During monsoon, common above Chittaruvi where the soil between rocks become marshy.

10. SCLERIA Berg.

Scleria lithosperma (Linn.) Sw., Prodr. 18. 1788 ; Clarke in Hook. f., Fl. Brit. Ind. 6 : 685. 1893 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) ; 1677. 1931 ; Kern, Reinwardtia 6 : 77. 1961. *Scirpus lithospermus* Linn., Sp. Pl. 51. 1753.

Erect herbs, 30–45 cm high ; rhizomes noded ; stems slender. Leaves narrowly - linear, as long as or shorter than the stem, subobtuse at apex ; sheaths hairy at mouth. Spikelets broadly ellipsoid in lax paniculate spikes ; glumes broadly ovate, cuspidately acuminate. Nuts 0.2–0.3 cm long, broadly - ellipsoid, smooth, white, polished

Fl. & Fr. : September–February.

Common around Main falls and on the way to Tekkumalai. The large tufted culms hang from steep rocky ridges.

114. GRAMINEAE

- 1a. Spikelets 2-flowered falling entire at maturity, usually with the upper floret hermaphrodite and the lower male or barren and if the latter, often reduced to the lemma or rarely the lemma entirely absent, all alike or more often differing in size, shape and structure, frequently dorsally compressed

Panicoideae 1

- 1b. Spikelets 1-many flowered, breaking up at maturity above the more or less persistent glumes, or if falling entire, then not 2-flowered, with the lower floret male or barren and the upper hermaphrodite, usually more or less laterally compressed or terete

Pooideae 2

GROUP I—*Panicoideae*

- 1a. Spikelets often paired, with one sessile and the other pedicelled, those of each pair similar or more often dissimilar, rarely solitary and all alike ; glumes as long as the spikelets and enclosing the florets, more or less rigid and firmer than the lemmas which are both hyaline or membranous ; upper lemma usually awned

Andropogoneae 1

- 1b. Spikelets solitary or paired, more or less similar ; glumes usually membranous, the lower usually smaller or sometimes suppressed ; lower lemma often resembling the upper glume in texture ; upper lemma papery to very tough and rigid, usually awnless

Paniceae 2

1. Tribe *Andropogoneae*

1a. Spikelets awned

2a. Inflorescence of racemes or spikes

3a. Racemes or spikes solitary

4a. Upper glume muticous ; racemes terete

Heteropogon 19

4b. Upper glume awned ; racemes not terete

Pogonanthrum 27

3b. Racemes 2-many, digitate or fascicled

5a. Lower glume not pitted ; upper lemma distinct, awned at the apex

6a. Pedicelled spikelet often reduced to a pedicel

Apocopsis 2

6b. Pedicelled spikelet well developed

Ischaemum 21

5b. Lower glume usually with a median pit ; upper lemma reduced to the hyaline base of the awn

Bothriochloa 5

2b. Inflorescence of panicles

7a. Panicles spatheate

8a. Involucral spikelet present

9a. Involucral spikelets sessile, either at the same level or in superposed pairs

Themeda 33

9b. Involucral spikelets pedicelled, all at the same level

Iseilema 22

8b. Involucral spikelet absent

Cymbopogon 10

7b. Panicles espatheate

10a. Spikelets in threes, one sessile, the other two pedicelled

Chrysopogon 9

10b. Spikelets 2-nate, one sessile, the other pedicelled

Sorghum 31

1b. Spikelets muticous

11a. Inflorescence of fascicled glabrous racemes ; joints on pedicels fused ; lower glumes of the sessile spikelets subglobose

Hackelochloa 18

11b. Inflorescence of silvery hairy panicles ; joints on pedicels free ; lower glumes of the sessile spikelets ovate to ovate-lanceate

Saccharum 282. Tribe *Paniceae*

1a. Inflorescence of panicles

2a. Spikelets subtended by 1-many bristles

Setaria 30

2b. Spikelets not subtended by bristles

- 3a. Panicles effuse ; spikelets lanceate or elliptic *Panicum* 23
- 3b. Panicles cylindric, spiciform ; spikelets more or less oblique, often turgid *Sacciolepis* 29
- 1b. Inflorescence of racemes or spikes
 - 4a. Spikelets muticous
 - 5a. Lower glumes reduced, minute or sometimes absent
 - 6a. Callus of spikelets thickened *Eriochloa* 17
 - 6b. Callus of spikelets not thickened
 - 7a. Spikelets suborbicular *Paspalum* 25
 - 7b. Spikelets elliptic or elliptic-lanceate *Digitaria* 12
 - 5b. Lower glumes distinct
 - 8a. Lower glumes turned away from the rhachis
 - 9a. Spikelets hairy *Echinochloa* 13
 - 9b. Spikelets glabrous, shiny *Paspalidium* 24
 - 8b. Lower glumes turned towards the rhachis *Brachiaria* 6
 - 4b. Spikelets awned *Allopteropsis* 1

GROUP II—*Pooideae*

- 1a. Spikelets 1-flowered
 - 2a. Spikelets awned
 - 3a. Lemmas awned, awns usually with 3 setae *Aristida* 3
 - 3b. Lemmas muticous (glumes tapering into long capillary awns) *Perotis* 26
 - 2b. Spikelets muticous
 - 4a. Inflorescence a panicle ; lower glume developed, both glumes glabrous *Sporobolus* 32
 - 4b. Inflorescence a solitary raceme ; lower glume often suppressed ; upper glume 5-ribbed, ribs armed with hooked spinules *Tragus* 34
- 1b. Spikelets 2-many flowered
 - 5a. Spikelets awned
 - 6a. Spikelets with lower fertile or male floret ; upper not empty
 - 7a. Florets 2 ; upper lemma hermaphrodite, with two setae on either side of the awn *Arundinella* 4
 - 7b. Florets 3-5 ; upper most lemma more or less imperfect ; lemmas cuspidate *Dactyloctenium* 11

- 6b. Spikels with 1 perfect floret below with 1-3 empty
aristate lemmas above *Chloris* 8
- 5b. Spikelets muticous or acute
 - 8a. Spikelets not muticous, but acute *Eleusine* 14
 - 8b. Spikelets muticous
 - 9a. Florets few to many
 - 10a. Lemmas with parallel venation
 - 11a. Inflorescence a panicle *Eragrostis* 16
 - 11b. Inflorescence of spikes with second
spikelets *Eragrostiella* 15
 - 10b. Lemmas with a tassellate venation *Centotheca* 7
 - 9b. Florets 2 *Isachne* 20

1. ALLOPTEROPSIS J. S. Presl ex C.B. Presl

Allopteroopsis ciminica (Linn.) Staf in Prain, Fl. Trop. Africa 9 : 487. 1919 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1766. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 276. 1960. *Milium ciminicum* Linn., Mant. 184. 1771. *Axonopus ciminica* (Linn.) Beauv., Ess. Agrost. 12. 1812 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 64. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South. Ind. Grass. 108, f. 106. 1921.

Tufted herbs, up to 1 m high ; culms geniculately ascending, slender. Leaves 2.5-7.5 × 0.3-1 cm, lanceate, glabrous or hirsute with long white hairs, acute at apex, cordate at base. Spikelets greenish in 3-8 cm long racemes, 0.3-0.4 cm long, ovoid ; upper lemma fertile aristate. Caryopsis ovate, flattened.

Fl. & Fr. : September-January.

Common in the dry areas around Main falls, on the way to Tekkumalai and at Five falls.

2. APOCOPIS Nees

Apocopis courtallumensis (Steud.) Henr., Blumea 4 : 524. 1941 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 95. 1960. *Andropogon courtallumensis* Steud., Syn. Pl. Glum. 1 : 377. 1854. *Apocopis wightii* Nees ex Thw., Enam. Pl. Zeyl. 365. 1864 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 142. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 166. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1725. 1934.

Densely tufted herbs, up to 20 cm high. Leaves $1.5 \times 0.1 \times 0.3$ cm, linear lanceate, hairy on both sides, acuminate at apex, bulbous at base. Spikelets brownish in two racemes, closely appressed, 0.4–0.5 cm long, oblong; fertile glume awned, ± 2.5 cm long. Caryopsis oblong.

Fl. & Fr. : October–February.

Perennial grasses in the dry areas of rock hill.

3. ARISTIDA Linn.

- 1a. Awn supported by a column; an articulation present in between the tip of the lemma and the base of the column *A. funiculata* 1
- 1b. Awn not supported by any column (sessile); no articulation present between the awn and the tip of the lemma *A. setacea* 2

1. *Aristida funiculata* Trin. *et* Rupr., Sp. Gram. Stip. 159. 1842 & in Mem. Acad. Sci. Petersb. ser. 6, 7 : 159. 1843; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 226. 1896; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 229, f. 177. 1921; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1809. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 410. 1960. *A. funicularis* Trin. *et* Steud. Nom. ed. 2 : 131. 1843 (*nomen*).

Slender, geniculately ascending herbs, 30–60 cm high. Leaves 6–12.5 cm long, narrow, flat, convolute, ciliate at base. Spikelets green in narrow lax panicles, 10–25 cm long; glumes aristate, 1–2 cm long. Caryopsis elongate-ellipsoid.

Fl. & Fr. : October–May.

Common in the humus soil on the way to Five falls.

2. *Aristida setacea* Retz., Obs. Bot. 4 : 22. 1786; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 225. 1896; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 225, f. 173. 1921; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1809. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 412. 1960. *Chaetaria setacea* (Retz.) Beauv., Ess. Agrost. 30 : 158. 1812.

Erect herbs, 40–90 cm high; stems smooth, polished. Leaves 10–20 $\times$ 0.1–0.2 cm, flat, convolute, coriaceous, smooth. Spikelets green in open or contracted terminal panicles; awns 3, subequal; callus bearded with long hairs. Caryopsis up to 0.6 cm long, cylindrical.

Fl. & Fr. : July–February.

Fairly common in the Agricultural estate at Five falls and along the pathsides below it.

4. ARUNDINELLA Raddi

- 1a. Spikelets sessile or subsessile, bifariously imbricate on the peduncle *A. mesophylla* 1
- 1b. Spikelets slenderly pedicelled, not bifarious or imbricate on the peduncle *A. setosa* 2

1. *Arundinella mesophylla* Nees ex Steud., Syn. Pl. Glum. 1 : 115. 1854 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 69. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1801. 1934 ; Bor, Grass. Burm. Ceyl. Ind. Pak. 423. 1960.

Slender erect herbs, 30-60 cm high. Leaves 3-12.5 × 0.3-0.6 cm, linear, pubescent to hairy, scabrid along the margins. Spikelets greenish with hairs, in panicles of distant spikes, sessile or very shortly pedicelled, 0.2-0.3 cm long ; fertile lemma awned, 0.6-0.8 cm long. Caryopsis oblong.

Fl. & Fr. : October-February.

Common in the crevices of rocks in Tekkumalai.

2. *Arundinella setosa* Trin., Gram. Panic. 63. 1826 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 70. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1801. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 424. 1960.

Slender herbs, 30-80 cm high. Leaves 15-30 × 0.3-0.6 cm, linear or lanceate, pubescent or hispid hairy, spinulose along the margins. Spikelets reddish in loose panicles, 0.5-0.6 cm long, paired ; florets 2, lower male, upper hermaphrodite ; fertile lemma awned, awns up to 0.8 cm long. Caryopsis oblong.

Fl. & Fr. : October-February.

Fairly common in the waste places around Tiger falls.

5. BOTHRIOCHLOA O. Ktze.

Bothriochloa pertusa (Linn.) A. Camus, Ann. Soc. Linn. Lyon 1930, n. s. 76 : 164. 1931 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 109. 1960. *Holcus pertusus* Linn., Mant. 301. 1771. *Andropogon pertusus* (Linn.) Willd., Sp. Pl. 922. 1806 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 173. 1896 ; Ranga Achariyar et Tudalinga, Handb. South. Ind. Grass. 191, f. 152, 153. 1921. *Amphilophis pertusa* (Linn.) Nash ex Stapf, Agric. News W. Ind. 15 : 179. 1916 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1731. 1934.

Suberect herbs, up to 60 cm high. Leaves 10–15 × 0.2–0.3 cm, linear, aggregated at the base, glabrous. Spikelets greenish or purplish, 0.3–0.4 cm long in terminal racemes; upper lemma fertile, awned. Caryopsis oblong, obtuse, slightly compressed.

Fl. & Fr. : August–December.

Common above Chittaruvi.

6. BRACHIARIA Griseb.

- | | |
|--|-------------------------|
| 1a. Panicles linear with erect racemes; lower glume minute, scaly | <i>B. eruciformis</i> 1 |
| 1b. Panicles various, oblong lanceate or spreading; lower glume up to half as long as the spikelets, not scaly | |
| 2a. Leaves lanceate with ciliate-caudate base; spikelets in densely crowded spikes | <i>B. ramosa</i> 2 |
| 2b. Leaves linear, glabrous or minutely pubescent at base; spikelets in lax irregular racemes | <i>B. remota</i> 3 |

1. **Brachiaria eruciformis** (J.E. Sm.) Griseb., Ledeb. Fl. Ross. 4 : 469. 1853; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1769. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 283. 1960. *Panicum eruciforme* J.E. Sm., Sibth. et J.E. Sm., Fl. Graeca 1 : 44, t. 59. 1853; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 28. 1896.

Erect herbs, 30–40 cm high. Leaves up to 7.5 × 0.5 cm, flat, long, softly pilose from bulbous bases. Spikelets secund, elliptic or broadly-oblong, 0.1–0.2 cm long on trigonous rhachis.

Fl. : December.

Courtallum (*M. Rama Rao's Coll.* 2089, CAL).

2. **Brachiaria ramosa** (Linn.) Stapf in Prain, Fl. Trop. Africa 9 : 542. 1919; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1770. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 284. 1960. *Panicum ramosum* Linn., Mant. 1 : 29. 1767; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 36. 1896; Ranga Achariyar et Tudalinga, Handb. South Ind. Grass. 89, f. 95, 96. 1921.

Much branched herbs, up to 1 m high. Leaves 5–12 × 0.5–1.3 cm, linear-lanceate, sometimes pubescent, finely acuminate at apex, subcordate at base. Spikelets greenish on suberect spikes or racemes, 0.2–0.3 cm long, ovoid; florets two, lower neuter, upper hermaphrodite. Caryopsis broadly elliptic, covered by transversally rugose glume.

Fl. & Fr. : August - December.

Common along the sides of rocks in between Tiger falls and Main falls.

3. *Brachiaria remota* (Retz.) Haines, Bot. Bih. & Oriss. 1005. 1924 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1770. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 285. 1960. *Panicum remotum* Retz., Obs. Bot. 4 : 17. 1776 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 38. 1896.

Tufted, often decumbent herbs, 15-40 cm high; culms much branched. Leaves 5-10 × 0.3-0.6 cm, linear or linear-lanceate, finely acuminate at apex, shortly pubescent at base. Spikelets greenish in lax panicles up to 8 cm long, loosely scattered on the rachis, 0.2-0.3 cm long, elliptic ; florets 2, lower neuter, upper hermaphrodite, fertile glume apiculate or mucronate, transversally rugose.

Fl. & Fr. : August - December.

Common in the dry red soil on the way to Tekkumalai.

7. *CENTOTHECA* Desv.

***Centotheca latifolia* (Obs.) Trin.**, Fund. Agrost. 141. 1820; Froideville, Blumea 19 : 59. 1971. *Holcus latifolius* Obs., Dagb. Ostind. Res. 247. 1757. *Centotheca lappacea* (Linn.) Desv., Nouv. Bull. Soc. Philom. 2 : 189. 1810 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 332. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1848. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 459. 1960 (*pro var. lappacea*). *Cenchrus lappaceus* Linn., Sp. Pl. ed. 2 : 1488. 1763.

Erect herbs, 15-90 cm high ; rootstock woody ; branches leafy, green. Leaves up to 15 × 2 cm, elliptic-lanceate or lanceate, transversally veined, glabrous, acuminate at apex, narrowed or subcordate at base. Spikelets whitish, compressed, secund, oblong or ovate in terminal lax panicles ; awn absent. Caryopsis ovoid, 0.3-0.6 cm long, acute with spinescent lemma.

Fl. & Fr. : October - March.

Fairly common in the highest altitudes of Tekkumalai below Courtallum peak.

8. CHLORIS Sw.

- 1a. Florets 3 ; empty lemmas, obovate or subglobose ;
rhachilla not extended *C. barbata* 1
- 1b. Florets 2 ; empty lemma one, rudimentary ; rhachilla
extended *C. dolichostachya* 2

1. *Chloris barbata* (Linn.) Sw., Fl. Ind. Occ. 1 : 200. 1797; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 292. 1896; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 264, f. 199, 200, 201. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1838. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 465. 1960 ; Fosberg, Taxon 25 : 178. 1976. *Andropogon barbatus* Linn., Syst. ed. 10, 2 : 1305. 1759. *Chloris dandyana* Adams, Phytologia 2 : 408. 1971 ; Gills, Rhodora 76 : 75. 1974.

Erect or geniculately ascending herbs, 30-45 cm high ; culms not tufted. Leaves 5-15.5 × 0.3-0.5 cm, narrowly-linear with rolled margins, acuminate at apex, truncate at base. Spikelets greenish with a brown tinge at the apex, in digitate spikes at the apex of culms ; awns 3. Caryopsis ± 0.1 cm long, ellipsoid.

Fl. & Fr. : August February.

Common in the plains.

2. *Chloris dolichostachya* Lag., Gen. *et* Sp. Pl. 5. 1816 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 466. 1960. *C. incompleta* Roth, Nov. Sp. Pl. Ind. Or. 60. 1821 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 290. 1896; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 258, f. 196. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1838. 1934.

Erect or often decumbent herbs, up to 90 cm high. Leaves 15-30 × 0.3-1.2 cm, linear, flat, scattered hairy above, scaberulous beneath. Spikelets greenish, secund on digitate spikes at the apex of culms ; awns 2. Caryopsis narrow, 0.3-0.5 cm long.

Fl. & Fr. : August February.

Common along hedges and in waste places.

9. CHRYSOPGON Trin. *nom. gen. cons.*

- 1a. Margins of the leaves wavy and spinous ; pedicels
glabrous or nearly so *C. aciculatus* 1
- 1b. Margins of the leaves entire, not spinous ; pedicels
villous with rusty or pale hairs *C. zeylanicus* 2

1. *Chrysopogon aciculatus* (Retz.) Trin., Fund. Agrost. 188. 1820 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 188. 1897; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1738. 1934 ; Bor. Grass. Bur. Ceyl. Ind. Pak. 115. 1960. *Andropogon aciculatus* Retz., Obs. Bot. 5 : 22. 1789.

Rhizomatous herbs, 10-40 cm high ; culms creeping and rooting at lower nodes, ascending terminally. Leaves confined to the base of the culms, 2-15 × 0.2-0.5 cm, linear, glabrous or with scattered hairs, wavy and spinous along the margins, acute at apex. Spikelets reddish, in groups of one hermaphrodite and two pedicelled, male or nuter florets in erect narrow panicles. Caryopsis 0.2-0.4 cm long, linear.

Fl. & Fr. : August November.

Common along the sides of fields and canals on the way to Five falls.

2. *Chrysopogon zeylanicus* (Nees ex Steud.) Thw., Enum. Pl. Zeyl. 366. 1864 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1739. 1934 ; Bor. Grass. Bur. Ceyl. Ind. Pak. 119. 1960. *Andropogon zeylanicus* Nees ex Steud., Syn. Pl. Glum. 1 : 397 : 1854 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 192. 1896.

Erect tufted herbs, 30-70 cm high; culms glabrous. Leaves up to 30 × 0.5 cm, narrow, stiff, densely imbricate at base. Spikelets reddish, in threes on erect or spreading panicles at the ends of branches, one sessile and two pedicelled ; sessile spikelet awned. Caryopsis linear, laterally compressed.

Fl. & Fr. : August - November.

Common in dry, rocky areas on the way to Tekkumalai.

10. CYMBOPOGON Spreng.

1a. Lower glume of the sessile spikelet with a deep slot-like depression occupying most of its length

C. gidarba 3

1b. Lower glume of the sessile spikelet with the slot-like depression in the lower half of it or the glume almost flat

2a. Sessile spikelet with a depression in the lower half as a ridge on the inner surface

C. caesioides 1

2b. Sessile spikelet almost flat or slightly depressed below the middle

C. coloratus 2

Cymbopogon caesius (Nees ex Hook. f.) Stapf, Kew Bull. 1906 : 341. 1906 ; Fischer in Gamble, Fl. Presid. Madras 3(10) : 1757. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 125. 1960. *Andropogon caesius* Nees (Wt. Cat. Ind. Pl. nos. 1700a, 1700b. 1833 *nom. nud.*) ex Hook. f. in Arn., Bot. Beech. Voy. 244. 1838. *A. schoenanthus* Linn., subsp. *genuinus* var. *caesius* Hack. in DC., Mon. Phan. 6 : 610. 1889. *A. schoenanthus* var. *gracillimus* Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 205. 1896. *Kamakshi pillu*, *Mandap pillu*, *Muchival pillu* (Tamil).

Tufted aromatic herbs, up to 1.5 m high. Leaves 4.5-10 × 0.4-0.6 cm, narrowly-linear, coarse when mature, glaucous beneath, finely acuminate at apex, caudate at base. Spikelets greenish, 2-nate, one sessile and the other pedicelled in terminal panicles ; sessile spikelets 2-flowered, awned, pedicelled spikelets male or neuter.

Fl. & Fr. : July April.

Common in the outskirts and rocky areas around Tiger falls and above Old Courtallum falls.

2. Cymbopogon coloratus Stapf, Kew Bull. 1906. 321. 1906 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1756. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 308. 1960. *Andropogon coloratus* Nees in Wt., Cat. Ind. Pl. no. 1703. 1833. *nom. nud.* *A. nardus* Linn. var. *coloratus* (Nees) Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 206. 1896. *Manda pillu*, *Manakuru pillu*, *Manjin pillu* (Tamil).

Tufted, aromatic herbs 30-120 cm high. Leaves 15-60 × 0.5-1 cm, linear, coarse when mature, not narrowed at base. Spikelets greenish, 2-nate, one sessile and the other pedicelled in often interrupted panicles with white hairs at joints and pedicels ; sessile spikelets 2-flowered, bisexual, awned, pedicelled spikelets male or neuter.

Fl. & Fr. : September March.

Common in the dry outskirts and rocky areas. An oil yielding grass of South India.

3. Cymbopogon gidarba (Ham. ex Hook. f.) Haines, Bot. Bih. & Oriss. 1048. 1924 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1757. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 128. 1960. *Andropogon gidarba* Ham. ex Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 208. 1896.

Erect herbs, 30-90 cm high. Leaves 20-40 × 0.2-0.4 cm, linear, puberulous or shortly hairy above, glaucous beneath, acuminate at apex, truncate at base. Spikelets greenish, 2-nate in slender erect panicles of spikes ; sessile spikelets 2-flowered, bisexual or female, awned ; pedicelled spikelets male or neuter.

Fl. & Fr. : November March.

Common in the rocky areas around and above Tiger falls to Shembagadevi.

11. DACTYLOCTENIUM Willd.

Dactyloctenium aegyptium (Linn.) Beauv., Agrost. Expl. Pl. 15. 1812; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1840. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 489. 1960. *Cynosurus aegyptica* Linn., Sp. Pl. 72. 1753. *Eleusine aegyptia* (Linn.) Desf., Fl. Atlant. 1 : 85. 1798; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 295. 1896; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass, f. 5. 208, 209. 1921.

Annual herbs, up to 80 cm high; culms erect or ascending from a prostrate base and rooting at lower nodes. Leaves 2.5 - 9.5 × 0.2-0.6 cm, linear, hairy along the margin, acuminate at apex. Spikelets greenish at right angles to the rhachis, laterally compressed, 0.2 - 0.3 cm long in 2-6 digitate spikes; rhachis produced into a rigid point. Caryopsis 0.1 - 0.2 cm long, obovoid globose, rugose.

