FLORA OF NALLAMALAIS
FLORA OF INDIA (Series 3)

FLORA OF NALLAMALAI S

VOLUME 2

J. L. Ellis

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FLORA OF NALLAMALAI

ASTERACEAE (COMPOSITAE)

1. Flowering heads with ray florets:
   2. Leaves opposite:
      3. Peduncles above 20 cm long
      4. Leaves compound
      5. Leaves simple:
         6. Achenes slightly flattened
         7. Achenes linear or 3-angled
   8. Leaves alternate:

1. Flowering heads without ray florets:
   7. Leaves opposite:
      8. Achenes dimorphic
      9. Achenes of one type
   10. Leaves alternate:

9. Involucral bracts spinose:
    10. Leaves about 5 x 0.6 cm; stems woolly-pubescent
    11. Leaves about 10 x 10 cm; stems hirtellous

9. Involucral bracts not spinose:
   11. Flowering heads subhace:
      12. Leaves pinnatifid; stems not winged
      13. Leaves not pinnatifid; stems winged

11. Flowering heads not globose:
   13. Flowering heads 3-5-times longer than broad:
      14. Leaves obovate-ovate
      15. Leaves lyrate, amplexicaul at base

13. Flowering heads as long as broad:
   16. Leaves 3-nerved:
      17. Stems glandular; leaves glabrous
      18. Stems pubescent; leaves pubescent

16. Leaves 1-nerved:
   18. Plants woolly-cottony-pubescent

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19. Stems and branches winged  
   PARAGLOSA

19. Stems and branches not winged:

20. Leaves dissected  
   PARTHENIUM

20. Leaves not dissected:

21. Leaves linear-ovate:

22. Flowering heads in panicles; outer involucral bracts linear-acuminate  
   ERIGERON

22. Flowering heads 1 or 2; outer involucral bracts linear-spathulate  
   PULICARIA

21. Leaves elliptic-ovate or orbicular-obovate or bract:

23. Involucral bracts as long as or longer than disk florets  
   BEMBEA

23. Involucral bracts shorter than disk florets  
   VERNONIA

TRIDAX LINN.


Decumbent herbs, about 30 cm high; branches sparsely pubescent, grooved. Leaves about 4 x 2.5 cm, opposite, elliptic, acute at base, irregularly inciso-dentate, sparsely hirtellous on both surfaces, 3-nerved from base; petioles 0.5 cm long. Flowers yellow, 0.8 cm long, in terminal heads 1 x 1 cm; peduncles about 28 cm long; phyllaries 0.8 x 0.3 cm, ovate-oblong, acuminate, densely glandular-without, paleae within, scarious-margined; corolla yellow, generally 3-partite, tube hairy, 0.5 cm long, sparsely hairy towards base, lobes ovate, hairy without; pappus hairy. Achene 0.2 cm long, sericeous.

Fl. & Fr.: Throughout the year.

World distribution: A pantropic weed.

Specimens examined: Athobilam, 29-8-1965, Ellis 25562; Bogada, 19-11 1969, Ellis 32527.

BIDENS LINN.


Erect herbs, about 50 cm high; stems angled, grooved, striate, glabrous. Leaves up to 18 cm long, 3-5-pinnate, laterals often inciso-serrate, puberulous; petioles 4 cm long, sheathing at base. Flowers yellow, 0.3 cm long, in heads 0.8 x 1 cm, in terminal, branched, panicles up to 25 cm long; outer phyllaries linear-obovate, sparingly hairy along margins and on the back, inner linear-acute, faintly hairy at top, scarious-margined; ligulate flowers yellow; corolla 0.3 cm long; pappus 3-4, 0.3 cm long, retrose hairy. Achenes 0.3 x 0.2 cm, several, linear, quadrangular, grooved, sparsely hairy along angles.

*Fl. & Fr.*: Almost throughout the year.

*World distribution*: Pan tropical.


*Remarks*: Sherff (op. cit. p. 389) has shown that the Indian plant known as *Bidens pilosa* Linn. is in fact *B. bitternata*.

*Wedelia* Jacq. non. cons.


Erect herbs, about 50 cm high; branches angled, grooved, sparsely puberulous. Leaves about 11 x 7 cm, opposite, ovate, acuminate, rounded to shortly acute at base, serrate or crenate-serrate, sparsely hairy, scabrous above; petioles 4 cm long. Flowers yellow, in terminal, solitary heads 1.5 x 2 cm, ligulate flowers 1.3 cm long, disk flowers 0.8 cm long; peduncles up to 9 cm long; phyllaries 0.8 x 0.3 cm, obovate, hirsute without; corolla of disk florets 0.6 cm long, lobes sparsely hirsute without; pappus a cup of 4 lobes. Achenes 0.3 x 0.2 cm, slightly flattened, sparsely hairy at top.

*Fl. & Fr.*: June-December.

*World distribution*: India, in rather dry localities of moist deciduous forests.

*Specimens examined*: Ramanapenta, Gundlabrahmeswaram, 29-8-1917, Rangachari s. n.; Gundlabrahmeswaram, 20-7-1963, *Ellis* 16945; Ramanapenta, Gundlabrahmeswaram, 25-10-1964, *Ellis* 22295; Gundlab-
BRAHMESWARAM, 29-11-1969, Ellis 32672; Mahanandi, 23-8-1972, Ellis 42341.

BLAINVILLEA CASE.


Erect herbs, about 30 cm high; branches angled, striate, puberulous. Leaves up to 13 x 6 cm, elliptic-ovate, acuminate, acute or rounded at base, crenate-serrate; nerves 3 from base, softly stigose; petioles about 3 cm long. Flowers yellow, 1 cm long, in terminal heads 0.6 cm long; outer phyllaries 0.5 x 0.2 cm, ovate acuminate, hairy near the apex without, coriaceous, inner shining; ray florets 0.7 cm long, sparingly hairy without; disk florets 0.4 cm long, lobes ovate, a few-haired without; anthers not exerted; pappus paleaceous, connate at base. Achenes 0.4 cm long, falcate, faintly transversely rugulose, minutely hairy.

Fl. & Fr.: Almost throughout the year.

World distribution: In tropics from Africa, India, Sri Lanka, Burma, Australia and South America.

Specimens examined: Pathalaganga, Srisailam, 20-10-1964, Ellis 22108; Mahanandi, 22-8-1965, Ellis 25480.

Remarks: Philipson (op. cit.) has indicated the conspecificity of Verbascina acmella Linn. and Blainvillea latifolia (Linn. f.) DC.

ECLIFTA Linn. nom. cons.


Erect or decumbent herbs, about 30 cm high; stems striate, sparingly strigose. Leaves up to 9 x 3 cm, opposite, elliptic-ovate, acute to attenuate at base, distantly serrate, sparingly strigose on both surfaces, basal lateral nerves prominent. Flowers white, 0.4 cm long, in axillary, 1 or 2 heads 0.5 x 1 cm; peduncles about 1.8 cm long, strigose; outer phyllaries 0.4 x 0.2 cm, sparsely strigose without, 3-nerved, inner linear;
ray florets ligulate, bilobed at apices; corolla of disk florets glabrous. Achenes 0.4 cm long, flattened, faintly rugulose, a few haired at apices.

*Fl. & Fr.*: August-March.

**World distribution**: A pantropical weed.


**Vicoa Cass.**


Herbs, up to 70 cm high; branches terete, striate, glabrous. Leaves up to 10 × 2 cm, alternate, linear-ovate, obovate, amplexicaul, auricled at base, serrulate, scabrously puberulous. Flowers 0.5 cm long, in heads 0.5 × 1 cm, in terminal, profusely branched panicles about 10 cm long; peduncles up to 4 cm long; ray florets ligulate, ligules 0.3 cm long; phyllaries 0.4 cm long, linear, sparsely hairy; corolla 0.3 cm long, glabrous; outer pappus small, inner feathery. Achenes 0.1 cm long, pubescent.

*Fl. & Fr.*: Throughout the year.

**World distribution**: India, Sri Lanka and Burma, in dry localities.


**Synedrella Gaertn. nom. cons.**


Erect herbs, about 50 cm high; branches obtusely angled, grooved, sparsely pilose when young. Leaves up to 13 × 7 cm, ovate-lanceolate, rounded or attenuate at base, crenate-serrate, puberulous on both surfaces, bullate when old; nerves 3 at base; petioles 2 cm long, hirsute
above towards node. Flowers yellow, 0.6 cm long, in axillary and terminal clusters 1 cm across; phyllar is 0.8 x 0.2 cm, sparsely hairy without, glabrous within; corolla of female flowers ligulate, of bisexual flowers tubulate; anthers black. Achenes of 2 types, ray—0.5 x 0.2 cm, compressed, lacerate along margins, disk—linear, 2-horned.

Fl. & Fr.: September-April.

World distribution: Tropical America, Burma and India.

Specimen examined: Diguvametta, 16-11-1969, Ellis 32409.

AGERATUM Linn.


Erect herbs, about 40 cm high; branches deep purple, terete, striate, hairy. Leaves about 10 x 5 cm, ovate, acute at base, crenate-serrate, sparsely hairy; nerves 3 from base; petioles 4 cm long. Flowers white, in heads 0.5 x 0.5 cm, in terminal panicles 10 cm long; phyllar is 0.4 cm long, linear-acuminate, ribbed without, sparsely puberulous along margins; pappus 0.2 cm long, ovate-caudate, scarios, puberulous along margins; corolla 0.2 cm long. Achenes 1.5 cm long, black, 4 angled, sparingly puberulous along margins.

Fl. & Fr.: Almost throughout the year.

World distribution: Pantropic.

Specimens examined: Chelama, 7-12-1963, Ellis 17972; Chelama, 16-10-1964, Ellis 22044; Diguvametta, 19-11-1969, Ellis 32541.

DICOMA Cass.


Erect herbs, about 40 cm high; stems woody, terete, striate, cottony-tomentose. Leaves about 5 x 0.6 cm, linear-obovate, apiculate, serrulate, attenuate at base, cottony-tomentose below, sessile. Flowers white, 0.9 cm long, in axillary, solitary heads about 1.2 x 1.2 cm; phyllaris 1.2 x 0.2 cm, linear-ovate, spinous-acuminate, serrulate, white-margined, woolly-tomentose without; corolla glabrous, lobes ovate; inner pappus linear-lanceolate, paleaceous, hairy at apices, midrib prominent, outer sericeous. Achenes 0.4 cm long, densely pubescent especially near the base.
Pl. & Fr.: September-December.

World distribution: Tropical Africa, India, in arid localities.

Specimens examined: Giddalur, 9-11-1906, C.A. Barber 8082; Duggavemetta, 18-11-1969, Ellis 32491.

**Xanthium Linn.**


Herbs, about 1 m high, monoecious; branches angled, grooved, hirtellous. Leaves about 10×10 cm, alternate, broadly ovate, shallowly 3 lobed, truncate or cordate at base, irregularly serrate-dentate, roughly puberulous, palmately nerved; petioles 6 cm long, roughly puberulous. Flowers yellowish, 0.3 cm long, in heads 0.5 cm long; male heads globose, 0.5×0.5 cm; corolla 0.3 cm long, ovate, anthers 0.1 cm long, linear, exserted; female heads 0.6 cm long, linear, sparsely hairy without, phyllaries 0.8×0.4 cm, horned with hooked bristles, corolla absent, filaments monadelphous, style arms exserted; pappus absent. Achenes 1.5×1 cm, 2-horned, densely covered with hooked spines, pubescent.

Pl. & Fr.: January-November.

World distribution: A waste land weed, generally along streams and rivers, tropical America, Africa, India, Sri Lanka and China.

Specimens examined: Pathalaganga, Srisailam, 25-3-1965, Ellis 23762; Ahobilam, 24-11-1969, Ellis 32613.

**Gracca Forsk.**


Prostrate herbs, spreading radially, sometimes erect, about 20 cm long; rootstocks woody; branches striate, hirtellous-pubescent. Leaves 4 cm long, sinuously pinnatifid, lobes dentate, hirsute; petioles 1 cm long, obscure. Flowers yellow, 0.1 cm long, in terminal, globose heads 0.7 cm across; phyllaries 0.3×0.1 cm, ovate-oblong, faintly fimbriate at apices, puberulous without; corolla 0.15 cm long, tube as long, faintly puberulous without, lobes ovate; pappus 0.15 cm long. Achenes 0.1 cm long, slightly flattened, glandular.
Fl. & Fr.: Throughout the year.

World distribution: Tropics from Africa, India and China.

Specimens examined: Chelama, 9-7-1963, Ellis 16809; Chelama, 20-3-1965, Ellis 23733.

Sphaeranthus Linn.


Erect herbs, about 40 cm high; branches terete, striate, irregularly dentate-serrate-winged. Leaves up to 4.5 x 1.6 cm, elliptic-ovate or obovate, narrowed at base, amplexicaul, decurrent, glandular-hairy on both surfaces. Flowers pinkish purple, 0.3 cm long, in terminal, globose heads 1.3 cm across; peduncles 4 cm long, pubescent, glandular, dentately winged; phyllaris 0.3 cm long, ovate-acuminate; bracts ciliate along margins; corolla 0.3 cm long, glabrous; anthers sagittate; pappus absent. Achenes 0.3 cm long, compressed, softly pilose.

Fl. & Fr.: Throughout the year.

World distribution: Tropics from Africa, India, Sri Lanka, China, Malaysia and Australia.

Specimens examined: Chelama, 7-12-1963, Ellis 17976; Mahanandii, 10-12-1969, Ellis 32729.

Notonia DC.


Fleshy shrubs, about 1 m high; stems glabrous, leaf-scars raised and prominent. Leaves up to 25 x 11 cm, elliptic-ovate, acute-attenuate at base, fleshy, glabrous; petioles 0.5 cm long. Flowers white, 2.5 cm long, in heads 2.5 x 1.2 cm, in terminal, pedunculate corymb 20 cm long; phyllaris 1.5 x 0.4 cm, scarious-margined, parallel-nerved; pappus ciliate; corolla 1.8 cm long, glabrous, lobes small; anthers linear, connectives exserted. Achenes 0.6 cm long, linear, ribbed.

Fl. & Fr.: Throughout the year.
World distribution: India and Sri Lanka, in dry localities.

Specimen examined: Chelama, 13-7-1963, Ellis 16870.

Eunilia Cass


Erect or diffuse herbs, about 40 cm high; stems striate, glabrous or sparsely puberulous. Leaves 8 x 3.5 cm, lyrate, coarsely crenate-dentate, amplexicaul at base, sessile, glabrous or sparsely puberulous. Flowers 1 cm long, pink, in heads 1 x 0.3 cm, in terminal racemes 15 cm long; phyllaries 1 x 0.1 cm, in single row, marginally scariosus, glabrous; corolla 0.6 cm long, linear, lobes acute; pappus ciliate, dense. Achenes 0.3 cm long, linear, flattened, hairy along margins.

Fl. & Fr.: Throughout the year.

World distribution: Tropics in Africa, India, Sri Lanka and America.

Specimen examined: Gundlabrahmeswaram, 1-4-1965, Ellis 23841.

Gynura Cass. nom. cons.


Erect herbs, about 1 m high; stems striate, grooved, glabrous or irregularly puberulous. Leaves up to 10 x 5 cm, elliptic-ovate, irregularly dentate-serrate, sometimes pinnatifid, shortly petiolate. Flowers orange-red, 1.5 cm long, in drooping heads 1.3 x 0.8 cm, in terminal panicles about 20 cm long; phyllaries 1 x 0.05 cm, marginally scariosus, sparsely puberulous; corolla 0.9 cm long, linear, lobes linear-ovate. Achenes 0.2 cm long, ribbed, sparsely hairy.

Fl. & Fr.: Throughout the year.

World distribution: Tropics in Africa, India and America.

Specimen examined: Gundlabrahmeswaram. 1-4-1965, Ellis 23842.
Remarks: This was introduced into India during the beginning of this century. The plants have not yet turned into weeds.

van Steenis (op. cit. p. 463) traces the splitting of the genus Crossocephalum from Gymura by S. Moore in 1912, and states, '...Crossocephalum differs from Gymura by the quite different tips of the style arms, by the corolla tube being not or only slightly widened at the base, and the limb of the corolla passing very gradually into the tube. For the present, I am accepting this opinion.' Thereby he has indicated that the splitting of the genus Gymura may not be final. In view of the confused state which still prevails on this issue, we are inclined to treat the present collection under the genus Gymura Cass.

Adenostemma Forsl.


Erect herbs, about 75 cm high, profusely branched; branches striate, glandular. Leaves up to 20 × 10 cm, elliptic-ovate, acuminate, broadly ovate, rhomboid, abruptly attenuate at base, glabrous, dentate-serrate, oblanceolate, often bullate; nerves 3 from base; petioles 2 cm long. Flowers white, in heads 0.7 cm across, in terminal, branched panicles 20 cm long, bracteate; peduncles about 2.7 cm long, phyllaries 0.4 × 0.15 cm, obovate, spatulate, glandular; corolla 0.3 cm long, glandular; style long, stigmas clavate. Achenes 0.4 cm long, oblong, slightly falcate, flattened at base; pappus 3–5, clavate, rigid.

Fl. & Fr.: August–February.

World distribution: Pantropic.

Specimen examined: Sunnipenta, Srisailam, 21-10-1964, Ellis 22143.

Remarks: Hooker f. (op. cit. pp. 242, 253) has given 7 varieties under this species, following C.B. Clarke (op. cit.). None of the subsequent Indian workers has followed this treatment; the varieties have been recognised in this treatment as variants of the typical form.

Lagasca Cav. non. cons.

Erect herbs, about 80 cm high; branches terete, striate, pubescent. Leaves about 6 x 3 cm, elliptic-ovate, rhomboid, acuminate, acute at base, scabrous above, white-pubescent beneath. Flowers white, about 0.7 cm long, in axillary heads 1 x 1.5 cm; peduncles up to 13 cm long; phyllaris up to 1.2 x 0.7 cm, ovate, elliptic-ovate or obovate, 3-5-nerved; corolla lobes 0.5 cm long, ovate, puberulous without; anthers 0.2 cm long, connectives expanded at apices covering the bilobed stigmas. Achenes 0.4 cm long, densely pubescent; pappus 0.2 cm long, hirsute.

*Fl. & Fr.*: Throughout the year.

*World distribution*: A native of Central America, it has become a weed in many tropical countries.

*Specimen examined*: Sunnipenta, 21-10-1964, *Ellis* 22143.

**Gnaphalium** Linn.


Erect herbs, about 20 cm high; branches decumbent, diffuse, woolly-pubescent, striate. Leaves up to 5 x 0.6 cm, obovate, spatulate, densely woolly-pubescent. Flowers white, 0.2 cm long, in heads 0.25 x 0.3 cm, in terminal, clustered, racemes 2.5 cm long; phyllaris 0.2 x 0.05 cm, linear-ovate, scarious, woolly-pubescent without; corolla 0.1 cm long, linear. Achenes 0.05 cm long, faintly papillose; pappus ciliate.

*Fl. & Fr.*: Throughout the year.

*World distribution*: India, Sri Lanka, China, Japan and Australia, in dry localities.


**Laggera** Sch.-Bip. ex Hochst.


Herbs, about 1.5 m high; stems prominently winged, striate, puberulous. Leaves about 7 x 2 cm, elliptic-ovate, obovate, serrulate, decurrent into a wing on the stem, coriaceous, puberulous. Flowers purplish, 0.3 cm long, in drooping heads 1 x 1 cm, in axillary racemes 8 cm long; phyllaris up to 0.5 x 0.1 cm, hairy without, becoming glabrous towards
centre; corolla 0.8 cm long, linear, glabrous, lobes 0.1 cm long, ovate; pappus ciliate. Achenes 0.15 cm long, faintly ribbed, sparsely hairy.

Fl. & Fr.: December-April.

World distribution: Tropics from Africa, India, Sri Lanka, China, Malaysia and Philippines.

Specimen examined: Gundlabrahmeswaram, 31-3-1965, Ellis 73806.

Parthenium Linn.


Gregarious herbs, about 50 cm high; branches grooved, sparsely hairy. Leaves up to 22 cm long, deeply dissected, puberulous; petioles 2 cm long, sheathing at base. Flowers white, 0.2 cm long, in heads 0.2 x 0.5 cm, in terminal panicles about 22 cm long; phyllaries about 0.15 x 0.2 cm, ovate-orbicular, sparsely hairy without, densely so at top, faintly serrulate along margin; corolla 0.2 cm long, glabrous, pappus 0.1 cm long, ovate. Achenes 0.2 x 0.1 cm, obovoid, flattened.

Fl. & Fr.: Throughout the year.

World distribution: Pan-tropic weed, spreading rapidly in India.

Specimens examined: Pathalaganga, Srisailam, 12-1-1963, Ellis 16819; Pathalaganga, Srisailam, 4-12-1969, Ellis 32687; Mahasundi, 21-8-1972, Ellis 42316.

Erigeron Linn.


Erect herbs, about 60 cm high; stems angled, grooved, striate, sparingly hairy. Leaves up to 10 x 1.5 cm, linear, obovate-spatulate, distantly dentate-serrate, pilose, sessile. Flowers white, 0.5 cm long, in heads 0.5 x 0.9 cm, in axillary panicles 10 cm long; outer phyllaries 0.4 cm long, linear-elliptic, sericeous-margined, pilose; pappus ciliate; corolla glabrous. Achenes 0.4 cm long, sparingly hairy.

Fl. & Fr.: October-May.
World distribution: India and Sri Lanka.

Specimen examined: Gundlabrahmeswaram, 20-7-1963, Ellis 16923.

PULICARIA Gaertn.

Pulicaria wightiana (DC.) C.B.Cl. Comp. Ind. 128. 1876 ; Hook. f. FRI 3: 298. 1881 ; Gamble, FPM 4: 702. 1921. Callitrophus wightianus DC. Prodr. 5: 275. 1836 ; Wt. & Dr. 3: t. 1089. 1844.

Erect herbs, about 40 cm high; stems striate, crisply puberulous. Leaves up to 6x0.4 cm, linear-ovate, amplexicaul at base, crenate-serrate, sparsely pubescent. Flowers about 0.7 cm long, in terminal, solitary heads 1.8x0.8 cm; peduncles about 3 cm long, rather thickened towards top; phyllaris 0.6x0.1 cm, oblong-spathulate, pubescent, becoming glabrous and acuminate; corolla ligulate in female, tubular in bisexual; pappus two types—outer scaly, inner hairy; anthers sagittate at base. Achenes 0.15 cm long, faintly ribbed, sparsely pilose or glabrous.

Fl. & Fr.: Throughout the year.

World distribution: India, in dry localities.

Specimen examined: Diguvanetta, 16-11-1969, Ellis 32382.

BLUMEA DC. nom. cons.


Erect herbs, about 70 cm high; stems terete, striate, glabrous. Leaves up to 18x7 cm, elliptic-ovate, obovate or lyrate, cuneate-attenuate at base, crenate-serrate, sparsely puberulous. Flowers yellow, 0.5 cm long, in heads 0.5 cm long, in terminal, cymes 25 cm long; phyllaris small, elliptic-ovate to linear-ovate, hairy along margins; ray florets absent; corolla 0.4 cm long, lobes linear, sparsely hairy without at apices. Achenes 0.1 cm long, sparsely hairy; pappus 0.5 cm long, hairy.

Fl. & Fr.: December-March.

World distribution: India, Sri Lanka and Burma, in rather dry localities.

Specimens examined: Mahanandi, March 1883, J. S. Gamble 10939; Chelama, 12-12-1963, Ellis 18071; Gundlabrahmeswaram, 31-3-1965, Ellis 23812.
Gamble (op. cit. p. 687) records *Blumea fistulosa* (Roxb.) Kurz (— *E. glomerata* DC.) from '...Nallamalai forests of Kurnool...'. It is surprising that it has not been collected from Nallamalais. Hence it is not treated in this enumeration.