Fl. & Fr. : September February.

Semiaquatic, along the sides of small canals and fields on the way to Five falls.

12. DIGITARIA Haller *nom. gen. cons.*

1a. Culms erect, 30-60 cm high; spikelets 2.5-3 mm long; rhachis triquetrous, winged

D. ciliaris 1

1b. Culms creeping and sending up flowering branches; spikelets up to 1.5 mm long; rhachis terete, not winged

D. longiflora 2

1. **Digitaria ciliaris** (Retz.) Koel., Descr. Gram. 27. 1802; Veldkamp, Blumea 21 : 32, f. 5a, t. 1. 1973. *Panicum ciliare* Retz., Obs. Bot. 4 : 16. 1786. *Digitaria marginata* Link, Enum. Hort. Berol. 1 : 102. 1821; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1764. 1934; var. *extensum* Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 15. 1896.

Erect herbs, 30 - 60 cm high; culms often geniculate, tufted. Leaves 5 - 10.5 × 0.4 - 0.6 cm, linear-lanceate or linear, margins rough, glabrous or slightly hairy, acuminate at apex. Spikelets greenish, 0.2 - 0.3 cm long, lanceate on slender erect or spreading racemes. Caryopsis 0.1 - 0.2 cm long, plano-convex.

Fl. & Fr. : September - February.

Common in the Forest Rest House campus and elsewhere in the plains.

2. *Digitaria longiflora* (Retz.) Pers., Syn. Plan. Glum. 1. 85. 1805 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1765. 1934 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 59, f. 76, 77. 1921 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 302. 1960 ; Veldkamp, Blumea 21 : 66, f. 14e. 1973. *Paspalum longiflorum* Retz., Obs. Bot. 4 : 15. 1786 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 17. 1896 (*pro parte*).

Creeping herbs, rooting at lower nodes ; culms solitary or in fascicles ; flowering branches erect, 5 - 30 cm high. Leaves 1 - 6 × 0.1 - 0.4 cm, linear lanceate, soft, glabrous or scattered hairy, acute at apex. Spikelets green, 0.1 - 0.2 cm long, elliptic oblong, appressed in 2 - 3 digitate racemes. Caryopsis ± 0.6 cm long, ellipsoid, compressed.

Fl. & Fr. : October - February.

Common on the way to Five falls and in the Forest Rest House campus.

13. ECHINOCHLOA Beauv.

Echinochola colonum (Linn.) Link, Enum. Hort. Berol. 2 : 209. 1833 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1776. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 308. 1960. *Panicum colonum* Linn., Syst. Nat. ed. 10 (2) : 870. 1759 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 32. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 80, f. 89, 90. 1921.

Erect or suberect herbs, 45 - 60 cm high ; culms often tufted, slender, prostrate at base or geniculately ascending. Leaves 3 - 17.5 × 0.2 - 0.5 cm, linear, slightly rough along the margins, glabrous or sparsely hairy, tapering to an acute point at apex. Spikelets greenish, crowded and appearing 4 - ranked on erect panicles ; florets 2, the lower male, upper hermaphrodite. Caryopsis up to 0.2 cm long, plano - convex.

Fl. & Fr. : August - December.

Semiaquatic, along the sides of the stream in Tekkumalai and below Shembagadevi.

14. ELEUSINE Gaertn.

Eleusine indica (Linn.) Gaertn., Fruct. 1 : 8. 1789 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 293. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 273, f. 206. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1839. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 493. 1960. *Cynosurus indica* Linn., Sp. Pl. 72. 1753. *Thipparagi* (Tamil).

Erect herbs, 30 50 cm high ; culms not tufted, soft, glabrous. Leaves 6 35 × 0.2 0.6 cm, narrow, flaccid. Spikelets whitish in 3 5 terminal spikes ; lower glume 1 nerved, upper 1 3 nerved. Caryopsis oblong, narrowed at both ends, laterally compressed.

Fl. & Fr. : September December.

Common in the disturbed areas of Tekkumalai at lower altitudes.

15. ERAGROSTIELLA Bor

Eragrostiella bifaria (Vahl) Bor, Indian For. 66 : 270. 1940 & in Grass. Bur. Ceyl. Ind. Pak. 494. 1960. *Poa bifaria* Vahl, Symb. Bot. 2 : 19. 1791. *Eragrostis coromandeliana* (Koen. ex Rottl.) Trin., Mem. Acad. Sci. Petersb. (ser. 6) 1 : 415. 1830 *per errorem coromandelina* ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 326. 1896. *E. bifaria* (Vahl) Wt. ex Steud., Nom. Bot. (ed. 2) 1 : 562. 1840 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1828. 1934 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 307, f. 227. 1921.

Slender herbs, tufted at base ; stems simple, wiry, glabrous. Leaves 2.5 12.5 cm long, convolute or complicate, slender, finely acuminate, puberulous above. Spikelets greenish, secund, compressed, distichous on a slender rhachis ; involucral glumes strongly 1 nerved, keeled ; palea with ciliate wings. Caryopsis oblong.

Fl. & Fr. : August December.

Common in Tekkumalai at low elevations.

16. ERAGROSTIS Beauv. *emend.* Reichb.

1a. Spikelets breaking up from above downwards ; rhachis fragile

2a. Panicles spiciform, much compact

E. riparia 2

2b. Panicles effuse

E. tenella 3

1b. Spikelets breaking up from below upwards ; rhachis tough

- 3a. Spikelets up to 1.5 mm long ; spikelets slate-grey in colour

E. gangetica 1

- 3b. Spikelets 2.5-3 mm long ; spikelets brown or greenish white in colour

E. uniloides 4

1. *Eragrostis gangetica* (Roxb.) Steud., Syn. Pl. Glum. 1 : 266. 1854 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1826. 1934 ; Bor, Grass. Burm. Ceyl. Ind. Pak. 508. 1960. *Poa gangetica* Roxb., Fl. Ind. 1 : 341. 1820. *Eragrostis stenophylla* Hochst. ex Miq., Verh. Kon.—Nederl. Inst. 3 (4) : 39. 1851 (*pro parte*) ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 318. 1896 (*pro parte*).

Herbs, spreading above and tufted below, 5-90 cm high. Leaves up to 20 × 0.2 cm, linear, convolute, rigid, glaucous, tapering to a fine point at apex. Spikelets slate-grey, acute at both ends, in compact terminal panicles. Caryopsis up to 0.6 cm long, oblong.

Fl. & Fr. : September-March.

Common in Tekkumalai along the sides of the stream.

2. *Eragrostis riparia* (Willd.) Nees, Agrost. Bras. 512. 1829 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1825. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 513. 1960. *Poa riparia* Willd., Ges. Naturf. Fr. Neue. Schr. 4 : 185. 1803. *Eragrostis tenella* (Linn.) Beauv. var. *riparia* (Willd.) Stapf in Hook. f., Fl. Brit. Ind. 7 : 315. 1896.

Erect, tufted herbs, 12-40 cm high ; culms wiry, smooth, glabrous. Leaves at right angles to the culm, 1-7 × 0.2-0.3 cm, linear-lanceate, glabrous, acute at apex. Spikelets greenish-white, ±0.1 cm long in filiform, compact panicles. Caryopsis up to 0.3 cm long, ovoid.

Fl. & Fr. : October-February.

Common in Tekkumalai, in the disturbed areas along forest pathsides.

3. *Eragrostis tenella* (Linn.) Beauv. ex Roem. et Schult., Syst. Veg. 2 : 576. 1817 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 513. 1960. *Poa tenella* Linn., Sp. Pl. 69. 1753. *Eragrostis plumosa* (Retz.) Link, Enum. Hort. Berol. 1 : 192. 1827 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1826. 1934. *Poa plumosa* Retz., Obs. Bot. 4 : 20. 1786. *Eragrostis tenella* var. *plumosa* (Retz.) Stapf in Hook. f., Fl. Brit. Ind. 7 : 315. 1896.

Loosely tufted erect herbs, 30-50 cm high ; culms often geniculately ascending. Leaves 3-7.5 × 0.1-0.4 cm, narrowly-linear, glabrous, acute at

apex. Spikelets greenish on loosely branched panicles with spreading hairs on the nodes of the rhachis; paleas ciliate. Caryopsis 0.2-0.3 cm long, oblong.

Fl. & Fr. : September-March.

Common in semiaquatic habitats below Shembagadevi.

4. *Eragrostis uniloides* (Retz.) Nees *ex* Steud., Syn. Pl. Glum. 1 : 264. 1854; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1826. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 515. 1960. *Poa uniloides* Retz., Obs. Bot. 5 : 19. 1789.

Loosely tufted, erect or geniculately ascending herbs, 30-45 cm high. Leaves mostly basal, 3-13 × 0.2-0.4 cm, linear-lanceate, glabrous or with scattered hairs, margins rough, acute at apex. Spikelets greenish-white or brown, broadly-ovate or oblong in terminal panicles; rhachilla tough, persistent. Caryopsis 0.4-0.6 cm long, oblong or elliptic.

Fl. & Fr. : September-March.

Common in marshy soil above Chittaruvi and in the agricultural estate above Five falls.

17. *ERIOCHLOA* H.B.K.

Eriochloa procera (Retz.) C.E. Hubb., Kew Bull. 1930 : 256. 1930; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1767. 1934; Bor, Grass. Bur. Ceyl. Ind. Pak. 312. 1960. *Agrostis procera* Retz., Obs. Bot. 4 : 19. 1786. *Eriochloa polystachya* Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 20. 1896 (*non* H.B.K. 1816); Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 62, f. 78, 79. 1921.

Erect herbs up to 1.5 m high; culms tufted, glabrous or pubescent at nodes. Leaves 8.5-28 × 0.2-0.3 cm, linear-lanceate, glabrous, acuminate at apex. Spikelets greenish in panicles of spikes, 0.2-0.3 cm long, velvety-hairy, not awned; florets 2, lower sterile, upper fertile. Caryopsis ± 0.3 cm long, acute at base, obtuse at apex.

Fl. & Fr. : August-December.

Semiaquatic grasses common on the way to Five falls.

18. *HACKELOCHLOA* O. Ktze.

Hackelochloa granularis (Linn.) O. Ktze., Rev. Gen. Pl. 2 : 776. 1891; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1758. 1934; Bor,

Grass. Bur. Ceyl. Ind. Pak. 159. 1960. *Cenchrus granularis* Linn., Mant. 2 : App. 575. 1771. *Manisuris granularis* Linn f., Nov. Gram. Gen. 40. 1779 ; Roxb., Pl. Corom. t. 118. 1799 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 159. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 180, f. 147. 1921.

Erect tufted herbs, 13-20 cm high ; branches slender. Leaves $2.5-4 \times 0.5-0.8$ cm, linear-lanceate, flat, hairy, acute or acuminate at apex. Spikelets greenish-yellow, 2-nate in axillary or terminal fascicled racemes ; florets of the pedicelled spikelets neuter or male ; upper floret of the sessile spikelet hermaphrodite. Caryopsis ± 0.1 cm in diameter, suborbicular.

Fl. & Fr. : August-December.

Fairly common in the reserve forest at Five falls in humus soil.

19. HETEROPOGON Pers.

Heteropogon contortus (Linn.) Beauv. *ex* Roem. *et* Schult., Syst. Veg. 2 : 836. 1817 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 207, f. 163. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1742. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 163. 1960. *Andropogon contortus* Linn., Sp. Pl. 1045. 1753 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 199. 1896. *Oosipullu*, *Karunsi pullu*, *Pani pullu* (Tamil).

Tufted erect herbs, up to 90 cm high ; stem compressed, thick below. Leaves $10-20 \times 0.3-0.5$ cm, narrow, flat, spairingly ciliate towards base, abruptly acuminate at apex. Spikelets in terminal. solitary spikes, ± 0.8 cm long, densely imbricated ; the lower pair neuter, the upper ones hermaphrodite ; awn of the fourth glume stout, twisted, 1 cm long. Caryopsis ± 0.8 cm long, obovate, apiculate.

Fl. & Fr. : September-February.

Common in the dry areas and outskirts of the forests around Five falls and Tiger falls.

19. ISACHNE R. Br.

Isachne dispar Trin., Sp. Gram. Stip. 1 : t. 86. 1828 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 26. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1797. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 580. 1960. *Panicum dispar* (Trin.) Steud., Syn. Pl. Glum. 1 : 96. 1854.

Decumbent herbs, up to 20 cm high ; culms rooting from the lower nodes, glabrous. Leaves $1.5-4.5 \times 0.4-0.6$ cm, ovate-lanceate, margins thickened, acuminate at apex, cordate at base. Spikelets greenish, 0.1-0.2 cm long, subglobose, acute, in panicles ; florets 2. Caryopsis 0.1-0.2 cm long, free within the upper lemma.

Fl. & Fr. : August-January.

Semiaquatic in the dry rocky soil at Five falls.

20. ISCHAEMUM Linn.

- | | |
|--|----------------------------|
| 1a. Sessile spikelets 0.6-0.8 cm long ; awn of the sessile spikelet with a nodule below the middle | <i>I. indicum</i> 1 |
| 1b. Sessile spikelets 0.2-0.25 cm long ; awn of the sessile spikelet not noded | <i>I. rangachorianum</i> 2 |

1. *Ischaemum indicum* (Houtt.) Merr., J. Arnold Arbor. 19 : 320. 1938 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 180. 1960. *Phleum indicum* Houtt., Nat. Hist. 2, 13 : 198, t. 90, f. 2. 1782. *Ischaemum aristatum auctt. non* Linn. 1753 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1721. 1934. *I. ciliare* Retz., Obs. Bot. 6 : 36. 1791 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 133. 1896.

Erect herbs, 30-40 cm high ; culms not branched, sometimes decumbent at base. Leaves confined to the base, $3.5-16 \times 0.2-0.8$ cm, linear-lanceate, scabrid along the margins, sparsely or densely hairy, finely acuminate at apex. Spikelets 0.6-0.8 cm long, 2-nate, one sessile and the other pedicellate in 1 or 2 short racemes. Caryopsis oblong or lanceate, dorsally compressed.

Fl. & Fr. : July-November.

Common above Chittaruvī in the open forest floor.

2. *Ischaemum rangacharianum* Fischer, Kew Bull. 1933 : 352. 1933 & in Gamble, Fl. Presid. Madras 3 (10) : 1722. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 184. 1960. *I. aristatum* Ranga Achariyar, Handb. South Ind. Grass. 151. 1921 (*non* Linn.).

Tufted herbs, 25-40 cm high ; stems ascending from a prostrate, rooting base. Leaves $2-8.5 \times 0.3-1$ cm, linear or linear-lanceate, smooth or scabrous along the margins, glabrous or hairy, acuminate at apex. Spikelets in terminal, usually binate racemes 2.5-6 cm long ; sessile spikelets hermaphrodite, awned.

Fl. : September.

Courtallum (*Rama Rao's Coll.* 2104, CAL).

21. ISEILEMA T. Anders.

Iseilema laxum Hack. in DC., Mon. Phan. 6 : 682. 1889 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 218. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 216, f. 166, 167, 168. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1748. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 188. 1960.

Tufted herbs ; culms shortly creeping. Leaves 6.5-13.5×0.1-0.3 cm, linear, glabrous or sparsely hairy, obtuse at apex. Spikelets reddish in axillary racemiform panicles with long, narrow, spathe ; sessile spikelets ± 0.5 cm long, narrowly-lanceate, narrowed into a stipe ; florets 2, the upper hermaphrodite. Caryopsis oblong, dorsally compressed.

Fl. & Fr. : September-December.

Common in the humus soil on the way to Five falls.

22. PANICUM Linn.

- 1a. Lemma of the upper floret finely transversely rugose ;
margins of the leaves spinulose

P. maximum 1

- 1b. Lemma of the upper floret quite smooth ; margins of
the leaves cartilaginous, not spinulose

P. psilopodium 2

1. Panicum maximum Jacq., Collect. 1 : 76. 1786 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 49. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1783. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 327. 1960. *Ginio pillu* (Tamil).

Tufted erect herbs, up to 1.5 m high. Leaves 6-24×0.6-0.8 cm, linear, glabrous or slightly hairy, margins spinulose, acuminate at apex. Spikelets greenish in lax erect or nodding panicles, in groups of 2-3 or solitary ; florets 2, the lower male, upper hermaphrodite. Caryopsis ±0.1 cm long, oblong.

Fl. & Fr. : November - February.

Fairly common around Five falls along the sides of the stream. It is often cultivated for its fodder value from where it may be an escape.

2. **Panicum psilopodium** Trin., Gram. Panic. 217. 1826 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 46. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1782. 1934 ; Bor. Grass. Bur, Ceyl. Ind. Pak. 329. 1960. *P. flexuosum* Retz., Obs. Bot. 3 : 9. 1783. *Kadaikanai*, *Piva pullu*, *Samai*, *Pallu pullu* (Tamil).

Often tufted, simple or branched herbs, 30 60 cm high. Leaves 7.5 25 × 0.4 0.8 cm, flat, linear, smooth, glabrous with cartilagenous margins, acuminate at apex. Spikelets greenish in spreading panicles, solitary or in pairs ; florets 2, lower barren, upper hermaphrodite. Caryopsis up to 0.3 cm long, oval.

Fl. & Fr. : September February.

Rare, on the way to Five falls in the humus soil.

23, PASPALIDIUM Stapf

Paspalidium flavidum (Retz.) A. Camus, Lecomte Fl. Gen. de Indochine 7 : 419. 1922 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1774. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 333. 1960. *Panicum flavidum* Retz., Obs. Bot. 4 : 15. 1786 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 28. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 69, f. 82, 83. 1921. *Arisi pillu* (Tamil).

Spongy herbs, 30 45 cm high ; culms shortly decumbent at base. Leaves 7.5 20 × 0.3 0.5 cm, linear lanceate, flat or rolled, ciliate near the base, acute acuminate at apex. Spikelets greenish in panicles of 6 9 erect spikes ; florets 2, lower male or neuter, upper hermaphrodite with mucronate lemma.

Fl. : September - February:

Common in the Agricultural estate as an under - growth or in the open areas on the way to Five falls.

24. PASPALUM Linn.

1a. Leaves densely ciliate along the margins ; spikelets fringed with fine white hairs from the margins of the upper glume

P. conjugatum 2

1b. Leaves glabrous or slightly pubescent, not ciliate along the margins ; spikelets glabrous or pubescent, not ciliate along the margins

2a. Spikelets orbicular or ovate-orbicular ; annuals

P. scorbiculatum 3

2b. Spikelets rotundate-elliptic ; perennials.

P. commersonii 1

1. ***Paspalum commersonii*** Lamk., Enc. Meth. Bot. 1 : 175, t. 43, f. 1. 1791 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 335, f. 38. 1960. *P. scorbiculatum* Linn. var. *commersonii* (Lamk.) Stapf in Prain, Fl. Trop. Africa 9 : 573. 1919 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1772. 1934 ; *P. scorbiculatum* Boj. ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 10. 1896 (*pro parte*). *Katu varagu* (Tamil).

Perennial leafy herbs, 20-60 cm, high. Leaves 20-30 × 0.3-1.2 cm, linear, acuminate. Spikelets greenish white, usually 2-ranked, rotundate-elliptic, up to 0.2 cm long, glabrous in terminal racemes. Caryopsis biconvex, enclosed within the hardened lemma and palea.

Fl. & Fr. : October-March.

Fairly common along the sides of the stream below Tiger falls. A fodder grass.

2. ***Paspalum conjugatum*** Berg, Acta. Helv. Phys. Meth. 7 : 129, t. 8. 1772 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 11. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1772. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 336. 1960.

Erect herbs, 20-60 cm high. Leaves up to 18 × 1.2 cm, linear lanceate, flat, scattered hairy above, densely ciliate along the margins, acute to acuminate at apex. Spikelets yellowish green in terminal or subterminal paired racemose spikes, 2-seriate. Caryopsis elliptic, glabrous.

Fl. : October-March.

Common in Tekkumalai along the sides of the stream and on the deltas there.

3. ***Paspalum scorbiculatum*** Linn., Mant. 29. 1767 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 10. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 49, f. 69, 70. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1772. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 340. 1960. *P. kora* Willd., Sp. Pl. 1 : 332. 1798.

Erect or shortly decumbent herbs, 15-90 cm high ; culms often tufted ; lower nodes rooting, glabrous. Leaves 15-30 × 0.2-0.6 cm, linear lanceate, glabrous or slightly pubescent, acuminate at apex. Spikelets greenish, secund, biseriate in panicles of 2-5 spikes. Caryopsis biconvex, pale.

Fl. & Fr. : September-December.

Growing wild in Courtallum at Five falls.

25. PEROTIS Ait.

Perotis indica (Linn.) O. Ktze., Rev. Gen. Pl. 2 : 787. 1891 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1814. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 611. 1960. *P. latifolia* Ait., Hort. Kew. 1 : 85. 1789 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 98. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 137, f. 124, 125. 1921. *Narival, Kudrai - valpul, Thopparaippullu* (Tamil).

Tufted herbs, up to 30 cm high ; culms wiry, glabrous, geniculate at base. Leaves $1.5 - 2.5 \times 0.4 - 1$ cm, ovate or lanceate, glabrous, spinulose along the margins, acute at apex. Spikelets dark pink or greenish-yellow, awned, in terminal spicate racemes. Caryopsis 0.2 - 0.3 cm long, linear.

Fl. & Fr. : October - December.

Common in the dry rocky soil of Tekkumalai.

26. POGONANTHERUM Beauv.

Pogonanthrum paniecum (Lamk.) Hack., Allg. Bot. Zeitschr. 12 : 178. 1906 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1714 ; 1934 ; Chase, J. Aronld Arbor. 31 : 130. 1950 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 202. 1960. *Saccharum paniecum* Lamk., Enc. Meth. Bot. 1 : 595. 1785. *Pogonanthrum saccharoideum* Beauv., Ess. Agrost. 56, t. 11, f. 7. 1812 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 141. 1896.

Densely tufted, erect herbs, 30 - 40 cm high ; stems filiform. Leaves $2 - 7 \times 0.1 - 0.3$ cm, linear or linear lanceate, scabrid, acuminate at apex, abruptly contracted at base. Spikelets greenish, sessile or pedicelled, 0.1 - 0.3 cm long, oblong, awned in terminal racemes 1 - 3 cm long ; awns filiform, spreading. Caryopsis, obovate, laterally compressed.

Fl. & Fr. : August - December.

Around Main falls and New falls the grass is common.

27. SACCHARUM Linn.

Saccharum spontaneum Linn., Mant. 183. 1771 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 118. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South. Ind. Grass. 149, f. 129. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1709. 1934 ; Mukerjee, Bull. Bot. Soc. Bengal 8 : 145.

1954 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 214. 1960. *Imperata spontanea* (Linn.) Beauv., Ess. Agrost. 8. 1812.

Perennial grasses, up to 4 m high ; culms solid, terete. Leaves 4.5 150 × 4 - 5 cm, linear - lanceate, involute, coriaceous, glabrous except at the base, long acuminate at apex. Spikelets whitish in silky terminal panicles much branched and reaching up to 60 cm in length ; florets 2, lower empty, upper hermaphrodite.

Fl. : November - December.

Common in the humus soil along the sides of the fields on the way to Five falls.

28. SACCIOLEPIS Nash

- | | |
|--|------------------------|
| 1a. Culms robust, often spongy below ; spikelets 0.4-0.5 cm long, in interrupted crowded fascicles | <i>S. interrupta</i> 2 |
| 1b. Culms slender, never spongy ; spikelets 0.2-0.3 cm long, in continuous pseudo-spikes | <i>S. indica</i> 1 |

1. *Sacciolepis indica* (Linn.) Chase, Proc. Biol. Soc. Wash. 2 : 8. 1908 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1787. 1934 ; Bor, Grass. Bur. Ceyl. Ind. 357. 1960. *Panicum indicum* Linn., Mant. 2 : 184. 1771 (*non P. indicum* Mill.) ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 41. 1896.

Erect slender grass, 30 50 cm high. Leaves 3 13 × 0.2 0.3 cm, linear, acuminate at apex. Spikelets in spike like, cylindric panicles, continuous on the rhachis, shortly pedicelled, 0.2 0.3 cm long, ovoid, often curved, 2 - flowered ; lower floret male or barren, upper hermaphrodite. Caryopsis elliptic.

Fl. & Fr. : November - February.

Above Chittaruvi and on the way to Shembagadevi the grass is common in the open forest floor.

2. *Sacciolepis interrupta* (Willd.) Stapf in Prain, Fl. Trop. Africa 9 : 757. 1920 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1787. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 358. 1960. *Panicum interruptum* Willd., Sp. Pl. 1 : 341. 1798 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 40. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 95, f. 99, 100. 1921.

Robust erect grasses up to 1.5 m high ; culms ascending from a creeping and rooting spongy base. Leaves 12 18 $\times$ 0.5 0.8 cm, linear, smooth or scaberulous, acuminate at apex. Spikelets 2 flowered, greenish in interrupted spike like, cylindric panicles ; lower floret barren, upper hermaphrodite. Caryopsis obovoid, apiculate.

Fl. & Fr. : November April.

Common on the way to Five falls in the forest out skirts

29. SETARIA Beauv. *nom. gen. cons.*

- 1a. Leaf-blade 5-20 $\times$ 0.4-0.7 cm, linear, setaceous at apex ; upper lemma distinctly transversely rugose ; spikelets up to 0.2 cm long

S. tomentosa 2

- 1b. Leaf-blade 20-40 $\times$ 0.1-0.3, cm, linear-lanceate, acuminate at apex ; upper lemma faintly transversely straited ; spikelets about 0.3 cm long

S. palmifolia 1

1. *Setaria palmifolia* (Koen.) Stapf, J. Linn. Soc. Lond. 42 : 186. 1914 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1789. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 363. 1960. *Panicum palmaefolium* Koen., Naturf. 23 : 208. 1788. *P. plicatum* Willd., Enum. Pl. 1033. 1809 (*non* Lamk.) ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 55. 1896.

Erect herbs, 30 150 cm high ; rootstock woody. Leaves 15 40 $\times$ 0.1 - 0.3 cm, linear - lanceate, chartaceous, glabrous or sparsely hairy, plicate between the veins, finely acuminate at apex. Spikelets brownish, up to 0.3 cm long in 30 60 cm long panicles ending in short bristles. Caryopsis 0.2 0.3 cm long ellipsoid.

Fl. & Fr. : July January.

Rather rare in the wet soil on the way to Five falls.

2. *Setaria tomentosa* (Roxb.) Kunth, Rev. Gram. 1 : 47. 1829 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 365. 1960. *Panicum tomentosum* Roxb., Fl. Ind. 1 : 303. 1820. *Setaria intermedia* (Roth) Roem. et Schult., Syst. Veg. 2 : 489. 1817 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 79. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 111, f. 110. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1789. 1934. *Panicum intermedium* Roth, Nov. Sp. Pl. Ind. Or. 47. 1821 (*non* Vahl ex Hornem. 1813).

Tufted grass, up to 60 cm high ; culms filiform, often decumbent at base. Leaves 5 20 $\times$ 0.4 - 0.7 cm, linear, rough along the margins,

flaccid hairy, setaceous at apex. Spikelets greenish, ± 0.1 cm long, broadly ovate in terminal panicles ending in bristles. Caryopsis ± 0.1 0.2 cm long, ovate, obtuse.

Fl. & Fr. : May January.

Rare at Honey falls in the black humus soil.

30. SORGHUM Moench

Sorghum nitidum (Vahl) Pers., Syn. Pl. Glum. 1 : 101. 1805 ; Fischer in Gamble. Fl. Presid. Madras 3 (10) : 1735. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 245. 1960. *Holcus nitidus* Vahl, Symb. Bot. 2 : 102. 1791. *Andropogon serratus* Thunb., Fl. Jap. 41. 1789 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 185. 1896.

Tufted grasses, up to 2.5 m high, villous at nodes. Leaves 20 45 $\times$ 0.2 0.5 cm, broadly linear, sparsely hairy on both sides, scabrid along the margins, narrowed and long hairy towards base. Spikelets in 2 8 spikes, solitary at the ends of filiform branches of lax panicles. Caryopsis obovate.

Fl. & Fr. : September February.

Common in the rocky soil of Tekkumalai.

31. SPOROBOLUS R. Br.

- | | |
|--|------------------------|
| 1a. Upper glume shorter than the lemma ; leaves not radical | <i>S. diander</i> 1 |
| 1b. Upper glume as long as or longer than the lemma ; leaves radical | <i>S. piliferous</i> 2 |

1. **Sporobolus diander** (Retz.) Beauv., Ess. Agrost. 26 : 147. 1812 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 247. 1896 ; Ranga Achariyar *et* Tudalinga, Handb. South. Ind. Grass. 231, f. 178. 1921 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1817. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 629. 1960. *Agrostis diandra* Retz., Obs. Bot. 5 : 19. 1789.

Robust, tufted herbs, up to 50 cm high. Leaves 10-20 $\times$ 0.2-0.3 cm, filiform, involute, glabrous, attenuated at apex. Spikelets greenish or dark-red in 6-10 cm long exserted panicles with filiform branches, ± 0.2 cm long. Caryopsis obovoid, adhering to the panicles, reddish.

Fl. & Fr. : November-February.

Semiaquatic or in dry soil below Main falls and in Tekkumalai.

2. *Sporobolus piliferous* (Trin.) Kunth, Enum. Pl. 1 : 211. 1833 ; Hook. f. in Hook, f., Fl. Brit. Ind. 7 : 251. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1817. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 632. 1960. *Vilfa pilifera* Trin., Diss. Bot. 157. 1824.

Tufted, erect grasses, 10-15 cm high. Leaves radical, $1.5-5.5 \times 0.2-0.3$ cm, linear-lanceate, flat or convolute, pilose or glabrous, attenuated at apex. Spikelets greenish, 0.2-0.3 cm long, shortly pedicelled, 1-flowered in linear, contracted often interrupted panicles. Caryopsis ellipsoid, reddish-brown.

Fl. & Fr. : May-December.

Common in the rocky soil of Tekkumalai.

32. THEMEDA Forssk.

1a. Spikelets in fan-shaped drooping fascicles ; spikelets large

T. triandra 2

1b. Spikelets in decompound thyriform panicles ; spikelets small

T. cymbaria 1

1. *Themeda cymbaria* Hack. in DC., Mon. Phan. 6 : 668. 1889 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1746. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 251. 1960. *Anthistiria cymbaria* Roxb., Fl. Ind. 1 : 255. 1820 (*quod descrip.*) ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 215. 1896.

Coarse herbs, 1.5-2 m high ; culms erect, branched, smooth, clothed at base with broad, coriaceous leaf sheaths. Leaves up to 70×0.7 cm, linear, green above, glaucous beneath, scaberulous, finely pointed at apex, glabrous or ciliate and finely pointed at base. Spikelets greenish, up to 0.8 cm long with lanceate bracts in terminal, decompound, thyriform panicles.

Fl. & Fr. : September-March.

Common in the rocky soil on the way to Tekkumalai.

2. *Themeda triandra* Forssk., Fl. Aegypt. Arab. 178. 1775 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1746. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 264. 1960. *Anthistiria imberbis* Retz., Obs. Bot. 3 : 11. 1783 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 213. 1896.

Perennial, densely tufted herbs, up to 1 m high. Leaves $20-40 \times 0.2-0.6$ cm, linear, rigid, glabrous, spreading, obtuse or acuminate at apex.

Spikelets greenish in leafy panicles of racemes ; hermaphrodite spikelet only one in a raceme. Caryopsis linear-obovate, grooved in the front.

Fl. & Fr. : Almost throughout the year.

Common along the rocky slopes and open forest floor between Tiger falls and Shembagadevi.

33. *TRAGUS* Scop. *nom. gen. cons.*

Tragus roxburghii Panighrahi, Kew Bull. 29 : 496. 1974. *Lappago biflora sensu* Roxb., (Hort. Beng. 82. 1814 *nom. nud.*) Fl. Ind. 1 : 284. 1820 (*quod descrip. excl. typo*). *Tragus biflorus sensu* Schultes, Mant. Syst. Veg. 2 : 205. 1824 : Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1813. 1934 ; Bor, Grass. Bur. Ceyl. Ind. Pak. 682. 1960. *T. racemosus sensu* Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 97. 1896, *non* (Linn.) All. 1785 ; Ranga Achariyar *et* Tudalinga, Handb. South Ind. Grass. 133, f. 123. 1921.

Tufted, erect herbs, 10-15 cm high ; culms leafy below. Leaves 1-3.5 × 0.2-0.3 cm, linear-lanceate, rigid, pectinately ciliate along the margins, acuminate at apex. Spikelets brownish in groups of 2 facing each other and appearing like a single unit with two equal echinate glumes in terminal spiciform racemes, 1-flowered ; upper involucre glume with hooked spines along the ribs. Caryopsis up to 0.2 cm long, linear-oblong.

Fl. & Fr. : November-February.

Rare in the open forest floor above Chittaruvi and on the way to Shembagadevi.

115. BAMBUSACEAE

BAMBUSA Schreb. *nom. gen. cons.*

Bambusa arundinacea Willd., Sp. Pl. 2 : 245. 1799 ; Hook. f. in Hook. f., Fl. Brit. Ind. 7 : 395. 1896 ; Gamble, Ann. R. Bot. Gard. Calcutta 7 : 51. pl. 48. 1896 ; Fischer in Gamble, Fl. Presid. Madras 3 (10) : 1859. 1934. *Illi, Mula* (Malayalam). *Mungil, Pereyamungil* (Tamil).

Armed bamboos, 8-25 m high ; culms bright green, 8-12 cm in diameter, branched from the base ; nodes prominent, basal ones rooting. Leaves variable in size, up to 15 × 2 cm, lanceate, glabrous above except for a few hairs at the base, glabrous or puberulous beneath, narrowed and

ending in a stiff point at the apex, rounded at the base into a swollen petiole ± 0.2 cm long. Spikelets pale, sessile, up to 0.2 cm long, lanceate, acute, in numerous panicles often formed by the whole culm. Caryopsis ± 0.5 cm long, oblong, smooth, grooved on one side, ending in a beak.

Fl. & Fr. : October.

Common along the sides of the ravines and steep slopes on the way to Tekkumalai.

116. ZINGIBERACEAE

1a. Inflorescence scapose ; ovary glabrous

Elettaria 2

1b. Inflorescence not scapose but terminal on leafy stems ;
ovary densely hairy

Alpinia 1

1. ALPINIA Roxb. *nom. gen. cons.*

Alpinia malaccensis (Burm. f.) Rosc., Trans. Linn. Soc. Lond. 8 : 345. 1808 ; Baker in Hook. f., Fl. Brit. Ind. 6 : 255. 1892 ; K. Schum. in Engl., Pflanzenr. 20 : 335. 1904 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1493. 1928. *Maranta malaccense* Burm. f., Fl. Ind. 2. 1768. *Catimbium malaccense* (Burm. f.) Holttum, Gard. Bull. Singapore 13 : 155. 1950.

Leafy erect shrubs, 1-1.5 m high. Leaves up to 60×10 cm, oblong or oblong-lanceate, glabrous above, pubescent beneath, acuminate at apex, narrowed at base ; petioles up to 3 cm long. Flowers white externally, yellow with red lines inside, in terminal showy racemes ; buds enclosed in large membranous bracteoles ; peduncles hairy ; ovary green, densely pubescent. Capsules ± 2 cm in diameter, subglobose.

Fl. & Fr. : January-May.

Rare, as an undergrowth in the dense shola forests along the slopes before Vithamalai.

2. Elettaria Maton

Elettaria cardamomum (Roxb.) Maton, Trans. Linn. Soc. Lond. 10 : 254. 1811 (*non Amomum cardamomum* Linn. 1753) ; Baker in Hook. f., Fl. Brit. Ind. 6 : 251. 1892 ; K. Schum. in Engl., Pflanzenr. 20 : 268. 1904 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1491. 1928. *Alpinia carda-*

momum Roxb., Asiat. Res. 11 : 355. 1810 & Pl. Corom. 3 : t. 266. 1820. *Elattari*, *Elam*, *Elachedi* (Malayalam). *Elam*, *Anchi* (Tamil).

Perennial leafy herbs, 1.5-3 m high ; rootstock thick, horizontal. Leaves 30-65 × 5-10 cm, distichous, elliptic or elliptic-lanceate, glabrous above, softly-pubescent beneath, acuminate at apex, narrowed or obtuse at base. Flowers white, striped with violet, in elongated, flexuous, bracteate panicles arising from the root-stock. Capsules oblong or subglobose, indehiscent, marked with fine vertical ribs ; seeds black, arillate.

Fl. & Fr. : January-November.

Growing wild rarely above the third wooden bridge in Tekkumalai. The seeds form the spice 'Cardamum'.

117. COSTACEAE

COSTUS Linn.

Costus speciosus (Koen.) Smith, Trans. Linn. Soc. Lond. 1 : 249. 1800 ; Wt., Ic. t. 2014. 1853 ; Baker in Hook. f., Fl. Brit. Ind. 6 : 249. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1490. 1928 ; Holttum, Gard. Bull. Singapore 13 : 242. 1950. *Anakuva*, *Cannakuva* (Malayalam). *Kottam*, *Kudavam*, *Kuravam* (Tamil).

Erect, perennial herbs, 1.5-2 m high ; stem unbranched, glabrous. Leaves 20-25 × 4-7.5 cm, subsessile, spirally arranged, oblanceate or oblong, glabrous above, hairy beneath, acuminate at apex, sheathing at base. Flowers white in terminal bracteate spikes ; bracts ovate, scarlet, persistent. Capsules globose or ovoid, dehiscent.

Fl. : August-October.

Common in Tekkumalai as an undergrowth in the shola along the sides of Chittar.

118. CANNACEAE

CANNA Linn.

Canna orientalis Rosc., Monandr. Pl. t. 12. 1828 ; Kraenzl. in Engl., Pflanzenr. 56 : 44. 1912 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1492. 1928. *C. indica* Linn. var. *orientalis* (Rosc.) Baker in Hook. f., Fl. Brit. Ind. 6 : 260. 1892. *Canna* (Malayalam).

Erect herbs, 90-130 cm high; rootstock tuberous; stem leafy. Leaves up to 30×20 cm, oblong or elliptic-lanceate, glabrous, acute at apex, penninerved. Flowers large, yellow with red spots, or bright red with yellowish labellum, in terminal spikes. Capsules 2-3 cm long, ellipsoid, obscurely 3-lobed.

Fl. & Fr. : August-November.

Common in the shady humid areas of Tekkumalai along the sides of the stream.

119. MARANTACEAE

SCHUMANNIANTHUS Gagnep.

Schumannianthus virgatus (Roxb.) Rolfe, J. Bot. 45 : 244. 1907; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1494. 1928. *Phrynium virgatum* Roxb., Asiat. Res. 11 : 324. 1810. *Donax virgata* (Roxb.) K. Schum. in Engl., Pflanzenr. 11 : 33. 1902. *Clinogyne virgata* (Roxb.) Benth. ex Baker in Hook f., Fl. Brit. Ind. 6 : 258. 1892. *Periya-kuhai-valai* (Tamil).

Erect, dichotomously branched shrubs, 2-4 m high. Leaves up to 40×10.5 cm, oblong or oblong-lanceate, glabrate, acuminate or shortly cuspidate at apex, narrowed or slightly rounded at base; petioles 1-2.5 cm long, hairy. Flowers white in terminal, effuse panicles. Capsules 0.8-1 cm long, subpyriform with 2-3 cocci.

Fl. & Fr. : March-August.

Common in the wet forest floor along the sides of the stream in Udayathan estate.

120. PALMAE

1a. Unarmed trees with leaves in a terminal crown; fruits ± 18 cm across, not scaly

Borassus 1

1b. Armed climbing shrubs with leaves scattered throughout the stem; fruits up to 1.2 cm across, scaly

Calamus 2

1. BORASSUS Linn.

Borassus flabellifer Linn., Sp. Pl. 1187. 1753; Becc. et Hook. f. in Hook. f., Fl. Brit. Ind. 4 : 482. 1892 (excl. syn. *B. aethiopum* Mart.);

Blatt., Palms Brit. India & Ceylon 174. 1926 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1562. 1931. *Karimpana*, *Pana*, *Olapana* (Malayalam). *Panei*, *Panaimaram*, *Vadaly*, *Karimpani* (Tamil).

Tall palms, 20-35 m high ; trunk unbranched, marked with the black scars of fallen leaves. Leaves 2-3.5 m in diameter, palmately fan-shaped, rigidly coriaceous, margins cleft into lanceate or linear, bifid lobes ; petioles 1-2 m long, stout, spinous along the edges. Male flowers in cylindric, branched spadix. Female flowers in simple spadix. Drupes up to 18 cm in diameter, globose when mature, seated on an enlarged parianth.

Fl. & Fr. : January-August.

Common, scattered in the barren and rocky outskirts of the forest, mostly towards the drier eastern part of the area.

2. CALAMUS Linn.

Calamus pseudo-tenuis Becc. in Hook. f., Fl. Brit. Ind. 6 : 445. 1892 & in Rec. Bot. Surv. India 2 : 264. 1903 & in Ann. R. Bot. Gard. Calcutta 11 (1) : t. 69. 1908 ; Blatt., Palms Brit. India & Ceylon 306. 1926 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1567. 1931.

Armed climbing shrubs ; leaf- sheath with straight, flat spines reaching 2 cm in length. Leaves up to 1.2 m long ; leaflets 50 or more, almost equidistant, up to 35×2.5 cm, linear-lanceate, thin, bristly-penicillate at apex with setulose margins and remotely setulose upper surface ; rhachis and petiole spinous. Male flowers in long slender decurved spikes forming a spadix, often 2-3 together, subglobose. Female flowers in very long slender spadix with distant branches. Fruits up to 1.2 cm across, subovoid with dull yellowish scales possessing scarious margins.

Fl. : February-May.

Fairly common in Tekkumalai and also on the way to Vaithamalai.

121. PANDANACEAE

PANDANUS Linn. f.

Pandanus fascicularis Lamk., Enc. Meth. Bot. 1 : 372. 1785 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 485. 1892. *P. odoratissimus* Linn. f., Suppl. 424. 1781 (*nom. superfl. et illegit.*) ; St. John, Taxon 12 : 201 - 204. 1963 ; Stone, Gard. Bull. Singapore 22 : 236. 1967. *P. tectorious* Soland. ex Par-

kinson, J. Voy. H.M.S. Endeavour 46. 1773 ; Warb. in Engl., Pflanzenr. 3 : 46. 1900 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1570. 1931.

Large shrubs, 3 4 m high ; stem rarely branched, cylindrical. Leaves up to 120×4.5 cm, ensiform, margins with forward pointing spinules, the keels with forward or backward pointing spinules, long acuminate at apex. Flowers yellowish white, fragrant in unisexual spadix ; male spadix with several cylindric spikes ; female spadix solitary. Syncarp up to 15 cm long, subovate, armed with spinules.

Fl. & Fr. : October April.

Common below Shembagadevi along the deltas of the stream.

122. ARACEAE

1a. Aquatic, floating herbs ; leaves in close spiral forming a cup

Pistia 1

1b. Terrestrial scandent shrubs ; leaves alternate and distichous

Pothos 2

1. PISTIA Linn.

Pistia stratiotes Linn., Sp. Pl. 963. 1753 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 697. 1894 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1573. 1931 ; Wilson, J. Arnold Arbor. 41 : 62, f. 5. 1960 ; Subr., Aquat. Angio. 75, f. 49. 1962. *Kodapayal* (Malayalam). *Kodithamarari*, *Agasatamarai* (Tamil).

Floating, stoloniferous herbs ; roots tufted at nodes. Leaves sessile in close spirals at the nodes forming a cup, 2.5 8 cm long, obovate - cuneate, shallowly lobulate or undulate along margins towards apex, densely pubescent on both surfaces, rounded or retuse at apex. Flowers greenish in monoecious spadix ; spathe shortly peduncled, white tomentose externally. Berries ovoid.

Fl. & Fr. : March August.

Common in Tippakkulam when it is filled ; during summer when the pond become dry, it survives in the marshy soil left behind.

2. POTHOS Linn.

Pothos scandens Linn., Sp. Pl. 968. 1753 ; Wt., Ic. t. 776. 1844 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 551. 1894 ; Engl. in Engl., Pflanzenr. 21 : 26. 1905 ; Fischer in Gamble, Fl. Presid. Madras 3 (9) : 1592. 1931. *Pareel*, *Pareelkavalli* (Malayalam).

Climbing shrubs with adventitious roots ; stem thick, branched towards apex, slightly ridged. Leaves 4.5 7.5 × 1 4 cm, obovate, elliptic or lanceate, coriaceous, entire, bright green above, acute or acuminate at apex, rounded or cuneate at base ; petioles 2.5 5 cm long, broadly winged. Flowers in axillary peduncled, yellowish white globose spadix ; spathe ± 0.5 cm long, cymbiform, green. Berries 1 1.5 cm long, oblong, scarlet when ripe.

Fl. & Fr. : October - May.

Common on trees and rocks in the higher altitudes of Tekkumalai.

123. LILIACEAE

1a. Rootstock prominent, bulbous or corm-like

2a. Flowers dark-purple or dark-chocolate coloured ;
scapes leafy ; flowers solitary or in small corymbose
clusters

Iphigenia 2

2b. Flowers greenish-white or greenish yellow ; scapes
not leafy ; flowers in racemose clusters

3a. Flowers less than 0.8 cm long ; scapes with
closely arranged flowers

Scilla 3

3b. Flowers more than 1 cm long ; scapes with dis-
tantly arranged flowers

Urginea 4

1b. Rootstock obscure, not bulbous or corm-like

Chlorophytum 1

1. CHLOROPHYTUM Ker. Gawl

1a. Leaves 2.5-6 cm broad, oblanceate ; racemes dense
flowered

C. heynei 1

1b. Leaves 0.3-1 cm broad, narrowly linear ; racemes distant
flowered

C. laxum 2

1. **Chlorophytum heynei** Baker, J. Linn. Soc. Lond. 15 : 322. 1877 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1525. 1928. *C. heyneanum* Wall. ex Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 333. 1892.

Scapigerous herbs, 30–45 cm high ; stem obscure, rhizomatous with tuberous roots. Leaves radical, 15–45 × 2.5–6 cm, oblanceate, glabrous, acuminate at apex, narrowed at base ; petioles 5–8 cm long. Flowers white in dense scapose racemes. Capsules $\pm$ 1 cm long, 3-lobed, truncate at apex.

Fl. & Fr. : June–October.

Rare, in the crevices of rocks at Five falls and also in the open forest floor on the way to Tekkumalai.

2. *Chlorophytum laxum* R. Br., Prodr. 277. 1810 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 336. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1526. 1928 ; E. Krause in Engl. & Prantl, Pflanzenfam. (ed. 2) 15a : 285. 1930.

Low, scapigerous herbs, up to 30 cm high ; stem obscure, rhizomatous ; roots not tuberous. Leaves radical, subdistichous, grass-like, 15–30 × 0.3–1 cm, narrowly linear, flat or folded, glabrous, acute at apex. Flowers greenish-white in lax, filiform scapose racemes. Capsules $\pm$ 0.5 cm long, obcordate, filiform.

Fl. & Fr. : June–September.