**Vernonia Swireb, **nom. cons.,

1. Shrubs; leaves 6×4 cm, ovate-lanceolate, scabrous above; achene glabrous
   
1. Herbs; leaves 6×4 cm, ovate, puberulous above;
   
   achene pubescent:
   
   2. Herbs densely pubescent
   
   *V. divaricata*

2. Herbs puberulous
   
   *V. cinerea*


Shrubs, about 1.5 m high; branches terete, striate, puberulous. Leaves about 8×3 cm, ovate-lanceolate, acute, rounded or acute at base, serrate, scabrous above, puberulous below. Flowers pinkish, 0.5 cm long, in terminal, clustered heads 0.5×0.4 cm, in panicles 20 cm long; common peduncles about 8 cm long; phyllaries 0.1×0.1 cm, oblong, mucronulate, puberulous near axils without; corolla 0.3 cm long, glabrous, lobes ovate; pappus feathery. Achene 0.1 cm long, strongly ribbed, truncate at apices, glabrous.

*Fl. & Fr.*: December-February.

*World distribution*: India and Burma.

*Specimen examined*: Quiddlabrahmeswaram, 30-3-1965, *Ellis* 23800.


Erect herbs, about 40 cm high; branches striate, pubescent. Leaves about 6×4 cm, ovate-lanceolate, acute-cuneate at base, crenate-dentate, densely pubescent beneath, less so above; petioles 0.5 cm long. Flowers pink, 0.4 cm long, in heads 0.8×1 cm, in terminal panicles 20 cm long; phyllaries 0.5 cm long, linear-acuminate, hairy without; corolla 0.2 cm long, glabrous; outer pappus short, inner feathery. Achene 0.2 cm long, faintly angular, sericeous.
Fl. & Fr. : July-February.

World distribution : India, in dry localities.

Specimens examined : Gaurlapalli, 3-8-1917, K. C. Jacob s.n.; Che-lama, 5-7-1963, Ellis 16764; Diguamettia, 18-11-1969, Ellis 32503.


Erect herbs, about 50 cm high; branches terete, striate, pilose to glabrous. Leaves up to 5 x 2.5 cm, ovate, elliptic-ovate, abruptly acute or attenuate at base, serrate-dentate, pilose on both surfaces. Flowers purplish, 0.5 cm long, in heads 0.6 x 1 cm, in terminal, branched cymes about 20 cm long; phyllarhis up to 0.5 x 0.1 cm, mucronulate, pilose without; corolla 0.4 cm long, glabrous, lobes ovate; outer pappus small, cupular, inner feathery. Achene 0.1 cm faintly angular, pubescent.

Fl. & Fr. : Throughout the year.

World distribution : Tropics from Africa, India, Sri Lanka and Australia.

Specimens examined : Che-lama, 9-12-1963, Ellis 18034; Diguama-stia, 16-11-1969, Ellis 32396.

CAMPA NULACEAE

1. Leaves crisped along margins; corolla lobes equal . . . . WAHLERBEGIA

1. Leaves not crisped along margins; corolla bilabiate LOBELIA

WAHLERBEGIA Schrad. ex Roth, nom. cons.


Herba, about 30 cm high; stems and branches quadrangular, hirsutely hairy. Leaves about 1.5 x 0.7 cm, ovate, apiculate, rounded at base, margins recurved, distantly serrulate, crisped, sparingly hirsute above and along midrib beneath. Flowers white with a pink tinge, 0.4 cm long, in axillary, panicled cymes 3 cm long; pedicels about 1 cm long; calyx
0.4 cm long, sparsely hirsute without, lobes linear-acuminate, coriaceous; corolla 0.2 cm long, lobes linear. Capsules 0.4 × 0.2 cm, hirsute; seeds several, minute, oval.

Fl. & Fr.: September-December.

World distribution: India and Sri Lanka.


LOBELIA Linn

1. Stems winged; seeds ellipsoid; 2 anthers bristly at apices ... L. heyneana
1. Stems not winged; seeds triangular; all anthers bristly at apices L. alsinoides


Erect herbs, up to 20 cm high; branches 3-winged, glabrous. Leaves 2 × 1.5 cm, ovate, abruptly cuneate at base, serrate, glabrous; petioles very short. Flowers bluish-pink with maroon markings on lower lip, 0.4 cm long, axillary, solitary; pedicels 1.5 cm long; calyx 0.5 cm long, glabrous, lobes 0.2 cm long, linear; corolla 0.2 cm long, 2-lipped, glabrous; anthers connate, lower two bristly at apices; stigmas 2-lobed. Capsules 0.5 cm long, ellipsoid; seeds several, minute, ellipsoid, smooth.

Fl. & Fr.: October-December.

World distribution: India and Malaysia.

Specimen examined: Gundlabrahmeswaram, 24-10-1964, Ellis 22166.


Herbs, erect or decumbent, about 40 cm long; stems weak, triangular, glabrous. Leaves about 1.2 × 1.2 cm, ovate-orbicular, rounded or acute at base, crenate-serrate, subsessile. Flowers blue, 0.8 cm long, solitary, axillary; pedicels up to 3 cm long; calyx 0.8 cm long, glabrous, lobes linear-acuminate; corolla 0.3 cm long, 2-lipped, glabrous, lobes ovate-elliptic; filaments glabrous, anthers connate, all bristly at apices; style
cylindric, stigmas 2-lubed. Capsules 0.3 cm long; seeds numerous, minute, triangular.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka and Burma.

Specimen examined: Chelama, 3-12-1963, Ellis 18018.

PLUMBAGINACEAE

Plumbago Linn.


Scandent herbs, about 40 cm high; branches slightly zig-zag, striate, glabrous. Leaves about 10 x 5 cm, ovate, elliptic-ovate, rounded or acute or attenuate at base, or dilate and vaginate, shortly petiolate. Flowers white, about 2.5 cm long, in terminal, branched spikes 15 cm long; calyx 1.5 cm long, tubular, stipitately glandular without; corolla 2.5 cm long, glabrous, lobes 0.5 cm long, oblong; stamens 5, antepetalous, filaments dilated; style as long as tube, stigmas shortly branched. Capsules 0.5 cm long, linear-oblong; seed 1, linear-oblong.

Fl. & Fr.: July-December.

World distribution: Tropics from India to Malaysia.

Specimens examined: Chelama, 7-12-1963, Ellis 17935; Srisailam, 21-10-1964, Ellis 22148; Upper Ahobilam, 22-11-1969, Ellis 32585.

MYRSINACEAE

Embelia Burm. f. nom. cons.


Shrubs, about 1 m high; branches woody, terete, rusty-tomentose when young, lenticellate. Leaves 8 x 5 cm, obovate, orbicular-oblong, abruptly acuminate, minutely serrulate, puberulous beneath and along nerves above; lateral nerves prominent below; petioles 1.5 cm long. Flowers greenish-brown, 0.2 cm, in axillary racemes 3 cm long, shortly pedicellate; calyx 0.1 cm long, lobes ovate, sparsely puberulous without and along margins; corolla 0.2 cm long, ovate, glandular-papilllose within
and along margins; anthers exerted; ovary glabrous. Drupes 0.3 x 0.3 cm, globose; seed 1.

Fl. & Fr.: July-October.

World distribution: India, Sri Lanka and Burma.

Specimens examined: Chelama, 21-7-1963, Ellis 16938; Rollapanta, 16-8-1972, Ellis 42269.

Remarks: After studying the herbarium specimens in MHI and CAL and the present collections C. B. Clarke (loc. cit.) is followed who in turn had agreed with Kurz’s opinion, saying that ‘...it appears impossible to separate E. villosa on the one side from E. robusta, on the other from E. ferruginea’; this issue requires a monographic study of all the taxa.

SAPOTACEAE

1. Leaves acuminate; lateral nerves prominent; fruits about 1 x 1.2 cm
   ... Madiuca

2. Leaves emarginate; lateral nerves not prominent; fruits about 3 x 2 cm
   ... Manilkara

MADIUCA J. F. Gmel.


Treca, about 30 cm tall; branches terete, bark suberous, cracked, laticiferous, brown-pubescent or tomentose when young. Leaves up to 15 x 9 cm, confined to ends of branchlets, elliptic-acuminate, acute or rounded at base; lateral nerves parallel; petioles about 3.5 cm long, brown-pubescent. Flowers pale yellow, about 6 cm long, in terminal fascicles 10 cm across; pedicels 3.5 cm long, brown-pubescent; calyx 1.2 cm long, brown-tomentose without, densely so within, lobes acute; corolla 0.7 cm long, fleshy, lobes many; stamens many, anthers pubescent at base; ovary hairy, style about 2 cm long, exerted. Berries 3 x 2 cm, ovoid; seeds 3-4, flattened.

Fl. & Fr.: March-May.

World distribution: India and Burma, in dry deciduous forests.

Specimen examined: Chelama, 19-3-1965, Ellis 23729.
MANILKARA Adanson emend. Gilly, nom. cons.

1. Flowers 0.4 x 0.3 cm; pedicels up to 0.8 cm long         M. hexandra
1. Flowers 0.8 x 1 cm; pedicels up to 3.5 cm long         M. roxburghiana


Trees, about 20 m tall; branches terete, puberulous when young, bark pale and fissured, laticiferous. Leaves up to 10 x 6 cm, oblong emarginate, rounded or obtuse at base, coriaceous; lateral nerves parallel; petioles about 2 cm long. Flowers pale green, 0.4 cm long, axillary, solitary or clustered; pedicels 0.8 cm long; calyx 0.2 cm long, lobes 6, ovate, rusty-pubescent without and along margins; corolla 0.15 cm long, lobes about 18, outer linear, inner ob lanceolate; stamens 6, anthers apiculate, filaments connate with fimbriate-staminodes, attached to corolla-tube; ovary hairy, style thick. Berries 0.8 x 0.5 cm; seed 1.

Fl. & Fr. : July-February.

World distribution : India and Sri Lanka, in dry deciduous forests.

Specimen examined : Chelama. 13-7-1963. Ellis 16869 : Mahanandi, 8-12-1969, Ellis 32719.


Trees, about 15 m tall; rusty-ramentose in young branches, bark wrinkled in older branches. Leaves up to 8 x 5.5 cm, elliptic-oblong, emarginate, rounded at base, coriaceous; nerves parallel, prominent; petioles 2 cm long. Flowers white, 0.8 cm long, axillary, solitary or clustered; pedicels about 3.5 cm long; calyx 0.7 cm long, brown-pubescent without, lobes 0.6 cm long, ovate; corolla 0.7 cm long, outer linear, inner ob lanceolate, glabrous; stamens 6-8, fimbriate-staminodes alternating with fertile ones, filaments connate, attached to corolla-tube; ovary hairy, style thick, glabrous. Berries 1 x 1.2 cm, globose, rather depressed at top.

Fl. & Fr. : March-December.

World distribution : India, in dry localities.

Specimen examined : Pathalaganga, Srisailam, 25-3-1965, Ellis 23750.
EBENACEAE

Diospyros Linn.

1. Leaves about 16 x 6 cm; fruits about 2.5 x 2.5 cm  
   D. melanoxylon

1. Leaves about 5 x 3 cm; fruits about 0.8 x 0.8 cm  
   D. chloroxyylon

Wt. Ic. 4 : t. 1223. 1850. D. tisperi Buch.-Ham. in Trans. Linn. Soc. 15 : 
111. 1827 ; Hiern, op. cit. 158 ; C.B.C.I. op. cit. 563.

Trees, about 15 m tall; brown-tomentose in young branches, bark in older stems cracked. Leaves up to 16 x 6 cm, subopposite, obtuse, orbicular, obtuse or rounded at base, brown-tomentose when young, coriaceous; petioles 1 cm long, puberulous. Flowers unisexual, axillary; 
male—0.5 cm long, in simple cymes 1.5 cm long, bracteate; calyx lobes 
ovate, pubescent; stamens about 16, anthers acuminate; female—0.6 cm 
long, solitary; calyx accrescent in fruits; staminodes about 10; ovary 
pubescent, style bili. Fruits about 2.5 x 2.5 cm, globose, pericarp hard; 
seeds a few, flattened.

Fl. & Fr.: March-October.

World distribution: India and Sri Lanka, in dry deciduous forests.

Specimens examined: 'Kurnool Dist.', no date, K.H. Headman s.n.; 
Srisailam, 26-3-1965, Ellis 23775.

Remarks: There has been some confusion about the status of 
Diospyros tomentosa and D. melanoxylon. Brandis (op. cit. p. 433), though 
distinguishing both D. tomentosa and D. melanoxylon Roxb. has spoken 
of these as follows: '...in my F. Fl. I united 17 and 18, and I doubt 
ed. 1950 (1903) ] treats D. tomentosa Roxb. as a distinct species. Gamble 
(op. cit. p. 772) treats these species separately. Haines [Bot. Bihar and 
synonymous to D. melanoxylon Roxb.

The present studies indicate that apparently D. tomentosa Roxb. 
appears to have larger leaves. How far this quantitative character is 
supported by other features requires a monographic study.

D. chloroxyylon Roxb. Pl. Corom. 1 : 38. 1795 ; Hiern, Monogr. 
Eben. 233. 1873 ; C.B.C.I. in Hook. f. Fl. Bk. 3 : 540. 1882 ; Brandis, Indian 
Trees, 430. 1906 ; Gamble, FPM 5 : 776. 1923. D. capitulata Wt. Ic. 4 : 
tt. 1224, 1858 bis. 1850.
FLORA OF NALLAMALAI

Trees, about 10 m tall; pubescent in branchlets, branchlets often modified into thorns, bark in older stems fissured. Leaves about 5 x 3 cm, alternate, oblanceolate, oblong or rounded at base, densely pubescent beneath, less so above; petioles 0.4 cm long, pubescent. Flowers unisexual, 0.5 cm long, white, axillary, sessile, bracteate; male---6-7, clustered, calyx lobes 0.2 cm long, obovate-ovate, densely pubescent without; corolla lobes 4, 0.5 cm long, obovate, hairy at back along midrib, accrescent in fruits; stamens many, anthers acute; female---solitary, calyx and corolla larger than male flowers; staminodes about 9; ovary glabrous, styles 4. Berries about 0.8 x 0.8 cm, globose, glabrous; seeds 2-3, flattened.

Fl. & Fr.: July-February.

World distribution: India, in dry deciduous forests.

Specimens examined: Diguvametta, 4-11-1906, C. A. Barber 8040; Chelama, 6-7 1963, Ellis 16777; Maddipenta, Eastern Nallamalais, 11-8-1972, Ellis 42230; Diguvametta, 16-11-1969, Ellis 32400.

OLEACEAE

1. Trees; fruits capsular, about 6 x 3 cm, loculicidally dehiscent

2. Scandent shrubs or small shrubs; fruits of indehiscent berries, about 0.8 x 0.5 cm

SCHREBERA


Trees, about 15 m tall; young branches glabrous, lenticellate. Leaves compound, about 32 cm long, imparipinnate; leaflets up to 13 x 60 cm, about 7, ovate-elliptic, acuminate, rounded or obtuse or attenuate at base; petioles 1 cm long. Flowers pale yellow, 1 cm long, in terminal, branched cymes 25 cm long, bracteate; calyx 0.3 cm long, puberulous, lobes 0.1 cm long, ovate; corolla 0.8 cm long, tube 0.5 cm long; stamens included in tube; ovary glabrous, style filiform, stigmas bifid. Capsules about 6 x 3 cm, woody, speckled with white spots, loculicidally dehiscent; seeds several, 3 x 1.2 cm, winged.

Fl. & Fr.: April-October.

World distribution: India and Burma, in dry tracts of deciduous forests.
Specimen examined: Ramanapenta, Gundlabrahmeswaram, 31-3-1965, Ellis 23828.

Jasminum Linn.

1. Leaves trifoliate
2. Leaves simple:
   1. Leaves about 11 x 8 cm, rounded or truncate at base J. auriculatum
   2. Leaves about 7 x 2.5 cm, obtuse or acute at base J. rigida


Shrubs, often scandent; juvenile branchlets pubescent, terete. Leaves trifoliolate, up to 6 cm long; terminal leaflet 5.5 x 3.5 cm, laterals 1 x 0.5 cm, sparsely puberulous, more or less along nerves. Flowers white, 1.5 cm long, in terminal, branched cymes 3 cm across; pedicels puberulous; calyx 0.2 cm long, sparsely puberulous without, lobes small, ovate; corolla tube 1 cm long, lobes 5-7, elliptic, 0.8 cm long; stamens 2, included; style glabrous, stigmas thickened, cylindric. Berries 0.5 x 0.5 cm, globose, ripening black; seed 1.

Fl. & Fr.: August-February.

World distribution: India and Sri Lanka, in dry localities.

Specimens examined: Diguvametta, 1-11-1906, C. A. Barber 8025; Mahanandi, 22-8-1965, Ellis 25496; Diguvametta, 18-11-1969, Ellis 32490; Bairanidokku, 17-8-1972, Ellis 42241.


Scandent shrubs; branches purplish, terete. Leaves simple, about 11 x 8 cm, ovate, shortly caudate-acuminate, rounded or almost truncate at base, glabrous, chartaceous; petioles 2 cm long, jointed just above the base. Flowers white, about 2 cm long, in terminal, trichotomous cymes 8 x 22 cm, bracteate; calyx 0.7 cm long, puberulous without, lobes linear, tube 0.2 cm long; corolla 2 cm long, glabrous, lobes about 8, 1 cm long, linear, acute; stamens included, anthers 0.3 cm long, linear, connectives produced; style glabrous, stigmas linear. Berries 0.7 x 0.4 cm, ovoid, ripen black; seed 1.

Fl. & Fr.: February-August.
FLORA OF NALLAMALAIS

World distribution: Peninsular India.

Specimen examined: Rollapenta, 16-8-1972, Ellis 42270.

Remarks: Since its publication this species is said to have been confined to Western Ghats. The present collection, therefore, is a first record of its occurrence in the Eastern Ghats.

Jasminum rigidum Zenk. Pl. Ind. Columb. 5, t. 6; DC. Prodr. 8: 305. 1844; Wt. Te. 4: 1247. 1850; C. B. Cl. in Hook. f. FBI 3: 598. 1882; Gamble, FPM 5: 790. 1923.

Erect or scandent shrubs; branches terete, glabrous. Leaves up to 7x3.3 cm, ovate-elliptic, obtuse or acute at base, basal 2 ovate-elliptic, glabrous, shining, gland-dotted beneath, coriaceous; lateral nerves running parallel to margins; petioles 0.3 cm long. Flowers white, 2.5 cm long, in axillary cymes 4 cm across, bracteate; calyx 0.7 cm long, puberulous, tube 0.2 cm long, lobes linear; corolla 2.3 cm long; tube 2 cm long, rather inflated at tip, lobes 1.8-0.5 cm, ovate; stamens included, anthers 0.4 cm long; ovary glabrous. Fruits 0.5 cm long, bilobed, shining; seed 1 in each cell, hemispherical.

Fl. & Fr.: February-July.

World distribution: India and Burma, in dry deciduous forests.

Specimens examined: 'Kurnool', without date, Beddome s.n.; Rollapenta, February 1887, J. S. Gamble 18706; Gundlaphrameswaram, 30-3-1965, Ellis 23797.

APOCYNACEAE

1. Climbing shrubs
2. Erect herbs, shrubs, or trees:
   1. Herbs
   2. Shrubs or trees:
      3. Stems thorny
      4. Stems not thorny:
         1. Stamens included at base of corolla tube; calyx lobes linear-ovate, acuminate
         2. Stamens exserted; calyx lobes ovate, ovate-oblong

ICHNOCARPUS R. Br. nom. cons.


Climbing shrubs over tall trees; juvenile branches rusty-tomentose. Leaves up to 11 x 5 cm, ovate, elliptic acuminate, obovate, shortly acuminate, obtuse, rounded or acute at base, coriaceous, generally glabrous. Flowers white with a tinge of orange, 0.3 cm long, in axillary and terminal, paniculate cymes up to 27 cm long, bracteate; calyx 0.1 cm long, lobes ovate, sparsely hairy without; corolla 0.5 cm long, tube slightly inflated at base, lobes 0.3 cm long, linear-ovate, twisted at maturity, pubescent above and at throat; stamens included, anthers cohering; disk 4-lobed; ovary hairy. Follicles about 14 cm long, cylindrical; seeds 2 cm long, linear, comose at apices.

*Fl. & Fr.*: September-March.

*World distribution*: Tropics from India, Sri Lanka, Burma, Malaysia and Australia.


**Catharanthus G. Don**

1. Corolla lobes about 0.3 x 0.2 cm; leaves elliptic-acuminate  
   *C. pusilla*

1. Corolla lobes about 2 x 1.5 cm; leaves obovate-oblong, emarginate  
   *C. roseus*


Erect herbs, about 35 cm high; branches terete, grooved. Leaves opposite, about 6.5 x 1.5 cm, elliptic-acuminate, acute or obtuse at base, faintly scabrous along margins. Flowers white, 1 cm long, axillary, solitary or in pairs; calyx 0.6 cm long, lobes cuneate-acuminate; corolla tube 0.8 cm long, inflated at top, lobes 0.3 x 0.2 cm, ovate; stamens included; disk of 2 glands; ovary glabrous, style filiform. Follicles black, 5.5 cm long, cylindrical, ribbed; seeds many, black, 0.3 cm long, muricate ribbed.

*Fl. & Fr.*: Throughout the year.

*World distribution*: India and Sri Lanka, in dry tracts.
FLORA OF NALLAMALAI

Specimens examined: Giddalur, 9-11-1906, C. A. Barber 8083; Srisailam, 20-10-1964, Ellis 22113; Srisailam, 5-12-1969, Ellis 32700.


Erect herbs, about 50 cm high; branches terete, striate, glabrous. Leaves opposite, about 6 x 3 cm, obovate-oblong, emarginate, apiculate, obtuse or acute or attenuate at base, chartaceous; lateral nerves prominent; petioles up to 0.4 cm long, 2-glandular at base; stipules laciniate. Flowers white and pink, about 3 cm across, axillary, solitary or in pairs; calyx 0.5 cm long, lobes linear; corolla tube 2.5 cm long, pilose within, lobes about 2 x 1.5 cm; stamens included; ovary softly pilose, style filiform, stigmas capitate; disk of 2 linear glands. Follicles up to 3 cm long, cylindrical, grooved; seeds 8-10, 0.2 cm long, longitudinally striate; muriculate.

Fl. & Fr: Throughout the year.

World distribution: A native of West Indies, run wild in many countries including India, Malaysia etc.

Specimen examined: Srisailam, 20-10-1964, Ellis 22114.

Remarks: The plants are medicinally important and are being exploited for extraction of an alkaloid which is used in high blood pressure.

Carissa Linn. nom. cons.


Erect or rarely subscandent shrubs; juvenile branches puberulous, zig-zag; thorns 2 cm long, straight. Leaves of 2 sizes, the thorn-borne larger than intermediate ones, about 4 x 3 cm, ovate-oblong, orbicular, emarginate, or apiculate, obtuse or acute at base, slightly puberulous, coriaceous; lateral nerves prominent, arched near margins; petioles 0.1 cm long. Flowers white, about 2 cm long, in terminal cymes about 3 cm long, bracteate; calyx 0.2 cm long, puberulous, lobes ovate-acuminata; corolla tube 1 cm long, inflated above, lobes 0.6 x 0.3 cm, ovate-oblong; stamens included; style glabrous. Berries about 1 x 1 cm, ovoid; seeds 4.
Fl. & Fr.: March-August.

World distribution: India, Sri Lanka and Burma, in dry deciduous forests.

Specimen examined: Srisailam, 13-7-1963, Eilts 16871.

Remarks: Haines [Bot. Bihur & Orissa, 2: 560-561, rep. ed. 1961 (1922)] has described 2 forms, diffusa and scandens, depending mainly on the habit—whether dwarf or scandent. The present studies in the field and in MH and CAL reveal that they are but one variable taxon. Haines (op. cit. p. 560) states, 'The two following forms may be distinct species, but are more probably one depending upon locality, whether in the open or with other forest growth, and especially upon the prevalence or otherwise of browsing.' In addition, Duthie [Fl. Up. Gang. Pl. 1: 483, rep. ed. 1960 (1903)] and Cooke [Fl. Pres. Bombay 2: 187, rep. ed. 1958 (1904)] are followed in treating C. hirsutum Roth under C. spinarum Linn., because except for the puberulous nature which appears to be due to the prevailing environmental conditions, there is no other qualitative character to separate the two taxa. Gamble (op. cit.), however, has recognised it at a specific level.

**Holarrhena R. Br.**


Large shrubs or small trees, about 4 m tall; juvenile branches slightly flattened, glabrous, rarely puberulous. Leaves up to 26 × 12 cm, opposite, elliptic, acuminate, obtuse or rounded sometimes unequally so at base, faintly wavy along margins, glabrous or puberulous; lateral nerves parallel; petioles 0.5 cm long. Flowers white, 1.5 cm long, in branched cymes 6 cm long and 10 cm across, bracteate; pedicels 0.5 cm long; calyx 0.4 cm long, sparsely pubescent without, lobes 0.3 cm long, unequal, linear-ovate; corolla tube about 1 cm long, ciliate without, lobes 1 × 0.5 cm, oblong-orbicular; stamens included; style filiform, stigmas slightly bifid. Foliolus about 33 cm long, linear, white-speckled; seeds about 1 cm long, silky-hairy at apices.

Fl. & Fr.: March-September.

World distribution: India, Malaysia, in dry deciduous forests.

Specimens examined: 'Kurnool', date not given. Beddome s.n.:

**Wrightia R. Br.**

1. Follicles connate throughout
2. Follicles connate only at apices


Trees, about 8 m tall; branches smooth, pubescent, exuding yellow latex. Leaves up to 13×5 cm, ovate-elliptic, apex acute or cuneate, acute at base, brown-pubescent beneath, puberulous above; lateral nerves parallel; petioles 0.3 cm long, pubescent. Flowers pale yellow, 2 cm long, in terminal, dichotomously branched cymes about 10 cm long, bracteate; calyx 0.3 cm long, lobes oblanceolate, puberulous without; corolla tube 0.5 cm long, lobes 1 cm long, oblong, puberulous; corona linear, glabrous; anthers 0.7 cm long, sagittate, pubescent without; stigmas ovoid. Follicles 25 cm long, grooved in the centre, speckled with white spots; seeds several, 0.8 cm long, silky hairy at base.

*Fl. & Fr.*: July-September.

*World distribution*: India, Sri Lanka and Burma, in dry deciduous forests.


Trees, about 10 m tall; branches glabrous to puberulous. Leaves
10×3 cm, elliptic-acuminate, acute at base, glabrous; petioles 0.2 cm long. Flowers white, 1.2 cm across, in dichotomously branched, terminal cymes 8 cm long, bracteate; calyx 0.1 cm long, glabrous, lobes ovate, ciliolate along margins; corolla tube 0.1 cm long, lobes 1×0.2 cm, linear-obovate, spathulate; corona scales fimbriate; stamens 0.6 cm long, filaments 0.1 cm long, anthers tapering at apex, sagittate, hairy within, less so without; ovary and style hairy, stigmas dilated. Follicles about 25 cm long, cylindric, joined at apex; seeds several, about 1.3 cm long, striated, silky-hairy at base.

Fl. & Fr.; May-October.

World distribution: India, Sri Lanka and Burma, in dry deciduous forests.


ASCLEPIADACEAE

1. Erect shrubs
   1. Twining herbs or shrubs:
   2. Plants leafless
   2. Plants with leaves:
   3. Flowers 1.5 cm across, fleshy
   3. Flowers 1 cm across, or less, not fleshy:
   4. Follicles echinate
   4. Follicles smooth:
   5. Follicles about 16×4 cm:
   6. Flowers in panicules; corolla tube 0.5 cm long
   6. Flowers in umbels; corolla tube 0.1 cm long
   5. Follicles up to 10×1.5 cm:
   7. Inflorescences 2 at each node
   7. Inflorescences solitary at each node:
   8. Flowers in umbellate cymes:
   9. Pedicels 0.8 cm long
   9. Pedicels 0.3 cm long
   8. Flowers in racemose cymes

CALOTROPIS
SARGOSTEMA
HOLOSTEMMA
PERGULARIA
MARSDENIA
WATTAKAKA
GYMNEMA
LEPTADENIA
CHANTHRUS
TYLOPHORA
CALOTROPIS R. BR.


Erect shrubs, rarely trees, about 2 m tall; branches ash-coloured, striate, fagaciously cottony-pubescent. Leaves about 17×12 cm, obovate, acute or shortly acuminate, rounded and cordate at base, coriaceous, white-tomentose beneath, less so above, subsessile. Flowers pinkish-purple, about 1.8×2 cm, in lateral, umbellate cymes 4×7 cm, bracteate; peduncles about 8 cm long; pedicels about 3.5 cm long; calyx lobes about 0.3×0.2 cm, ovate, glandular within; corolla lobes 1×0.6 cm, ovate, tube 0.5 cm long, coriaceous; corona lobes 5, laterally compressed, curved, shorter than staminal column, puberulous at back; stamens inserted at base of corolla, anthers membranous, inflexed, pollinia one in each cell; ovary 2-carpelled, style slender, stigmas pentagonal. Follicles in pairs, about 10×4 cm, ovoid, cottony-pubescent; seeds several, 0.7×0.5 cm, flattened, comose at apices.

Fl. & Fr.: March-December.

World distribution: India, Sri Lanka, Burma, South China and Malaysia, in fallow land.

Specimens examined: Sunnipenta, Srisailam, 5-12-1969, Ellis 32705; Maddipenta, Eastern Nallamalais, 11-8-1972, Ellis 42226.

SARCOSTEMMA R. BR.


Trailing shrubs; branches terete, jointed, glabrous. Leaves absent. Flowers white, 0.5 cm across, in terminal and lateral umbels about 2 cm across; pedicels 0.8 cm long, puberulous; calyx lobes 0.1×0.1 cm, ovate, puberulous without; corolla lobes 0.5 cm long, linear-ovate; corona lobes about 10, rather fleshy, outer attached to the base of staminal column; pollinia clavate, caudicles long; ovary glabrous, style exserted. Follicles about 6 cm long, tapering; seeds many, 0.6×0.3 cm, oblong, rounded and irregularly toothed at base, flattened, puberulous, comose at apices.

Fl. & Fr.: December-August.
World distribution: India, in arid tracts.

Specimen examined: Mahanandi, 10-12-1969, Ellis 32145.

**Holostemma R. Br.**


Extensive twiners; branches laticiferous, faintly angled, striate, glabrous or sparsely puberulous. Leaves about 15 × 11 cm, ovate-oblong, abruptly acuminate, cordate at base with large sinuses, glabrous or faintly puberulous along nerves and nervules, glandular above near petiole; petioles up to 7 cm long. Flowers pale pink, 1.5 cm across, in lateral cymes 8 cm long; bracteate; calyx lobes 0.4 × 0.4 cm, ciliate along margins; corolla 4 × 6 cm, ovate, coriaceous; corona truncate, winged; staminal column 1 cm long, anthers hairy at back; pollinia linear, caudicles black; ovary glabrous. Follicles 10 × 4 cm, ovoid, tapering above, glabrous; seeds 0.9 × 0.4 cm, winged, comose at apices.

Fl. & Fr.: July-December.

World distribution: India, Sri Lanka, Burma and China, in moist deciduous forests.

Specimens examined: Chelama. 5-7-1963, Ellis 16753; Mahanandi, 21-8-1965, Ellis 25431.

**Pergularia Linn.**


Extensive climbing herbs; branches terete, striate, hispidly tomentose to puberulous. Leaves about 10 × 10 cm, orbicular-ovate, abruptly acuminate, cordate at base with large sinuses, faintly puberulous, more so along margins, glandular above near petiole; petioles about 6 cm long. Flowers pale green, 0.9 × 0.8 cm. in corymbs up to 18 cm long; bracteate; pedicels 3 cm long; calyx lobes 0.2 cm long, hispid without, tube 0.1 cm long;
corolla lobes 0.5 x 0.3 cm. ovate, ciliate, corona in 2 series, outer membranous, inner covering stamens; pollinia flattened; ovary glabrous, style exserted. Follicles paired, up to 6 x 1.2 cm, tapering at apices, echinate, softly hisrute; seeds many, 0.8 x 0.4 cm, ovate, flattened, tomentose, comose at apices.

Fl. & Fr.: July-March.


Specimens examined: Giddalur, 9-11-1906, C.A. Barber 8075; Chelama, 7-12-1963, Ellis 17933.

Remarks: Santapau & Irani (op. cit.) have concurred with N. E. Brown’s (in Kew Bull. 1907: 323-325. 1907) conclusions where he had re-established the genus, Pergularia sensu Linnaeus (non alior. auct.), stating, ‘...I propose to re-establish the genus in the sense that Linnaeus intended. But as it seems clear that Linnaeus combined two species under the name P. tomentosa, I propose to retain the name for the tomentose-leaved plant only.’

Marsdenia R. Br.


Twining shrubs, branches terete, brown-pubescent. Leaves up to 32 x 30 cm, ovate-orbicular, acuminate, cordate at base, velvety-puberulous; petioles up to 12 cm long. Flowers pale green, 0.8 cm long, in interpetiolar, repeatedly branched, paniculate cymes 8 cm long, bracteate; calyx lobes 0.2 x 0.15 cm, oblong-orbicular, pubescent without; corolla lobes 5, 0.6 cm long, spathulate, pubescent without, tube short; corona lobes 5, flattened; stamens epipetalous at base, anthers covering style; pollinia reniform; ovary glabrous. Follicles about 16 x 4 cm, ovoid, brown-tomentose; seeds several about 1 x 0.4 cm, ovate, silky-pubescent.

Fl. & Fr.: May-January.

World distribution: Tropics from India, Sri Lanka, Burma and Malaysia, in rather dry tracts.

Specimens examined: Chelama, 7-12-1963, Ellis 17939; Ischegundum, Eastern Nallamalais, 9-8-1972, Ellis 42222.
Wattakaka Hassk.


Twining shrubs; branches terete, strigiate, lenticellate, glabrous. Leaves up to 10×8 cm, ovate, shortly acuminate, rounded, truncate or shortly cordate at base, minutely puberulous or glabrous, glandular above near the petiole; petioles up to 4 cm long. Flowers pale green, 0.5×1 cm, in umbels 4 cm across, bracteate; pedicles about 2 cm long, sparsely puberulous; calyx lobes 0.1 cm long, ovate; corolla lobes 0.5×0.3 cm, ovate-orbicular, oblong, glabrous, ciliolate along margins, tube short; corona lobes 5; staminal column 0.2 cm long, anthers attached to style apex. Follicles 10×5 cm, divaricate, tapering at tips; seeds 1.4×0.8 cm, flattened, comose at apex.

*Fl. & Fr.*: May January.

*World distribution*: India, Sri Lanka and Malaysia.

*Specimens examined*: Gazulapalli, 4-9-1971, Rangachari s.n.; Che-lama, 9-7-1963, Ellis 16787; Ramanapenta, Gundlabrahmeswaram, 31-8-1965, Ellis 23827.


Gymnema R. Br.


Twining herbs or shrubs; branches terete, pubescent. Leaves about 6×3 cm, ovate-elliptic, shortly acuminate, rounded and cordate at base, pubescent beneath, less so above; petioles 1.2 cm long. Flowers yellow, 0.2×0.3 cm, in 2 lateral, corymbose cymes about 1.2 cm across at each node; pedicels 0.3 cm long; peduncles 0.5 cm long; calyx lobes
0.1×0.1 cm, ovate-oblong, pilose without; corolla lobes 0.1 cm long, ovate, tube 0.1 cm long, glabrous; corona lobes 5, fleshy; staminal column 0.2 cm long, anthers erect; caudicles short; ovary glabrous. Follicles 1.7×0.8 cm, beaked at apex; seeds 0.5×0.3 cm, bordered, comose at apices.

Fl. & Fr.: September-March.

World distribution: Tropics from Africa, India and Sri Lanka, in dry localities.

Specimen examined: Chelama, 8-12-1963, Ellis 17992.

Leptadenia R. Br.


Twining herbs; juvenile branches puberulous, striate. Leaves up to 9×4 cm, ovate-lanceolate, acuminate, rounded to truncate at base, puberulous, glandular above near petiole; petioles 2 cm long. Flowers pale yellow, 0.2×0.3 cm, in single, lateral, umbellate cymes about 1.2 cm across, bracteolate; pedicels 0.8 cm long; peduncles about 1 cm long; calyx lobes 0.15×0.1 cm, ovate, pubescent without; corolla lobes 0.2 cm long, pubescent without, tube glabrous; corona of 2 rows, epipetalous, fleshy; staminal column short, anthers covering the style; pollinia ovoid, caudicles rather long; ovary glabrous. Follicles about 6.5×1.2 cm, tapering at apices; seeds 1 cm long, comose at apices.

Fl. & Fr.: March-December.

World distribution: India, Sri Lanka, Burma and Malaysia.

Specimen examined: Diguvametta, 7-8-1972, Ellis 42168.

Oianthus Benth.


Twining undershrubs; branches striate, almost glabrous. Leaves about 28×11 cm, pale beneath, ovate, acuminate, rounded or cordate at base, glabrous or faintly puberulous, glandular above near the petiole; nerves 7 from base; petioles up to 5 cm long, striate, puberulous. Flowers pale yellow, 0.5 cm across, in lateral umbellate cymes 1 cm across; calyx lobes 0.15 cm long, faintly puberulous, tube very short; corolla 0.5 cm
across, lobes 0.5 cm long; disciform corona adhering to the staminal column, cupular; staminal column small; pollinia 1 in each cell; stigmas conical. Capsules 9.5 x 0.8 cm, tapering at tips; seeds linear, comose at apices.

Fl. & Fr.: May-October.

World distribution: Peninsular India.

Specimen examined: Gundlabrahmeswaram, 24-10-1964, Ellis 22187.

Remarks: Gamble has not recorded this species from the areas covered in his Flora. Santapau and Irani (in Univ. Bombay bot. Mem. No.4: 66. 1960) state, "...apparently endemic in North Kanara", for they themselves have not collected this species. The present collection, therefore, is a new record for the Eastern Ghats.

TYLOPHORA R. Br.

Tylophora macrantha (Wt.) Hook. fl. Fl. Brit. Ind. 5: 40. 1883; Gamble, FPM 5: 842. 1923. T. fusciculata Buch.-Ham. var. macrantha Wt. Contrib. 50. 1834; Decaisne in DC. Prodr. 8: 608. 1844.

Twining herbs, often decumbent; branches terete, striate, tomotose with recurved hairs. Leaves about 6 x 4 cm, ovate-obtuse, acute, acuminate, rounded or acute at base, puberulous; petioles about 1.5 cm long. Flowers green with red tinge, 0.3 cm long, in lateral racemose cymes 2 cm long, bracteate; pedicels 0.4 cm long; peduncles 0.8 cm long; calyx lobes 0.15 cm long, ovate-acuminate, pilose, tube very short; corolla lobes 0.2 cm long, ovate-lanceolate, tube 0.1 cm long; corona lobes 5, ovoid; staminal column 0.15 cm long, pollinia small; ovary glabrous. Follicles 4 x 1 cm, tapering; seeds flattened, bordered, comose at apices.

Fl. & Fr.: August-December.

World distribution: India and Burma.


PERIPLOCAEACEAE

1. Twining shrubs; lateral nerves parallel
1. Twining herbs; lateral nerves not parallel

CRYPTOLEPIS R. Br.

Cryptolepis buchananii Roem. & Schult. Syst. Veg. 6: 409. 1819; Wt. Jr. 2: t. 494. 1843; Hook. fl. FBI 4: 5. 1883; Gamble, FPM
Climbing shrubs: branches terete, dark wrinkled, lenticellate, glabrous. Leaves about 16 x 8 cm, glaucous beneath, elliptic-acuminate, obovate, shortly acuminate, obtuse or rounded at base; lateral nerves parallel; petioles 0.8 cm long, from thickened pads. Flowers pale yellow, 1 cm long, in axillary, branched cymes 3.5 cm long, bracteate; calyx lobes 0.2 cm long, ovate, tube short; corolla lobes 0.4 cm long, linear-lanceolate, twisted to left, tube 0.1 cm long; corona lobes 5, clavate, fleshy; anthers and connectives cover stigma; pollen grains granular; stigmas pentalongal. Follicles up to 12 cm long, tapering at tips; seeds several, about 0.9 cm long, linear, silky comose at apices.

Pl. & Fr.: April-December.

World distribution: India, Sri Lanka, Burma and China, in dry localities.

Specimen examined: Diguvametta, 8-8-1972, Ellis 42206.

Hemidesmus R. Br.


var. indicus. Twining or prostrate herbs; branches generally purplish-red, angled, glabrous, faintly puberulous, lenticellate; rootstocks woody, aromatic. Leaves variable, up to 12 x 3 cm, linear-acuminate, elliptic-ovate, obovate, oblong, shortly apiculate, emarginate, rounded or obtuse or acute at base, margins excurved, coriaceous, glabrous; petioles 0.2 cm long. Flowers yellow, 0.3 x 0.2 cm, in axillary, clustered, racemose cymes up to 3 cm long, bracteate; calyx lobes 0.12 x 0.1 cm, ovate, sparsely ciliate along margins, tube very short; corolla about 0.5 cm across, ovate-oblong, coriaceous, tube short; coronal scales 5; stamens epipetalous below, anthers connate covering stigma; pollen-masses granular; stigmas 5-gonous. Follicles up to 22 cm long, divaricate, tapering; seeds 0.8 cm long, linear, comose at apices.

Pl. & Fr.: July-February.

World distribution: India and Sri Lanka, in dry localities.
Specimen examined: Diguvametta, 18-11-1969, Ellis 32498.


Except for the pubescence seen on branchlets and leaves beneath and on inflorescences, it agrees in all other characters with the typical variety.

Specimens examined: Gagalapalli, 10-9-1917, Rangachari s.n.; Gundlarihmeswaram, 24-10-1964, Ellis 22194; Mahanandi, 22-8-1972, Ellis 42328.

SPIGELIACEAE

Mitreola Linn. ex Schaeffer


Erect herbs, up to 40 cm high; branches 4-angled, faintly winged. Leaves about 6 x 3 cm, ovate, abruptly attenuate at base, glabrous, faintly puberulous along margins; petioles short; stipules short, ovate. Flowers white, 0.2 cm long, in axillary and terminal, dichotomously branched cymes about 10 cm long, secund, bracteate; pedicels short; calyx 0.1 cm long, lobes 5, ovate, tube short; corolla lobes 5, 0.2 cm long; stamens epipetalous at base; ovary subglobose, style divided up to base. Capsules 3.5 x 3.5 cm, divergently 2-horned, compressed, softly puberulous; seeds numerous, minute, ellipsoid.

Fl. & Fr.: September-December.

World distribution: Tropics from West Africa, India, Burma, Malaysia and North Australia, extending up to tropical America.

Specimen examined: Chelama, 7-12-1963, Ellis 17978.

Remarks: Leeuwenberg (op. cit. pp. 1 & 2) has discussed at length the history of the genus, Mitreola Linn. (Opera Varia 214. 1758) and states (p. 2), '...Britton (1894) rejected Mitreola as genus name but
used the earliest epithet for the first species known, resulting in the new
combination Cynoctonum mitreola... This state of affairs should be consi-
dered in connection with the fact that many authors did not know Linnae-
evus *Opera Varia* (1758)... In fact, it was a reprint of his *Syst. Nat.* ed.
4. 1744. Recently Dandy (1967) considered the *Opera Varia* of interest
and saw that they received international recognition. This resulted
in the reinstalment of *Mitreola* as a genus...

**STRYCHNACEAE**

**Strychnos** Linn.

1. Leaves generally orbicular; nerves 3-5 from base; fruits
   about 5 cm across
   
2. Leaves ovate; nerves 3 from above the base; fruits 1.5
   cm across

*S. nuxvomica*

*S. potatorum*

*Strychnos nuxvomica* Linn. *Sp.* Pl. 189. 1753; DC. Prodr. 9:15.
1845; C.B. Cl. in Hook. f. FBI 4:90. 1883; Brandis, Indian Trees, 473.
1906; Gamble, FPM 5:868. 1923; Bisset *et al.* in Lloydia 36:179-201.

Trees, about 20 m tall; branches glabrous, lenticellate, nodes swollen.
Leaves about 13×10 cm, elliptic-ovate, acuminate, orbicular, rounded at
base, coriaceous, glabrous; nerves 3-5 from base; petioles 1 cm long.
Flowers pale white, 1.2 cm long, in axillary and terminal, branched cymes
4 cm long, bracteate; calyx 0.2 cm long, lobes ovate, puberulous; corolla
tube 1 cm long, pilose within, lobes 0.2 cm long, oblong; anthers epipetal-
ous near throat; ovary glabrous, style linear, stigmas globose. Fruits
about 5×5 cm, globose; seeds 3-4, 1 cm across, flattened.

*Pl. & Fr.*: May-October.

*World distribution*: India, Sri Lanka and Burma, in dry deciduous
forests.

*Specimens examined*: Dornal, February 1887. *Gamble* 18694;
Basavapuram, March 1883, *J.S. Gamble* 10918; Chelama, 18-3-1965, *Ellis*
23709; Ahobilam, 31-8-1965, *Ellis* 25593.

*S. potatorum* Linn. *f.* Suppl. 148. 1781; DC. Prodr. 9:15. 1845;
C.B. Cl. in Hook. f. FBI 4:90. 1883; Brandis, Indian Trees, 474. 1906;

Trees, about 10 m tall; bark furrowed. Leaves up to 14×7 cm,
elliptic-ovate, acuminate, rounded or acute at base, coriaceous; lower 2
lateral nerves above the base, prominent, arched. Flowers white, 0.5 cm
long, in axillary cymes 1 cm long, bracteate; calyx 0.1 cm long, lobes acute or acuminate; corolla puberulous without, pilose within, tube 0.3 cm long, lobes ovate; anthers slightly exerted; ovary glabrous, style as long as corolla, stigmas globose. Berries about 1.5 cm across; seeds 1-2, slightly flattened.

*Fl. & Fr.*: April-October.

*World distribution*: India, Sri Lanka and Burma, in dry localities.

*Specimens examined*: Gazulapalli, 3-9-1917, K. C. Jacob 14988; Srisailam, 20-10-1964, Ellis 22098; Mahanandi, 22-8-1965, Ellis 25476; Diguvaletta, 18-11-1969, Ellis 32499.

A. W. Hill (in *Kew Bull.* 1917: 194. 1917) records *Strychnos cinna-momea* Thwaites var. *wrightii* A. W. Hill, whose present name, according to Bisset *et al.* (in *Taxon* 20: 537-543. 1971 and *Lloydia* 36: 179-201. 1973), being *S. wallichiana* Stendl ex DC., from ‘Nallay Mallays’ (*Beddome* 5303). However, it is not collected from Nallamalais during the present tours of Nallamalais.