Rather common above Main falls in wet areas along the sides of the stream.

2. *IPHIGENIA* Kunth *nom. gen. cons.*

Iphegenia indica (Linn.) Gray in Kunth, Enum. Pl. 4 : 213. 1843 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 357. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1528. 1928 ; E. Krause in Engl. & Prantl, Pflanzenfam. (ed. 2) 15a : 357. 1930. *Melanthium indicum* Linn., Mant. 226. 1771.

Erect herbs ; corm subglobose ; stem 15–25 cm high, slender, leafy. Leaves sessile, 4–16 × 0.3–0.5 cm, linear or linear-lanceate, glabrous, acuminate at apex, sheathing at base. Flowers dark purple or dark chocolate coloured, solitary or in few flowered corymbose clusters on erect terminal racemes. Capsules $\pm$ 1 cm long, oblong-ellipsoid.

Fl. & Fr. : June–August.

Common in the reserve forest on the way to Tekkumalai and below Shembagadevi.

3. *SCILLA* Linn.

Scilla hyacinthina (Roth) Mac Bride, Contr. Gray Herb. Harv. (n. s.) 56 : 14. 1918 ; Deb. *et* Dasgupta, Bull. Bot. Surv. India, 17 : 46. 1975 (1978). *Ledebouria hyacinthina* Roth, Nov. Sp. Pl. Ind. Or. 195. 1821. *Scilla indica* (Wt.) Baker, Saund. Refrg. Bot. 3 : 1pp. 12. 1870 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 348. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1527. 1928. *Barnardia indica* Wt., Ic. t. 2041. 1853.

Bulbous herbs. Leaves 3.5 18 × 0.5 2.5 cm, linear, lanceate or oblong, glabrous, obtuse or acute at apex, narrowed at base into a sheathing petiole. Flowers greenish in racemose scapes. Capsules ± 0.3 cm long, ovoid, membranous, 3 valved.

Fl. & Fr. : June November.

Rare, in the dry rocky soil around Tiger falls.

4. *URGINEA* Steinh.

Urginea indica (Roxb.) Kunth, Enum. Pl. 4 : 333. 1843 ; Wt., Ic. t. 2063. 1853 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 347. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1526. 1928 ; Deb *et* Dasgupta, Bull. Bot. Surv. India 16 : 118. 1974 (1977). *Scilla indica* Roxb., Fl. Ind. 2 : 148. 1832. *S. coromandeliana* Roxb., Fl. Ind. 2 : 147. 1824. *Urginea coromandeliana* (Roxb.) Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 347. 1892 ; Fischer, *loc. cit.* *U. wightiana* Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 347. 1892 ; E. Krause in Engl. & Prantl, Pflanzenfam. (ed. 2) 15a : 340. 1930. *Kanthanga* (Malayalam). *Narivengayam* (Tamil).

Bulbous herbs, 15 85 cm high. Leaves radical, 10 30 × 0.5 0.8 cm, linear, lanceate or lorate, glabrous, subacute at apex. Flowers greenish - yellow on slender, lax, scapose racemes. Capsules 0.5 1.5 cm long, ellipsoid, trilocular.

Fl. & Fr. : July - September.

Occasional, in the reserve forest around Main falls.

124. AMARYLLIDACEAE

CRINUM Linn.

Crinum latifolium Linn., Sp. Pl. 291. 1753 ; Wt., Ic. tt. 2019, 2020, 1853 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 282. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1054. 1928.

Scapigerous herbs, 30–90 cm high; stem underground, bulbous, erect. Leaves 30–90 × 3.5–8 cm, lorate, thin, entire, slightly pilose on both sides, scabrid along the margins, acuminate at apex, narrowed into the petiole at base. Flowers white, tinged with purple, showy, fragrant, on 8–10 flowered scapes up to 90 cm long; bracts 7.5–10 cm long, oblong lanceate; perianth tube funnel shaped, drooping with lanceate lobes. Capsules 3.5–4.5 cm long, subglobose.

Fl. & Fr. : May–March.

Common in the moist forest floor of Tekkumalai.

125. HYPOXIDACEAE

CURCULIGO Gaertn.

Curculigo orchoides Gaertn., *Fruct.* 1 : 63, t. 13. 1788; Hook. f. in Hook. f., *Fl. Brit. Ind.* 6 : 278. 1892; Pax *et* K. Hoffm. in Engl. & Prantl, *Pflanzenfam.* (ed. 2) 15a : 426. 1930; Fischer in Gamble, *Fl. Presid. Madras* 3 (8) : 1502. 1928.

Scapigerous herbs, 10–15 cm high; rootstock tuberous. Leaves radical, 6.5–15 × 0.5–1.5 cm, narrowly linear or lanceate, glabrous above, whitish pilose or glabrous beneath, acute at apex, narrowed towards base; petioles obscure or rarely 1–1.5 cm long. Flowers light yellow in few-flowered short scapes shorter than the leaves and often hidden at their base; perianth ± 1 cm long, pilose. Capsules about 1 cm long, oblong.

Fl. & Fr. : June–November.

Common on the way to Tekkumalai.

126. ASPARAGACEAE

ASPARAGUS Linn.

Asparagus racemosus Willd., *Sp. Pl.* 2 : 152. 1799; Wt., *Ic.* t. 2056. 1853; Baker, *J. Linn. Soc. Lond.* 14 : 623. 1874; Hook. f. in Hook. f., *Fl. Brit. Ind.* 6 : 316. 1892; Fischer in Gamble, *Fl. Presid. Madras* 3 (8) : 1517. 1928. *Satavari* (Malayalam). *Kadumulla*, *Nili - chedi*, *Ammal - kodl* (Tamil).

Armed, scandent shrubs, 4–6 m high; roots tuberous; main stem yellowish, thick, smooth. Leaves scaly, linear, subulate, with tufts of

leaf-like 1-1.5 cm long, acicular, triquetrous or flattened cladodes in their axils. Flowers white, fragrant in simple, axillary, solitary or fascicled racemes. Berries $\pm$ 0.4 cm in diameter, globose, red when ripe.

Fl. & Fr. : June - October.

Fairly common in the outskirts of the forests between Tiger falls and Main falls.

127. AGAVACEAE

- | | |
|---|----------------------|
| 1a. Flowers in terminal or axillary racemes ; stem aerial | <i>Dracaena</i> 1 |
| 1b. Flowers in racemose scapes ; stem underground | <i>Sansevieria</i> 2 |

1. DRACAENA Vand. *ex* Linn.

Dracaena terniflora Roxb., Fl. Ind. 2 : 159. 1832 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 328. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1521. 1928 ; E. Krause in Engl. & Prantl, Pflanzenfam. (ed. 2) 15a : 359. 1930.

Erect shrubs, 60-150 cm high ; stem slender, rarely rooting near the base. Leaves 6-20 $\times$ 3-5 cm, often crowded subterminally, elliptic-lanceate, glabrous, acuminate at apex, narrowed at base. Flowers white, 1-3 together in terminal simple or branched glabrous racemes reaching up to 12 cm in length. Berries 0.6-1 cm across, globose, didymous or 3-lobed, red when ripe.

Fl. & Fr. : May - September.

Common in the thickest around Karuppuswamy Kovil on the way to Vaithamalai.

2. SANSEVIERIA Thumb. *nom. gen. cons.*

Sansevieria roxburghiana Schult. f., Syst. Veg. 5 : 7. 1829 ; Baker, J. Linn. Soc. Lond. 14 : 549. 1874 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 271. 1892 ; N. E. Br., Kew Bull. 1915 : 228. 1915 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1520. 1928 ; K. Krause in Engl. & Prantl, Pflanzenfam. (ed. 2) 15a : 360. 1930.

Erect herbs, 30-60 cm high ; stem stoloniferous or creeping rhizomes. Leaves radical, 30-60 $\times$ 2.5-3.5 cm, linear, thick, fleshy, convex on the lower

surface, trans versely marked with a number of dark green bars, ending in a solid cusp at apex. Flowers greenish-white with a light smell in clusters of 3-4 on racemose scapes.

Fl. : March-May.

Common above Main falls in the rocky soil.

128. SMILACACEAE

SMILAX Linn.

Smilax zeylanica Linn., Sp. Pl. 1029. 1753 ; Wt., Ic. tt. 2057, 2058. 1853 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 309. 1892 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1518. 1928 ; Koyama, Adv. Front. Pl. Sci. 4 : 50. 1963. *Parukannivalli, Ceruvacayavalli* (Malayalam). *Kathikodi, Ayadi* (Tamil).

Climbing shrubs with tendrils, 3-4 m high ; branches slightly zig-zag or straight, smooth, sparsely prickly. Leaves 4.5-14.5×3.5-7 cm, broadly-elliptic or ovate-oblong, coriaceous, glabrous, shortly acuminate or bluntly cuspidate at apex, cuneate at base ; petioles 1-2 cm long. Flowers greenish-white in many-flowered, axillary, pedunculate umbels. Berries globose, ±0.6 cm in diameter, green.

Fl. & Fr. : July-February.

Common along the sides of the stream in Udayathan estate.

129. DIOSCOREACEAE

DIOSCOREA Linn.

- | | |
|--|---------------------------|
| 1a. Stem twining to the left ; leaves 3-5 foliate | <i>D. pentaphylla</i> 2 |
| 1b. Stem twining to the right ; leaves 1-foliate | |
| 2a. Leaves cordate or truncate and cordate at base | <i>D. wallichii</i> 3 |
| 2b. Leaves acute or rounded at base | <i>D. oppositifolia</i> 1 |

1. **Dioscorea oppositifolia** Linn., Sp. Pl. 1033. 1753 ; Wt., Ic. t. 813. 1844 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 292. 1892 ; Kunth in Engl., Pflanzenr. 87 : 286. 1924 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1512. 1928 ; Prain *et* Burk, Ann. R. Bot. Gard. Calcutta 14 (2) : 392-93,

t. 139. 1938 ; Sant., J. Bombay Nat. Hist. Soc. 49 : 632-33. 1950. *Kanji* (Malayam). *Kavala-kodi*, *Verrilaivalli* (Tamil).

Climbing shrubs, twining to the right ; branches terete, glabrous. Leaves $5-12.5 \times 1-8.5$ cm, lanceate or elliptic-oblong, obtuse or shortly acuminate at apex, rounded or acute at base ; petioles up to 3 cm long. Male flowers in axillary spikes ; female flowers solitary or in simple decurved spikes. Capsules 2.5-3.5 cm in diameter, suborbicular, retuse or 2-lobed at apex, coriaceous, glabrous.

Fl. & Fr. : August-October.

Tuberous plants in the cleared parts of the forest before Tekkumalai.

2. *Dioscorea pentaphylla* Linn., Sp. Pl. 1032. 1754 ; Wt., Ic. t. 814. 1844 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 289. 1892 ; Kunth in Engl., Pflanzenr. 87 : 145. 1924 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1511. 1928 ; Prain *et* Burk., Ann. R. Bot. Gard. Calcutta 14 (2) : 160, t. 57. 1936 ; Sant., J. Bombay Nat. Hist. Soc. 49 : 634. 1950 ; Rao *et* Verma, Bull. Bot. Surv. India 15 : 193. 1973. *Nuran*, *Chaval*, *Korna-pidan* (Malayalam). *Chendukundi*, *Vallaikodi* (Tamil).

Climbing shrubs, 5-6 m high ; twining to the left ; stem prickly, hairy in young parts. Leaves 3-5 foliate ; leaflets $5-12 \times 3-5$ cm, elliptic, lanceate, ovate or obovate, glabrous or rusty pubescent beneath, acute at apex ; rhachis 3-6 cm long, pubescent. Male flowers greenish in axillary racemes forming panicles ; female flowers in slender elongate racemes. Capsules 2-2.5 cm long, oblong, glabrous.

Fl. & Fr. : August-November.

Common around Swamiar falls in Udayathan estate and above Ammathottam.

3. *Dioscorea wallichii* Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 295. 1892 ; Kunth in Engl., Pflanzenr. 87 : 274. 1924 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1512. 1928 ; Prain *et* Burk., Ann. R. Bot. Gard. Calcutta 14 (2) : 281-85, t. 115. 1938 ; Sant., J. Bombay Nat. Hist. Soc. 49 : 633, pl. 1. f. 2. 1950 ; Rao *et* Verma, Bull. Bot. Surv. India 15 : 200. 1973. *Cheranga*, *Vara-kilang*, *Kattu-kilang* (Malayalam).

Climbing shrubs ; stem winged, somewhat prickly towards base. Leaves $6-11.5 \times 3.5-7$ cm, cordate or truncate and cordate, glabrous, acuminate at apex, 7-nerved at base, nerves prominent beneath ; petioles 3.5-5.5 cm long. Female flowers in decurved, slender glabrous spikes, solitary or paired. Capsules 1.5-2 cm broad, truncate at both ends, glabrous or glaucous.

Fl. & Fr. : August.

Courtallum (*Robert Wight s.n.*, CAL).

130. TRICHOPODACEAE

TRICHOPUS Gaertn.

Trichopus zeylanicus Gaertn., *Fruct.* 1 : 44, t. 14. 1788 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 6 : 297. 1892 ; Fischer in Gamble, *Fl. Presid. Madras* 3 (8) : 1513. 1928. *Trichopodium zeylanicum* Thw., *Enum. Pl. Zeyl.* 291. 1861 ; Bedd., *Ic. Pl. Ind. Or.* t. 290. 1874.

Erect, rhizomatous herbs ; rhizome thick, irregular with wiry roots. Leaves 8-12.5×5-7 cm, broadly-triangular ovate, entire or slightly crenate, acute or shortly apiculate at apex, cordate or deltoid and 3-8 ribbed at base ; petioles 3.5-9 cm long, slender, grooved. Flowers small fascicled at the base of leaves ; pedicels 2-4 cm long, filiform. Capsules ±2 cm long, ovoid, long stalked, beaked, indehiscent ; seeds 0.4-0.6 cm long, rugose grooved.

Fl. & Fr. : March-June.

Courtallum (*Robert Wight* 887, CAL).

131. ORCHIDACEAE

1a. Plants terrestrial

2a. Flowers with a prominent spur *Habenaria* 3

2b. Flowers without any spur

3a. Lip saccate at base ; inflorescence glandular-pubescent *Zeuxine* 6

3b. Lip not saccate at base ; inflorescence or flowers glabrous *Disperis* 2

1b. Plants epiphytic

4a. Leaves terete, falcate *Luisia* 4

4b. Leaves dorsiventral

5a. Lips spurred ; flowers in terminal dense racemes *Vanda* 5

5b. Lip not spurred ; flowers solitary or in lateral racemes *Dendrobium* 1

1. DENDROBIUM Sw. *nom. gen. cons.*

Dendrobium macrostachyum Lindl., *Gen. et Sp. Orch.* 78. 1830 & in *Bot. Reg.* t. 1865, misc. 60. 1844 ; Wt., *Ic.* t. 1647. 1851 ; Hook. f. in Hook. f., *Fl. Brit. Ind.* 5 : 735. 1890 ; Kraenzl. in *Engl., Pflanzenr.* 45 :

59. 1910 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1416. 1928 ; Sant. et Kapad., Orch. Bombay 96, pl. 23. 1966.

Pendulous, epiphytic herbs, 7-40 cm long ; stem terete, slender, yellowish when dry. Leaves up to 11.5×2 cm, lanceate or oblong-lanceate, membranous, acute at apex, sheathing at base. Flowers greenish-white, solitary or in 2-4 flowered lateral racemes. Capsules up to 4 cm long, spindle-shaped, green when fresh, beaked.

Fl. & Fr. : January-May.

Rare, in the humid sholas at the higher altitudes of Tekkumalai.

2. DISPERIS Sw.

Disperis zeylanica Trim., J. Bot. 23 : 245. 1885 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 169. 1890. *D. neilgherrensis sensu* Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1478. 1928 (*pro parte, non* Wt., 1851).

Erect, terrestrial, unbranched herbs, 15-20 cm high ; roots tuberous. Leaves 1-4, sessile, $1.2-4.8 \times 0.6-3.6$ cm, ovate or suborbicular, thin, entire, glabrous, acute at apex. amplexicaul at base. Flowers terminal, solitary or in few-flowered racemes ; bracts foliaceous.

Fl. : July.

Courtallum (C.A. Barber 3454, MH).

3. HABENARIA Willd.

Habenaria crinifera Lindl., Gen. et Sp. Orch. 323. 1835 ; Wt., Ic. t. 926. 1844-45 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 142. 1890 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1471. 1928 ; Sant. et Kapad., Orch. Bombay 26. 1966.

Terrestrial herbs with underground tubers ; stem 20-30 cm high, fleshy, pale white below. Leaves 2-4 towards the base of the stem, cauline, $3.5-14 \times 1-3$ cm, oblong-elliptic or oblanceate, glabrous, acute at apex, sheathing at base. Flowers milky-white in colour, in 2-4 flowered terminal racemes ; bracts $\pm 2 \times 0.3$ cm, ovate-lanceate, foliaceous.

Fl. : September-October.

Curious, rare orchids below the third bridge in Tekkumalai.

4. *LUISIA* Gaud.

Luisia teretifolia Gaud., Freyc. Voy. Bot. 427, t. 37. 1826 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 22. 1890 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1948. 1928 ; Sant. *et* Kapad., Orch. Bombay 218. 1966 ; A.V.N. Rao, Bull. Bot. Surv. India 8 : 224. 1966.

Erect epiphytes, 20-30 cm high ; stem thick, brown or ash-grey in colour. Leaves 3.5-12 × 0.2-0.4 cm, falcate, uniformly thick throughout, green molted with purple, rounded or acute at apex, sheathing at base. Flowers dark-pink, drooping, fleshy, in 2-4 flowered short, extra-axillary bracteate racemes. Capsules 2-2.5 cm long, spindle-shaped, ribbed, tapering towards base.

Fl. & Fr. : May-August.

Rare in the highly humid areas of Tekkumalai.

5. *VANDA* R. Br.

Vanda tessellata (Roxb.) Hook. *ex* D. Don in Lond. Hort. Brit. 372. 1830 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1445. 1928 ; Sant. *et* Kapad., Orch. Bombay 220, pl. 51. 1966. *Epidendrum tessellatum* Roxb., Pl. Corom. 1 : 34, t. 42. 1795. *Vanda roxburghii* R. Br. in Bot. Reg. 6 : t. 506. 1820 ; Wt., Ic. t. 916. 1844-45 ; Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 52. 1890. *Maravazha* (Malayalam).

Epiphytic undershrubs ; stem 5-15 cm long, stout with hanging, fleshy, greenish roots. Leaves spreading, up to 30 × 2.5 cm, strap-shaped, conduplicate, thick, fleshy, obtuse or 2-3 lobed at apex, sheathing at base. Flowers greenish-yellow, tessellated, ± 5 cm across in subpendulous or erect racemes, usually longer than the leaves. Capsules 6-8 cm long, oblong, sharply six-winged, long stalked.

Fl. & Fr. : March-August.

Common in Udayathan estate and plains around Tiger falls.

6. *ZEUXINE* Lindl.

Zeuxine longiglavis (Lindl.) Benth. *ex* Hook. f. in Hook. f., Fl. Brit. Ind. 6 : 107. 1890 ; Fischer in Gamble, Fl. Presid. Madras 3 (8) : 1456. 1928 ; Sant. *et* Kapad., Orch. Bombay 169, pl. 39, 1966 ; A.V.N.

Rao, Bull. Bot. Surv. India 8 : 226. 1966. *Monochilus longiglabre* Lindl., Gen. et Sp. Orch. 487. 1840 & in J. Linn. Soc. Lond. 1 : 186. 1857.

Terrestrial herbs, up to 40 cm high ; rhizomes fleshy, creeping. Leaves clustered at the base, up to 5×2.5 cm, ovate-oblong or ovate-lanceate, thin, glabrous, acute at apex, sheathing at base ; petioles up to 2 cm long. Flowers yellowish in terminal, somewhat glandular-pubescent, slender spikes. Capsules up to 0.7 cm long, ovoid, ribbed, beaked.

Fl. & Fr. : March-June.

Occasional, in Tekkumalai in the humid shady areas.

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SEQUENCE OF FAMILIES

1. Annonaceae 21
2. Myristicaceae 26
3. Lauraceae 26
4. Chloranthaceae 28
5. Piperaceae 29
6. Aristolochiaceae 30
7. Nymphaeaceae 32
8. Ranunculaceae 33
9. Menispermaceae 33
10. Sabiaceae 37
11. Ulmaceae 37
12. Moraceae 38
13. Urticaceae 44
14. Nyctaginaceae 49
15. Molluginaceae 50
16. Caryophyllaceae 51
17. Portulacaceae 52
18. Amaranthaceae 52
19. Polygonaceae 57
20. Plumbaginaceae 58
21. Theaceae 59
22. Elatinaceae 59
23. Guttiferae 60
24. Tiliaceae 62
25. Sterculiaceae 66
26. Malvaceae 70
27. Lecythidaceae 77
28. Droseraceae 77
29. Flacourtiaceae 78
30. Violaceae 80
31. Passifloraceae 81
32. Ancistrocladaceae 82
33. Begoniaceae 82
34. Cucurbitaceae 84
35. Capparaceae 87
36. Cleomaceae 91
37. Cruciferae 92
38. Sapotaceae 92
39. Ebenaceae 94
40. Symplocaceae 94
41. Myrsinaceae 95
42. Crassulaceae 95
43. Papilionaceae 97
44. Caesalpiniaceae 112
45. Mimosaceae 126
46. Podostemaceae 132
47. Haloragaceae 132
48. Lythraceae 133
49. Myrtaceae 134
50. Onagraceae 134
51. Melastomataceae 135
52. Combretaceae 139
53. Alangiaceae 143
54. Olacaceae 143
55. Erythropalaceae 144
56. Opiliaceae 144
57. Santalaceae 145
58. Loranthaceae 146
59. Viscaceae 151
60. Hippocrateaceae 153
61. Celastraceae 154
62. Icacinaceae 156
63. Buxaceae 158
64. Euphorbiaceae 158
65. Bischofiaceae 181
66. Stilaginaceae 181
67. Rhamnaceae 182
68. Leeaceae 184
69. Vitaceae 184
70. Sapindaceae 188
71. Burseraceae 190
72. Anacardiaceae 191
73. Rutaceae 194
74. Meliaceae 202
75. Oxalidaceae 204
76. Balsaminaceae 206
77. Erythroxylaceae 210
78. Linaceae 210

- | | | | |
|-----------------------|-----|-----------------------|-----|
| 79. Malpighiaceae | 211 | 106. Rubiaceae | 307 |
| 80. Polygalaceae | 212 | 107. Compositae | 327 |
| 81. Araliaceae | 214 | 108. Hydrocharitaceae | 342 |
| 82. Umbelliferae | 215 | 109. Aponogetonaceae | 343 |
| 83. Loganiaceae | 218 | 110. Xyridaceae | 343 |
| 84. Potaliaceae | 219 | 111. Commelinaceae | 344 |
| 85. Gentianaceae | 220 | 112. Eriocaulaceae | 350 |
| 86. Apocynaceae | 221 | 113. Cyperaceae | 351 |
| 87. Asclepiadaceae | 226 | 114. Gramineae | 362 |
| 88. Periplocaceae | 234 | 115. Bambusaceae | 388 |
| 89. Solanaceae | 235 | 116. Zingiberaceae | 389 |
| 90. Convolvulaceae | 240 | 117. Costaceae | 390 |
| 91. Hydrophyllaceae | 248 | 118. Cannaceae | 390 |
| 92. Boraginaceae | 248 | 119. Marantaceae | 391 |
| 93. Ehretiaceae | 249 | 120. Palmae | 391 |
| 94. Verbenaceae | 249 | 121. Pandanaceae | 392 |
| 95. Labiatae | 255 | 122. Araceae | 393 |
| 96. Buddlejaceae | 262 | 123. Liliaceae | 394 |
| 97. Oleaceae | 263 | 124. Amaryllidaceae | 396 |
| 98. Scrophulariaceae | 269 | 125. Hypoxidaceae | 397 |
| 99. Gesneriaceae | 278 | 126. Asparagaceae | 397 |
| 100. Bignoniaceae | 283 | 127. Agavaceae | 398 |
| 101. Acanthaceae | 285 | 128. Smilacaceae | 399 |
| 102. Thunbergiaceae | 302 | 129. Dioscoreaceae | 399 |
| 103. Pedaliaceae | 303 | 130. Trichopodaceae | 401 |
| 104. Lentibulariaceae | 303 | 131. Orchidaceae | 401 |
| 105. Campanulaceae | 305 | | |