**MENYANTHACEAE**

*Nymphoides Seguieri*


Aquatic, floating herbs; stems runner-like or petiole-like; roots fibrous at nodes. Floating leaves about 8 x 8 cm, orbicular, obscurely sinuate, cordate at base, glabrous, minutely scaberulous; petioles about 1 cm long. Flowers white, about 2 x 3 cm, in axillary, solitary clusters; pedicels about 4 cm long; calyx tube 0.2 cm long, lobes 0.3 cm long, spatulate-ovate; corolla 0.8 cm long, lobes glabrous, longitudinally crested in the middle; stamens about 6, filaments short; ovary glabrous, style short, stigmas 2-lobed. Capsules 0.5 x 0.4 cm, ovoid; seeds 0.2 x 0.2 cm, many, muriculate.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Tropics from India, Sri Lanka, China, Malaysia and Philippines.

*Specimens examined*: Srisailam, 12-7-1963, Ellis 16848; Srisailam, 6-12-1969, Ellis 32717.
**FLORA OF NALLAMALAI**

Remarks: The Menyanthaceae are with leaves alternate, corolla induplicate-valvate, and aquatic plants, whereas the Gentianaceae are with leaves opposite, corolla involute or imbricate and terrestrial plants. That the Menyanthaceae and Gentianaceae are to be treated as separate families has gained support by morphological and anatomical investigations of Lindsey (in Amer. Journ. Bot. 25 : 480-485, 1938). The genus *Nymphoides* is therefore treated under the Menyanthaceae.

**GENTIANACEAE**

1. Flowers in axillary, sessile clusters

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**Enicostema**

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1. Flowers in terminal, pedicellate, panicked cymes:

2. Ovary 1-celled; corolla irregular

2. Ovary 2-celled; corolla regular

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**Enicostema Bl. nom. cons.**


 Erect or decumbent herbs, up to 30 cm high; branches quadrangular, glabrous, angles rather scaberulous. Leaves up to 11 × 1.5 cm, opposite, linear-oblong, spatulate, attenuate and slightly vaginate at base, glabrous, margins faintly scaberulous. Flowers white, 0.8 cm long, in axillary clusters, bracteate; calyx 0.3 cm long, tube 0.1 cm long, lobes marginally white, unequal, oblong, ovate, acuminate, scaberulous along margins; corolla lobes 0.2 cm long, linear-oblong, tube 0.5 cm long; stamens 5, epipetalous, filaments scaly at base; ovary glabrous, stigma ovoid. Capsules 0.5 cm long; seeds several, reticulate.

Fl. & Fr.: March-December.

World distribution: Tropics from Africa, India, Sri Lanka and Malaysia.

Specimens examined: Nandyal, March 1883, J. S. Gamble 10878; Ramanapenta, Gundlabrahmeswaram, 26-8-1917, K.C. Jacob 14959; Chelama, 8-7-1963, Ellis 16783; Chelama, 9-12-1963, Ellis 18036;
**Canscora Lamk.**

1. Branches prominently winged, as also the calyx  
   **C. decussata**

1. Branches faintly winged; calyx not winged:
   2. Upper leaves prominent, rounded at base; pedicels filiform  
      **C. diffusa**
   2. Upper leaves not prominent, narrowed at base; pedicels rather thick  
      **C. decurrens**

*Canscora decussata* (Roxb.) Roem. & Schult. Syst. Veg. 3: 229. 1818;  
DC. Prodr. 9: 64. 1845; C. B. Cl. in Hook. f. FBI 4: 104. 1883;  

Erect herbs, about 30 cm high; branches 4-winged, decussate. Leaves  
opposite, about 3 x 1 cm, ovate-elliptic, acute, acuminate, obtuse at base,  
sessile; nerves 3 from base. Flowers pale pink or white, 1.5 cm long,  
bracteate; pedicels about 2 cm long, winged; calyx tube 0.1 cm long,  
profoundly nerved, lobes 0.2 cm long, acuminate; corolla lobes 0.5 cm  
long, oblong, tube 1 cm long; stamens 4, one fertile and larger; ovary  
glabrous, style linear, stigmas 2-lobed. Capsules about 1.3 cm long,  
linear; seeds several, minute.

*Fl. & Fr.*: August-March.

*World distribution*: Tropics from Africa, India, Sri Lanka and  
Burma.

*Specimen examined*: Gundlabrahmeswaram, 24-10-1964, *Ellis* 22190.

1845; C. B. Cl. in Hook. f. FBI 4: 103. 1883; Gamble, FPM 5: 878  
Lc. 4: t. 1327. 1850.

Erect herbs, about 40 cm high; branches faintly 4 angled. Leaves of  
2 types; upper up to 2.5 x 1 cm, ovate, rounded at base, sessile, nerves  
3 from base, reticulations prominent, lower up to 4 x 2 cm, elliptic-ovate,  
aeute at base, sessile, nerves 3 from base. Flowers pale pink, about 1 cm  
long, bracteate; pedicels filiform; calyx lobes 0.1 cm long, ovate-acuminate,  
tube 0.7 cm long; corolla 1 cm long, lobes oblong; stamens 4, one  
placed at a higher level; ovary glabrous. Capsules 0.6 cm long; seeds  
numerous, small, reticulate-rugose.
Fl. & Fr.: September-April.

World distribution: Tropics from Africa, India, Sri Lanka, Burma and Malaysia.


Erect herbs, about 20 cm high; branches quadrangular, faintly winged. Leaves 1.5 × 0.5 cm, ovate, attenuate at base, glabrous; basal lateral nerves prominent running up to apex. Flowers pale pink, 1 cm long, in terminal, branched cymes about 13 cm long, bracteate; pedicels about 2 cm long; calyx lobes 0.1 cm long, ovate, caudate, tube 0.4 cm long; corolla 0.8 cm long, lobes oblong; stamens 4, filaments short, anthers ovate; ovary pubescent at top, style glabrous, stigmas bilobed. Capsules cylindric; seeds numerous, small, reticulate.

Fl. & Fr.: November-March.

World distribution: India, along stream-banks.

Specimen examined: Chelama, 7-12-1963, Ellis 17975.

Exacum Linn.

1. Leaves 3-nerved from base; calyx faintly winged
   on back

   1. Leaves 5-nerved from base; calyx prominently
      winged on back

   .. E. pedunculatum

   .. E. petiolaris

Exacum pedunculatum Linn. Sn. Pl. 112. 1753; Wt. & G. 2: t. 336.
1843; Griseb. in DC. Prodr. 9: 46. 1845; C. B. Cl. in Hook. f. FBI 4:
97. 1883; Gamble, FPM 5: 874. 1923.

Erect herbs, about 25 cm high; branches teretely quadrangular.
Leaves up to 4 × 1.2 cm, elliptic-ovate, or linear-elliptic, acute at base,
glabrous; nerves 3 from base; petioles short. Flowers pale violet, about
0.8 cm long, in terminal, panicked cymes up to 15 cm long, bracteate;
pedicels about 1 cm long; calyx lobes 0.2 cm long, ovate-acuminate,
winged on back; corolla lobes 0.4 cm long, ovate, tube 0.3 cm long;
stamens 4, anthers 0.3 cm long, cordate at base; ovary glabrous, style
slightly exerted. Capsules 0.3 cm across, ovoid, glabrous; seeds
numerous, reticulate.

Fl. & Fr.: November-March.
World distribution: Tropics from India, Sri Lanka, Burma and Malaysia.

Specimens examined: Nandyal, February 1889, J. S. Gamble 18889; Nandyal, February 1953, Rajasekara Mudaliar s.n.; Chelama, 8-12-1963, Ellis 18004; Veligode Range, 26-11-1969, Ellis 32619.


Erect herbs, about 20 cm high; branches obtusely quadrangular, faintly winged along margins. Leaves about 4 x 2.5 cm, ovate, acuminate, abruptly acuminate at base; nerves 5 from base; petioles 0.5 cm long. Flowers pale blue. 0.7 cm long, in terminal cymes 4 cm long. the central solitary; pedicels of lateral cymes 1 cm long, the central 1.5 cm long; bracts small; calyx 0.4 cm long, prominently winged on the lobes and tube, slightly accrescent and strongly parallel-nerved in fruiting; corolla 0.7 cm long, lobes oblong; stamens 5, anthers linear-oblong; ovary glabrous. Capsules 0.5 x 0.4 cm, ovoid; seeds numerous, minute, rugose.

Fl. & Fr.: August-December.

World distribution: India.

Specimen examined: Gundlababaleswaram, 24-10-1964, Ellis 22193.

BORAGINACEAE

1. Herbs:

2. Erect herbs;
   3. Flowers in racemes about 20 cm long
   3. Flowers solitary or in cymes about 8 cm long

2. Decumbent or prostrate herbs;
   4. Flowers solitary, axillary
   4. Flowers in terminal cymes

1. Shrubs or trees:
   3. Calyx accrescent in fruit, drupes about 1 x 0.8 cm
   5. Calyx not accrescent in fruit; drupes about
      0.4 x 0.3 cm

CYNOGLOSSUM LINN.


Erect herbs, about 80 cm high; branches terete, sparsely adpressedly hirsute, woody at base. Leaves up to 20 x 8 cm, elliptic-ovate, obtuse, obtuse or acute at base, sparingly pubescent, scabrous; petioles up to 7 cm long; nerves prominent, lateral ones joining to form a marginal nerve till the tip. Flowers blue, 0.2 cm long, in axillary and terminal scorpioid cymes about 20 cm long, ebracteate, shortly pedicellate; calyx lobes 0.1 cm long, ovate, pilose without; corolla 0.4 cm long, lobes obtuse; stamens 5, filaments short; ovary 4-lobed, style and stigmas glabrous. Nutlets 4, flattened, margins raised, glochidiate.

Fl. & Fr.: September-February.

World distribution: India, in dry localities.

Specimens examined: Gundlabrahmeswaram, 24-10-1964, Ellis 22172; Ramnampilina, Gundlabrahmeswaram, 28-11-1969, Ellis 32628.

Trichodesma R. Br. nom. cons.

1. Leaves amplexicaul at base

T. sedgwickianum

1. Leaves attenuate at base

T. zeylanicum


Erect herbs, about 50 cm high; branches terete, setose-pubescent when young, becoming hirtellous in older. Leaves up to 8 x 3 cm, elliptic-oblong to linear-oblong, obtuse or rounded or amplexicaul at base, sessile, scabrous with pillosus-based hairs above, scabrous below only along nerves. Flowers white, maroon-speckled near throat, 1 x 0.8 cm, axillary, solitary; pedicels about 2.2 cm long, hirsute; calyx about 1 cm long, accrescent in fruits, lobes ovate-acuminate, hastate at base, hirtellous along margins and midrib without; corolla 1.2 cm long. 3 dorsal lobes smaller than 2 ventral, mucronulate, pilose within; anthers connivent, penicillate, densely hairy at back of tips; ovary 4-lobed, glabrous. Nutlets 0.5 x 0.3 cm; seeds ovoid.

Fl. & Fr.: April-October.
World distribution: India, in arid localities of deciduous forests.

Specimens examined: Way to Ahobilam, 29-8-1965, Ellis 25548; Krishnanandi, Mahanandi, 21-8-1972, Ellis 42315.


Erect herbs, about 70 cm high; branches striate, puberulous, sparsely hirsute. Leaves about 9 × 2.5 cm, elliptic-acuminate, attenuate at base, puberulous and scabrous above with white-bulbous-based hairs, pubescent beneath. Flowers pale blue with red streaks near throat, about 1 cm long, in terminal, paniculate cymes about 8 cm long; pedicels about 3 cm long, hirsute; calyx lobes 0.5 cm long, acuminate, tube 0.5 cm long, accrescent in fruit, densely pubescent without, sparsely so within; corolla about 1.2 cm long. Lobes short acuminate, tube 0.7 cm long; stamens 5, anthers densely hairy without, connectives coiled above; ovary glabrous. Nutlets 0.4×0.2 cm, white, ovoid, polished without, faintly rugose within.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka, Malaysia and Australia.

Specimens examined: Diguwametta, 28-10-1906, C. A. Barber 8003; Diguwametta, 16-11-1969, Ellis 32383.

COLDENIA LIND.


Prostrate herbs; branches radially spreading about 40 cm long, pilose; roots woody. Leaves up to 2×1 cm, obovate, oblong, acute at base, dentate, densely hairy with crispoid hairs; nerves and nervules prominently impressed above. Flowers white, 0.2 cm long, axillary, solitary; calyx 0.2 cm long, ovate, densely pilose; corolla lobes small, tube short; stamens 5, epipetalous; ovary puberulous. Drupes 0.4×0.4 cm, ovoid, with persistent styles, puberulous, separating into 4, 1-seeded pyrenes; seeds single in each locule.

Fl. & Fr.: January-July.

World distribution: Tropics from Africa, India, Sri Lanka, Burma, China, Australia and America, occurring generally on drying ponds and along banks of rivers.

Specimens examined: Chelama, 9-7-1963 Ellis 16801.
Heliotropium Linn.

1. Calyx lobes equal; nutlets marginate, tuberculate
   plants densely pubescent

   H. supinum

2. Calyx lobes unequal; nutlets not marginate, densely pubescent; plants not densely pubescent

   H. ovalifolium


Prostrate herbs; branches densely pubescent. Leaves about 2 x 1.2 cm, ovate, obtuse, emarginate, obtuse or rounded at base, crenate, densely pubescent; nerves impressed above; petioles about 0.5 cm long. Flowers white, 0.4 cm long, in terminal, branched, scorpionid cymes about 8 cm long; calyx 0.2 cm long, lobes ovate, densely pubescent without, pilose within; corolla 0.4 cm long, pubescent without, lobes oblong, tube dilated below, constricted above; stamens 5, epipetalous; ovary with stigma conical. Nutlets 0.3 x 0.3 cm, generally 3, marginate, tuberculate.

Fl. & Fr.: October-April.

World distribution: Tropics from Africa, India and Sri Lanka, in drying, clayey localities.

Specimen examined: Pathalaganga, Srisailam, 25-3-1965, Ellis 23764.


Erect or decumbent herbs, about 30 cm high; branches pubescent; rootstocks woody. Leaves about 4 x 2 cm, oblong, attenuate at base; petioles about 1.5 cm long. Flowers white, 0.2 cm long, in terminal, branched, scorpionid cymes about 8 cm long; calyx lobes 5, about 0.2 cm long, one broader and ovate, others spathulate, pilose without; corolla 0.2 cm long, pubescent without and at throat; stamens epipetalous, filaments short; ovary with pubescent stigmas. Nutlets 4, 0.1 x 0.1 cm, not marginate, densely pubescent.

Fl. & Fr.: Throughout the year.

World distribution: Tropics from Africa, India, Burma and Australia.

Specimen examined: Chelama, 9-7-1963, Ellis 16798.
Cordia Linna.

1. Calyx glabrous without; inflorescences up to 15 cm long
   *C. dichotoma*

1. Calyx densely tomentose without; inflorescences up to 4 cm long
   *C. monolica*


Trees, about 10 m tall; young branches glabrous. Leaves about 9 × 5 cm, ovate, abruptly acuminate, equally or unequally obtuse or rounded at base, entire or faintly dentate, chartaceous to coriaceous, glabrous or sparsely puberulous, especially in the axils of nerves; nerves and nervules prominent; petioles up to 3 cm long. Flowers white, 0.2 cm long, in axillary and terminal, divergently branched, peduncled cymes about 15 cm long, ebracteate, polygamous: calyx lobes ovate, pilose within, accrescent in fruits, prominently nerved; corolla lobes oblong, tube 0.3 cm long; stamens adnate to corolla tube, filaments hairy at base; ovary glabrous, style branched. Drupes 1 cm long, ovoid, 1-seeded.

*Fl. & Fr.*: February-May.

*World distribution*: Arid tropics from Egypt, India, Sri Lanka, China, Malaysia and Australia.

*Specimen examined*: Chelama, 18-3-1965, *Ellis 23106*.


Trees, about 8 m tall; young branches rusty-tomentose. Leaves up to 12 × 8 cm, ovate, elliptic-ovate, obovate, acuminate, acute, obuse or rounded at base, entire or dentate, scabrous, tomentose beneath; petioles 1.5 cm long, rusty-tomentose. Flowers white, 0.5 cm long, in close, corymbose cymes 4 cm long; calyx 0.7 cm long, densely brown-tomentose without, irregularly lobed; corolla tube 0.5 cm long, lobes 0.2 cm long, linear-spathulate; stamens exserted. Filaments glabrous; ovary glabrous, style branched, stigmas 3-lobed. Drupes 1 × 0.8 cm, ovoid, longitudinally striated.

*Fl. & Fr.*: August-December.
World distribution: India and Sri Lanka, in dry deciduous forests.

Specimen examined: Sunnypenta, Srisailam, 21-10-1964, Ellis 22139.

**Ehretia** Linn.

1. Leaves about 3.5 x 1.5 cm, sessile or sub sessile: $E.\ microphylla$
2. Leaves about 10 x 5 cm, petiolate: $E.\ laevis$
3. Leaves puberulous: $F.\ pubescens$


Shrubs, about 1 m high; branches terete, sparsely puberulous when young. Leaves about 3.5 x 1.5 cm, several, obovate, oblong, sometimes crenately serrate, cuneate at base, margins excurved, hirtellous with white bases; petioles 0.1 cm long. Flowers pale yellow, about 0.4 cm long, solitary or in 2-flowered cymes about 2 cm long; peduncles sparsely hirtellous; calyx 0.3 cm long, hirsute without, lobes 0.2 cm long, obovate, tube 0.1 cm long; corolla 0.4 cm long, lobes oblong, sparsely hirsute along the middle without; stamens exerted; ovary glabrous, style bifid from base. Drupes 0.4 x 0.3 cm, ovoid, faintly rugose; pyrene 1.

Fl. & Fr.: August-February.

World distribution: Tropics from India, Sri Lanka, China and Malaysia, in dry localities.

Specimens examined: Diguva metta, 18-11-1969, Ellis 32519.

Remarks: Johnston (op. cit.) gives the following characters, among others, for the segregation of Carmona Cav. from Ehretia Linn.: (a) endocarp does not divide in half along the dorso-ventral axis, (b) the absence of sterile cavities intercalared in the pairs of fertile cavities, (c) style very deeply cut or almost divided.

*The genus *Ehretia* sometimes is treated under the Ehretiaceae, an elevation in the familial status from a subfamilial level. However, here it is treated under the broad circumscription of the family, Boraginaceae.*

Trees, about 8 m tall; branches pale. Leaves about 10 x 5 cm, ovate, acuminate, acute or obtuse at base rather unequally, coriaceous; nerves innovations pubescent; petioles about 1 cm long. Flowers white, 0.4 cm long, in axillary and extra-axillary, branched, corymbose cymes about 5 cm long; pedicels 0.1 cm long; calyx 0.2 cm long, lobes small, oblong, puberulous without; corolla lobes 0.2 cm long, ovate, tube 0.1 cm long; stamens exerted; ovary glabrous, style bilobed at apex. Drupes 0.3 x 0.5 cm, bilobed with 2 pyrenes in each.

Fl. & Fr.: Throughout the year.

World distribution: Middle East, India, Sri Lanka, China and Australia.


E. pubescens Benth. in Royle, Ill. 306. 1836; DC. Prodr. 9 : 597. 1845; Gamble, FPM 5 : 891. 1923. E. laevis Roxb. var. pubescens (Benth.) C. B. Cl. in Hook. f. Fl. India 4 : 142. 1883.

Trees, about 3 m tall; branches terete, densely pubescent when young. Leaves 4.5 x 3 cm, ovate acuminate, obtuse, rounded at base, pubescent; petioles up to 0.7 cm long, pubescent. Flowers white, 0.4 cm long; calyx lobes 0.2 cm long, linear-lanceolate, villous without or strigose near tips without; tube short; corolla 0.4 cm long, oblong, sparsely ciliolate along margins; anthers faintly puberulous, filaments shorter than anthers; ovary glabrous, styles 2 from base. Drupes 0.3 x 0.5 cm, bilobed, with 2 pyrenes in each.

Fl. & Fr.: August-November.

World distribution: India, in dry localities.

Specimens examined: Srisailam, 12-7-1963, Ellis 16826 B; Srisailam, 20-10-1964, Ellis 22104; Diguvametta, 6-8-1972, Ellis 42142.

it as a synonym under *E. laevis* Roxb. The present studies at MH and CAL, in addition to field observations, indicate that this taxon, though variable and Clarke's 6 varieties are the outcome of this variability, yet its pubescent nature and leaf sizes are constant enough for treating it at a specific status.

CONVOLVULACEAE

1. Fruits indehiscent :
   2. Leaves broader than long ........................................ RIVEA
   3. Leaves as broad as long or longer than broad ................. ARGYEIA

1. Fruits dehiscence :
   3. Flowers in umbellate cymes ..................................... JACQUEMONTIA
   3. Flowers in racemose cymes :
      4. Prostrate or decumbent herbs .................................. EVOLVULUS
      4. Climbers or creepers :
         5. Corolla tube uniformly enlarged from base to apex, the 5 bands or plicate condition not clearly marked ............... MERRELLIA
         5. Corolla tube not uniformly enlarged from base to apex, the 5 bands or plicate condition on corolla clearly marked ............... IPOMOEA

RIVEA Choisy


Climbing shrub; stems terete, white-tomentose. Leaves about 7×2 cm, broadly ovate, apiculate, rounded, cordate or shallowly truncate at base, sericeous beneath; petioles up to 6 cm long. Flowers white, 7 cm long, solitary; pedicels about 2.5 cm long; sepals 1.2×0.8 cm, accrescent in fruits, oblong, pubescent without; corolla tube up to 5.5 cm long, lobes 1.5 cm long, orbicular-ovate, plicate; stamens included, anthers linear, filaments villous at base; ovary glabrous, style slender, stigmas 2. Fruits 1.5×1.5 cm, globose, shining, indehiscent; seeds about 4, glabrous.

**Fl. & Fr.:** July-February.

**World distribution:** India, in dry deciduous forests.

**Specimens examined:** Duguvametta, 4-11-1906, C. A. Barber 8042; Chelana, 5-7-1963, Ellis 16747; Jabakulavagu, Mahanandi, 22-8-1965, Ellis 25494; Ahobilam, 24-11-1969, Ellis 32608.
ARGYREA Lour.

1. Leaves sericeous below:
   2. Bracts caudate-acuminate, up to 4 x 2 cm ... A. nervosa
   2. Bracts elliptic, up to 2.5 x 1 cm ... A. bracteata

1. Leaves hirsute or puberulous below:
   3. Sepals densely sericeous without, up to 1.5 cm long ... A. setosa
   3. Sepals puberulous on both surfaces, about 5.5 cm long ... A. cymosa


Climbing shrubs: branches densely tomentose. Leaves about 30 x 25 cm, ovate, cordate at base, glabrous above, white-silky-tomentose beneath; lateral nerves about 12 pairs, prominent; petioles about 20 cm long, white-tomentose. Flowers pinkish-blue with purple centre, about 8 x 4 cm, in clustered cymes 7 cm across; peduncles about 18 cm long, tomentose; bracts 4 x 2 cm, caudate-acuminate, puberulous without; sepals 1 x 0.8 cm, coriaceous, tomentose without; corolla 6 x 3 cm, pilose without, lobes oblong, tube 1.5 cm long; stamens 5, hairy at base; ovary glabrous; stigmas 2-lobed. Berries 0.8 x 0.8 cm, ovoid; seeds 4.

Fl. & Fr.: July-December.

World distribution: Mauritius Island, India, Sri Lanka and China.


Climbing shrubs: branches terete, tomentose or puberulous. Leaves about 10 x 10 cm, ovate-oblong, cordate at base, glabrous or sparsely hairy above, densely sericeous below; petioles about 5 cm long, tomentose. Flowers pink, about 5 x 3 cm, in axillary, clustered cymes; peduncles about 10 cm long; bracts about 2.5 x 1 cm, elliptic, densely sericeous without, sparingly puberulous within; sepals 1 x 0.5 cm, ovate-acuminate, sparsely hairy without; corolla lobes 1 cm long, acuminate, tube 3 cm long, pilose without; stamens 5, filaments hairy at base; ovary glabrous, style filiform, stigmas 2-lobed. Berries 1.5 x 1.5 cm, ovoid; seeds 4.
Fl. & Fr.: July-January.