INDEX TO BOTANICAL NAMES (Synonyms in italics)

- Abelmoschus Med. 71
 moschatus Med. 71
 rugosus Wt. et Arn. 71
Abildgardia monostachya (Linn.) Vahl 357
 Abrus Adans. 100
 precatorius Linn. 100
 Abutilon Mill. 71
 indicum (Linn.) Sweet 71
 Acacia Mill. 127
 caesia Wt. et Arn. 127
 ferruginea DC. 127
 intsia Willd. var. *caesia* (Wt. et Arn.) Baker 127
 odoratissima Willd. 129
 procera Willd. 129
 speciosa (Linn.) Willd. 128
 stipulata (Roxb.) DC. 128
 torta (Roxb.) Craib 127
 Acalypha Linn. 161
 fruticosa Forssk. 161
 indica Linn. 161
 paniculata Miq. 162
 racemosa Wall. ex Baill. 162
ACANTHACEAE 285
 Acanthospermum Schrark. 329
 hispidum DC. 329
 Achyranthes Linn. 53
 aspera Linn. 53
 bidentata Bl. 53
 corymbosa Linn. 51
 lanata Linn. 54
 lappacea Linn. 57
 nuda Heyne ex Wall. 57
 prostrata Linn. 55
 Acrocephalus Benth. 256
 capitatus (Roth) Benth. 256
 indicus (Burm.f.) O. Ktze. 256
 Acronychia Forst. et Forst. f. 195
 barberi Gamble 195
 laurifolia Bl. 195
 pedunculata (Linn.) Miq. 195
Adathoda betonica Nees 295
 Adenia Forssk. 81
 hondala (Gaertn.) de Wild. 81
 palmata (Lamk.) Engl. 81
Adina cochinchinensis Lour. 324
 Aegle Correa 195
 marmelos (Linn.) Correa 195
 Aerva Forssk. 54
 lanatna (Linn.) Juss. 54
 Aeschynanthus Jack. 279
 ceylanica Wt. 279
 perrottetii A. DC. 279
 perrottetii var. *planiculmis* Clarke 279
 planiculmis (Clarke) Gamble 279
 Aeschynomene Linn. 100
 indica Linn. 100
 Aganosma G. Don 222
 cymosa var. *elegans* (G. Don) Hook.f. 222
 cymosum (Roxb.) G. Don 222
 elegans G. Don 222
AGAVACEAE 398
 Aglaia Lour. 202
 bourdillonii Gamble 203
 courtallensis Gamble 203
 elaegnoidea (Juss.) Benth. 202
 var. *bourdillonii* (Gamble) K.K. N. Nair 203
 var. *courtallensis* (Gamble) K.K. N. Nair 203
 odorata Lour. 203

- roxburghiana sensu* Bedd. 203
roxburghiana (Wt. et Arn.)
 Miq. 202
 var. *courtallensis* Gamble 203
Agrostis diandra Retz. 386
Agrostis procera Retz. 377
Agrostistachys Dalz. 162
gauchandii Hook.f. 162
indica Dalz. 162
longifolia (Wt.) Benth. var.
genuina Muell.-Arg. 162
meeboldii Pax et K. Hoffm. 163
Aikinia carnosae G. Don 281
ALANGIACEAE 143
Alangium Lamk. 143
decapetalum Lamk. 143
lamarckii Thw. 143
salvifolium (Linn.f.) Wanger. 143
Albizia Durr. 128
chinensis (Osbeck.) Merr. 128
lebbeck (Linn.) Benth. 128
marginata Merr. 128
odoratissima (Linn.f.) Benth. 129
procera (Roxb.) Benth. 129
stipulata Boiv. 128
Allopteropsis J.S. Persl. ex C.B.
 Persl. 365
cimicina (Linn.) Stapf 365
Alpinia Roxb. 389
cardamomum Roxb. 389
malaccensis (Burm.f.) Rosc. 389
Alstonia R. Br. 222
scholaris (Linn.) R. Br. 222
venenata R. Br. 223
Alternanthera Forssk. 54
sessilis (Linn.) R. Br. ex DC. 54
triandra Lamk. 54
AMARANTHACEAE 52
Amaranthus Linn. 55
spinosus Linn. 55
AMARYLLIDACEAE 396
Amischophacelus Rolla Rao et
 Kammathy 344
axillaris (Linn.) Rolla Rao et
 Kammathy 344
Ammannia Linn. 133
baccifera Linn. 133
cordata Wt. et Arn. 134
salicifolia Hiern 133
Amomum cardamomum Linn. 389
Ampelocissus Planch 185
arnottiana Planch. 185
Amphilophis pertusa (Linn.) Nash ex
 Stapf 367
Amyris dentata Willd. 197
ANACARDIACEAE 191
Anacardium Linn. 192
occidentale Linn. 192
Anamirta Colebr. 34
cocculus (Linn.) Wt. et Arn. 34
paniculata Colebr. 34
ANCISTROCLADACEAE 82
Ancistrocladus Wall. ex Arn. 82
heyneanus Wall. ex Grah. 82
Andrographis Nees 287
echioides (Linn.) Nees 287
lobelioides (Nees) Wt. 288
paniculata (Burm. f.) Wall. ex
 Nees 288
Andropogon aciculatus Retz. 371
Andropogon barbatus Linn. 370
Andropogon caesius Nees ex Hook.
 f. 372
Andropogon coloratus Nees 372
Andropogon contortus Linn. 378
Andropogon courtallensis Steud. 365
Andropogon gidarba Ham. ex
 Hook. f. 372
Andropogon nardus Linn. var. *colora-*
tus (Nees) Hook. f. 372
Andropogon pertusus (Linn.)
 Willd. 367
Andropogon schoenanthus Linn.
 subsp. *genuinus* var. *caesius*
 Hack. 372
 var. *gracillimus* Hook. f. 372
Andropogon serratus Thunb. 386
Andropogon zeylanicus Nees ex
 Steud. 371

- Aneilema* R. Br. 345
 dimorpha Dalz. 348
 dimorpha sensu Fyson 349
 esculentum Wall. ex Clarke 349
 loriforme Hassk. 349
 montanum (Wt.) Clarke 345
 nudiflorum R. Br. var. *terminalis* (Wt.) Clarke 349
 paniculata Wt. 348
 pulneyense Fyson 349
 terminalis Wt. 349
 zeylanicum Clarke var. *longicapsa* Clarke 349
Anisochilus Benth. ex Wall. 256
 carnosus (Linn. f.) Wall. ex Benth. 256
Anisomeles R. Br. 257
 malabarica (Linn.) R. Br. ex Sims 257
ANNONACEAE 21
Anogeissus Wall. ex Guill. et Perr. 140
 latifolia (Roxb. ex DC.) Wall. ex Bedd. 140
Anotis monosperma Wt. et Arn. 320
Anthistiria cymbaria Roxb. 387
 Anthistiria imberbis Retz. 387
Anthocometes aristatus Nees 295
Antidesma Linn. 181
 alexiteris Linn. 181
 zeylanicum Lamk. 181
Antirrhinum gratissimum Roxb. ex Hook. f. 272
Apama Lamk. 30
 siliquosa Lamk. 30
Apium involucratum Roxb. ex Flem. 217
Apocopis Nees 365
 courtallumensis (Steud.) Henr. 365
 wightii Nees ex Thw. 365
APOCYNACEAE 221
Apocynum frutescens Linn. 225
Aponogeton Linn. f. 343
 monostachyon Linn. f. 343
 natans (Linn.) Engl. et E. Krause 343
APONOGETONACEAE 343
ARACEAE 393
Arachis fruticosa Retz. 119
ARALIACEAE 214
Argyreia Lour. 240
 aggregata (Roxb.) Choisy 241
 nervosa (Burm. f.) Bojer 241
 osyrensis (Roth) Choisy var. *aggregata* (Roxb.) K.K.N. Nair 241
 speciosa Sweet 241
 tiliaefolia (Desr.) Wt. 247
Aristida Linn. 366
 funicularis Trin. et Steud. 366
 funiculata Trin. et Rupr. 366
 setacea Retz. 366
Aristalochia Linn. 31
 acuminata Roxb. 32
 bracteata Retz. 31
 bracteolata Lamk. 31
 indica Linn. 31
 roxburghiana Klotzsch 32
 tagala Cham. 32
ARISTOLOCHIACEAE 30
Arundinella Raddi 367
 mesophylla Nees ex Steud. 367
 setosa Trin. 367
ASCLEPIADACEAE 226
Asclepias acida Roxb. 231
Asclepias asthmatica Linn. f. 232
Asclepias gigantea Linn. 226
Asclepias tunicata Roxb. 230
Asclepias volubilis Linn. f. 233
Aspalanthus indicus Linn. 113
ASPARAGACEAE 397
Asparagus Linn. 397
 racemosus Willd. 397
Astragen zeylanica Linn. 33
Asystasia Bl. 288
 chelonoides Nees 288

- var. *quadrangularis* Clarke 288
coromandeliana Wt. ex Nees 289
gangetica (Linn.) T. Anders. 289
Atalantia Correa 196
ceylanica (Arn.) Oliv. 197
floribunda Wt. 196
malabarica (Raf.) Tanaka 196
monophylla DC. 196
spinosa (Willd.) Tanaka 196
wightii Tanaka 197
Atylosia Wt. et Arn. 101
albicans (Wt. et Arn.) Benth. 101
scarabaeoides (Linn.) Benth. 101
Axonopous cimicina (Linn.)
 Beauv. 365
Bacopa Audub. 270
monnieri (Linn.) Wettst. 270
Ballota suaveolens Linn. 258
BALSAMINACEAE 206
Bambusa Schreb. 388
arundinacea Willd. 388
BAMBUSACEAE 388
Banisteria benghalensis Linn. 211
Barleria Linn. 289
acuminata Wt. ex Nees 289
courtallica Nees 290
cuspidata Heyne ex Nees 290
pilosa Heyne ex Nees 290
tomentosa Roth var. *acuminata*
 Clarke 289
Barnadria indica Wt. 396
Basilicum Moench 257
polystachyon (Linn.)
 Moench 257
Bassia latifolia Roxb. 93
Bassia longifolia Koen. ex Linn. 92
Bauhinia Linn. 122
racemosa Lamk. 122
Begonia Linn. 82
albo-coccinea Hook. 83
fallax DC. 84
grahamiana Wt. 83
malabarica Poir. 84
BEGONIACEAE 82
Bergia Linn. 59
ammanoides Heyne ex Roth 59
 var. *pentandra* Wt. 59
Bidens Linn. 329
bipinnata Linn. 329
pilosa Linn. var. *bipinnata*
 Hook. f. 329
 var. *decomposita*
 Hook. f. 329
Bignonia atrovirens Heyne ex
 Roth 284
Bignonia caudata DC. 284
Bignonia chelonoides sensu
 Roxb. 284
Bignonia crispa Buch.-Ham. 284
BIGNONIACEAE 283
Biophytum DC. 204
intermedium Wt. 204
sensitivum (Linn.) DC. 205
Bischofia Bl. 181
javanica Bl. 181
BISCHOFIACEAE 181
Blachia Baill. 163
calycina Benth. 163
umbellata (Willd.) Baill. 164
Blainvillea Cass. 330
acmella (Linn.) Philips. 330
latifolia (Linn.f.) DC. 330
rhomboidea Cass. 330
Blepharispermum Wt. ex DC. 330
petiolare Wt. ex DC. 330
Blumea DC. 331
amplectens DC. 331
mollis (D. Don) Merr. 331
obliqua (Linn.) Druce 331
spectabilis DC. 332
wightiana DC. 331
Boehmeria Jacq. 44
malabarica Wedd. 44
travancorica Bedd. 44
Boerhavia Linn. 49
diffusa Linn. 49
procumbens Roxb. 49

- repens* Linn. 49
Bonnaya brachiata Link et Otto 273
Bonnaya hyssopoides Wt. 274
Bonnaya veronicifolia (Retz.) Spreng. 272
BORAGINACEAE 248
Borassus Linn. 391
aethiopum Mart. 391
flabellifer Linn. 391
Borreria articularis (Linn. f.) F.N. Will. 326
Borreria hispida (Linn.) K. Schum. 326
Borreria ocymoides (Burm.f.) DC. 326
Bothriochloa O. Ktze. 367
pertusa (Linn.) A. Camus 367
Brachiaria Griseb. 368
eruciformis (J.E. Sm.) Griseb. 368
ramosa (Linn.) Stapf 368
remota (Retz.) Haines 369
Brachypterum benthamii Thw. 108
Bradleia zeylanica Gaertn. 172
Bragantia wallichii R. Br. ex. Wt. et Arn. 30
Bramia monnieri (Linn.) Pennell 270
Breynia Forst. et Forst.f. 164
palmata Linn. 81
patens Rolfe 164
retusa (Dennst.) Alston 164
rhamnoides (Retz.) Muell.-Arg. 164
Bridelia Willd. 165
scandens (Roxb.) Willd. 165
stipularis (Linn.) Bl. 165
stipularis Muell.-Arg. 165
Bryonia maysorensis Wt. et Arn. 86
Bryophyllum calycinum Saliso. 95
Bryophyllum pinnatum (Lamk.) Kurz 95
Buchanania Spreng. 192
lanzan Spreng. 192
latifolia Roxb. 192
Buchnera angustifolia D. Don 276
Buchnera asiatica Linn. 276
Buchnera euphrasioides Benth. 276
Buchnera hirsuta Benth. 276
Buddleja Linn. 262
asiatica Lour. 262
discolor Roth 262
BUDDLEJACEAE 262
Bulbostylis Kunth 352
barbata (Rottb.) Clarke 352
BURSERACEAE 190
BUXACEAE 158
Cacalia sonchifolia Linn. 335
Cadaba Forssk. 86
trifoliata Wt. et Arn. 86
CAESALPINIACEAE 122
Cailliea cinerea (Linn.) Macbr. 130
Calamus Linn. 392
pseudo-tenuis Becc. 392
Callicarpa Linn. 250
lantana Linn. 250
tomentosa (Linn.) Murr. 250
Callistephus wightianus DC. 338
Calophyllum Linn. 60
blumei Wt. 60
inophyllum Linn. 60
Calotropis R. Br. 227
gigantea (Linn.) R. Br. 227
Calycopteris Lamk. 140
floribunda (Roxb.) Lamk. 140
Camellia Linn. 59
sinensis (Linn.) O. Ktze. 59
thea Link 59
CAMPANULACEAE 305
Canarium Linn. 191
strictum Roxb. 191
Canavalia Adans. 101
ensifomis Baker 102
ensifomis (Linn.) DC. var.
gladiata (Jacq.) O. Ktze. 102
var. *virosa* (Roxb.) Baker 102
gladiata (Jacq.) DC. 102
virosa (Roxb.) Wt. et Arn. 102
Canna Linn. 390

- indica* Linn. var. *orientalis* (Rosc.) Baker 390
orientalis Rosc. 390
CANNACEAE 390
Canscora Lamk. 220
 heteroclita (Linn.) Gilg 220
 sessiliflora Roem. et Schult. 220
Cansjera Juss. 145
 rheedii Gmel. 145
 scandens Roxb. 145
Cantharospermum albicans Wt. et Arn. 101
Cantharospermum pauciflorum Wt. et Arn. 101
Canthium Lamk. 309
 angustifolium Roxb. 309
 leschenaultii Wt. et Arn. 309
 parviflorum Lamk. 309
 rheedii DC. 309
CAPPARACEAE 86
Capparis Linn. 87
 baducca auct. non Linn. 89
 bisperma Roxb. 89
 divaricata Lamk. 87
 diversifolia Wt. et Arn. 88
 fusifera Dunn 88
 grandis Linn.f. 89
 heyneana Wall. ex Wt. et Arn. 89
 horrida Linn. f. 90
 parviflora Bedd. 88
 parviflora Hook.f. et Thoms. 89
 pyrifolia non Hook.f. et Thoms. 90
 rheedii DC. 89
 stylosa DC. 87
 zeylanica Linn. 90
Capraria crustacea (Linn.) F. Muell. 274
Cardamine Linn. 92
 hirsuta Linn. 92
Cardiospermum Linn. 188
 helicacabum Linn. 188
Carex Linn. 352
 filicina Nees 352
 ovata Burm.f. 357
Careya Roxb. 77
 arborea Roxb. 77
Carissa Linn. 224
 carandas Linn. 224
Carmona Cav. 249
 microphylla (Lamk.) D. Don 249
 retusa (Vahl) Masamune 249
Carum roxburghianum Kurz 217
CARYOPHYLLACEAE 51
Casearia Jacq. 78
 bourdillonii Mukherjee 78
 varians Bedd. 78
Cassia Linn. 122
 absus Linn. 123
 alata Linn. 123
 angustissima Lamk. 125
 auriculata Linn. 124
 fistula Linn. 124
 florida Vahl 125
 hirsuta Linn. 124
 mimosoides Linn. 125
 occidentalis Linn. 125
 siamea Lamk. 125
 tomentosa Wall. ex Baker 124
Cassine Linn. 154
 glauca (Rottb.) O. Ktze. 154
Catha wallichii G. Don 155
Catharanthus G. Don 223
 roseus (Linn.) G. Don 223
Catimbium malaccense (Burm.f.) Holtum 389
Cayratia Juss. 185
 pedata (Lamk.) Juss. ex Gagnep. 185
CELASTRACEAE 154
Celastrus Linn. 155
 oppositus Wall. 156
 paniculata Willd. 155
 wallichiana Spreng. ex Wt. et Arn. 155
Celosia Linn. 55

- polygonoides Retz. 55
 Celtis Linn. 37
 cinnamomea Lindl. ex Planch. 37
 orientalis Linn. 38
 wightii Planch. 37
 Cenchrus granularis Linn. 378
 Cenchrus lappaceus Linn. 369
 Centella Linn. 216
 asiatica (Linn.) Urb. 216
 Centotheca Desv. 369
 lappacea (Linn.) Desv. 369
 latifolia (Dbs.) Trin. 369
 Centratherum Cass. 332
 anthelminticum (Linn.)
 O. Ktze. 332
 molle Benth. var. tenue Wt. 332
 tenue (Wt.) Clarke 332
 Ceropogia Linn. 227
 biflora Linn. 228
 candelabrum Linn. 228
 elegans Wall. 228
 elliotti Hook.f. 228
 intermedia Wt. 228
 mysorensis Wt. 228
 tuberosa Roxb. 228
 walkeriae Wt. 228
 Chaetaria setacea (Retz.)
 Beauv. 366
 Chalcas paniculata Linn. 200
 Chassalia curviflora auct. non (Wall.)
 Thw. 324
 Chassalia ophioxylodes (Wall. ex
 Roxb.) Craib 324
 Chilmoria pentandra Ham. 79
 Chiococca malabarica Dennst. 316
 Chionanthus Linn. 263
 courtallensis Bedd. 263
 leprocarpa Thw. var. courtallen-
 sis (Bedd.) K.K.N. Nair et
 Janardh. 263
 linocieroides (Wt.) Bennett et
 Raizada 264
 malabaricus (Wall. ex G. Don)
 Bedd. 264
 mala-elengi (Dennst) P.S.
 Green 264
 ramiflorus Roxb. 264
 zeylanicus Linn. 265
 CHLORANTHACEAE 28
 Chloranthus brachystachys sensu
 Hook.f. 28
 Chloranthus grandifolius Miq. 28
 Chloris Sw. 370
 barbata (Linn.) Sw. 370
 dandyana Adams 370
 dolichostachya Lag. 370
 incompleta Roth 370
 Chlorophytum Ker.-Gawl 394
 heyneanum Wall. ex Hook. f. 394
 heynei Baker 394
 laxum R. Br. 395
 Chomelia asiatica (Linn.)
 O. Ktze. 326
 Chrozophora Neck. ex Juss. 166
 rottleri (Geiseler) Juss. ex
 Spreng. 166
 Chrysopogon Trin. 370
 aciculatus (Retz.) Trin. 370
 zeylanicus (Nees ex Steud.)
 Thw. 370
 Cicendia fastigiata Griseb. 221
 Cinnamomum Schaeff. 26
 iners auct. (non Bl.) 26
 macrocarpum Hook. f. 26
 verum J.S. Persl. 27
 zeylanicum Bl. 27
 Cipadessa Bl. 203
 baccifera (Roth) Miq. 203
 fruiticosa Bl. 203
 Cissampelos Linn. 34
 convolvulacea Willd. 34
 ovata Poir. 36
 pareira Linn. 34
 Cissus Linn. 186
 heyneana (Wall.) Planch. 186
 pedata Lamk. 185

- quadrangularis* Linn. 186
repanda Vahl 187
Claoxylum muricatum Wt. 174
Clausena Burm.f. 197
 dentata (Willd.) M.J. Roem. 197
 willdenovii Wt. et Arn. 197
Clematis zeylanica (Linn.) Poir. 33
CLEOMACEAE 91
Cleome Linn. 91
 icosandra Linn. 91
 monophylla Linn. 91
 viscosa Linn. 91
Clerodendrum Linn. 251
 infortunatum non Linn. 251
 viscosum Vent. 251
Clinogyne virgata (Roxb.) Benth. ex Baker 391
Clitoria Linn. 102
 ternatea Linn. 102
Cluytia scandens Roxb. 165
Cluytia stipularis Linn. 165
Cocculus DC. 35
 burmanni DC. 35
 cordifolius DC. 34
 hirsutus (Linn.) Diels 35
 suberosus DC. 34
 villosus (Lamk.) DC. 35
Coffea Linn. 310
 travancorensis Wt. et Arn. 310
 wightiana Wall. ex Wt. et Arn. 310
Coldenia Linn. 248
 procumbens Linn. 248
Columnnea heterophylla Roxb. 272
COMBRETACEAE 139
Combretum Loefl. 141
 extensum Roxb. 141
 latifolium Bl. 141
 ovalifolium Roxb. 141
Commelina Linn. 345
 axillaris Linn. 344
 benghalensis Linn. 345
 cristata Linn. 347
 ensifolia R. Br. 346
 obliqua Buch.-Ham. ex D. Don 346
 paludosa Bl. 346
 undulata Clarke var. *setosa* Clarke 346
COMMELINACEAE 344
Commiphora Jacq. 191
 caudata (Wt. et Arn.) Engl. 191
COMPOSITAE 327
Conocarpus latifolius Roxb. ex DC. 140
CONVOLVULACEAE 240
Convolvulus alsinoides Linn. 242
Convolvulus cairicus Linn. 243
Convolvulus nervosus Burm. f. 241
Convolvulus nil Linn. 244
Convolvulus obscurus Linn. 244
Convolvulus pentaphyllus Linn. 246
Convolvulus pes-caprae Linn. 244
Convolvulus sinensis Desr. 245
Convolvulus tiliaefolius Desr. 247
Convolvulus tridentatus Linn. 246
Convolvulus turpethum Linn. 247
Convolvulus umbellatus Linn. 246
Conyza Less. 333
 ambigua DC. 335
 anthelmintica Linn. 332
 cinerea Linn. 341
 leucantha (D. Don) F. Ludlow et Raven 333
 leucodasys Miq. 335
 vicidula Wall. 333
Corchorus Linn. 62
 acutangulus Lamk. 62
 aestuans Linn. 62
Cordia retusa Vahl 249
COSTACEAE 390
Costus Linn. 390
 speciosus (Koen.) Smith 390
Cotyledon pinnata Lamk. 95
Cracca purpurea Linn. 121
Cracca villosa Linn. 121
Crassocephalum Moench 333
 crepidioides (Benth.) Moore 333
CRASSULACEAE 95
Crataeva Linn. 90
 marmelos Linn. 196