World distribution: Peninsular India, in dry tracts.

Specimens examined: Ramanapenta, Gundlabrahmeswaram, 28-8-1917; Rangachari 14965; Gundlabrahmeswaram, 20-7-1963, Ellis 16917; Kollapenta, 14-8-1972, Ellis 42210.


Climbing shrubs; stems terete, strigously hairy. Leaves up to 15 x 15 cm, ovate, abruptly acuminate, cordate at base, strigously hairy beneath, glabrous above; petioles about 8 cm long. Flowers pale pink, 3 cm long, in axillary, branched cymes about 10 cm across, bracteate; peduncles about 22 cm long; sepals 1.5 x 1.2 cm, oblong-orbicular, densely sericeous without, glabrous within; corolla tube 2 cm long, constricted at base where it is glabrous, tube densely pubescent, lobes shallow; stamens included; ovary glabrous. Berries 1 x 1 cm, ovoid; seeds 4.

Fl. & Fr.: October-January.

World distribution: India, Sri Lanka, Burma, in dry deciduous forests.

Specimens examined: Chelama, 9-12-1963, Ellis 18030; Gundlabrahmeswaram, 30-11-1969, Ellis 32680.


Climbing herbs; branches terete, puberulous, leaves about 13 x 13 cm, broadly ovate, cordate at base, puberulous below; petioles about 10 cm long. Flowers pale purple, about 6 cm long, 3 cm across, bracteate, in branched, cymose clusters 4 cm across; peduncles 20 cm long; bracts 1.5 x 1 cm, oblong, puberulous; sepals broadly ovate, puberulous, 2 inner narrower; corolla lobes shallow, tube 5 cm long; stamens 5, filaments dilated below; ovary glabrous, stigmas puberulous. Berries 1.5 x 1.5 cm, ovoid; seeds 4.

Fl. & Fr.: November-January.

World distribution: Peninsular India and Philippines.

Specimen examined: Ahobilam, 22-11-1969, Ellis 32373.

Climbing herbs; stems faintly angled, grooved, glabrescent when young. Leaves up to 7×5 cm, ovate, cuneate-acuminate, rounded or cordate to truncate at base, glabrous; petioles about 3 cm long, pubescent. Flowers pale pink, 0.8 cm long, in umbellate cymes about 3 cm across, bracteate; peduncles up to 4 cm long; sepals 0.6 cm long, unequal, ovate-acuminate, pilose; corolla 0.8 cm long, lobes shallow; stamens included, filaments dilated below, hairy at base; ovary glabrous, stigmas filiform. Capsules 0.5×0.4 cm, ovoid, shining; seeds about 4, black, angled, slightly winged along angles, verruculose.

Fl. & Fr.: November-January.

World distribution: Tropics from East Africa, India, Sri Lanka, Malaysia and Australia.

Specimens examined: Chelama, 9-12-1963, Ellis 18043; Bogada, 19-11-1969, Ellis 32525.

Evolvulus Linn.


Prostrate herbs, stems running to about 60 cm, shaggy; rootstocks woody. Leaves about 2×1.2 cm, alternate, elliptic-ovate, apiculate, obtuse at base, softly pilose or glabrous; petioles 0.2 cm long. Flowers violet, 0.4 cm long, in axillary cymes 3.5 cm long, bracteate; peduncles filiform; sepals 0.3 cm long, shaggy; corolla 0.5 cm long, softly sparsely pilose; stamens included, filaments adnate to corolla tube, filiform; ovary glabrous; styles 2 from base; each in turn bifid, stigmas linear. Capsules 0.3×0.3 cm, globose, 4-valved; seeds 4, black, smooth.

Fl. & Fr.: Throughout the year.
World distribution: Pantropic.

Specimens examined: Chidambara, 10-12-1963, Ellis 18053; Mahanandi, 22-8-1965, Ellis 75467; Mahanandi, 8-12-1969, Ellis 32720.

Merremia Dennst. emend. Hallier f.

1. Leaves digitately compound
2. Leaves simple:
   3. Stems terete, smooth, wingless

M. aegyptia

M. iridensata

M. hederacea

M. turpethum


Twining herbs; stems hisrute, striate. Leaves digitate; leaflets 5, up to 10 x 5 cm, oblanceolate, abruptly acuminate, acute at base, patently hairy; pedicels about 10 cm long, patently hairy. Flowers white, 2 cm long, in axillary cymes 6 cm long, bracteate; pedicels about 2 cm long, patently hairy; peduncles about 23 cm long; sepals 1.5 x 1.1 cm, ovate, cadate, hisrute; corolla 2.5 cm long, lobes shallow; stamens included, anthers twisted; ovary glabrous. Capsules 1.8 x 1.5 cm, globose, 4-valved; seeds 4, black.

Fl. & Fr.: October-March.

World distribution: Pantropic; an escape from cultivation.

Specimens examined: Giddalur, 9-11-1906, C. A. Barber 8077; Chelama, 8-12-1963, Ellis 18028; Diguvalmetta, 16-11-1969, Ellis 32389.

Remarks: Haines [Bot. Bihar & Orissa 2: 621. rep. ed. 1961 (1922-1924)] is highly sceptical of Hallier f.'s splitting of the genus Ipomoea Linn., into several genera, stating that it is artificial. He supports C.B. Clarke's earlier treatment in Fl. Brit. Ind. He includes Pharbitis Choisy, Batatas Choisy, Operculina S. Manso, Aniscea Choisy, and Merremia Dennst. ex Hallier f. under Ipomoea Linn., and separates only Calonyction Choisy, Mina Cerv., and Quomocelti Moench. Ooststroom (op. cit.) treats
Ipomoea Linn., including under it Quamoclit, Batatas, Pharbitis and Calonyction.

In the present study van Ooststroom [in Steenis, Fl. Males, ser. I. 4(4) : 448. 1953] is followed.

The other point of interest is regarding the combination, Merremia aegyptia : Gamble (op. cit.) accredits it to T. Cooke, stating that he made it * in note⁴. The combination, however, was not made by Cooke; he had just pointed that Hallier f. should have taken the oldest epithet, aegyptia. The combination was definitely made by Urban in 1910, in accordance with Article 33 of the Botanical Code (1975).


Prostrate herbs; stems running to about 40 cm long, angled, grooved; rootstocks rather woody. Leaves about 1.3 cm long, linear or broadly obovate, acute, obtuse or trident at apices, obtuse or hastate-auricled at base, subsessile; midrib prominent below. Flowers pale yellow, axillary, solitary, bracteate; pedicels about 1.7 cm long; sepals 0.5 cm long, broadly obovate-cordate; corolla 1.2 cm long, lobes shallow; stamens included; ovary glabrous. Capsules 0.4 cm long, ovoid; seeds 4, black.

Fl. & Fr. : February-April.

World distribution: Africa, India, Sri Lanka, Malay Peninsula, in very dry condition, on rocky substratum.

Specimen examined: Srisailam, 13-3-1963, Ellis 16859.
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Twining herbs; branches running to 50 cm long, angled, grooved. Leaves 4 cm long, linear-ovate, or shorter and broadly ovate, apiculate, auricled and dentate at base, sessile. Flowers pale yellow with maroon centre, solitary, or in few-flowered cymes about 7 cm long, bracteate; sepals 0.7 cm long, caudate-acuminate; corolla up to 2 cm long; stamens included, filaments sparsely hairy; ovary glabrous. Capsules 0.5 cm long, globose; seeds 4, grey, glabrous.

*Fl. & Fr.:* Throughout the year.

**World distribution:** Tropics from East Africa, India, Sri Lanka, Malaysia and Australia.

**Specimens examined:** Srisailam, 16-7-1963, *Ellis* 16900; Diguvemetta, 16-11-1969, *Ellis* 32426.


Climbing herbs; stems terete, angled, grooved, sparsely puberulous. Leaves up to $4.5 \times 4$ cm, ovate-acuminate, obscurely 3-lobed, cordate at base, irregularly dentate, sparsely hairy on either side of midrib near the petiole; petioles about 4 cm long. Flowers yellowish with tube white, 0.6 cm long, in axillary, racemose cymes 3.5 cm long, bracteate; peduncles about 9 cm long; sepals 0.5 cm long, obtruse, oblong, concave, mucronulate; corolla 1.6 cm long, lobes shallow; stamens slightly exserted, filaments hairy; ovary glabrous. Capsules 0.5 cm long, ovoid, transversely wrinkled; seeds 4, glabrescent.

*Fl. & Fr.:* October-February.

**World distribution:** Tropics from Africa, India, Sri Lanka, Burma, Southern China, Malaysia and Australia.

**Specimens examined:** Ahobilam, 23-11-1969, *Ellis* 32589.


Climbing shrubs; stems terete or faintly angled, 3-5-winged, glabrescent. Leaves about 10×10 cm, broadly ovate or lanceolate, entire, angled or lobed, rounded, cordate or hastate at base, sparsely puberulous; petioles about 6.5 cm long, angled, faintly winged. Flowers white, 4 cm long, solitary or in axillary, a few-flowered cymes 8 cm long, bracteate; sepals 2×2 cm, accrescent in fruits, unequal, oblong-apiculate, tomentose without; corolla 3×3 cm; stamens included, filaments sparsely hairy below; ovary glabrous, style filiform, stigma biglobular. Capsules about 2×2 cm, globose; seeds 4, finely reticulate.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Tropics from East Africa, India, Sri Lanka, Malaysia and Australia.

*Specimen examined*: Krishnanandi, Mahanandi, 9-12-1969, Ellis 32121.

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**IPOMOEA Linn.**

1. Leaves entire:

2. Inflorescences axillary:

3. Sepals obtuse-ovaricate:

4. Flowers 4 cm long

5. Flowers up to 2 cm long

6. Sepals acuminate

1. Inflorescences terminal

1. Leaves variously lobed:

5. Plants creeping:

6. Flowers about 1 cm long

6. Flowers about 7.5 cm long

5. Plants climbers:

7. Climbing shrubs; leaves 25×25 cm

7. Climbing herbs; leaves 7×10 cm


1. *campanulata* auctt. *non* Linn.): Choisy in DC. Prodr. 9: 359. 1845; Wt. Ic. 4: t. 1375. 1850; C. B. Cl. in Hook. f. F. 4: 211. 1883;
Gamble, FPM 5 : 917. 1923. I. campanulata Linn. var. illustris C. B. Cl. I. c. 211.

Climbing shrubs; branches terete, wrinkled, striate, puberulous when young. Leaves about 15 x 13 cm, ovate-orbicular, abruptly acuminate, cordate at base, glabrous; lateral nerves parallel; petioles up to 8 cm long. Flowers pink, 4 cm long, 4 cm across, in axillary, paniculate cymes about 10 cm long; peduncles about 5 cm long; sepals 1 x 0.8 cm, orbicular-oblong, tomentose, accrescent; corolla 4 cm long, lobes prominent; stamens included; ovary glabrous. Capsules 1.5 x 1.3 cm, ovoid; seeds 4, sericeous.

Fl. & Fr.: October-February.

World distribution: India, Sri Lanka, Malaysia and Philippines.

Specimen examined: Gundlabrahmeswaram, 27-10-1964, Ellis 22227.

Remarks: Austin, D. F., D. A. Paveil, and D. H. Nicolson (in Brittonia 30: 195-196, 1978) have advocated for Ipomoea illustris Linn. giving way to I. campanulata Linn. by lectotypifying it. Interestingly, Ooststrroom (op. cit. p. 485) points that Linnacus’ epithet is conspecific with Thebesia lampas (Linn.) Soland. and therefore C. B. Clarke’s varietal epithet, at specific level, needs to be taken up as was done by Prain.

Ipomoea stipulina Roem. & Schult. Syst. Veg. 4: 249. 1819; C. B. Cl. in Hook. f. FBI 4: 210. 1883; Gamble, FPM 5: 917. 1923.

Straggling or climbing shrubs; branches terete, glabrous. Leaves up to 11 x 10 cm, ovate-lanceolate, rounded or truncate or cordate at base, glabrous; petioles about 8 cm long. Flowers white, 1.7 x 2 cm, in axillary, paniculate cymes 17 cm long, bracteate; sepals 0.4 x 0.3 cm, orbicular-oblong, glabrous; corolla tube 1.5 cm long, lobes 0.5 cm long; stamens included, filaments hairy at base; ovary glabrous. Capsules 0.5 x 0.4 cm, ovoid; seeds 4, sericeous.

Fl. & Fr.: December-March.

World distribution: India and Malay Peninsula.

Specimen examined: Ramanapenta, Gundlabrahmeswaram, 28-11-1969, Ellis 32622.

Climbing herbs; branches slender, grooved, puberulous. Leaves about 8 × 5 cm, ovate-acuminate, rounded and cordate at base, softly, sparsely pilose; petioles about 8 cm long. Flowers pink, 0.6 cm long, in axillary, subsessile cymes 2 cm across, bracteate; sepals about 0.5 × 0.2 cm, ovate-acuminate, densely pubescent without, glabrous within at base; corolla 0.5 cm long, densely pubescent in parts without on the tube and at tips of lobes, glabrous within; stamens included; ovary pubescent. Capsules 0.5 × 0.5 cm, ovoid, pubescent; seeds 4, minutely reticulate.

Fl. & Fr.: November-January.

World distribution: Tropics from Africa, India, Malaysia and North Australia.

Specimens examined: Chelama, 8-12-1963, Ellis 18007; Srisailam, 21-10-1964, Ellis 22124, Diguvaunnetta, 16-11-1969, Ellis 32386.


Climbing herbs; branches terete, faintly grooved, puberulous. Leaves about 10 × 7 cm, ovate-acuminate, apiculate, cordate at base, angular, obscurely to deeply 3-lobed; petioles about 4 cm long. Flowers red, 4 cm long, in lateral and terminal cymes about 25 cm long; pedicels about 1 cm long; calyx 0.4 cm long, lobes ovate, awned at back; corolla about 4 cm long, lobes shallow; ovary glabrous. Capsules about 0.7 × 0.7 cm; seeds 4, densely hairy or glabrescent.

Fl. & Fr.: September-January.

World distribution: Tropics from Africa, India, China, Japan, Malaysia and extending up to South America.

Specimen examined: Chelama, 7-12-1963, Ellis 17960.

Trailing herbs; branches about 20 cm long, angled, grooved, glabrous; rootstocks prominent. Leaves about 3 cm long, highly variable, digitate, segments highly dissected, generally the central elliptic, acute at base, irregularly serrate, pseudo-stipulate; pedicels short. Flowers white, about 1 cm long, in axillary cymes 2 cm long, bracteate; peduncles about 3 cm long, angled; sepals 0.5 cm long, oblong, verruculose on back, abruptly acuminate; corolla about 1.2 cm long, lobes shallow; stamens included; ovary glabrous. Capsules about 1 x 0.8 cm, ovoid; seeds about 3, puberulous.

Fl. & Fr.: September-February.

World distribution: Tropics from Africa, India, Malaysia and North Australia, in dry localities.

Specimen examined: Mahanandi, 10-12-1969, Ellis 32730.


Climbing or creeping herbs; branches angled, strigate, glabrous; rootstocks woody. Leaves about 5 cm across, digitately lobed, lobes ovate, obovate, orbicular, or laciniate, linear, acute or obtuse at base, crenate-serrate or serrate, glabrous. Flowers pale purple, 7.5 x 3 cm, solitary or in cymes about 3.5 cm long, axillary, bracteolate, pseudo-stipulate; sepals about 0.7 x 0.4 cm, unequal, elliptic, apiculate, glabrous; corolla tube 5 cm long, lobes 3 cm long, shallow; stamens included; ovary glabrous. Capsules 1 x 0.8 cm, oblong; seeds about 6, puberulous.

Fl. & Fr.: July-November.

World distribution: India, Malaysia, Philippines and Northeast Australia.

Specimen examined: Gundlaphrameswaram, 30-11-1969, Ellis 32681.


Shrubby climbers: branches terete, glabrous, grooved. Leaves about 25 x 25 cm, palmately divided, cordate at base; lobes 5-7, ovate-acuminate, mucronulate, glabrous. Flowers pale pink, about 6 x 2.5 cm, in axillary
cymes 4 cm across; pedicels faintly muricate; peduncles 7 cm long; sepals 0.8 cm long, oblong-orbicular, concave, coriaceous; corolla glabrous, lobes shallow; stamens included, filaments hairy at base; ovary glabrous. Capsules 1 x 1 cm, ovoid; seeds 4, black, woolly.

Fl. & Fr.: July-December.

World distribution: Pantropic.

Specimen examined: Suumipenta, Srisailam, 21-10-1964, Ellis 22137.

Remarks: Apparently a garden escape.


Climbing herbs; branches grooved with spreading hairs. Leaves 7 x 10 cm, palmately 5-7-lobed almost to base; lobes ovoid, abruptly acuminate, narrowed at base, shaggy; petioles about 11 cm long, sparsely pubescent with spreading hairs. Flowers white, about 2 cm long, sessile, in axillary heads 2 cm across; bracts about 1.5 x 0.7 cm, elliptic-acuminate, densely shaggy; sepals 0.4 cm long, slightly unequal, lanceolate, hairy; corolla about 3 cm long, lobes shallow; stamens included, filaments glabrous; ovary glabrous. Capsules 0.8 x 0.6 cm, ovoid; seeds 4, tomentose.

Fl. & Fr.: July-December.

World distribution: Tropics from East Africa, India, Sri Lanka and Malaysia.

Specimens examined: Cheliama, 16-10-1964, Ellis 22050; Diguve-metta, 16-11-1969, Ellis 32395.

SOLANACEAE

1. Flowers about 16 cm long; fruits capsular, spinescent

   1. Flowers less than 1.5 cm long; fruits of berries, not spinescent:

      2. Calyx acerecent and inflated in fruits

      2. Calyx not acerecent, nor inflated in fruits

   Datura


Robust herbs, about 1 m high; branches purplish-black, zig-zag, angled or terete, faintly puberulous or glabrous. Leaves about 17×14 cm, broadly ovate, 5-8-shallowly lobed, unequal at base, glabrous; petioles about 7 cm long. Flowers purple without and white within, about 16 cm long, 6 cm across, axillary; pedicels 1 cm long; calyx tube about 5.5 cm long, puberulous without, lobes 1 cm long, acuminate; corolla lobes shallow, tube about 14 cm long; stamens as long as corolla tube, anthers elongated; ovary softly tuberculate, stigmas club-shaped. Capsules about 5 cm across, globose, spinous-tuberculate, seated on a circumcised orbicular calyx; seeds many, flattened.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Tropics from Africa, India, Sri Lanka and Malaysia.


*Remarks*: Rather a rare plant.

Santapau (*op. cit. pp. 657-658*) has discussed at length the nomenclature of this taxon, quoting Safford's work; Safford (*op. cit.*) had said, '...That the white and purple forms of the various forms of this single or double forms of the single or double flowered plants should all be referred to one species by Linnæus is justified by the best modern authorities on East Indian Botany; but that the name *D. fastuosa* should be adopted for the species and the previously established type (*D. metel*) reduced to a synonym, as in Trimen's *Handbook of the Flora of Ceylon*, is inexcusable...'.

**Physalis Linn.**


Erect herbs, about 40 cm high; branches zig-zag, striate, grooved, puberulous in young ones. Leaves about 7×4 cm, ovate-acuminate, elliptic, coarsely dentate, rounded at base, faintly puberulous or glabrous, sparsely hirsute; petioles about 5 cm long, grooved, puberulous. Flowers
yellow, 0.6 cm long, axillary, solitary; pedicels 0.9 cm long; calyx tube 0.3 cm long, lobes 0.2 cm long, accrescent and inflated in fruits, sparsely pilose without, puberulous along margins; stamens included; ovary glabrous. Berries about 1 x 1 cm, globular; seeds several, compressed, finely muricate.

Fl. & Fr.: July-January.

World distribution: Tropics in Africa, India and Australia.

Specimen examined: Mahanandi, 23-8-1965, Ellis 25519.

Remarks: The plant is highly variable with regard to the amount of pubescence and size of leaves.

Solanum Linn.

1. Herbs, about 60 cm high; berries up to 1.5 x 1.5 cm: 
   
2. Herbs prickly
   
   2. Herbs not prickly
   
1. Shrubs, about 1.5 m high; berries 2.5 x 3 cm


Diffuse or erect herbs, about 30 cm high; branches terete, very prickly, woody at base; rootstocks woody. Leaves about 10 x 5 cm, deeply sinuate, very prickly, stellate-hairy on both surfaces; petioles about 2 cm long. Flowers bluish pink, 1 cm long, in extra-axillary, 3-5-flowered cymes 6 cm long; pedicels about 1.4 cm long; calyx lobes 0.3 cm long, accrescent in fruits, spinescent, tube 0.2 cm long; corolla 1 cm long, stellate-pubescent without, lobes shallow; anthers elongated, dehiscing apically, glabrous. Berries 1.5 x 1.5 cm, globose; seeds several, flattened, alveolate.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka, Pacific Islands, in dry localities.


Erect herbs, about 60 cm high; branches zig-zag, glabrescent, sparsely hirtellous. Leaves about 10×4 cm, elliptic-acuminate, coarsely dentate or entire, attenuate at base, sparsely hirtellous; petioles short. Flowers about 0.3×0.3 cm, in extra-axillary umbels 1.5 cm across; pedicels about 1 cm long; peduncles 2 cm long; calyx lobes 0.1 cm long, oblong-orbicular, puberulous without, tube short; corolla lobes 0.1 cm long, ovate, puberulous without, tube 0.1 cm long; anthers longer than filaments; ovary 0.1 cm long, style pubescent. Berries 0.5×0.5 cm, globose; seeds many, alveolate.

*Fl. & Fr.: October-April.*

*World distribution:* A cosmopolitan weed.


Shrubs, about 1.5 m high; branches prickly, densely to sparsely stellate-pubescent. Leaves about 14×6 cm, ovate, rounded, oblong, acute, equal or unequal at base, sinuately lobed along margin, prickly along veins, stellate-puberulous above, densely so beneath; petioles about 2.5 cm long, short tomentose, prickly. Flowers violet, 1.5 cm across, in lateral racemes about 7 cm long; calyx lobes 1 cm long, tube 0.5 cm long, densely pubescent without; corolla 1 cm long, densely tomentose without, lobes ovate; stamens included, anthers puberulous halfway down; ovary pubescent, style glabrous, stigmas pubescent. Berries 2.5×3 cm, globose; seeds several alveolate.

*Fl. & Fr.: January-May.*

*World distribution:* South and Tropical Africa, Middle East and India.

SCROPHULARIACEAE

1. Corolla tube curved at top:
   2. Corolla lobes 5, unequal or subequal
      . . . Buchnera
   2. Corolla 2-lipped
      . . . Striga

1. Corolla tube not curved:
   3. Corolla 3 cm long
      . . . Sophora
   3. Corolla less than 1.5 cm long:
      4. Calyx polysepalous or nearly so; corolla rotate, lobes 4, pilose without
         . . . Scoparia
      4. Calyx gamosepalous, tubular; corolla bilabiata or 5-lobed, lobes glabrous without:
         5. Leaves glandular-punctate or pellucid-dotted. at least on lower surface:
            6. Styles dilated at apex, stigmas entire or bilobed
               . . . Bacopa
            6. Style slender, stigmas 2 lamellate
               . . . Limosiphila
      5. Leaves without glands or pellucid dots:
         7. Anther cells parallel; corolla yellow
            . . . Lindenbergia
         7. Anther cells divergent; corolla white, bluish-purple or pink
            . . . Lindenbergia

Buchnera Linn.

Buchnera hispida Buch.-Ham. in D. Don, Prodr. 91. 1825; Benth. in DC. Prodr. 10: 496. 1845; Wt. & t. 4: t. 1413. 1850; Hook. f. Fl. 4: 298. 1884; Gamble, Fl. M. 6: 966. 1924.

Erect herbs, about 50 cm high; branches sparingly hirsute. Leaves about 3.5 x 1.5 cm, upper often much linear and larger, elliptic-ovate, acute at base, sparsely hirtellous, sessile. Flowers violet, 1 cm long, in terminal racemes about 40 cm long, bracteate; calyx 0.6 cm long, hirtellous without, lobes 0.1 cm long; corolla lobes 0.1 cm long, unequal or subequal, tube 0.9 cm long, hairy within; stamens included, didynamous, anthers dorsifix; ovary glabrous, style dilated above stigma entire. Capsules 0.5 cm long; seeds numerous, minute, angled.

Fl. & Fr.: September-January.

World distribution: Tropics from Africa, India and Sri Lanka.

Specimen examined: Chelama, 8-12-1963, Ellis 17997.

Striga Lour.

1. Leaves about 1.2 cm long; plants reddish; calyx lobes 1-ribbed
   . . . S. gammaricida
1. Leaves about 5 cm long; plants greenish; calyx lobes 3-ribbed
   . . . S. angustifolia

Erect herb, about 45 cm high, parasitic on roots of other plants; stems reddish, striate, puberulous. Leaves scaly, about 1.2×0.3, linear, scaberulous, sessile. Flowers white with a pink tinge, 1 cm long, in terminal spikes about 18 cm long, bracteate, bracteolate, calyx 0.4 cm long, lobes short, acuminate, binate along margins, 1-ribbed; corolla 0.6 cm long, lobes obtuse, hairy within, tube incurved at top; stamens 4, didynamous, anthers 1-celled; ovary glabrous, style dilated above. Capsules 0.6×0.4 cm, ellipsoid; seeds numerous, reticulate.

*Fl. & Fr.*: October-July.

*World distribution*: Africa, Middle East, India and Sri Lanka.

*Specimens examined*: Chelama, 16-10-1964, Ellis 22048; Ahobilam, 23-11-1969, Ellis 32595.


Erect herb, about 35 cm high; stems grooved, striate, hirtellous; parasitic on roots of other plants. Leaves about 5×0.3 cm, linear, hirtellous, sessile. Flowers white, 1.5 cm long, axillary, in spikes 25 cm long; calyx lobes 0.6 cm long, acuminate, hirtellous without, 3-ribbed from base, tube 0.2 cm long; corolla 1.7 cm long, tube 1.2 cm long, hairy, curved at top, lobes unequal, obtuse; stamens didynamous, anthers 1-celled; ovary glabrous. Capsules 0.6 cm long; seeds numerous, striate.

*Fl. & Fr.*: August-December.

*World distribution*: India.


Sopubia Buch.-Ham. ex D. Don

*Sopubia delphiniifolia* (Linn.) G. Don, Gen. Syst. 4: 560. 1837; Benth.

Erect herbs, about 60 cm high; branches grooved, striate, scaberulous. Leaves up to 5 cm long, pinnatisect, filiform, scaberulous. Flowers pink, 3 cm long, in axillary racemes about 4 cm long; bracts leafy; bracteoles 2; calyx lobes 0.6 cm long, linear, scaberulous, tube 0.6 cm long; corolla 3 cm long, tube infundibuliform, lobes 5, spreading, orbicular; stamens didynamous, one anther cell stipitate, filaments sparsely hairy; ovary glabrous, style filiform, stigmas thickened. Capsules 0.6 cm long, ovoid; seeds numerous, small, striate.

Fl. & Fr.: September-November.

World distribution: India and Sri Lanka, in swampy localities.

Specimens examined: 'Kurnool', 1836, Dr. Drew s.n.; Sunnilpenta, Srisailam, 21-10-1964, Ellis 22126.

Scoparia Linn.


Erect herbs, about 40 cm high; stems angled. Leaves up to 4x1.3 cm, often whorled, ovate, cuneate at base, serrate, punctate. Flowers white, 0.5 cm long, axillary, solitary or two; pedicels about 0.7 cm long; calyx polysepalous, lobes elliptic-ovate, hairy along margins, tube 0.2 cm long; corolla 0.2 cm long, densely pilose without, pubescent within at throat, lobes unequal; stamens 4, filaments filiform; ovary glabrous, style rather thick, stigmas thick. Capsules 0.3x0.3 cm, ovoid, enclosed in persistent calyx; seeds many, scrobiculate.

Fl. & Fr.: April-November.

World distribution: A native of tropical America; a pantropic weed.

Specimens examined: Gundilabrahmeswaram, 20-7-1963, Ellis 16928; Gundilabrahmeswaram, 30-11-1969, Ellis 32678.

Bacopa Aubl. nom. cons.

Flora of Nallamalais

Procumbent herbs; branches glabrous, rooting at nodes. Leaves about 2 x 0.6 cm, oblong-ovate,spathulate, acute at base, sessile. Flowers pale blue, 0.6 cm long; axillary, solitary, pedicels 1.5 cm long; outer calyx lobes 0.5 x 0.3 cm, inner linear; corolla 0.8 cm long, lobes orbicular; stamens included, didynamous; ovary glabrous, style dilated at apex, stigmas entire or bilobed. Capsules 0.4 x 0.3 cm, ovoid; seeds numerous, striated.

Fl. & Fr.: Throughout the year.

World distribution: Cosmopolitan.

Specimen examined: Pathalaganga, Srisailam, 25-3-1965, Ellis 23763.

Limnophila R. Br. nom. cons.

1. Leaves of one type, up to 7 x 4 cm
   L. rugosa

1. Leaves of two types, up to 7 x 0.5 cm
   L. indica


Herbs, in marshy places; about 80 cm high, strongly aromatic; stems weak, decumbent, glabrous to sparsely puberulous. Leaves about 7 x 4 cm, ovate, elliptic-oblong, obovate, cuneate at base, crenate-serrate, rugose, bullate in older leaves, glandular, sparsely hirtellous; petioles about 1 cm long. Flowers violet with tube yellow within and reddish without, 1 cm long, solitary or in axillary clusters about 1.5 cm across. bracteate, sometimes shortly peduncled; calyx lobes 0.5 cm long, upper largest, acuminate, sparsely hirtellous, glandular, tube 0.1 cm long; corolla about 1 cm long, sparsely glandular without, villous within, posterior lobe broader; stamens didynamous; ovary glabrous. Capsules 0.5 cm long, ellipsoid; seeds black, numerous, angular.

Fl. & Fr.: August-January.

World distribution: India, China and Pacific Islands.

Specimen examined: Rollapenta, 14-8-1972, Ellis 42250.


Amphibious, perennial herbs; aerial stems about 10 cm long, faintly angled, glandular, submerged stems much longer, glabrous. Aerial leaves about 2 x 0.5 cm, verticillate or opposite, obovate, linear-obovate, acute at base, crenate-serrate, glandular, submerged leaves about 2 cm long, verticillate, pinnatisect lobes becoming capillary. Flowers white to pale pink, about 1 cm long, axillary, solitary; pedicels 0.5 cm long; calyx lobes 0.2 cm long, acuminate, tube 0.2 cm long; corolla 0.8 cm long; filaments of 2 types—2 longer and 2 shorter; ovary glabrous, stigmas lamellate. Capsules 0.3 x 0.3 cm, ovoid; seeds black, numerous, angular.

**Fl. & Fr.**: May-February.

**World distribution**: Tropics from Africa, India, Sri Lanka, China, Malaysia and Australia.

**Specimens examined**: Srisailam, 12-7-1963, *Ellis* 16836; Chelana, 7-12-1963, *Ellis* 17974; Diguvametta, 16-11-1969, *Ellis* 32385.

**Lindenbergia Lehm.**


Erect or decumbent herbs, about 30 cm high, in crevices of dripping wall; branches weak, pubescent. Leaves about 5 x 2 cm, ovate-oblong, obtuse at base, crenate-serrate, sparsely pubescent; petioles about 0.8 cm long. Flowers yellow, about 1.5 cm long, axillary, solitary or two; calyx 0.4 cm long, pubescent, lobes ovate; corolla 1.3 cm long, 2-lipped, sparsely pubescent without, densely so within; stamens didynamous, anther cells parallel; ovary hairy. Capsules 0.4 cm long, patently hairy; seeds numerous, minute, faintly striated.

**Fl. & Fr.**: March-September.

**World distribution**: Middle East, India and Burma.

Lindernia Allioni

[S. K. Mukerjee (1945) in his revision of the Indo-Burmese species of *Lindernia* has traced the history of the circumscription of the genus, *Lindernia* and subscribes to the broader circumscription of the genus which includes *Vandelia* Linna., *Hysantes* Raf., and *Bonnaya* Link & Otto, following Pennell (1935). Here Pennell and Mukerjee are followed.]

1. Leaves sharply serrate; capsules linear, longer than calyx
   • *L. ciliata*

1. Leaves crenate-serrate; capsules ovoid, as long as calyx:
   2. Branches and leaves sparsely hisrate; margin of leaves excrusted
      • *L. pusilla*
   2. Branches and leaves glabrous; margin of leaves not excrusted
      • *L. crusiaeca*


Erect herbs, about 10 cm high; branches angled, grooved, glabrous. Leaves up to 3x1 cm, oblong, ovate, obtuse, auricled at base, sharply crenate-serrate. Flowers white with a blue patch at base, 0.5 cm long, in terminal racemes 4 cm long, bracteate; calyx lobes 0.3 cm long, linear-acuminate; corolla 0.4 cm long, shortly exserted; stamens 2, upper fertile, lower sterile; ovary glabrous, style filiform, stigmas 2-lamellate. Capsules 1.3 cm long, linear-oblong; seeds numerous, minute, rugose.

*Fl. & Fr.*: July-September.

*World distribution*: India, Sri Lanka, China, Malaysia and Philippine Islands.

*Specimens examined*: Gundlabrahmeswaram, 24-10-1964, Ellis 22171; Mahanandi, 23-8-1965, Ellis 25507; Diguvaemetta, 19-11-1969, Ellis 32542.


Diffuse herbs, up to 8 cm high; branches angled, sparsely pubescent. Leaves about 1 x 1 cm, ovate, cordate at base, crenate-serrate, margin excurred, sparsely hirsute, sessile. Flowers white, 0.5 cm long, axillary and terminal, solitary or two; pedicels 1.5 cm long; calyx 0.3 cm long, linear-lanceolate, hirsute without; corolla 0.5 cm long, bilobed, tube 0.4 cm long; stamens 4, didynamous, slightly exerted, anther cells divaricate; ovary glabrous, style slender, stigmas bilamellate. Capsules 0.2 x 0.2 cm, ovoid; seeds numerous, minute, rugose.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Tropics from Africa, India, Sri Lanka, China and Malaysia.

*Specimens examined*: Sunnipenta, Srisailam, 15-7-1963, Ellis 16892; Sunnipenta, Srisailam, 21-10-1964, Ellis 22127.


Diffuse herbs, about 14 cm high; branches decumbent, angled, glabrous. Leaves about 1.5 x 1.5 cm, ovate, cordate at base, crenate-serrate, shortly petiolate. Flowers pale pink, 0.6 cm long, in axillary or terminal, single or few-flowered racemes 2 cm long; pedicels about 2 cm long; calyx 0.4 cm long, lobes short, few-haired without along midrib; corolla 0.7 cm long; stamens 4, didynamous, filaments slender, appended at base, anther cells divaricate; ovary glabrous, stigmas bilamellate. Capsules 0.2 x 0.2 cm, ovoid; seeds numerous, minute, rugose.

*Fl. & Fr.*: Throughout the year.

*World distribution*: India, Sri Lanka, Malaysia.

*Specimen examined*: Diguametta, 17-11-1969, Ellis 32459.
FLORA OF NALLAMALAI

LENTIBULARIACEAE

UTRICULARIA LINN.

1. Aquatic herbs

2. Marshy, terrestrial herbs:
   2.1. Twining plants
   2.2. Erect plants


Aquatic, floating herbs; stolons branched, trap-bearing. Leaves minute, sparingly dissected, lobes capillary, some modified into traps; traps obliquely avoid, mouth lateral, truncate, ciliate. Flowers yellow, 0.3 cm long, in terminal racemes 4 cm long, bracteate, pedicellate; calyx 0.2 cm long, tube small; corolla 0.3 cm long, spur obtusely conical. Capsules 0.3 x 0.3 cm, globose; seeds numerous, minute, crenately winged.

*Fl. & Fr.*: February-March.

*World distribution:* Africa, India, Sri Lanka, Malaysia and North Australia.


Marshy, terrestrial herbs, up to 18 cm in length, twining; stolons capillary, branched. Leaves 1 cm long, linear-spathulate, attenuate at base; traps on stolons and leaves, very small, glandular at mouth. Flowers yellow, 0.7 cm long; pedicels about as long as the calyx; calyx 0.3 cm long, upper longer than lower, persistent; corolla 1 cm long, upper lip much shorter and narrower than the upper calyx lobe, emarginate or
shortly bluish, spur curved; anther cells connate, filaments linear; ovary glabrous. Capsules 0.2 x 0.2 cm, enclosed by calyx, globose; seeds numerous, minute, reticulate.

Fl. & Fr.: Throughout the year.

World distribution: Africa and India.

Specimen examined: Sunnipentavagu, Srisailam, 15-7-1963, Ellis 16896.

Utricularia reticulata Sm. var. parviflora Santapau in Kew Bull. 1948: 491. 1949.

Marshy, terrestrial herbs, erect or scandent, about 10 cm long; stolons filiform, glabrous. Leaves 1 cm long, linear-oblong; traps oblique. Flowers blue. 0.6 cm long. bracteate. pedicellate; pedicels filiform. 0.5 cm long, winged in fruits; calyx 2.5 cm long, broadly ovate, lobes of upper slightly broader than lower, acute, accrescent, about 0.6 x 0.4 cm; corolla 0.8 cm broad, labellum bulate at base; stamina included; ovary glabrous. Capsules 0.5 cm long; seeds numerous, minute, striate.

Fl. & Fr.: July-December.

World distribution: Peninsular India.

Specimens examined: Sunnipentavagu, Srisailam, 15-7-1963, Ellis 16893; Sunnipentavagu, Srisailam, 21-10-1964, Ellis 22128.

Remarks: Santapau (loc. cit.) states, 'A gregarious, small, scandent herb, growing in association with the typical species, but without intermediate stages between the two. It cannot be said that the general reduction of the plant and all its parts in relation to the typical species is due to soil conditions, as both plants were found growing on the same type of soil and in general exposed to the same climatic conditions'.

BIGNONIACEAE

1. Leaves 2-3-pinnate, about 1.75 m long; calyx 2.5 cm long, almost truncate  . . . Oroxylum

1. Leaves one-pinnate, about 40 cm long; calyx less than 1.5 cm long, spathaceous or lobed:
   2. Calyx spathaceous  . . . DOLICHANDRONE
   2. Calyx 3-5-lobed  . . . STEREOSPERMUM

Oroxylum Vent.

Oroxylum indicum (Linn.) Vent. Dec. Nov. 8. 1808; C.B.C.I. in Hook. f. F.I. 4: 378. 1884; Brandis, Indian Trees. 496. 1906; Gamble,
FLORA OF NALLAMALAI


Trees, about 5 m tall; bark lenticellate. Leaves about 1.75 m long, 2-3-pinnate; petioles striated; leaflets 11 × 6 cm, ovate-acuminate, unequally rounded or acute at base, rather coriaceous, glandular, puberulous on nerves beneath; petiolules 1.5 cm long, grooved above; flowers dark pinkish-purple without and yellowish-green within, 8 cm long, 6 cm across, in terminal, erect racemes about 60 cm long; pedicels about 3.5 cm long, calyx 2.5 cm long, almost truncate or lobes small, crispated; corolla tube 3.5 cm long, lobes oblong, crispated; stamens slightly exerted, anthers 0.8 cm long; ovary glabrous; style filiform, stigmas 2-lobed. Capsules 45 × 1.5 cm, flattened; seeds 1.3 cm long, numerous, broadly winged.

*Fl. & Fr.* : June-December.

*World distribution* : India, Sri Lanka, Burma, Malaysia and Indonesia.


DOLICHANDRONE (Fenzl) Seem. nom. cons.

1. Leaflets 8 × 4 cm, pubescent beneath; capsules almost straight
   
   D. arcuata

1. Leaflets 3 × 2.5 cm, puberulous beneath; capsules falcate
   
   D. falcate


Trees, about 15 m tall; young branches tomentose. Leaves 15 cm long, imparipinnate; rachises grooved, tomentose; leaflets 5, about 8 × 5 cm, ovate, acuminate or rounded, rounded or unequally obtuse at base, tomentose beneath, coriaceous; petioles 0.6 cm long. Flowers white or pale yellow. 7 cm long; calyx 1.5 cm long, spatheaceous, bent at apex, glabrous; corolla tube 5 cm long, narrow, lobes crenately crisped; stamens 4, didynamous, included; ovary glabrous. Capsules about 30 cm long, oompressed; seeds flattened, winged.
Fl. & Fr.: January-October.

World distribution: Peninsular India.

Specimens examined: Chelama, 6-7-1963, Ellis 16779; Ahobilam, 22-11-1969, Ellis 32507; Rollapanta to Pecharavu, 16-3-1972, Ellis 42268.

Remarks: Sprague (loc. cit.) states, ‘Beddome’s specimen from the Kurnool hills referred to D. arecata by Clarke and Brandis may possibly belong to this species, but the material is insufficient to determine it with certainty. It has velvety-pubescent 5-foliolate leaves, and reniform lateral leaflets, with petiolules 7-10 mm long.”


Trees, 5 m tall; young branches pubescent. Leaves 10 cm long, 5-7-foliolate, rachises puberulous; leaflets about 3×2.5 cm, terminal the largest, obovate, retuse, faintly apiculate, obtuse at base, puberulous; petiolules short. Flowers white, 3 cm long, in terminal, a few-flowered, corymbs 5 cm long; calyx 1.5 cm long, spathaceous, curved with micro at tip, pubescent; corolla lobes 2 cm across, crisped, tube 2 cm long; stamens 4, didynamous, included; ovary glabrous. Capsules about 40×2 cm, flattened, falcate, puberulous; seeds 1.5×0.8 cm, winged.

Fl. & Fr.: March-June.

World distribution: India, in dry localities, especially on rocky substratum.

Specimens examined: Chelama, 8-12-1963, Ellis 18019; Velgode, 26-11-1969, Ellis 32614.

Remarks: Sprague (op. cit. p. 308) had not treated D. lawii Seem. at the varietal level in the sense of the Code; it has been accredited to him. He states, ‘Dolichandrone lawii appears to be merely a glabrous form of D. falcata, as suggested by Brandis. The variation in the indumentum is not correlated with the degree of curvature of the capsule.’ Chatterjee (op. cit. p. 67) accredits it to Haines, ‘...It was Haines who first treated this plant as a variety...’ But Haines [Bot. Bihar & Orissa p. 690. rep. ed. 1961 (1924)] states, ‘This is considered by Brandis and also by Sprague (vide Kew Bulletin, 1919, Dolichandrone and Markhamia) as
merely a glabrous form of *D. falcata* and so also it appears to me. It was in fact Gamble (*op. cit. p. 996*) who accepted it definitely at varietal level. The present studies indicate that the variety, *lawn* cannot stand, for pubescence in this taxon is a variable character.

**STEREOSPERMUM** Cham.

1. Leaflets abruptly, shortly acuminate; flowers 2.5 cm long; fruits cylindric

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*S. cheloneoides*

1. Leaflets caudate-acuminate; flowers 1.5 cm long; fruits subquadrangular

---

*S. personatum*


Trees, about 20 m tall; young branchlets puberulous, bark exfoliates into scales. Leaflets about 3 pairs, terminal largest, 15×8 cm, elliptic-oblong, orbicular, abruptly acuminate, unequally obtuse to rounded at base, puberulous; nerves and reticulations prominent. Flowers pale pink, 2.5 cm long, in large, panicled cymes about 40 cm long, bracteolate; calyx tube 0.6 cm long, lobes 0.2 cm long, puberulous; corolla lobes 1 cm long, orbicular, tube 2 cm long, puberulous without, more so within; stamens 4, didynamous; disk cupular; ovary glabrous, style filiform, stigmas 2. Capsules about 25 cm long, cylindrical; seeds 0.5 cm long, winged at back, wings 1 cm long.

*Fl. & Fr.* : February-May.

**World distribution** : India and Burma.

**Specimen examined** : Ramanapenta, Gundalabrahmeswaram, 31-3-1965, Ellis 23829.

**Remarks** : Steenis (*op. cit. p. 948*) erroneously cites specific epithet from G. Dou's *Gen. Syst. 4 : 244.* which dates from 1837, whereas Roxburgh's was published in 1832.

Trees, about 15 m tall; young branches striate, faintly puberulous. Leaves about 20 cm long; rachises angled, grooved, faintly puberulous; leaflets 9 × 3.5 cm, in 3 pairs, elliptic-ovulate or acuminate, rounded at base, glabrous. Flowers yellow, 1.5 cm long, in cymose panicles 20 cm long, bracteolate; calyx 0.5 cm long, puberulous without, lobes small; corolla 1.5 cm long, puberulous, lobes glabrous or ciliate; stamens in cluded, didynamous; ovary glabrous; disk cupular. Capsules about 70 cm long, subquadrangular, curved; seeds 0.5 cm long, winged.

Fl. & Fr.: April-July.

World distribution: India.

Specimens examined: Mahanandi, 21-8-1965, Ellis 25442; Mahanandi, 21-8-1972, Ellis 42309.

PEDALIACEAE

Sesamum Linn.


Erect herbs, about 70 cm high; branching often from base, puberulous. Leaves up to 10 × 6 cm, lanceolate, lower pedatisect, glabrous above, puberulous beneath. Flowers pinkish-purple, about 2.5 cm long, axillary, solitary or in racemes about 4 cm long; pedicels glandular at base; calyx 0.3 cm long, 5-partite, puberulous; corolla 2.5 cm long, ventricose, faintly gibbous at base, 2-lipped; stamens 4, didynamous, included; ovary glabrous, style filiform, stigma 2-lobed; disk annular. Capsules 1.5 cm long, quadrangular, shortly beaked, pubescent, dehiscing about halfway down; seeds black, compressed, glabrous, oily.

Fl. & Fr.: July-October.

World distribution: A native of tropical Africa, cultivated extensively in India for edible oil.

Specimen examined: Chelama, 16-10-1964, Ellis 22027.
MARTYNIACEAE

MARTYNYIA Linn. emend. Stapf


Erect herbs, about 15 cm high; stems glandular-pubescent. Leaves about 20 x 15 cm, deltoid-ovate, cordate at base, sinuately lobed, minutely denticate, glutinously sticky. Flowers pink, darkly spotted on the lobes, yellow-speckled on the lower lip, often drooping, about 2.5 cm long, in racemes 6 cm long; bracts and bracteoles petaloid; stamens 2. Fruits about 2 cm long, woody, anteriorly strongly 2-hooked.

Fl. & Fr.: July-November.

World distribution: A native of tropical America, introduced into India, growing on rubber-heaps and waste lands.

Specimens examined: Mahanandi, 24-8-1965, Ellis 25532; Digu-vametta, 16-11-1969, Ellis 32430.