- nurvala* Buch.-Ham. 90
religiosa var. *nurvala* (Buch.-Ham.) Hook.f. et Thoms. 90
Crinum Linn. 396
latifolium Linn. 396
Crossandra Salisb. 291
axillaris Nees 291
infundibuliformis (Linn.) Nees 291
undulaefolia Salisb. 291
Crotalaria Linn. 103
albida Heyne ex Roth 103
latifolia Roxb. ex Wt. et Arn. 105
linifolia Linn.f. var. *tecta* (Roth) K.K.N. Nair 104
mucronata Desv. 105
mysorensis Roth 105
nana Burm.f. 105
pallida Ait. 105
striata DC. 105
subperfoliata Wt. ex Wt. et Arn. 106
tecta Roth 104
umbellata Wt. ex Wt. et Arn. 105
verrucosa Linn. 106
Croton Linn. 166
bonplandianum Baill. 166
klotzchianus (Wt.) Thw. 167
macrophyllus Bl. var. *peninsularis* Hook.f. 167
malabaricus Bedd. 167
moluccanum Linn. 171
philippense Lamk. 174
plicata Hook.f. 166
rhamnifolius Willd. 175
rottleri Geiseler 166
sparsiflorus Morong 166
umbellatum Willd. 164
umbellatum Wt. 163
CRUCIFERAE 92
Cryptolepis R. Br. 234
buchnanii Roem. et Schult. 234
grandiflora Wt. 235
reticulata (Roxb.) K. Schum. 234
Cryptophragmium canescens Nees 294
Cucumis maderaspatana Linn. 85
CUCURBITACEAE 84
Curculigo Gaertn. 397
orchioides Gaertn. 397
Cyanotis D. Don 347
arachnoidea Clarke var. *thwaitesii* (Hassk.) Rolla Rao et Kamma-thy 347
axillaris (Linn.) Schult. et Schult. f. 344
cristata (Linn.) D. Don 347
fasciculata (Heyne ex Roth) Roem. et Schult.f. 347
var. *thwaitesii* (Hassk.) Clarke 347
lanceolata Wt. 348
thwaitesii Hassk. 347
villosa Schult.f. 348
Cyathula Bl. 55
prostrata (Linn.) Bl. 55
Cyclea Arn. et Wt. 35
burmanni (DC.) Hook.f. et Thoms. 35
peltata (Lamk.) Hook.f. et Thoms. 35
Cyclostemon macrophyllus Bourd. 167
Cyclostemon macrophyllus Bl. var. *sessiliflora* Bedd. 167
Cymbopogon Spreng. 371
caesius (Nees ex Hook.f.) Stapf 372
coloratus Stapf 372
gidarba (Ham. ex Hook.f.) Haines 372
Cyminoe pedunculata Roxb. 195
Cynanchum Linn. 230
indicum Burm.f. 232
pauciflorum R. Br. 230
tunicatum (Retz.) Alston 230

- Cynosurus aegyptica* Linn. 373
Cynosurus indica Linn. 375
CYPERACEAE 351
Cyperus Linn. 352
 brevifolius (Rottb.) Hassk. 358
 castaneus Willd. 353
 compactus Retz. 359
 dubius Rottb. 359
 exaltatus Retz. 353
 flavidus Clarke 355
 globosus All. 360
 iria Linn. 353
 killigia Endl. 358
 melanospermus (Nees) Swing. 358
 monostachyos Linn. 357
 pangorei Rottb. 354
 paniceus (Rottb.) Boeck. 360
 pilosus Vahl 354
 polystachyos Rottb. 361
 squarrosus Linn. 360
 tegetum Roxb. 354
 tenuispica Steud. 354
Cytisus pinnatus Linn. 116

Dactyloctenium Willd. 373
 aegyptium (Linn.) Beauv. 373
Daedalacanthus montanus T. Anders. 293
Dalbergia Linn.f. 106
 emarginata Prain 108
 frondosa Roxb. ex DC. 107
 horrida (Dennst.) Mabberley 107
 var. *glabrescens* (Prain) Thoth. et K.K.N. Nair 107
 javanica Miq. 108
 lanceolaria Linn.f. 107
 latifolia Roxb. var. *sissoides* (Grah. ex Wt. et Arn.) Baker 108
 multiflora Heyne ex Prain 107
 var. *glabrescens* Prain 107
 scandens Roxb. 109
 sissoides Grah. ex Wt. et Arn. 108
 sympathetica Nimmo ex Grah. 107
 var. *glabrescens* Parin 107
Dalium coromandelicum Houtt. 193
Decaneurum divergens (Roxb.) DC. 341
Deguelia timoriensis (DC.) Taub. 109
Delonix Raf. 126
 regia (Bojer ex Hook.) Raf. 126
Dendrobium Sw. 401
 macrostachyum Lindl. 401
Dendrophthoe Mart. 146
 falcata (Linn.f.) Etting. 146
Derris Lour. 108
 benthamii (Thw.) Thw. 108
 paniculata Benth. 108
 scandens (Roxb.) Benth. 109
 timoriensis (DC.) Pittier 109
Desmodium Desv. 109
 heterophyllum (Willd.) DC. 109
 latifolium (Roxb. ex Ker.) DC. 110
 pulchellum (Linn.) Benth. 116
 pyronii DC. 110
 triflorum (Linn.) DC. 110
 var. *majus* Wt. et Arn. 109
 velutinum (Willd.) DC. 110
 walkeri Arn. 110
 wightti Grah. ex Wt. et Arn. 110
Desmos pannosus (Dalz.) Stafford 22
Dianthera bicalyculata Retz. 297
Dichrostachys (A. DC.) Wt. et Arn. 128
 cinerea (Linn.) Wt. et Arn. 129
 cinerea (Willd.) Wt. et Arn. 130
Dicliptera Juss. 291
 cunneata Nees 291
DICOTYLEDONS 20
Dicraeia stylosa Wt. 132
Dicrema pulchellum (Linn.) DC. 116
Dictyospermum montanum Wt. 345
Didymocarpus Wall. ex Buch.—Ham. 279

- innominatus* Burt 279
rottlerianus Clarke 279
tomentosa Wt. 281
Digitaria Hallier 373
 ciliaris (Retz.) Koel. 373
 longiflora (Retz.) Pers. 374
 marginata Link 373
 var. *extensum* Hook. f. 373
Dioscorea Linn. 399
 oppositifolia Linn. 399
 pentaphylla Linn. 400
 wallichii Hook. f. 400
DIOSCOREACEAE 399
Diospyros Linn. 94
 assimilis Bedd. 94
 ebenum Koen. ex Retz. 94
Diploclinum lindleyanum Wt. 84
Dipterosperma personatum
 Hassk. 284
Disperis Sw. 402
 neilgherrensis sensu Fischer 402
 zeylanica Trim. 402
Dodonaea Mill. 188
 burmanniana DC. 188
 viscosa (Linn.) Jacq. 188
Dolichandrone (Fenzl) Seem. 284
 atrovirens (Heyne ex Roth)
 Sprague 284
 crispa Seem. 284
Dolichos Lamk. 111
 ensiformis Linn. 102
 falcatus Klein ex Willd. 111
 gladiatus Jacq. 102
 lablab Linn. 115
 purpureus Linn. 115
 scarabaeoides Linn. 101
 trilobus Linn. 111
 virens Roxb. 102
Donax virgata (Roxb.) K.
 Schum. 391
Dopatrium Buch.-Ham. ex
 Benth. 270
 juncum (Roxb.) Buch.-Ham. 270
Dorstenia Linn. 38
 indica Wt. 38
Dracaena Vand. ex Linn. 398
 terniflora Roxb. 398
Dregea volubilis (Linn. f.) Benth. ex
 Hook. f. 233
Drosera Linn. 77
 burmanni Vahl 77
DROSERACEAE 77
Drymaria Willd. ex Roem. et
 Sult. 51
 cordata (Linn.) Willd. ex Roem.
 et Sult. 51
 subsp. *diandra* (Bl.) Duke 51
 diandra Bl. 51
 villosa subsp. *villosa* 51
Drypetes Vahl 167
 longifolia Pax et K. Hoffm. 168
 oblongifolia (Bedd.) Airy Shaw
 167
Dunbaria Wt. et Arn. 111
 ferruginea Wt. et Arn. 111
 latifolia Wt. et Arn. 111
EBENACEAE 94
Ecbolium Kurz 292
 linnaeanum Kurz 292
 viride (Forssk.) Alston 292
Echinochloa Beauv. 374
 colonum (Linn.) Link 374
Echites cymosa Roxb. 222
Echites scholaris Linn. 222
Eclipta Linn. 334
 alba (Linn.) Hassk. 334
 latifolia Linn. f. 330
 prostrata (Linn.) Linn. 334
Ehretia buxifolia Roxb. 249
 microphylla Lamk. 249
EHRETIACEAE 249
Elaeodendron glaucum (Vahl)
 Pers. 154
Elaeodendron roxburghii Wt. et
 Arn. 155
ELATINACEAE 59
Elatine Linn. 60
 americana Arn. 60

- ammanoides* Wt. et Arn. 59
triandra Schk. 60
Elatostema Forst. et Forst. f. 45
lineolatum Wt. 45
Eleocharis R. Br. 355
capitata (Linn.) R. Br. 355
Elephantopus Linn. 334
scaber Linn. 334
Elettaria Maton 389
cardamomum (Roxb.) Maton 389
Eleusine Gaertn. 375
aegyptica (Linn.) Desf. 373
indica (Linn.) Gaertn. 375
Elytranthe Bl. 147
lepidophylla (Walp.) Danser 147
loniceroides (Linn.) G. Don 149
parasitica (Linn.) Danser 149
Elytraria Mich. 292
acaulis (Linn. f.) Lindau 292
crenata Vahl 292
Emblica officinalis Gaertn. 177
Emilia Cass. 334
rigidula DC. 335
sonchifolia (Linn.) DC. 334
Endostemon N. E. Br. 257
viscosus (Roth) M. Ashby 257
Entada Adans. 130
pursaetha DC. 130
scandens Baker 130
Epicarpurus orientalis Bl. 43
Epicarpurus spinosus (Roxb.)
Wt. 43
Epidendrum tessellatum Roxb. 403
Epithema Bl. 281
carnosum (G. Don) Benth. 281
var. *hispida* Clarke 281
var. *zeylanicum* Clarke 281
zeylanicum Gardner 281
Eragrostiella Bor 375
bifaria (Vahl) Bor 375
Eragrostis Beauv. 375
bifaria (Vahl) Wt. ex Steud. 375
coromandeliana (Koen. ex Rottl.)
Trin. 375
gangetica (Roxb.) Steud. 376
plumosa (Retz.) Link 376
riparia (Willd.) Nees 376
stenophylla Hochst. ex Miq. 376
tenella (Lind.) Beauv. ex Roem.
et Schult. 376
var. *plumosa* (Retz.) Stapf 376
var. *riparia* (Willd.) Stapf 376
uniloides (Retz.) Nees ex
Steud. 375
Eranthemum Linn. 293
capense Linn. 293
malabaricum Clarke 298
montanum Roxb. 293
Eriantha lobelioides Nees 288
Erigeron Linn. 335
crispus Pourr. 335
gaudichaudii DC. 335
karvinskianus DC. 335
karvinskianum var. *mucronatum*
(DC.) Hieron 335
leucanthum D. Don 333
linifolius Willd. 335
molle D. Don 331
mucronatus 335
obliqua Linn. 331
sumatrensis Retz. 335
ERIOCAULACEAE 350
Eriocaulon Linn. 350
quinguangulare Linn. 350
truncatum Ham. ex Mart. 350
Eriochloa H.B.K. 377
polystachya Hook. f. 377
procera (Retz.) C.E. Hubb. 377
Eriococcus Hassk. 168
ovalifolia (Wt.) K.K.N. Nair 168
Ervatamia (DC.) Stapf 224
heyneana (Wall.) Cooke 224
Erycibe Roxb. 242
paniculata Roxb. 242
var. *wightiana* Clarke 242
rheedii Bl. 242
wightiana Garh. 242
ERYTHROPALACEAE 144

- Erythralium* Bl. 144
 populifolium (Arn.) Mast. 144
ERYTHROXYLACEAE 210
Erythroxylum P. Br. 210
 monogynum Roxb. 210
Eugenia jamboliana Lamk. 134
Eupatorium Linn. 337
 adenophorum Spreng. 337
 divergens Roxb. 341
 glandulosum H.B.K. 337
Euphorbia Linn. 168
 antiquorum Linn. 169
 geniculata Ort. 169
 hirta Linn. 169
 nereifolia Roxb. 170
 nivulia Buch.-Ham. 170
 pilulifera non Linn. 169
 rosea Retz. 170
 tirucalli Linn. 170
 tithymaloides Linn. 176
EUPHORBIACEAE 158
Evolvulus Linn. 242
 alsinoides (Linn.) Linn. 242
 Exallange auricularia (Linn.) Bremek. 313
Excoecaria Linn. 171
 crenulata Wt. 171
Fagraea Thunb. 219
 ceilanica Thunb. 219
 coromandelina Wt. 220
 malabarica Wt. 220
 obovata Wall. ex Roxb. 220
Ficus Linn. 39
 arnottiana (Miq.) Miq. 39
 var. *courtallensis* (Miq.) Miq. 40
 benghalensis Linn. 40
 benamina Linn. 40
 daemonum Koen. ex Vahl 41
 glomerata Roxb. 42
 hispida Linn. f. 48
 indica Linn. 40
 mollis Vahl 41
 nitida Thumb. 40
 oppositifolia Roxb. 41
 racemosa Linn. 42
 retusa Linn. 42
 var. *nitida* (Thumb.) Miq. 40
 tsjahela Burm. f. 42
Fimbristylis Vahl 355
 bisumbellata (Forssk.) Bubani 356
 complanata (Retz.) Link 356
 dichotoma auct. 356
 dipsacea (Rottb.) Clarke 356
 miliacea (Linn.) Vahl 357
 monostachya (Linn.) Hassk. 357
 ovata (Burm. f.) Kern. 357
FLACOURTIACEAE 78
Flacourtia Comm. ex L'. Herit. 78
 indica (Burm. f.) Merr. 78
 ramontchi L'. Herit. 78
 sepiaria Roxb. 79
Flemingia monosperma Moon. 118
Fleurya interrupta (Linn.) Gaud. 45
Flueggea leucopyrus Willd. 179
Flueggea microcarpa Bl. 180
Flueggea virosa Baill. 179
Farsythia mala-elengi Dennst. 264
Gaertnera racemosa Roxb. 211
Galactia P. Br. 112
 tenuiflora (Klein ex Willd.) Wt. et Arn. 112
 var. *villosa* Baker 112
 villosa Wt. et Arn. 112
Galega maxima Linn. 120
Galega pumila Lamk. 120
Garcinia Linn. 61
 cambogia (Gaertn.) Desr. 61
 roxburghii Wt. 61
Gardeneria fragrans Koen. ex Roxb. 325
Gardenia Ellis 311
 lucida Roxb. 311
 resinifera Roth 311
 spinosa Thunb. 327
Geissaspis Wt. et Arn. 112
 cristata Wt. et Arn. 112
Gendarussa Nees 293

- tranquebariensis* (Linn. f.)
 Nees 293
vulgaris Nees 293
Gentiana heteroclita Linn. 220
GENTIANACEAE 220
Geophila D. Don 311
 herbacea (Linn.) K. Schum. 311
 reniformis D. Don 311
 repens (Linn.) Johnst. 311
Gerardia delphinifolia Linn. 275
GESNERIACEAE 278
Getonia floribunda Roxb. 140
Givotia Griff. 171
 moluccana (Linn.) Sreem. 171
 rottleriformis Griff. ex Wt. 171
Glochidion Forst. 171
 ellipticum Wt. 172
 tomentosum Dalz. 172
 zeylanicum (Gaertn.) Juss. 172
Glycine tenuiflora Klein ex Willd. 112
Glycosmis Correa 197
 angustifolia Lindl. ex Wt. et Arn. 198
 arborea (Roxb.) DC. 200
 cochinchinensis Pierre 199
 macrocarpa Wt. 199
 mauritiana (Lamk.) Tanaka 199
 pentaphylla DC. 199
 pentaphylla (Retz.) DC. 199
 pentaphylla sensu Narayana-swami 199
 subvar. *angustifolia* Hook.f. 198
 subvar. *angustifolia* Oliv. 198
 var. *macrocarpa* (Wt.) Hook.f. 199
Gmelina Linn. 251
 arborea Roxb. 251
 asiatica Linn. 252
 indica Burm.f. 78
Goldfussia decurrens Wt. 296
Gomphandra Wall. ex Roxb. 156
 axillaris Wall. ex Voight 156
 polymorpha Wt. 157
 tetrandra (Wall. ex Roxb.) Sleum. 156
Gomphrena Linn. 56
 celosioides Mart. 56
 decumbens Gamble 56
 sessilis Linn. 54
Goniothalamus (BL.) Hook. f. et Thoms. 21
 wightii Hook. f. et Thoms. 21
Gouania Jacq. 182
 microcarpa DC. 182
GRAMINEAE 362
Granadilla hondala Gaertn. 81
Gratiola ciliata Colsm. 273
Gratiola grandiflora Retz. 273
Gratiola juncea Roxb. 270
Gratiola parviflora Roxb. 274
Gratiola pusilla Willd. 274
Gratiola serrata Roxb. 273
Gratiola veronicifolia Retz. 273
Grewia Linn. 62
 abutilifolia Vent. ex Juss. 63
 acuminata Bedd. 67
 aspera Roxb. 63
 bracteata Heyne ex Roth 63
 columnaris Smith 64
 emarginata Wt. et Arn. 64
 hirsuta Vahl 64
 microcos Linn. 65
 obtusata Wall. 63
 oppositifolia Buch. ex DC. 64
 orientalis Linn. 64
 salvifolia Linn.f. 143
 tiliaefolia Vahl 65
Griffithia fragrans Wt. et Arn. 325
Grumilea congesta Wt. et Arn. 322
Grumilea elongata Wt. 323
Grumilea nigra Gaertn. 323
Grumilea subintegra Wt. et Arn. 324
Guatteria cerasoides (Roxb.) Dun. 24
Guatteria korinti Dun. 25
Guatteria suberosa DC. 25

- GUTTIFERAE 60
Gymnema R. Br. 230
 sylvestre (Retz.) R. Br. ex
 Schult. 230
Gymnosporia wallichiana A.
 Laws. 155
Gymnostachyum Nees 294
 canescens (Nees) T. Anders. 294
Gynura Cass. 337
 crepidioides Benth. 333
 lycopersicifolia DC. 337
 nitida DC. 338

Habenaria Willd. 402
 crinifera Lindl. 402
Hackelochloa O. Ktze. 377
 granularis (Linn.) O. Ktze. 377
 HALORAGACEAE 132
Haloragis oligantha Wt. et Arn. 132
Heckeria subpeltata (Willd.)
 Kunth 29
Hedera obovata Wt. 214
Hedyotis Linn. 312
 affinis Roem. et Schult. 312
 auricularia Linn. 313
 biflora (Linn.) Lamk. 313
 eulata Bedd. ex Gamble 313
 eulata (Gamble) Henry et
 Subr. 313
 glabella R. Br. 314
 herbacea Linn. 313
 lentiginosa Bedd. 315
 monosperma Wt. et Arn. 320
 nitida Wt. et Arn. 314
 pruinosa Wt. et Arn. 314
 purpurascens Hook.f. 314
 purpurea Bedd. 314
 racemosa Lamk. 313
 umbellata (Linn.) Lamk. 315
 wightii (Hook.f.) K.K.N.
 Nair 315
Hedysarum biflorum 110
Hedysarum diphyllum Linn. 121
Hedysarum heterophyllum
 Willd. 109
 Hedysarum lutescens Poir. 118
 Hedysarum pulchellum Linn. 116
 Hedysarum triflorum Linn. 110
 Hedysarum velutinum Willd. 110
 Hedysarum viscidum Linn. 117
Helicanthes Danser 147
 elastica (Desr.) Danser 147
Helichrysum Mill. ex Pers. 338
 buddleioides DC. var. *hookeriana*
 (Wt. et Arn.) Hook.f. 338
 hookerianum Wt. et Arn. 338
Helicteres Linn. 66
 isora Linn. 66
Heliotropium Linn. 249
 scabrum Linn. 249
Helixanthera Lour. 148
 hookeriana (Wt. et Arn.)
 Danser 148
 obtusata (Schult.) Danser 148
Helosciandium heyneanum Wall. ex
 DC. 217
Hemigyrosa canescens Bl. 189
Hemigyrosa longifolia Hiern 189
Heptapleurum stellatum
 Gaertn. 214
Heptapleurum venulosum (Wt. et
 Arn.) Seem. 215
Herpestis monniera (Linn.)
 H.B.K. 270
Hesperethusa crenulata (Roxb.)
 M.J. Roem. 200
Heteropogon Pers. 378
 contortus (Linn.) Beauv. ex
 Roem. et Schult. 378
Hibiscus Linn. 72
 abelmoschus Linn. 71
 lobatus (Murr.) O. Ktze. 72
 lunarifolius Willd. 72
 micranthus Linn.f. 73
 populneus Linn. 76
 rugosus (Wt. et Arn.) Mast 71
 sidoides Wt. et Arn. 72
 solandra L' Herit. 72
 surattensis Linn. 73

- HIPPOCRATEACEAE** 153
Hippocratea indica Willd. 153
Hiptage Gaertn. 211
benghalensis (Linn.) Kurz 211
cumingii Merr. 211
madablota Gaertn. 211
parviflora Wt. et Arn. 211
Holcus latifolius Obs. 369
Holcus nitidus Vahl 386
Holcus pertusus Linn. 367
Holostium cordatum Linn. 51
Hoppea Willd. 221
fastigiata (Griseb.) Clarke 221
Hoya viridiflora R. Br. 233
Hugonia Linn. 210
mystax Linn. 210
Hunteria Roxb. 224
corymbosa Roxb. var. *roxburghiana* Gamble 225
var. *salicifolia* (Wall. ex DC.) Hallier f. 224
lanceolata DC. 224
roxburghiana Wt. 224
zeylanica (Retz.) Gardner ex Thw. var. *lanceolata* (Wall. ex DC.) Alston 225
var. *salicifolia* (Wall. ex DC.) Pichon 224
Hybanthus Jacq. 80
enneaspermum (Linn.) F. Muell. 80
suffruticosus (Linn.) Baill. 81
Hydnocarpus Gaertn. 79
alpina Wt. 79
inebrians Vahl 80
laurifolia (Dennst.) Sleum. 79
pentandrus (Ham.) Oken 79
wightiana Bl. 79
Hydrilla Rich. 342
verticillata (Linn.f.) Royle 342
HYDROCHARITACEAE 342
Hydrocotyle Linn. 216
asiatica Linn. 216
hispida DC. 216
javanica Thunb. 216
nepalensis Hook. 216
polycephala Wt. et Arn. 216
zeylanica DC. 216
Hydrolea Linn. 248
zeylanica (Linn.) Vahl 248
HYDROPHYLLACEAE 248
Hygrophila R. Br. 294
angustifolia R. Br. 294
salicifolia (Vahl) Nees 294
HYPOXIDACEAE 397
Hyptis Jacq. 258
suaveolens (Linn.) Poit. 258
ICACINACEAE 156
Ichnocarpus R. Br. 225
frutescens (Linn.) R. Br. 225
Illipe latifolia Roxb.) Dubard 93
Illipe malabrorum Koen. ex Engl. 92
Illysanthes parviflora Benth. 274
Illysanthes serrata (Roxb.) Urb. 273
Illysanthes veronicifolia (Retz.) Urb. 273
Impatiens Linn. 206
acaulis Arn. 207
auriculata Wt. 207
dasysperma Wt. 207
flaccida Arn. 208
grandis Heyne ex Wall. 208
umbellata Heyne ex Wall. 209
uncinata Wt. 209
Imperata spontanea (Linn.) Beauv. 384
Indigofera Linn. 113
aspalathoides Vahl ex DC. 113
enneaphylla Linn. 113
linnaei Ali 113
subulata Vahl ex Poir. 114
sumatrana Gaertn. 114
tinctotrita Linn. 114
trita Linn.f. var. *subulata* (Vahl ex Poir.) Ali 114

- Inga dulcis* Willd. 131
Inola indica Willd. 342
Ionidium suffruticosum (Linn.)
 Roem. et Schult. 81
Iphigenia Kunth 395
indica (Linn.) Gray 395
Ipomoea Linn. 243
aegyptica Linn. 246
biloba Forssk. 244
cairica (Linn.) Sweet 243
calycina (Choisy) Clarke 245
coccinea Clarke 243
cymosa Roem. et Schult. 246
hederacea auct. 244
hederifolia Linn. 243
nil (Linn.) Roth 244
obscura (Linn.) Ker.-Gawl. 244
palmata Forssk. 243
pentaphylla (Linn.) Jacq. 246
pes-caprae (Linn.) R. Br. 244
phoenicea Roxb. 243
sinensis (Desr.) Choisy 245
staphylina Roem. et Schult. 245
tridentata Roth ex Roem. 246
turpethum (Linn.) R. Br. 247
Isachne R. Br. 378
dispar Trin. 378
Isanthera permolle Nees 283
Ischaemum Linn. 379
aristatum Ranga Achariyar 379
aristatum auct. non. Linn. 379
ciliare Retz. 379
indicum (Houtt.) Merr. 379
rangacharianum Fischer 379
Isilema T. Anders. 380
laxum Hack. 380
Ixora Linn. 315
arborea Roxb. ex Smith 316
brachiata Roxb. 316
lanceolaria Colebr. ex Roxb. 316
malabarica (Dennst.) Mabb-
 ley 316
nigricans R. Br. ex Wt. et
 Arn. 317
parviflora Vahl 316
Jasminum Linn. 265
affine Wt. 266
auriculatum Vahl 266
calophyllum Wall. ex DC. 266
courtallense Wt. 266
flexile Vahl 266
var. travancorense Gamble 267
ovalifolium Wt. 266
rottlerianum Wall. ex DC. 267
sessiliflorum Vahl 267
travancorense Klein 267
trichotomum Heyne ex Roth 269
Jatropha Linn. 173
gossipifolia Linn. 173
Jussiaea octonervia f. *sessiliflora*
 Mich. 135
Jussiaea perennis (Linn.)
 Brenan 135
Jussiaea suffruticosa Linn. 135
Jussiaea villosa Lamk. 135
Justicia Linn. 295
acaulis Linn. f. 292
betonica Linn. 295
var. ramosissima (Roxb.)
 Clarke 295
diffusa (Willd.) Nees var. *hedyoti-*
difolia (Nees) Clarke 298
var. prostrata Roxb. ex
 Clarke 299
echitoides Linn. 287
gangetica Linn. 289
gendarussa Burm. f. 293
infundibuliformis Linn. 291
paniculata Burm. f. 288
procumbens Linn. 299
prostrata (Clarke) Gamble 299
ramosissima Roxb. 295
repens Linn. 301
simplex D. Don 299
tranquebariensis Linn. f. 293
viridis Forssk. 292

- Kalanchoe** Adans. 95
 pinnata (Lamk.) Pers. 95
Kirganelia Baill. 173
 reticulata (Poir.) Baill. 173
Klugia notoniana (Wall.) DC. 283
 var. *glabra* (Gardner) Clarke 283
 var. *scabra* (Dalz.) Clarke 283
Knema Lour. 26
 attenuata (Hook. f. et Thoms) Warb. 26
Kyllinga Rottb. 357
 brevifolia Rottb. 357
 melanosperma Nees 358
 monocephala Rottb. 358
 nemoralis (Forst. ex Forst. f.) Dandy ex Hutch. 358
 panicea Rottb. 360

LABIATAE 255
Lablab Adans. 115
 purpureus (Linn.) Sweet 115
 vulgaris Savi 115
Laneasagum oblongifolium Bedd. 167
Lannaea A. Rich. 193
 coromandelica (Houtt.) Merr. 193
Lantana Linn. 252
 aculeata Linn. 252
 camara Linn. var. *aculeata* (Linn.) Mold. 252
 camara non Linn. 252
Laportea Gaud. 45
 interrupta (Linn.) Chew 45
Lappago biflora sensu Roxb. 388
Lasianthera ? tetrandra Wall. ex Roxb. 156
Lasianthus Jack. 317
 blumeanus Wt. 317
 strigillosus Hook. f. 317
LAURACEAE 26
Laurus cassia Linn. 27
Lavandula carnosus Linn. f. 256
LECYTHIDACEAE 77
Ledebouria hyacinthina Roth 396
LEEACEAE 184
Leea D. Royen ex Linn. 184
 indica (Burm. f.) Nees 184
 sambucina Willd. 184
LENTIBULARIACEAE 303
Lepianthes Raf. 29
 umbellata (Linn.) Raf. 29
Lepisanthes Bl. 189
 assamica Radlk. 189
 basicardia Radlk. 189
 browniana Hiern 189
 deficiens Radlk. 189
 granulata Radlk. 189
 lamponga Radlk. 189
 montana Bl. 189
 tetraphylla (Vahl) Radlk. 189
Leptonychia Turcz. 66
 acuminata (Bedd.) Burret 67
 moacurroides Bedd. 66
Lettsonia aggregata Roxb. 241
Leucaena Benth. 130
 glauca Benth. 130
 leucocephala (Lamk.) de Wit 130
Leucas R. Br. 258
 aspera (Willd.) Link 259
 biflora (Vahl) R. Br. var. *procumbens* (Desf.) Gamble 259
 procumbens Desf. 259
LILIACEAE 394
Limnophila R. Br. 272
 heterophylla (Roxb.) Benth. 272
 var. *reflexa* (Benth.) Hook. f. 272
 roxburghii G. Don 272
Limonia acidissima auct. 201
Limonia alata Wt. et Arn. 201
Limonia arborea Roxb. 200
Limonia crenulata Roxb. 200
Limonia mauritiana Lamk. 199
Limonia monophylla Roxb. 196
Limonia pentaphylla Retz. 199
Limonia pentaphylla non Retz. 199
LINACEAE 210

- Lindernia* All. 272
anagallis (Burm. f.) Pennell var.
grandiflora (Retz.) Mukerjee 273
antipoda (Linn.) Alston 272
ciliata (Colsm.) Pennell 273
crustacea (Linn.) F. Muell. 273
hirta (Cham. et Schult.)
 Pennell 274
parviflora (Roxb.) Haines 274
pusilla (Willd.) Boldingh 274
scabra (Benth.) Wettst. 274
veronicifolia (Retz.) F.
 Muell. 273
Linociera courtallensis (Bedd.)
 Bourd. 263
Linociera intermedia Wt. 265
Linociera leprocarpa (Thw.) Clarke
 var. *courtallensis* (Bedd.)
 Clarke 263
Linociera malabarica Wall. ex D.
 Don. 264
Linociera purpurea Vahl 265
Linociera wightii Clarke 264
Linociera zeylanica (Linn.)
 Gamble 265
Litsea zeylanica Nees 27
Lobelia Linn. emend. K.K.N.
 Nair 305
courtallensis K.K.N. Nair 305
nicotianaefolia Roth ex Roem.
 et Schult. var. *trichandra* (Wt.)
 Clarke 307
trichandra Wt. 307
Lochnera rosea (Linn.) Reich. 223
 LOGANIACEAE 218
Lonicera parasitica Linn. 148
 LORANTHACEAE 146
Loranthus arnottianus Wt. 147
Loranthus blumeanus Wt. 148
Loranthus bracteatus Heyne ex
 Roxb. var. *angustifolia*
 Hook. f. 150
Loranthus cordifolius Wall. ex
 Roxb. 149
Loranthus courtallensis Gamble 150
Loranthus cuneatus Roth 150
Loranthus elasticus Desr. 147
Loranthus euphorbia Wt. 147
Loranthus falcatus Linn. f. 146
Loranthus hookerianus Wt. et
 Arn. 148
Loranthus lepidophyllus Walp. 147
Loranthus longiflorus Desr. 146
Loranthus loniceroides Linn. 148
Loranthus obtusatus Schult. 148
Loranthus serrula Linn. 149
Loranthus wightii Hook. f. 147
Ludwigia Linn. 134
octovalvis (Jacq.) Raven subsp.
sessiliflora (Mich.) Raven 135
parviflora Roxb. 135
perennis Linn. 135
Luisia Gaud. 403
teretifolia Gaud. 403
Lycianthes (Dun.) Hassl. 235
bigeminata (Nees) Bitter 235
Lysimachia monnieri Linn. 270
 LYTHRACEAE 133
Macaranga Thou. 173
peltata (Roxb.) Muell.-Arg. 173
roxburghii Wt. 173
Mackaya populifolia Arn. 144
Macrosolen (Bl.) Reichb. 148
parasiticus (Linn.) Danser 148
Madhuca Hamilton ex Gmel. 92
indica Gmel. 93
latifolia (Roxb.) Mac Bride 93
longifolia (Koen. ex Linn.) Mac
 Bride 93
 var. *latifolia* (Roxb.) Cheval. 93
 var. *longifolia* 93
Maerua Forssk. 91
arenaria (DC.) Hook. f. et
 Thoms. 91
Maesa Forssk. 95
indica Wt. 95
 var. *perrottetiana* (A. DC.)
 Clarke 95

- perrottetiana* A. DC. 95
Mallotus Lour. 174
 aureo-punctatus (Dalz.) Muell.-Arg. 174
 lawii Muell.-Arg. 174
 muricatus (Wt.) Muell.-Arg. 174
 philippensis (Lamk.) Muell.-Arg. 174
 rhamnifolius (Willd.) Muell.-Arg. 175
 stenanthus Muell.-Arg. 175
Malnerega malabarica Raf. 196
MALPIGHIACEAE 211
MALVACEAE 70
Mangifera glauca Rottb. 154
Mangostana cambogia Gaertn. 61
Manisuris granularis Linn. f. 378
Mappia championiana Miers 157
Mappia foetida (Wt.) Miers 157
Mappia gardneriana Miers 157
Mappia ovata Miers 157
Mappia tomentosa Miers 157
Maranta malaccense Burm. f. 389
MARANTACEAE 391
Mariscus Vahl 359
 compactus (Retz.) Druce 359
 drageanus Kunth 359
 dubius (Rottb.) Kuk. et Fischer 359
 microcephalus Persl. 359
 paniceus (Rottb.) Vahl 359
 squarrosus (Linn.) Clarke 360
Marsdenia volubilis (Linn. f.) Cooke 233
Maytenus Molina 155
 wallichiana (Wt. et Arn.) Raju et Babu 155
 wallichii (G. Don) Bennt et Sahni 155
Meineckia Baill. 175
 longigpes (Wt.) Webster 175
Meiogyne Miq. 22
 pannosa (Dalz.) Sinclair 22
Melanthesa retusa (Dennst.) Kost. 164
Melanthesa rhamnoides (Retz.) Wt. 165
Melanthesa turbinata Wt. 164
Melanthium indicum Linn. 395
Melastoma asperum Linn. 138
MELASTOMATACEAE 135
Melia baccifera Roth 203
MELIACEAE 202
Meliosma Bl. 37
 simplicifolia (Roxb.) Walp. 37
Melochia Linn. 67
 corchorifolia Linn. 67
Melothria maderaspatana (Linn.) Cogn. 85
Melothria mucronata Chakraborty 86
Melothria perpusilla (Bl.) Cogn. var. *subtruncata* Cogn. 86
Memecylon Linn. 136
 amplexicaule var. *malabarica* Clarke 137
 angustifolium Wt. 136
 edule Roxb. 137
 var. *ramiflora* Clarke 137
 heyneanum Benth. 136
 jambosoides Wt. 136
 malabaricum (Clarke) Cogn. 137
 tinctorium Koen. ex Wt. et Arn. 137
 umbellatum Burm. f. 137
MENISPERMACEAE 33
Menispermum acuminatum Lamk. 36
Menispermum cocculus Linn. 34
Menispermum heteroclitum Roxb 34
Menispermum hirsutum Linn. 35
Menispermum peltatum Lamk. 35
Menispermum polycarpon Roxb. 36
Menispermum villosum Lamk. 35
Merremia Dennst. 246
 aegyptica (Linn.) Urb. 246
 tridentata (Linn.) Hallier f. 246
 umbellata (Linn.) Hallier f. 246

- Mesua** Linn. 61
coromandelina Wt. 61
ferrea Wt. 61
ferrea Linn. var. *coromandelina* (Wt.) Mahesh. 61
nagassarium (Burm. f.) Kasterm. 61
 var. *coromandoliana* (Wt.) K.K.N. Nair 61
Meyesua erecta Benth. 302
Micranthus oppositifolius Wendl. 297
Microcos Linn. 65
paniculata Linn. 65
Microelus roeperianus Wt. et Arn. 181
Milium cimicinum Linn. 365
Miliusa Lesch. ex DC. 22
eriocarpa Dunn 22
indica var. *tomentosa* Hook. f. et Thoms. 22
wightiana Hook.f. et Thoms. 23
Millettia Wt. et Arn. 115
rubiginosa Wt. et Arn. 115
Millingtonia simplicifolia Roxb. 37
Mimosa Linn. 131
chinensis Osbeck 128
cineraria Linn. 132
cineria Linn. 130
dulcis Roxb. 131
entada Linn. 130
ferruginea Roxb. 127
lebbeck Linn. 128
leucocephala Lamk. 130
odoratissima Linn. f. 129
procera Roxb. 129
pudica Linn. 131
stibulata Roxb. 128
torta Roxb. 127
MIMOSACEAE 126
Mitragyna Korth. 318
parvifolia (Roxb.) Korth. 318
Mitrephora (Bl.) Hook. f. et Thoms. 23
heyneana (Hook. f. et Thoms.) Thw. 23
Modecca palmata Lamk. 81
Modecca tuberosa Roxb. 81
MOLLUGINACEAE 50
Mollugo Linn. 50
pentaphylla Linn. 50
stricta Linn. 50
Momordica Linn. 84
dioica Roxb. ex Willd. 84
Monniera cuneifolia Mich. 270
Monochilus longiglabre Lind. 404
MONCOTYLEDONS 342
Monotheceum Hochst. 295
aristatum (Nees) T. Anders. 295
MORACEAE 38
Morinda Linn. 318
umbellata Linn. 318
Moschosma polystachyum (Linn.) Benth. 257
Mukia Arn. 85
maderaspatana (Linn) M. J. Roem. 85
scabrella (Linn. f.) Arn. 85
Munnicksia laurifolia Dennst. 79
Murdannia Royle 348
dimorpha (Dalz.) Bruck. 348
esculenta (Wall. ex Clarke) Rolla Rao et Kammathy 349
loriformis (Hassk.) Rolla Rao et Kammathy 349
malabarica (Linn.) Bruck. var. *terminalis* (Wt) Sant. et Jain 349
zeylanicum (Clarke) Bruck. var. *longicapsa* (Clarke) Rolla Rao et Kammathy 349
Murraya Koen. ex Linn. 200
exotica (Linn.) 200
paniculata (Linn.) Jacq. 200
Mussaenda Linn. 319
frondosa var. *glabrata* Hook. f. 319
 var. *laxa* Hook. f. 319

- glabrata* (Hook. f.) Hutch. ex Gamble 319
laxa (Hook. f.) Hutch. et Gamble 319
Myriophyllum Potend. ex Linn. 132
indicum Trimen 133
intermedium auct. non DC. 132
oliganthum (Wt. et Arn.) F. Muell. 132
variaefolium Hook. f. 133
Myristica attenuata Hook. f. et Thoms. 26
Myristica corticosa (Lour.) Hook. f. et Thoms. 26
MYRISTICACEAE 26
MYRSINACEAE 95
MYRTACEAE 134
Myrtus cumini Linn. 134

Nama zeylanica Linn. 248
Naravelia Adans. 33
zeylanica (Linn.) A. DC. 33
Naringi Adans. 200
crenulata (Roxb.) Nicolson 200
Nauclea parvifolia Roxb. 318
Neanotis W. H. Lewis 320
monosperma (Wt. et Arn.) W. H. Lewis 320
Nemadra elaeagnoidea Juss. 202
Neolitsea (Benth.) Merr. 27
cassia (Linn.) Kosterm. 27
zeylanica (Nees) Merr. 27
Neopeltandra longipes (Wt.) Muell.-Arg. 176
Nepta malabarica Linn. 257
Nerium reticulatum Roxb. 234
Nesaea Comm. ex Juss. 133
brevipes Koehne 133
Niebuhreria arenaris DC. 91
Nilgirianthus Bremek. 296
barbatus (Nees) Bremek. 296
decurrens (Nees) Bremek. 296
Nothapodytes Bl. 157
foetida (Wt.) Sleum. 157
Nothopegia Bl. 193
beddomei Gamble var. *wynaadica* Ellis et Chandrabose 193
colebrookiana Bl. var. *heyneana* Hook. f. 193
heyneana (Hook. f.) Gamble 193
NYCTAGINACEAE 49
Nymphaea Linn. 32
lotus Linn. var. *pubescens* (Willd.) Hook. f. et Thoms. 32
lotus Roxb. 32
nouchali Merr. 32
pubescens Willd. 32
NYMPHAEACEAE 32

Ocimum Linn. 259
adscendens Willd. 259
capitatum Roth 256
cristatum Roxb. 259
diffusum Benth. 257
var. *hispida* (Beth. ex DC.) Hook. f. 258
gratissimum Linn. 260
hispidus Benth. 258
polystachyum Linn. 257
thymiflorum Roth 261
viscosum Roth 257
Odina wodier Roxb. 193
OLACACEAE 143
Olax Linn. 143
scandens Roxb. 143
wightiana Wall. ex Wt. et Arn. 143
Oldenlandia affinis (Roem. et Schult.) DC. 312
Oldenlandia auricularia (Linn.) K. Schum. 313
Oldenlandia biflora Linn. 313
Oldenlandia dichotoma (Koen. ex Roth) Hook. f. 312
Oldenlandia eulata Gamble 313
Oldenlandia herbacea (Linn.) Roxb. 313

- Oldenlandia heynii* G. Don 314
Oldenlandia nitida (Wt. et Arn.) Gamble 314
Oldenlandia paniculata Burm. f. 313
Oldenlandia pruinosa (Wt. et Arn.) O. Ktze. 314
Oldenlandia purpurascens (Hook. f.) O. Ktze. 314
Oldenlandia umbellata Linn. 315
Oldenlandia wightii Hook. f. 315
Olea linocieroides Wt. 264
Olea roxburghii Spreng. 264
OLEACEAE 263
ONAGRACEAE 134
Operculina Silva Manso 247
 turpethum (Linn.) Silva Manso 247
Ophiorrhiza Linn. 320
 eriantha Wt. 320
 mungos Linn. 320
Opilia Roxb. 145
 amentacea Roxb. 145
OPILIACEAE 144
ORCHIDACEAE 401
Oreocnide Miq. 46
 integrifolia (Gaud.) Miq. 46
Orophea Bl. 24
 heyneana Hook. f. et Thoms. 23
 uniflora Hook. f. et Thoms. 24
Orthosiphon Benth. 260
 glabratus Benth. 260
 thymiflorus (Roth) Sleesen 261
 tomentosus Benth. var. *glabratus* (Benth.) Hook. f. 260
 var. *viscosa* (Benth.) Hook. f. 261
 viscosus Benth. 261
Osbeckia Linn. 137
 aspera (Linn.) Bl. 138
 var. *wightiana* (Benth. ex Wt. et Arn.) Trim. 138
 muralis Steud. 138
 truncata D. Don ex Wt. et Arn. 138
 wightiana Benth. ex Wt. et Arn. 138
 zeylanica Linn. f. 139
 zeylanica Steud. 138
Ostodes appendiculata Hook. f. 189
Osyris peltata Roxb. 173
OXALIDACEAE 204
Oxalis Linn. 205
 corniculata Linn. 205
 corymbosa DC. 206
 intermedia Steud. 204
 martiana Zucc. 206
 metziana Edgew. et Hook. f. 205
 sensitiva Linn. 205
Pachygone Miers 36
 ovata (Poir.) Miers ex Hook. f. et Thoms. 36
 plukenetii Miers 36
PALMAE 391
PANADANACEAE 392
Pandanus Linn. f. 392
 fascicularis Lamk. 392
 odoratissimus Linn. f. 392
 tectorius Soland. ex Parkinson 392
Panicum Linn. 380
 ciliare Retz. 373
 colonum Linn. 374
 dispar (Trin.) Steud. 378
 eruciforme J. E. Sm. 368
 flavidum Retz. 381
 flexuosum Retz. 381
 indicum Linn. 384
 indicum Mill. 384
 intermedium Roth 385
 interruptum Willd. 384
 maximum Jacq. 380
 palmaefolium Koen. 385
 plicatum Willd. 385
 psilopodium Trin. 381
 ramosum Linn. 368
 remotum Retz. 369
 tomentosum Roxb. 385
PAPILIONACEAE 97

- Paragrewia poilanei* Gagnep. 67
Paratropia venulosa Wt. et Arn. 215
Parietaria microphylla Linn. 47
Parietaria zeylanica Linn. 49
Paspalidium Stapf 381
 flavidum (Retz.) A. Camus 381
Paspalum Linn. 381
 commersonii Lamk. 382
 conjugatum Berg. 382
 kora Willd. 382
 longiflorum Retz. 374
 scorbiculatum Linn. 382
 var. *commersonii* (Lamk.) Stapf 382
Passiflora Linn. 82
 foetida Linn. 82
PASSIFLORACEAE 81
Paullinia asiatica Linn. 201
Pavetta Linn. 321
 blanda Bremek. 321
 breviflora DC. var. *subcoriacea* Gamble 321
 indica Linn. 321
Pavonia Cav. 73
 odorata Willd. 73
PEDALIACEAE 303
Pedaliium D. Royen ex Linn. 303
 murex Linn. 303
Pedilanthus Neck. 176
 tithymaloides (Linn.) Poit. 176
Pellionia Gaud. 46
 heyneana Wedd. 46
Peltandra longipes Wt. 175
Pentaptera arjuna Roxb. ex DC. 142
Pentaptera paniculata Roxb. 142
Peperomia Ruiz et Pav. 29
 dindigulensis Miq. 29
 heyneana Wt. 29
Periploca emetica Retz. 231
Periploca tunicata Retz. 230
Periploca sylvestre Retz. 230
PERIPLOCACEAE 234
Peristrophe Nees 296
 bicalyculata (Retz.) Nees 297
 montana Nees 297
Perotis Ait. 383
 indica (Linn.) O. Ktze. 383
 latifolia Ait. 383
Persicaria chinensis (Linn.) Gross. 58
Phaulopsis Willd. 297
 densiflora (Retz.) Sant. 297
Phaylopsis parviflora Willd. 297
Phleum indicum Houtt. 379
Phlomis aspera Willd. 259
Phoberos crenatus Wt. et Arn. 80
Phrynium virgatum Roxb. 391
Phyllanthus Linn. 176
 debilis Hook. f. 177
 debilis Klein ex Willd. 177
 emblica Linn. 177
 longiflorus Wall. ex Hook. f. 168
 longipes (Wt.) Muell.-Arg. 176
 missionis Hook. f. 177
 niruri var. *debilis* Muell.-Arg. 177
 var. *javanicus* Muell.-Arg. 177
 polyphyllus Willd. 178
 quadrangularis Willd. 179
 reticulatus Poir. 173
 retusus Dennst. 164
 rhamnoides Retz. 165
 simplex Retz. 178
 var. *virgatus* (Forst. f.) Muell.-Arg. 178
 urinaria Linn. 178
 virgatus Forst. f. 178
 virosus Roxb. ex Willd. 179
Phyllochlamys spinosa (Roxb.) Bureau 43
Phyllochlamys wallichii King 44
Phyllodium Desv. 116
 pulchellum (Linn.) Desv. 116
Physalis Linn. 236
 minima Linn. 236