ACANTHACEAE

1. Scapigerous herbs
2. Non-scapigerous herbs or shrubs:
   2. Retinaculae absent; leaves non-linolate:
      3. Stamens 2; calyx segments 4
      3. Stamens 4; calyx segments 5
   2. Retinaculae present; leaves linolate:
      4. Calyx segments 4:
         5. Marshy plants, generally spinous
         5. Terrestrial, non-marshy plants, generally
            not spinous:
            6. Leaves 4 at each node
            6. Leaves 2 at each node:
               7. Bracts and bracteoles prominently
                  scarious marginated; flowers secund
               7. Bracts and bracteoles not or faintly
                  scarious marginated; flowers not secund:
                  8. Seeds smooth, appressedly sericeous
                  8. Seeds tuberculate, glabrous
                  9. Stamens 2:
                  10. Stems rather sharply angled:

   2. Retinaculae present; leaves linolate:
      4. Calyx segments 5:
      9. Stamens 2:
          10. Stems rather sharply angled:
11. Capsules clavate with cylindrical stalk
11a. Capsules linear-oblong or ellipitical, not stalked

Perisophae

Andrographis

10. Stems terete or faintly angled:
12. Corolla with upper lip much reduced
12a. Corolla with upper lip and lower lip almost equal:
13. Seeds hairy
13a. Seeds tuberculate:
14. Anther cells parallel, not spurred at base
14a. Anther cells disposed one higher than other, lower prominently spurred

Rhinacanthus

Rhaphidospora

Diceriptera

Institia

15. Corolla 2-lipped:
16. Bracts and bracteoles sharply mucronate
16a. Bracts and bracteoles not spinous

Lepidagathis

Dyschoristia

15a. Corolla 5-lobed:
17. Capsules clavate with solid, cylindrical base:
18. Seeds many; bracts green
18a. Seeds about 4; bracts greenish white
17a. Capsules linear, without solid base

Dipteracanthus

Eranthemum

Hemigraphis


Scapigrouse herbs, about 10 cm high; stems densely pubescent. Leaves up to 16 x 5 cm, oblong-obovate, acute at base, crenate-dentate, shortly petiolate. Flowers white, 0.4 cm long, in branched scapes about 20 cm long; bracts 0.6 x 0.4 cm, ovate-acuminate, aristate, glabrous without, densely ciliate within; calyx lobes 0.4 cm long, unequal, linear-acuminate to broadly ovate, hairy at apex, tube 0.1 cm long, rather horned at base; corolla 0.2 cm long, lobes ovate, tube 0.3 cm long; stamens slightly exerted; ovary glabrous, stigma 2-lobed. Capsules 0.5 cm long, ovoid; seeds reticulate; retinaculum absent.

Fl. & Fr.: Throughout the year.

Specimens examined: Nandyal, March 1883, J. S. Gamble 10877; Chelama, 4-7-1963, Ellis 16719; Ahobitalam, 29-8-1965, Ellis 25555; Diguvarmetta, 19-11-1969, Ellis 32550; Mahanandi, 22-8-1972, Ellis 42323.

Nelsonia R. Br.


Herbs. about 10 cm high; branches prostrate-decumbent. glabrescent, villous when young. Leaves of 2 types, larger 22 x 6 cm, elliptic-oblong, attenuate at base, sparsely pubescent along nerves, upper smaller and sub sessile; petiolae 2.5 cm long. Flowers pink, 0.5 cm long, in axillary and terminal spikes 5 cm long; bracts 0.4 x 0.3 cm, ovate, ciliate; calyx lobes 0.4 cm long, linear-elliptic, densely ciliate, prominently 3-nerved; corolla 0.4 cm long, lobes linear-elliptic, prominently 2-lipped; stamens 2, included, anther cells rather spurred at base; ovary glabrous, stigma shortly 2 lobed. Capsules 0.5 cm long, linear-ovate, glabrous; seeds 8, confined to lower end, granular.

Fl. & Fr.: January-April.

World distribution: Pantropic.

Specimen examined: Gundlabrahmeswaram, 30-3-1965. Ellis 23798.

Staurogyne Wall.


Erect herbs, about 40 cm high; stems terete, glandular-pubescent. Leaves about 4 x 2 cm, obovate, obtuse, spatulate, attenuate at base, glabrescent, almost sessile. Flowers pale violet, 0.8 cm long, axillary, solitary, or in spikes 7 cm long; bracts 1.5 cm long, spatulate; bracteoles about 1 cm long; calyx segments 5, 0.5 cm long, subequal, glandular; corolla 0.8 cm long, slightly curved, puberulous without; stamens 4, included, filaments puberulous; ovary glabrous. Capsules 0.8 cm long, glabrous; seeds about 10, papillate.
Fl. & Fr.: November-March.

World distribution: India and Burma.

Specimens examined: Chelama, 8-12-1963, Ellis 18017; Srisailam, 25-3-1963, Ellis 23760.


**Hygrophila R. Br.**


Erect, marshy herbs, about 60 cm high; stems subquadangular, sparingly hisutre, bearing six long, sharp, axillary thorns at nodes. Leaves 16 x 1.8 cm, in whorls of 6, outer pair largest, linear-lanceolate, attenuate at base, sparsely hisutre, sessile. Flowers purplish, 4 cm long, in axillary whorls 6 cm across; calyx lobes 1 cm long, linear-lanceolate, ciliate along margin; corolla tube 2 cm long, sparsely pubescent without, lobes 1 cm long, unequal; stamens included, didynamous; style slender, pubescent, stigma simple. Capsules 0.8 cm long, linear-oblong; seeds 4, on retinaculæ, flattened.

Fl. & Fr.: Almost throughout the year.

World distribution: Central & South Africa, India and Sri Lanka.

Specimens examined: 'Kurnool' no date, Beddome s.n.; Diggavametta, 18-11-1969, Ellis 32509.

**Blepharis Juss.**

1. Leaves about 11 x 4.5 cm
2. Leaves about 2.3 x 0.8 cm

**R. madraspatensis**

**B. moluginifolia**

Prostrate or decumbent herbs: stems running up to 50 cm, pubescent, rooting at nodes. Leaves about 11 x 4.5 cm, unequal, 4 in a whorl, elliptic, ovate, acute at base, distantly toothed, puberulous, sessile. Flowers white with yellow centre, 2 cm long, 1–3, in sessile clusters; bracts 1 x 0.3 cm, about 8 in pairs, oblong-spathulate, glochidiate-spinous toothed, sparsely pubescent without, prominently 3-nerved; calyx segments 1.5 cm long, linear-elliptic, scarious, inner smaller, innermost pair smallest, densely retrorse pubescent within; corolla 2 cm long, upper lip small, lower broad, 3-lobed, tube horny; stamens 4, didynamous, included, filaments flattened, horny, anthers marginally pubescent on one side; ovary glabrous, stigma 2-lobed. Capsules 0.5 x 0.3 cm, ovoid; seeds 2, flattened, echinate.

Fl. & Fr.: August-February.

World distribution: Tropics in Central & South Africa, India, Sri Lanka and Burma, in dry localities.

Specimens examined: Nandyal, 25-8-1917, Rangachari 15004; Rudravaram, 7-9-1917, Rangachari 15005; Chelama, 7-12-1963, Ellis 17984.


Prostrate herbs; stems running to about 30 cm, hispid. Leaves 2.3 x 0.8 cm, 4 at nodes, ovate, obovate, spathulate, linear-elliptic, acute at base, hispid, sessile. Flowers pale violet, 1 cm long, axillary, solitary; bracts and bracteoles about 4 pairs, up to 0.7 x 0.3 cm, oblong-obovate, glochidiate-spinous, toothed, puberulous without, prominently 3-nerved; calyx 1 x 0.3 cm, linear-ovate, scarious, mucronate, 3-nerved; corolla 0.7 cm long, 2-lipped, upper small, lower 3-lobed, pubescent, tube horny; stamens 4, didynamous, anthers pubescent; ovary glabrous. Capsules 0.5 cm long, oblong; seeds 4, flattened, orbicular, echinate, on retinaculae.

Fl. & Fr.: September-December.

World distribution: India and Sri Lanka, in very dry localities of deciduous forests.

Rungia Nees

1. Bracts dimorphic  

R. narvilliflora  

1. Bracts not dimorphic  

R. repens


Erect or decumbent herbs, about 10 cm high; stems pubescent in lines. Leaves about 6 x 2.5 cm, ovate-elliptic, obtuse, acute at base, sparsely puberulous, cystoliths parallel to midrib; petioles about 2 cm long. Flowers violet, 0.5 cm long, in terminal and axillary spikes 1.2 cm long; bracts dimorphic, infertile ones 0.5 cm long, arranged in two rows, ovate, cuspidate, scarious-margined, sparsely hairy, fertile ones orbicular, scarious-margined, bident at apex, pubescent; calyx lobes 0.4 cm long, linear, sparsely pubescent; corolla 0.5 cm long, 2-lipped, upper ovate, lower obovate, 3-lobed; stamens slightly exerted, anther cells 2, parallel, lower cell spurred; ovary glabrous, style filiform, stigma bident. Capsules 0.5 cm long, ovoid, flattened; seeds 4, flattened, orbicular, concentrically ridged.

Fl. & Fr. : November-March.

World distribution : India and Sri Lanka.

Specimens examined : “Nallamalais”, March 1883, J.S. Gamble 10945; Chelama, 7-12-1963, Ellis 17956.


Erect or decumbent herbs about 30 cm high; stems zig-zag, slightly angled, glabrous. Leaves about 5.5 x 2.5 cm, ovate-elliptic, acuminate, obtuse or acute at base, minutely lineolate; petioles 0.5 cm long. Flowers pale violet, 1 cm long, in terminal spikes about 15 cm long; bracts 0.8 x 0.8 cm, broadly ovate, prominently scarious-margined, ciliate; bracteoles 0.5 cm long, ovate-acuminate, puberulous; calyx lobes 0.5 cm long, linear-ovate, puberulous; corolla 0.7 cm long, pubescent, upper lip notched, lower 3-lobed; stamens slightly exerted, lower anther cell spurred. Capsules 0.6 x 0.4 cm, ovoid, flattened, pubescent; seeds 4, concentrically rugose, on retinaculum.

Fl. & Fr. : Throughout the year.
**World distribution:** India and Sri Lanka.

**Specimens examined:** Chelama, 8-12-1963, *Ellis* 18010; Velgoda, 26-11-1969, *Ellis* 32617.

**Barleria Linn.**

1. Herbs spinescent
   1. Herbs not spinescent:
      2. Corolla tube about 8 cm long; plants stellate-pubescent
         .. *B. prionitis*
      2. Corolla tube about 4 cm long; plants not stellate-pubescent:
         3. Flowers in secund spikes; leaves about 20×10 cm
            .. *B. longiflora*
         3. Flowers not in secund spikes; leaves up to 13×8 cm:
            4. Outer calyx lobes ovate, entire; leaves tomentose
               .. *B. strigosa*
            4. Outer calyx lobes ovate lanceolate, spinous-ciliate along margin; leaves faintly puberulous
               .. *B. tomentosa*

   4. Outer calyx lobes ovate lanceolate, spinous-ciliate along margin; leaves faintly puberulous
      .. *B. cristata*


Erect herbs, about 60 cm high; branches lineolate. Leaves about 10×4 cm, elliptic-ovate, oblong-lanceolate, attenuate at base, lineolate; petioles small. Flowers yellow, about 2.5 cm long, in axillary, divaricate spikes about 8 cm long, bracteate, bracteolate; calyx lobes 1.5×0.4 cm, ovate-cuspidate; corolla lobes 1 cm long, pubescent without, tube 2.5 cm long; stamens 4, 2 long and 2 short, filaments glabrous; ovary glabrous except near top where it is pubescent, style filiform, stigma faintly bifid. Capsules 1.5 cm long, oblong; seeds 4, flattened.

**Fl. & Fr.:** October-May.

**World distribution:** India, Sri Lanka, Burma and Malaysia.


**B. longiflora** Linn. f. Suppl. 229. 1781; Nees in DC. Prodr. 11: 235. 1847; C.B.Cl. in Hook. f. FBI 4: 485. 1885; Gamble, FPM 6: 1059. 1924.

Erect herbs, about 80 cm high; stems tomentose. Leaves 4×3 cm, ovate, rounded at base, densely stellate-pubescent below, less so above;
petioles 1.2 cm long. Flowers white, axillary, solitary or in simple, sessile spikes; bracts 2 cm long, linear; two outer calyx lobes 2.5 x 1.6 cm, ovate, finely crenulate, scarious, reticulately veined, sparsely pubescent, two inner 0.4 x 0.2 cm, ovate-caudate, scarious; corolla tube 8 cm long, lobes 1 cm long, ovate; stamens 2 long and 2 short, included; ovary glabrous except at top. Capsules 1.8 cm long, oblong, beaked; seeds 4, flattened, sericeous.

Fl. & Fr.: September-March.

World distribution: India, in dry localities.

Specimens examined: Srisailam, 21-10-1964, Ellis 22153; Srisailam, 5-12-1969, Ellis 32696.


Shrubs, about 1 m high; stems terete, strigose. Leaves about 20 x 10 cm, broadly ovate, acuminate, abruptly attenuate at base, sparsely ciliolate; petioles about 4 cm long. Flowers pale blue, 3 cm long, in axillary and terminal dense spikes about 10 cm across, sessile, bracteate, bracteolate; bracts about 3 x 2 cm, ovate, rounded at base, denticulate, strigously hairy along margins; outer calyx lobes 0.5 x 0.2 cm, ovate, inner linear, pubescent; corolla lobes 4 cm across, tube 3 cm long; stamens 2 long and 2 short, included; ovary glabrous. Capsules 2 cm long, ovoid, beaked; seeds 4, flattened, sericeous.

Fl. & Fr.: September-October.

World distribution: India and Burma, often cultivated.

Specimens examined: Mantralakanama, February 1887, Gamble 18725; Sunnipenta, Srisailam, 21-10-1964, Ellis 22133; Diguavmetta, 17-11-1969, Ellis 32447.


Sufltrutescent herbs, about 60 cm high; stems tomentose. Leaves 3 x 2.5 cm, ovate, rounded or obtuse at base, tomentose; petioles 1 cm long. Flowers pale pink, 4.5 cm long, in axillary clusters of 2-4-flowers, bracteate, bracteolate; calyx lobes white, 0.5 cm long, linear-ovate, reticulately nerved, tube 0.1 cm long; corolla lobes 1 cm long, orbicular, tube 3.5 cm long; stamens 4, two shorter, included; ovary glabrous,
style filiform. Capsules 1 cm long, obovoid, beaked; seeds 4, pubescent, flattened.

_Fl. & Fr._: July-January.

*World distribution*: Peninsular India, in dry localities.

*Specimen examined*: Ahobilam, 22-11-1969, _Ellis_ 32584.


Erect herbs, about 50 cm high; branches sparsely hairy. Leaves about 13 × 8 cm, highly variable, elliptic-ovate or oblong, linear-oblong, faintly puberulous, lineolate; petioles about 3 cm long. Flowers pink, blue or white, about 4 cm long, in axillary, clustered spikes 6 cm across, bracteate, bracteolate; calyx segments 1.5 × 1 cm, lanceolate, bristly-toothed along margins, glandular hairy, prominently nerves, inner narrower; corolla lobes 0.8 cm long, orbicular, tube 3 cm long, pubescent; stamens included; ovary glabrous. Capsules 1.3 × 0.5 cm, ovoid, acute at apex, flattened; seeds 4, flattened.

_Fl. & Fr._: October-January.

*World distribution*: India and Burma.

*Specimens examined*: Chelama, 9-12-1963, _Ellis_ 18039; Gundlabrahmeswaram, 24-10-1964, _Ellis_ 22177; Ahobilam, 23-11-1969, _Ellis_ 32602.

_Barleria gibsoni_ Dalz. is said to be present in ‘Nallamalai Hills of Kurnool,...’ according to Gamble (*op. cit.*). As this species has not been collected from Nallamalais in the recent tours, it has not been taken up for a detailed study.

**ROSTELLULARIA Reichenb.**

1. Bracts and bracteoles hirsute; calyx very broad at base, suddenly acuminate at apex
   2. Cystoliths on leaves wavy or straight, oriented almost parallel to midrib in the centre and transverse along the margin
      3. Capsules puberulous; plants decumbent or erect
         2. Capsules glabrous; plants decumbent or prostrate
            3. . . _R. vahlit var. ripicola_
   1. Bracts and bracteoles puberulous or pubescent; calyx linear-oblong or ovate
      2. Cystoliths on leaves minute, straight, oriented in an ascending direction from the midrib
         3. Capsules puberulous; plants decumbent or erect
            2. Capsules glabrous; plants decumbent or prostrate
               3. . . _R. vahlit var. ripicola_

Erect herbs, about 25 cm high; stems grooved, crisped-hairy. Leaves 3.5×2.2 cm, ovate, elliptic-ovate or obtuse at base, lineolate, cystoliths irregularly ascending from midrib. Flowers pink, 0.6 cm long, in terminal spikes 3.5 cm long; bracts and bracteoles 0.7 cm long, linear, distantly hirsute at right angles to margins; calyx 0.7 cm long, prominently broadly scarious-margined at base, suddenly acuminate at apex, distantly ciliate at top; corolla 0.6 cm long, 2-lipped; stamens slightly exerted, anthers 2-celled, lower prominently spurred; ovary glabrous, style filiform, stigma bifid. Capsules 0.4 cm long, clavate, puberulous at tips; seeds 4, tuberculate, slightly flattened, sometimes corrugated.

Fl. & Fr.: Throughout the year.

World distribution: Peninsular India.

Specimens examined: Ramanapenta, Gundlabrahmeswaram, 28-8-1917, Rangachari 14966; Chelama, 5-7-1963, Ellis 16741; Mahanandi, 23-8-1965, Ellis 25524; Diguvalametta, 16-11-1969, Ellis 32410.


Prostrate or decumbent herbs, sometimes erect; stems often rooting at nodes, grooved, puberulous or glabrous. Leaves up to 5.5×1.5 cm, elliptic-ovate, obtuse, orbicular, acute at base, cystoliths parallel to midrib and transverse near margin. Flowers pink, 0.5 cm long, in terminal spikes 5 cm long; bracts 0.3 cm long, linear-ovate, ciliate along margin; calyx lobes 0.4 cm long, ovate, scarious; corolla 0.5 cm long, glabrous, 2-lipped; stamens exerted, lower anther cell spurred; ovary glabrous, style filiform, stigma bifid. Capsules 0.4 cm long, clavate, puberulous; seeds 4, ovoid, tuberculate.

Fl. & Fr.: Throughout the year.

World distribution: India.

Specimens examined: Ahobilam, 31-8-1965, Ellis 25595; Diguvalametta, 18-11-1969, Ellis 32489.

Gamble, FPM 6 : 1081. 1924.  J. diffusa Willd. var. vahlii (Roth) C. B. Cl. in Hook. f. FBI 4 : 538. 1885.

Erect or decumbent herbs, 30 cm high; stems grooved, lineolate. Leaves up to 8 x 1 cm, linear, elliptic, or ovate, acute at base, sparsely hairy; cystoliths minute, ascending from midrib. Flowers pale pink, 0.5 cm long, in terminal spikes up to 10 cm long; bracts and bracteoles 0.4 cm long, linear-ovate, puberulous, ciliate along margins, marginally scarious; calyx 0.4 cm long, linear, scarious, ciliate; corolla 0.5 cm long, 2-lipped, sparsely hairy without; stamens exserted, lower anther cell spurred; ovary puberulous, style slender, stigma slightly bifid. Capsules 0.5 cm long, clavate, puberulous; seeds slightly flattened, tuberculate.

Fl. & Fr. : Throughout the year.

World distribution : India, in dry localities.

Specimens examined : Srisailam, 12-7-1963, Ellis 16825 & Ellis 16842; Chelama, 7-12-1963, Ellis 17944; Ahobilam, 20-8-1965, Ellis 25545; Diguvanmetta, 17-11-1969, Ellis 32432; Mahanandi, 23-8-1972, Ellis 42330.


This variety is allied to the typica from which it differs in having, (i) prostrate habit, (ii) cystoliths on leaves rather sparse and irregularly placed, (iii) capsules glabrous and (iv) leaves sessile and linear.

Fl. & Fr. : Throughout the year.

World distribution : Peninsular India.

Specimens examined : Srisailam, 12-7-1963, Ellis 16842; Srisailam, 5-12-1969, Ellis 32698.

Peristrophe Nees


Herbs, about 1 m high; stems weak, often decumbent, angled, grooved, sparsely hirsute. Leaves about 7 x 4 cm, ovate-acuminate, rounded at base, sparsely hirsute, ciliate along margins; petioles 1 cm long. Flowers pink, 1.5 cm long, in terminal and axillary cymes in dichotomously branched panicles 15 cm long; bracts 2, 1 cm long, unequal, the larger linear-obovate or spatulate; bracteoles 4, linear-
acuminate; calyx lobes linear-acuminate, softly puberulous; corolla 1.5 cm long, 2-lipped, upper obtuse, lower 3-lobed, pubescent without, tube 0.6 cm long; filaments dilated, glabrous, anthers 2-celled, one slightly higher; ovary glabrous, style filiform, stigma bifid. Capsules 1 cm long, clavate, ciliate at top, stalk cylindric; seeds 4, flattened, orbicular, papillate.

Fl. & Fr.: Throughout the year.

World distribution: Tropics from Africa, Afghanistan, India and Burma, generally in waste land.

Specimens examined: Chelama, 7-12-1963, Ellis 17936; Diguvametta, 16-11-1969, Ellis 32391.

ANDROGRAPHIS Wall.

1. Plants erect:
   2. Calyx about 0.3 cm long; capsules 1 cm long \(\textit{A. paniculata}\)
   2. Calyx about 1.5 cm long; capsules 2 cm long \(\textit{A. echinodes}\)

1. Plants procumbent \(\textit{A. nallumunsiyanu}\)


Erect herbs, about 80 cm high; branches subquadrangular, grooved, puberulous. Leaves about 7x3 cm, oblong, linear, obtuse at base, sparsely puberulous, sessile. Flowers pink, about 0.5 cm long, in terminal, paniculate racemes about 7 cm long, bracteate; calyx 0.3 cm long, segments linear, puberulous; corolla 0.5 cm long, 2-lipped, upper 2-toothed, lower 3-toothed, sparsely puberulous without; stamens exerted, anthers pubescent at base, filaments dilated; ovary glabrous, style filiform, stigma bifid. Capsules 2 cm long, linear-elliptic, sparsely pubescent, recurving during dehiscence; seeds about 8, on retinaculae pitted.

Fl. & Fr.: July-December.

World distribution: India and Sri Lanka.

Specimens examined: 'Kurnool', 6-9-1899, A. W. B. Higgens s.n. (? C. A. Barber 802 !); Srisailam, 13-7-1963, Ellis 16862; Ahobilam, 29-8-1965, Ellis 25549; Diguvametta, 17-11-1969, Ellis 32453; Diguvametta, 7-8-1972, Ellis 42176.

Erect herbs, about 40 cm high; stems subquadrangular, hairy. Leaves 7 × 2.5 cm, elliptic-ovate, obtuse at base, sparsely hairy, sessile. Flowers white, 1.5 cm long, in axillary, second racemes 7 cm long, bracteolate; calyx segments 1.2 cm long, linear, hairy, tube short; corolla lobes sparsely pubescent, tube glabrous, gibbous above; stamens exserted, filaments dilated, anther cells bearded at base; ovary puberulous, style slender, stigma bifid. Capsules 1 cm long, elliptic, rather flattened; seeds 4, rugose, pitted.

Fl. & Fr.: July-December.

World distribution: India and Sri Lanka.


Remarks: C. P. Streemadhavan (in Phytophgia 15: 270-271, 1967 and Ibid. 16: 466, 1968) has described a new genus, Indoneesiella Streemadhavan (= Neesella Streemadhavan) mainly dependent on the number of seeds—4 in Andrographis echioides (Linn.) Nees and many in others. How far he is justified in splitting of a rather homogeneous taxon into two genera, albeit quoting an earlier opinion of Nees (1832), requires to be substantiated by other disciplines of Botany. Till such a work is available Andrographis echioides is retained in Andrographis Wall.