- pubescens* Wt. 236
Pilea Lindl. 46
 melastomoides (Poir.) Wedd. 47
 microphylla (Linn.) Liebm. 47
 muscosa Lindl. 47
 trinervia Wt. 47
Pimpenella Linn. 217
 heyneana (Wall. ex DC.)
 Kurz 217
Piper Linn. 30
 attenuatum Buch.-Ham. ex
 Benth. 30
 subpeltatum Willd. 29
 trioicum Roxb. 30
 umbellatum Linn. 29
PIPERACEAE 30
Pisonia Linn. 50
 aculeata Linn. 50
 mitis Linn. 50
 villosa Poir. 50
Pistacia oleosa Lour. 190
Pistia Linn. 393
 startiotes Linn. 393
Pithecellobium Mart. 131
 dulce (Roxb.) Benth. 131
Pladera ? fastigiata Clarke 221
Pladera sessiliflora Roxb. 220
Platostoma Beauv. 261
 africanum Beauv. 261
 flaccidum Benth. 261
Plectranthus viscosus (Roth)
 Spreng. 257
Plectronia leschenaultii (DC.)
 Bedd. 309
Plectronia parviflora Bedd. 309
Plectronia rheedii DC. var. *angusti-*
 folia (Roxb.) Gamble 309
Pleiospermium (Engl.) Swingle 201
 alatum (Wt. et Arn.)
 Swingle 201
Pleurostyliia Wt. et Arn. 156
 heynei Wt. et Arn. 156
 opposita (Wall.) Alston 156
 wightii Wt. et Arn. 156
PLUMBAGINACEAE 58
Plumbago Linn. 58
 zeylanica Linn. 58
Poa bifaria Vahl 375
Poa gangetica Roxb. 376
Poa plumosa Retz. 376
Poa riparia Willd. 376
Poa uniloides Retz. 377
PODOSTEMACEAE 132
Podostemon stylosus (Wt.)
 Benth. 132
Pogonanthum Beauv. 383
 panicum (Lamk.) Hack. 383
 saccharoideum Beauv. 383
Pogostemon Desf. 261
 heyneanus Benth. 261
 patchouli Hook. f. 261
Poinciana regia Bojer ex
 Hook. 126
Polanisia icosandra (Linn.) Wt. et
 Arn. 92
Polanisia viscosa (Linn.) DC. 91
Poloa wightiana DC. ex Wt. 338
Polyalthia Bl. 24
 cerasoides Hook. f. et
 Thoms. 24
 cerasoides (Roxb.) Bedd. 24
 korinti (Dun) Thw. 25
 korinti Hook. f. et Thoms. 25
 suberosa Hook. f. et Thoms. 25
 suberosa (Roxb.) Thw. 25
Polycarpaea Lamk. 51
 corymbosa (Linn.) Lamk. 51
 spadicea Lamk. 51
Polygala Linn. 212
 arvensis Willd. 212
 chinensis auct. non Linn. 212
 javana DC. 213
 raoi R.N. Ban. et L.K.
 Ban. 213
 rothiana Wt. et Arn. 212
 telephonoides Willd. 212
POLYGALACEAE 212
POLYGONACEAE 57
Polygonum Linn. 57

- chinense* Linn. 57
glabrum Willd. 58
Polypleurum (Tayl. ex Tul.)
 Warming 132
 stylosum (Wt.) J. B. Hill 132
Pongamia Vent. 116
 glabra Vent. 116
 pinnata (Linn.) Pierre 116
Portulaca Linn. 52
 cristata Wall. 52
 pilosa Linn. 52
 suffruticosa Wall. ex Wt. et Arn. 52
 tuberosa Roxb. 52
PORTULACACEAE 52
POTALIACEAE 219
Pothomorphe subpeltata (Willd.)
 Miq. 29
Pothos Linn. 394
 scandens Linn. 394
Pouzolzia Gaud. 47
 auriculata Wt. 48
 bennettiana Wt. 48
 indica (Linn.) Gaud. 49
 pentandra (Roxb.) Benn. 48
 sponiafolia Schlechter 48
 wightii Benn. 49
 zeylanica (Linn.) Benn. 49
Premna Linn. 252
 tomentosa Willd. 252
Pristimera indica (Willd.)
 A. Sm. 153
Prosopis Linn. 132
 cineraria (Linn.) Druce 132
 spicigera Linn. 132
Protium caudatum Wt. 191
Prunella indica Burm. f. 256
Pseudarthria Wt. et Arn. 117
 viscida (Linn.) Wt. et Arn. 117
Pseuderanthemum Radlk. 298
 malabaricum (Clarke)
 Gamble 298
Psilotrichum Bl. 56
 elliottii Baker 56
 calceolatum Moq. ex Hook. f. 56
 moquinianum Abeywickrama 56
 nudum (Heyne ex Wall.)
 Moq. 57
Psychotria Linn. 322
 ambigua Wt. et Arn. 324
 congesta (Wt. et Arn.)
 Hook. f. 322
 connata Wall. ex Roxb. 322
 elongata (Wt.) Hook. f. 323
 herbacea Linn. 311
 laevigata Wt. et Arn. 322
 nigra (Gaertn.) Alston 323
 octosulcata Talbot 323
 ophioxyloides Wall. ex
 Roxb. 324
 subintegra (Wt. et Arn.)
 Hook. f. 324
 thwaitesii Hook. f. 323
Ptelea viscosa Linn. 188
Pterocarpus Jacq. 117
 marsupium Roxb. 117
Pterospermum Schreb. 67
 heyneanum Wall. ex Wt. et
 Arn. 69
 obtusifolium Wt. ex Mast. 67
 xylocarpum (Gaertn.) Sant. et
 Wagh 69
Ptychotis roxburghiana DC. 217
Pulicaria Gaertn. 338
 wightiana (DC. ex Wt.)
 Clarke 338
Pupalia Juss. 57
 lappacea (Linn.) Juss. 57
Pycnospora R. Br. ex Wt. et
 Arn. 118
 hedysaroides R.Br. ex Wt. et
 Arn. 118
 lutescens (Poir.) Schindl. 118
 nervosa Wt. et Arn. 118
Pycneus Beauv. 360
 cappillaris (Koen. ex Roxb.)
 Nees 360
 globosus (All.) Reich. 360

- odoratus* Urb. 361
polystachyos (Rottb.) Beauv. 361
Quamoclit phoenicea (Roxb.) Choisy 243
Randia Linn. 324
 cochinchinensis (Lour.) Merr. 324
 densiflora (Wall.) Benth. 324
 dumetorum (Retz.) Poir. 327
 longispina Wt. et Arn. 327
 malabarica Lamk. 325
RANUNCULACEAE 33
Reidia longiflora Gamble 168
Reidia ovalifolia Wt. 168
Reissantia Halle 153
 indica (Willd.) Halle 153
RHAMNACEAE 182
Rhamnus circumscissus Linn. f. 182
Rhamnus myrtinus Burm. f. 182
Rhamnus oenoplia Linn. 183
Rhamnus xylophyrus Retz. 183
Rhynchoglossum Bl. 283
 notonianum (Wall.) Burt 283
Rhynchothecum Bl. 283
 permolle (Nees) Burt 283
Riedleia corchorifolia (Linn.) DC. 67
Rondeletia asiatica Linn. 326
Rondeletia repens Linn. 311
Rostellularia Reich. 298
 hedyotidifolia Nees 298
 procumbens (Linn.) Nees 299
 var. *simplex* (D. Don) Yamazaki 299
 prostrata (Roxb. ex Clarke) K. K. N. Nair 299
Rottlera aureo-punctata Dalz 174
Rubia Linn. 325
 cordifolia Linn. 325
 munjista Roxb. 325
RUBIACEAE 307
Ruellia Linn. 301
 antipoda Linn. 272
 densiflora Retz. 297
 salicifolia Vahl 294
 tuberosa Linn. 301
Rungia Nees 300
 arnottiana Wt. 301
 parviflora Nees 300
 repens (Linn.) Nees 300
 repens T. Anders. 300
 wightiana Nees 301
RUTACEAE 194
SABIACEAE 37
Saccharum Linn. 383
 panicum Lamk. 383
 spontaneum Linn. 383
Sacciolepis Nash 384
 indica (Linn.) Chase 384
 interrupta (Willd.) Stapf 384
Salacia Linn. 154
 oblonga Wall. ex Wt. et Arn. 154
Sansevieria Thunb. 398
 roxburghiana Schult. f. 398
SANTALACEAE 145
Santalum Linn. 145
 album Linn. 145
SAPINDACEAE 188
Sapindus Linn. 189
 ? *deficiens* Wt. et Arn. 189
 emarginatus Vahl 189
 tetraphylla Vahl 189
 trifolius Hiern 189
SAPOTACEAE 92
Sarcandra Gardner 28
 chloranthoides Gardner 28
 grandifolia (Miq.) Subr. et Henry 28
 irvinbaileyi Swamy 28
Sarcocidium longifolium Wt. 163
Sarcococca Lindl. 158
 pruniformis Lindl. 158
 trinervia Wt. 158
Sarcostemma R. Br. 231

- acidum* (Roxb.) Voigt 231
brevistigma Wt. et Arn. 231
Sauropus Bl. 179
quadrangularis (Willd.) Muell.-Arg. 179
Saururus natans Linn. 343
Schefflera Forst. et Forst. f. 214
stellata (Gaertn.) Baill. 214
venulosa (Wt. et Arn.) Harms. 215
Schleichera Willd. 190
oleosa (Lour.) Oken 190
trijuga Willd. 190
Schumannianthus Gagnep. 391
virgatus (Roxb.) Rolfe 391
Scilla Linn. 396
coromandelina Roxb. 396
hyacinthina (Roth) Mac Bride 396
indica Baker 396
indica Roxb. 396
Scirpus Linn. 361
barbatus Rottb. 352
bisumbellatus Forssk. 356
capitatus Linn. 355
complanatus Retz. 356
dipsaceus Rottb. 356
lithospermus Linn. 362
miliaceus Linn. 357
supinus Linn. 361
Scleria Berg. 362
lithosperma (Linn.) Sw. 362
Scolopia Schreb. 80
crenata (Wt. et Arn.) Clos 80
wightiana (Wt. et Arn.) Clos 80
Scoparia Linn. 275
dulcis Linn. 275
SCROPHULARIACEAE 269
Scurrula Linn. 149
cordifolia (Wall. ex Roxb.) G. Don 149
parasitica Linn. 149
Scutellaria Linn. 262
violacea Heyne ex Benth. 262
Scutia (DC.) Comm. ex Brongn. 182
circumscissa (Linn. f.) Radlk. 182
indica Brongn. 182
myrtina (Burm. f.) Kurz 182
Secamone R. Br. 231
emetica (Retz.) R. Br. 231
Securinea Commn. ex Juss. 179
leucopyrus (Willd.) Muell.-Arg. 179
virosa (Roxb. ex Willd.) Pax et Hoffm. 179
Senna absus Roxb. 123
Senna occidentalis (Linn.) Roxb. 125
Serpicula verticillata Linn. f. 342
Setaria Beauv. 385
intermedia (Roth) Roem. et Schult. 385
palmifolia (Koen.) Stapf 385
tomentosa (Roxb.) Kunth 385
Sethia indica DC. 210
Sida Linn. 74
acuta Burm. f. 74
carpinifolia Mast. 74
cordifolia Linn. 75
glutinosa Roxb. 75
indica Linn. 71
mysorensis Wt. et Arn. 75
rhombifolia Linn. subsp. *rhombifolia* 75
rhomboidea Roxb. ex Flem. 75
urticifolia Wt. et Arn. 75
SMILACACEAE 399
Smilax Linn. 399
zeylanica Linn. 399
SOLANACEAE 235
Solandra lobata Murr. 72
Solanum Linn. 236
bigeminata Nees 235
erianthum D. Don 237
ferox Linn. 237
giganteum Jacq. 238

- indicum* Linn. 238
laeve sensu Clarke 235
melongena Linn. 238
nigrum Linn. 239
surattense Burm. f. 239
torvum Sw. 239
vagum Heyne *ex* Nees 240
verbascifolium auct. non
 Linn. 237
xanthocarpum Schard. *ex*
 Wendl. 239
Sonerila Roxb. 139
speciosa Zenk. 139
Sophora Linn. 118
interrupta Bedd. 118
Sopubia Buch.-Ham. *ex* D.
 Don 275
delphinifolia (Linn.) G.
 Don 275
Sorghum Moench. 386
nitidum (Vahl) Pers. 386
Spermacoce Linn. 326
articularis Linn. f. 326
hispida Linn. 326
ocymoides Burm. f. 326
Sphaeranthus Linn. 339
hirtus Willd. 339
indicus Linn. 339
Sphenodesme Jack. 253
involucrata (Pers.) C. B. Robins.
 var. *paniculata* (Clarke)
 Munir 253
paniculata Clarke 253
Spilanthes Jacq. 339
acmella auct. 339
clava sensu Wt. 339
paniculata Wall. *ex* DC. 339
Sporobolus R. Br. 386
diander (Retz.) Beauv. 386
piliferous (Trin.) Kunth 387
Stachytarpheta Vahl 253
indica (Linn.) Vahl 253
Stephylea indica Burm. f. 184
Stemonurus axillaris Miers 157
Stemonurus foetidus Wt. 157
Stemonurus heyneanus Miers 157
Stenosiphonium Nees 302
russelianum Nees 302
Stephegyne parvifolia Korth. 318
Sterculia Linn. 69
guttata Roxb. 69
STERCULIACEAE 66
Sterospermum Cham. 284
chelonoides DC. 284
personatum (Hassk.)
 Chatterjee 284
tetragonum DC. 284
Stictocardia Hallier f. 247
tiliifolia (Desr.) Hallier f. 247
STILAGINACEAE 181
Streblus Lour. 43
asper Lour. 43
taxoides (Heyne *ex* Roth)
 Kurz 43
Striga Lour. 276
angustifolia (D. Don)
 Saldanha 276
asiatica (Linn.) O. Ktze. 276
euphrasioides (Benth.)
 Benth. 276
hirsuta (Benth.) Benth. 276
lutea Lour. 276
Strobilanthes barbatus Nees 296
Strobilanthes decurrens Nees 296
Strychnos Linn. 218
bourdilloni Brandis 219
cinnamomifolia Thw. 219
 var. *wightii* A. W. Hill 219
colubrina Linn. 219
malaccensis Clarke 219
nux-vomica Linn. 218
potatorum Linn. f. 218
rheedii Clarke 219
wallichiana Steud. *ex* DC. 219
Stylocoryne werbera Wt. *et*
 Arn. 326
Stylosanthes Sw. 119
fruticosa (Retz.) Alston 119
mucronata Willd. 119
SYMPLOCACEAE 94

- Symplocos* Jacq. 94
macrocarpa Wt. ex Clarke 94
macrophylla Wall. ex DC. 95
rosea Bedd. 95
Synedrella Gaertn. 340
nodiflora (Linn.) Gaertn. 340
Syzygium Gaertn. 134
cumini (Linn.) Skeels 134
jambolanum (Lamk.) DC. 134
Tabernaemontana heyneana
 Wall. 224
Tabernaemontana salicifolia Wall. ex
 DC. 224
Tarennia Gaertn. 326
asiatica (Linn.) O. Ktze. 326
asiatica (Linn.) Sant. et
 Wagh 326
zeylanica Gaertn. 326
Taxillus P. van Tiegh. 150
courtallensis (Gamble)
 Danser 150
cuneatus (Roth) Danser 150
Tectonia Linn. f. 254
grandis Linn. f. 254
Tephrosia Pers. 119
hirta Buch.-Ham. 121
hookeriana Wt. et Arn. 120
maxima (Linn.) Pers. 120
procumbens Buch.-Ham. 120
pumila (Lamk.) Pers. 120
purpurea (Linn.) Pers. 121
 var. *maxima* (Linn. Baker 120
 var. *pumilla* Baker 120
villosa (Linn.) Pers. 121
Terminalia (Linn.) 141
arjuna (Roxb. ex DC.)
 Bedd. 142
bellerica (Gaertn.) Roxb. 142
gella Dalz. 142
paniculata Roxb. ex Roth 142
Tetrastigma (Miq.) Planch. 187
lanceolarium (Roxb.)
 Planch. 187
Thea sinensis Linn. 59
THEACEAE 59
Themeda Forssk. 387
cymbaria Hack. 387
triandra Forssk. 387
Thespesia Soland. ex Correa 76
populnea (Linn.) Soland. ex
 Correa 76
Thunbergia Retz. 302
erecta (Benth.) T. Anders. 302
fragrans Roxb. 302
THUNBERGIACEAE 302
Thyrocephalon nemorale Forst. ex
 Forst. f. 358
Tigium klotzschianus Wt. 167
TILIACEAE 62
Tiliacora Colebr. 36
acuminata (Lamk.) Miers 36
racemosa Colebr. 36
Toddalia Juss. 201
aculeata Pers. 201
asiatica (Linn.) Lamk. 201
Tomex tomentosa Linn. 250
Torenia Linn. 278
asiatica Hook. f. 278
bicolor Dalz. 278
globosa Buch.-Ham. ex
 Hook. f. 275
leucosiphon Alston 278
travancorica Gamble 278
varians Roxb. 274
Trachyspermum Link 217
roxburghianum (DC.) Graib 217
roxburghianum Wolff 217
Tradescantia axillaris (Linn.)
 Linn. 344
Tragia Linn. 180
involucrata Linn. 180
Tragus Scop. 388
biflorus sensu Schultes 388
racemosus sensu Hook. f. 388
roxburghii Panigrahi 388
Trema Lour. 38
orientalis (Linn.) Bl. 38
Trichillia spinosa Willd. 196

TRICHOPODACEAE 401

Trichopodium zeylanicum Thw. 401*Trichopus* Gaertn. 401*zeylanicus* Gaertn. 401*Trichosanthes* Linn. 85*nervifolia* Linn. 85*Tridax* Linn. 340*procumbens* Linn. 340*Trophis spinosa* Roxb. 43*Trophis taxoides* Heyne ex Roth 43*Tylophora* R. Br. 232*asthmatica* Wt. et Arn. 232*capparifolia* Wt. et Arn. 232*indica* (Burm. f.) Merr. 232*subramanii* Henry 233

ULMACEAE 37

UMBELLIFERAE 215

Unona pannosa Dalz. 22*Urena* Linn. 76*lobata* Linn. 76var. *lobata* 76var. *sinuta* 77*sinuta* Linn. 77*Urginea* Steinh. 396*coromandelina* (Roxb.)

Hook. f. 396

indica (Roxb.) Kunth 396*wightiana* Hook. f. 396*Urostigma arnottianum* Miq. 39*Urostigma benghalensis* (Linn.)

Gasp. 40

Urostigma courtallense Miq. 40*Urtica interrupta* Linn. 45*Urtica melastomoides* Poir. 47*Urtica pentandra* Roxb. 48

URTICACEAE 44

Utricularia Linn. 303*bifida* Linn. 304*caerulea sensu* Clarke 304*glochidiata* Wt. 305*graminifolia* Vahl 304*humilis* Wt. 304*orbiculata* Wall. ex DC. 305*peltifolia* Chev. et Pellegrin 305*polygaloides* Edgew. 304*reticulata* Sm. var. *stricticaulis*

Koen. ex Oliv. 304.

var. *uliginosa* Clarke 304*striatula* Sm. 304*stricticaulis* (Koen. ex Oliv.) Stapf

ex Gamble 304

wallichiana Benj. 304*Uvaria cerasoides* Roxb. 24*Uvaria suberosa* Roxb. 25*Vanda* R. Br. 403*roxburghii* R. Br. 403*tessellata* (Roxb.) Hook. ex D.

Don 403

Vandellia alba Benth. 274*Vandellia crustacea* (Linn.)

Benth. 274

Vandellia crustacea (Willd.) Yama-

zaki 274

Vandellia scabra Benth. 274*Velago xylocarpa* Gaertn. 69

VERBENACEAE 249

Verbesina acmella Linn. 330*Verbesina alba* Linn. 334*Verbesina nodiflora* Linn. 340*Verbesina prostrata* Linn. 334*Vernonia* Schreb. 340*anthelmintica* (Linn.) Willd. 332*cinerea* (Linn.) Less. 341*divergens* (Roxb.) Edgew. 341*salvifolia* Wt. 341*setigera* Arn. 342*Vicosa* Cass. 342*auriculata* Cass. 342*indica* (Willd.) DC. 342*Vilfa pilifera* Trin. 387*Villebrunea integrifolia* Gaud. 46*Vinca rosea* Linn. 223*Viola enneasperma* Linn. 80*Viola suffruticosa* Linn. 81

VIOLACEAE 80

VISCACEAE 151

Viscum Linn. 151

- auriculatum* Burm. f. 151
attenuatum DC. 151
benghalensis Roxb. ex Wt. et Arn. 152
dichotomum D. Don 151
flexuosum Gamble 151
liquidambricolum Hayata 151
monoicum Roxb. ex DC. 152
nepalense Spreng. 151
orientale Talbot 152
orientale Willd. 152
ramosissimum Wt. et Arn. 153
VITACEAE 184
Vitex Linn. 254
 altissima Linn. f. 254
 negundo Linn. f. 254
Vitis heyneana Wall. 186
Vitis indica Wt. et Arn. 185
Vitis lanceolaria Roxb. 187
Vitis muricata Wt. 187
Vitis pedata (Lamk.) Vahl ex Wt. et Arn. 185
Vitis quadrangularis Wall. ex Wt. et Arn. 186
Vitis repanda Wt. et Arn. 187
Vitis serratifolia Wt. et Arn. 187

Waltheria Linn. 70
 americana Linn. 70
 indica Linn. 70
Wattakaka Hassk. 233
 viridiflora (R. Br.) Hassk. 233
 volubilis (Linn. f.) Stapf 233

Werbera corymbosa Willd. 326
Wrightia R. Br. 225
 tinctoria R. Br. 225
Wulfenia notoniana Wall. 283

Xanthophyllum Roxb. 213
 angustifolium Wt. 214
 flavescens Roxb. 213
 var. *angustifolia* (Wt.) A. Benn. 214
Xeromphis Raf. 327
 spinosa (Thunb.) Keay 327
Ximenia olacioides Wt. et Arn. 145
XYRIDACEAE 343
Xyris Linn. 343
 pauciflora Willd. 343

Zehneria Endl. 86
 hookeriana Clarke 86
 maysorensis (Wt. et Arn.) Arn. 86
Zeuxine Lindl. 403
 longiglbris (Lindl.) Benth. ex Hook. f. 403
ZINGIBERACEAE 389
Ziziphus Mill. 183
 oenoplia (Linn.) Mill. 183
 rugosa Lamk. 183
 xylopyrus (Retz.) Willd. 183
Zornia Gmel. 121
 diphylla (Linn.) Pers. 121
Zygomenus axillaris (Linn.) Salisb. 344