Procumbent herbs, ± 50 cm long; rootstocks woody; stems radiate from woody rootstock, quadrangular. Leaves about 7.5 × 3 cm, obovate, elliptic-ovate, depending on season smaller and oblong, attenuate at base, sessile. Flowers white, 1.2 cm long, in terminal and axillary racemes 6 cm long, pedicellate, bracteate; calyx 1.7 cm long, lobed till base, segments puberulous-glandular without, puberulous within; corolla bilabiate, pubescent-glandular without, glabrous within except near base; stamens 2, filaments winged, anthers maroon, densely bearded at base; ovary puberulous, style slender, stigma slightly bifid. Capsules 1.5 cm long, elliptic-oblong, sparsely glandular; seeds 4-6, rugose.

Fl. & Fr.: Throughout the year.

World distribution: Peninsular India.
Specimens examined: Diguvanetia, 11-8-1921, C. E. C. Fischer 4658; Chelama, 4-7-1963, Ellis 16709; Chelama, 18-3-1965, Ellis 23715; Ahobilam, 29-8-1965, Ellis 25545; Ahobilam, 23-11-1969, Ellis 32592.

Rhinacanthus Nees


Undershrubs, about 1 m high; stems erect or decumbent, terete, grooved, puberulous when young. Leaves up to 18 x 10 cm, elliptic-acuminate, acute at base, glabrescent, lineolate; petioles 2 cm long. Flowers white, 3 cm long, in cymes, in axillary and terminal, divaricate, panicles about 15 cm long, bracteate, bracteolate; bracts often foliaceous; calyx lobes 0.4 cm long, linear, puberulous; corolla 1 cm long, lobes 5, upper lip with 2 small, lower lip with 3-lobe, ciliate without; stamens 2, epipetalous, exerted; ovary glabrous, style sparsely pubescent. Capsules 2.5 cm long, clavate, pubescent; seeds 4, flattened, tuberculate.

Fl. & Fr.: October-April.

World distribution: Tropics in Africa, India, Sri Lanka and Malaysia.

Specimens examined: 'Nallamalais', March 1883, J.S. Gamble 10955; Chelama, 7-12-1963. Ellis 17942; Chelama, 17-10-1964, Ellis 22082; Bogada, 19-11-1969, Ellis 32524.

Raphidospora Nees


Erect or decumbent herbs, about 80 cm high; stems grooved, glabrous. Leaves about 11 x 8 cm, ovate-acuminate, obtuse at base, glabrous; petioles up to 5 cm long. Flowers white, 0.8 cm long, in axillary and terminal, dichotomously branched cymes up to 10 cm long, bracteate, bracteolate; calyx lobes 0.4 cm long, linear, acute, puberulous, tube short; corolla 0.8 cm long, 2-lipped, puberulous without; stamens 2, epipetalous, exerted, lower anther cell spurred; ovary puberulous. Capsules 1.2 cm long, clavate, pubescent; seeds 4, flattened, densely brown-villous.
Fl. & Fr.: Throughout the year.

World distribution: Mauritius Islands, India, Sri Lanka and Malaysia.

Specimens examined: Gazulapalli, 8-11-1906, C. A. Barber 8067; Ahobilam, 22-11-1969, Ellis 32588.

**Diciplerta** Juss. *nom. cons.*

*Diciplerta cuneata* Nees in Wall. Pl. Asiat. Rar. 3 : 111. 1832 et in DC. Prodr. 11 : 481. 1847; Wt. Ic. 4 : t. 1552. 1850; C.B.Cl. in Hook. f. FBI 4 : 552. 1885; Gamble, FPM 6 : 1073. 1924.

Erect herbs, about 60 cm high; branches grooved, glabrous. Leaves about 10 × 5 cm, ovate-acuminate, obtuse or rounded or acute at base, sparsely puberulous, lincolate; petioles 4 cm long. Flowers pink, 1.5 cm long, in axillary and terminal, umbellate cymes 1.8 cm across, pedicellate; bracts small; bracteoles spathulate, faintly puberulous, 3-nerved; calyx lobes 0.3 cm long, linear, puberulous, tube 0.1 cm long; corolla lobes 0.7 cm long, sparsely pubescent without, tube 0.7 cm long; stamens 2, anther cells parallel; ovary glabrous, styles slender, stigmas bifid. Capsules 0.6 cm long, puberulous; seeds 4, flattened, tuberculate.

Fl. & Fr.: Throughout the year.

World distribution: India, in moist deciduous forests.

Specimen examined: Srisailam, 23-6-1965, Ellis 23779.

C. B. Clarke (op. cit. p. 551) has described a new species, *Diciplerta beddomei* from 'Nallamavys (in Kurnool). Beddome'. Gamble (op. cit. p. 1073) records it from 'Deccan, Nallamalai Hills of Kurnool (Beddome)' It is rather intriguing that it has not been collected from Nallamalais. There are no herbarium specimens of this species at MII or CAL. Through the kind courtesy of the Director, Kew Herbarium, a photograph of the Type Specimen has been seen. Though the photograph is very good, it is not possible to make out the significant differences from *Diciplerta cuneata* Nees. Therefore, *Diciplerta beddomei* C.B.Cl. has not been taken up for a detailed study.

**Justicia** Linn.

1. Bracts white with green venation
   1. Bracts green

Shrubs, about 1 m high; young branches glabrescent. Leaves about 10 × 6 cm, ovate-acuminate, rounded and suddenly attenuate at base, entire or subcuneate; petioles 1 cm long. Flowers white, 2.5 cm long, in terminal spikes about 5 cm long; bracts and bracteoles 1.2 × 0.5 cm, white with green nerves, ovate, glabrous; calyx lobes 0.4 cm long, linear, pubescent, tube 0.1 cm long; corolla 2 cm long, 2-lipped, upper 2-lobed, lower 3-lobed, tube 1.5 cm long; stamens 2, slightly exerted, lower anther cell spurred; ovary pubescent. Capsules 1.5 cm long, clavate, pubescent; seeds 4, tuberculate.

_Fl. & Fr._: Throughout the year.

_World distribution_: Tropics in Africa, India, Sri Lanka and Malaysia.

_Specimens examined_: Chelama, 7-12-1963, _Ellis_ 17968; Ahobilam, 29-8-1963, _Ellis_ 25553; Diguvanettta, 17-11-1969, _Ellis_ 32433.


Erect herbs, about 60 cm high; stems terete, grooved, puberulous. Leaves up to 9 × 3 cm, ovate, elliptic, obtuse at base; petioles 2 cm long. Flowers white, 0.7 cm long, in terminal and axillary spikes 20 cm long; bracts 1 × 0.8 cm, oblong orbicular, generally hairy along margins; calyx lobes 0.4 cm long, linear, scarious, sparsely puberulous, tube short; corolla lobes 0.5 cm long, pubescent without, tube 0.5 cm long, glabrous; stamens 2, slightly exerted, lower anther cell spurred at base, filaments hairy near attachment; ovary glabrous, style sparsely hairy. Capsules 0.9 cm long, clavate, glabrous: seeds 4, tuberculate.

_Fl. & Fr._: July-March.

_World distribution_: India, in dry localities.

_Specimens examined_: Gazulapalli, 3-9-1917, _Rangachari_ 14986; Chelama, 5-7-1963, _Ellis_ 16748; Srisilam, 6-12-1969, _Ellis_ 32711; Mahanandi, 22-8-1972, _Ellis_ 42321.

_Remarks_: It has been rather difficult to assign this species to any particular genus as could be judged by placement of this under _Gendarussa_ Nees (Nees, 1832) and later under _Adhatoda_ Miller (Nees, 1841) by Nees.
himself. Earlier, Roxburgh (Fl. Ind. 1820) had treated it under Justicia Linn. From the available work on this species and studies at MH and CAL and from field studies regarding its gross morphology, it is treated here under Justicia Linn., in a broad sense. A monographic study on the genus, Justicia Linn., will throw new light on its delimitations.

LEPIDAGATHIS Willd.

1. Flowers confined to base of stems in cushion of clusters
   
   L. subarmata

1. Flowers in terminal and axillary panicked spikes
   
   L. cuspidata


Undershubs, about 15 cm high; stems radiating in all directions from woody rootstocks, decumbent, puberulous. Leaves 2.5×0.7 cm, linear-ovate, obovate-oblong, obovate, glabrous, scabrous on nerves beneath; nerves 5-6 from base. Flowers pink with maroon streaks near throat, 0.5 cm long, in clustered, cushion-like spikes at base of stems, 5 cm across; bracts 0.5 cm long, obtuse, mucronate, densely sericeous; calyx 0.5 cm long, lower lobes connate almost to top, densely sericeous; corolla 1 cm long, 2-lipped, upper 2-fid, lower 3-lobed; stamens 4, didynamous; ovary glabrous. Capsules 0.5 cm long, flattened; seeds 2, flattened, faintly rugose.

Fl. & Fr.: October-January.

World distribution: Peninsular India.

Specimen examined: Chelena, 7-12-1963, Ellis 17941


Erect undershrubs, about 90 cm high; stems terete, densely puberulous. Leaves about 10×2 cm, linear-elliptic, acuminate, mucronate, acute at base, glabrascent. Flowers white with purple spots, 1.5 cm long, in terminal and axillary panicked spikes about 20 cm long; bracts ovate-mucronate, pubescent, 3-nerved from base, hairy; bracteoles 1-nerved; calyx 0.5 cm long, lobes unequai, linear, spinous-mucronate; corolla white, 1 cm long, densely pubescent; stamens 4, included, filaments glabrous, anther cells bearded; ovary glabrous, style pubescent. Capsules 0.4 cm long, oblong, glabrous; seeds 4, compressed, pubescent.

Fl. & Fr.: March-June.
World distribution: India, in dry localities.

Specimen examined: 'Streams', 'Nallamalais', March 1887, Gamble 10917.

Remarks: It is rather surprising that Lepidagathis cuspidata Nees has not been collected during the present tours of Nallamalais. The collections of Gamble are in excellent condition at CAL.

Dyschoriste Nees


Decumbent herbs, about 60 cm high; stems angled, glabrescent. Leaves about 8 x 4 cm, elliptic-ovate, acuminate, acute at base, glabrescent, lineolate; petioles 1 cm long. Flowers purplish, 1.5 cm long, in axillary, a few-flowered, peduncled racemes 2 cm long, bracteate; calyx lobes 0.7 cm long, linear-acuminate, puberulous, tube 0.4 cm long; corolla lobes 0.5 cm long, obtuse, tube 1.5 cm long, suddenly expanded above, pubescent without; stamens 4, didynamous, anthers spurred at base; ovary glabrous, style pubescent. Capsules 1 cm long; seeds 4, flattened, pubescent.

Fl. & Fr.: November-March.

World distribution: India.

Specimens examined: 'Kurnool Hill', no date, Beddome s.n.; 'Kurnool Mountains', 1870, R. H. Beddome s.n.; Chelama, R. 12-1263, Ellis 17996; Ahobilam, 23-11-1969, Ellis 32603.

Dipteracanthus Nees

1. Herbs procumbent; capsules puberulous
   1. Herbs erect; capsules glabrous


Procumbent herbs, about 40 cm high, often rooting at nodes; stems grooved, faintly puberulous. Leaves about 6 x 4 cm, ovate, rounded, obtuse or acute at base, sparsely puberulent; petioles 2 cm long. Flowers pale blue, 2 cm long, axillary, solitary; bracteoles 2 cm long, foliolar, ovate-orbicular; calyx lobes 0.4 cm long, linear, puberulent, tube 0.1 cm long; corolla lobes 0.5 cm long, orbicular, tube 1.5 cm long, ciliate
without; stamens 4, didynamous, filaments pubescent at base; ovary glabrous. Capsules 1.8 × 0.5 cm, ovoid, puberulous; seeds many, flattened, thin, hirtellous, bearded along margins.

*Fl. & Fr.*: August-March.


Erect herbs, about 60 cm high; stems puberulous. Leaves up to 4 × 3 cm, ovate, obtuse, orbicular, acute or obtuse at base, crenulate, pubescent; petioles about 2 cm long. Flowers pinkish, 3.5 cm long. Axillary, solitary, sessile; bracts about 1.8 cm long, oblong-spathulate; calyx lobes 0.6 cm long, linear, ovate, pubescent, tube 0.1 cm long; corolla lobes 0.5 cm long, orbicular, tube 4 cm long, pubescent without; stamens 4, included, filaments glabrous, anther cells 2, parallel; ovary glabrous. Capsules 1.5 cm long, ovoid, beaked, glabrous; seeds many, orbicular, flattened, thin, pubescent along margins.

*Fl. & Fr.*: Throughout the year.


*Specimen examined*: Srisailam, 12-7-1963, *Ellis* 16821.

**Eranthemum Linn.**


Shrubs, about 1 m high; stems quadrangular, grooved, puberulous. Leaves 20 × 10 cm, elliptic-ovate, oblanceolate, acuminate, attenuate at base, rather coriaceous; lateral nerves and reticulations prominent; petioles 2 cm long. Flowers blue, 3 cm long, in terminal racemes 8 cm long; peduncles up to 25 cm long; common bracts 4 × 2 cm, ovate-acuminate, individual bracts greenish-white, ovate-acuminate, prominently nerved; bracteoles 0.5 cm long, linear; calyx lobes 0.2 cm long, acuminate, tube
0.5 cm long; corolla lobes 0.8 cm long, puberulous without, tube 1.5 cm long; stamens 2 fertile, 2 staminodes, slightly exerted; ovary glabrous. Capsules 1 cm long, glabrous; seeds 4, orbicular, flattened, on retinaculae.

*Fl. & Fr.*: October-July.

*World distribution*: India and Sri Lanka.

*Specimens examined*: Mantralakanama, Feb. 1887, J. S. Gamble 18724; Gundlabrahmeswaram, 31-3-1965, Ellis 23820.

**Hemigraphis Nees**


Erect herbs, about 40 cm high; stems faintly angled, striate, hairy. Leaves up to 7.5 × 4.5 cm, ovate-acuminate, rounded and suddenly attenuate at base, dentate, sparsely hairy, lineolate; pedioles about 4 cm long. Flowers pale blue, 1.5 cm long, in axillary, shortly peduncled cymes 1 cm across; bracts about 1.7 cm long, ovate-acuminate, ciliate; calyx lobes 0.8 cm long, linear acute, scarious, prominently ciliate at top, tube 0.1 cm long; corolla lobes 0.1 cm long, tube 0.6 cm long, ciliate within; stamens 4, didynamous, included; ovary hairy, style sparsely hairy. Capsules 0.7 cm long, pubescent above; seeds about 6, flattened, laciniate along margins.

*Fl. & Fr.*: January-July.

*World distribution*: India, in dry localities.

*Specimen examined*: Chelama. 12-12-1963. Ellis 18072.

*Remarks*: Many varieties have been described under *Hemigraphis latebrosa* (Roth) Roxb., viz. *rupestris* (Heyne ex T. Anders) C. B. Cl., *beddomei* C. B. Cl., *ebracteata* (Dulz.) Cooke, *incana* Gamble, *heynana* Brem. etc. From a study of herbarium specimens at MH and CAL, it appears, that these varieties may not stand as they imperceptibly merge with one another. Santapan (in *Univ. Bombay bot. Mem.* 2: 25-28. 1951) too is rather sceptical about the varieties, for he states, 'I find it very difficult to distinguish between these three plants, i.e. *H. latebrosa* vars. *heynana*, *ebracteata* and *H. rupestris*! (p. 27), A monograph's pronouncement is required about this.
Meyenina Nees


Trailing herbs, sometimes erect, up to 30 cm high; stems angled, grooved, glabrous. Leaves about 7×4 cm, ovate, apiculate, cordate at base, coriaceous, sessile; reticulations prominent. Flowers violet, yellowish at throat, 4.5 cm long, solitary, axillary; pedicels about 2.5 cm long; bracteoles 3×1 cm long, foliaceous, ovate-acuminate; calyx 0.1 cm long, truncate or obscurely 5-toothed; corolla lobes orbicular, spreading, tube enlarging at throat; stamens 4, didynamous, anthers spurred at base; ovary glabrous, style slender, stigma 2-lobed. Capsules 3.3×2 cm, conical with broadened base; seeds 4; retinaculce absent.

Fl. & Fr.: March-August.

World distribution: India, in rocky substratum.

Specimens examined: Gundlabrahmeswaran, 2-4-1965, Ellis 23846; Diguvaamettu, 9-8-1972, Ellis 42221.

Thunbergia Retz. nom. cons.


Climbing herbs; stems striate, glabrous to hirsute-pubescent. Leaves about 7×4 cm, ovate-acuminate, rounded or cordate at base, shallowly lobed, coriaceous, scabrous, puberulous; petioles 2 cm long. Flowers white with yellow centre, 6 cm long, axillary, solitary; bracteoles 2.5×1 cm, ovate-acuminate; pedicels 3-10 cm long; calyx 0.3 cm long, many-toothed, puberulous; corolla lobes 2 cm long, orbicular, tube 2.5 cm long; stamens 4, didynamous, anther cells spurred at base or not; ovary glabrous, style slender, stigma 2-lobed. Capsules about 2.5 cm long, conical, basally broadened; seeds 4, globose, retinaculce absent.

Fl. & Fr.: April-December.
World distribution: India, Sri Lanka, Malaysia and Philippines.

Specimens examined: Gundlubrahmeswaram, 20-7-1963, Ellis 16911; Gundlubrahmeswaram, 1-12-1969, Ellis 32684.

Remarks: C. B. Clarke (op. cit.) has reported 3 varieties under Thunbergia fragrans Roxb. Gamble (op. cit p. 1008), in addition, has described a new variety, hispida. However, all these varieties show variations, and the present study both in the field and in herbaria at MH and CAI, reveals that these varieties cannot stand. With this broad circumscription only the present understanding of the taxon has been envisaged.

VERBENACEAE

1. Prostrate herbs

1. Erect or scandent shrubs and trees:

2. Leaves simple:

3. Scandent shrubs; bracts foliaceous

3. Erect shrubs and trees; bracts foliaceous or not:

4. Drupes 1 cm across, densely stellate-pubescent

4. Drupes less than 0.5 cm across, puberulous:

5. Leaves dentate-serrate

5. Leaves entire or crenate-serrate:

6. Stems prickly

6. Stems not prickly:

7. Corolla 1 cm or more long

7. Corolla less than 0.5 cm long

2. Leaves 3-5-foliolate

PHYLA


Creeping herbs, up to 50 cm in length; stems terete, glabrous, rooting at nodes. Leaves 2×0.8 cm, opposite or ternate, oblong-ovate, serrate at apices, strigose on both surfaces. Flowers white, 0.4 cm long, in axillary, oblong spikes about 0.9 cm long; calyx small, 4-lobed, membranous, hairy; corolla 2-lipped, upper 2-fid, lower 3-lobed; tube cylindrical, slightly curved, 0.1 cm long, sinus 4, didynamous, included, anther cells parallel; ovary glabrous, style short, stigma capitate. Drupes 0.1 cm across; pyrenes 2.
Fl. & Fr.: Throughout the year.

*World distribution:* Warm-temperate regions of Mediterranean, tropics comprising India, Sri Lanka, Malaysia, Australia and America.

*Specimen examined:* Krishnanandi, Mahanandi, 21-8-1972, *Ellis 42319.*

**Symphorema Roxb.**


Climbing shrubs; stems terete, striate, densely brown-tomentose. Leaves 7×5 cm, ovate, orbicular, rounded at base, crenate-serrate, dentate, densely tomentose beneath, less so above. Flowers white, 0.5 cm long, in pedunculate capitate cymes about 2 cm across; bracts 2.5×1 cm, oblance-obovate, spathulate, puberulous, reticulations prominent; calyx lobes 6, 0.4 cm long, ovate, tube 0.7 cm long, pubescent without; stamens about 6, exserted; ovary glabrous. Drupes 0.5×0.5 cm, oblong, enclosed in persistent calyx; seed 1, fleshy.

Fl. & Fr.: March-May.

*World distribution:* India, Sri Lanka and Burma.

*Specimen examined:* Pathalaganga, Srisailam, 25-3-1965, *Ellis 23758.*

*Remarks:* Sometimes placed in the Symphoremataceae in a restricted sense, dependent on its having free-central placentation.

Gamble (op. cit. p. 1104) reports *Symphorema polyandrum* Wt. from ‘..Nallamalai Hills of Cuddapah and Kurnool (Beddome, Gamble); ..' This species has not been collected during the present tour of Nallamalais; nor are there herbarium specimens in MH or CAL collected from Nallamalais.

**Tectona Linn. f. nom. cons.**

*Tectona grandis* Linn. f. Suppl. 151. 1781; Schauer in DC. Prodr. 11: 629. 1847; C. B. Cl. in Hook. f. FBI 4: 571. 1885; Brandis, Indian Trees, 505. 1906; Gamble, FPM 6: 1092. 1924.

Trees, about 30 m tall; young branches angled, stellate-tomentose, Leaves 40×30 cm, elliptic, acute or acuminate, cuneate at base, densely tomentose beneath; transverse nerves prominent. Flowers white, 0.5 cm
long, in terminal, paniculate cymes about 30 cm long; bracts foliar towards base; calyx lobes not equal, 0.4 cm long, ovate, accrescent in fruits, prominently nerved; corolla 0.5 cm long, tube 0.2 cm long; stamens 5, exserted, anther cells parallel; ovary glabrous, style slender, stigma bilab. Drupes 1.5×1.5 cm, enclosed in accrescent calyx, densely stellate-hirsute; endocarp bony.

Fl. & Fr.: July September.

World distribution: India, Burma and Malaysia.

Specimens examined: Chelama, 8-7-1963, Ellis 16782; Mahanand, 22-8-1965, Ellis 25484.

Clerodendrum Linn.

Clerodendrum serratum (Linn.) Moon, Cat. 46. No. 382. 1824; Schauer in DC. Prodr. 11: 664. 1847; WT. Io. 4: t. 1472. 1850; C. B. Cl. in Hook. f. FBI 4: 592. 1885; Gamble, FPM 6: 1100. 1924. Volkameria serrata Linn. Mant. Pl. 90. 1767.

Shrubs, about 2 m high; stems subquadrangular, brown-tomentose when young. Leaves up to 27×13 cm, opposite and ternate, elliptio-acuminate, attenuate or acute or obtuse at base, deeply crenate-serrate, glabrescent; petioles short. Flowers pale violet, about 1 cm long, in axillary, dichotomous cymes 7 cm long, disposed in terminal panicles about 25 cm long, shortly pedicellate; bracts 3.5×1.5 cm, ovate-acuminate, serrate, foliaceous: calyx 0.3 cm long, shortly lobed, puberulous without; corolla about 1 cm long, curved, lobes suborbicular, ciliate along margins; stamens much exserted, filaments densely pubescent at base; ovary glabrous, style slender, stigma bilab. Drupes 4×7 cm, obovoid, 4-lobed, pyrenes 1 in each lobe.

Fl. & Fr.: July November.

World distribution: India, Sri Lanka and Malaysia.

Specimens examined: Gundlhabraheswaram, 21-7-1963, Ellis 16946; Gundlhabraheswaram, 24-10-1964, Ellis 22184; Gundlhabraheswaram, 28-11-1969, Ellis 32648: Rollowenta. 14-8-1972, Ellis 42259.

Remarks: This is remarkably a moist deciduous plant of Nalliamalais.

Lantana Linn.

Straggling shrubs, about 1.5 cm high; stems with recurved prickles, sparingly hirsute, angled, grooved. Leaves up to 11x6 cm, ovate-acuminate, abruptly acuminate at base, crenate-serrate, strigose; petals 2 cm long. Flowers orange-yellow, 1 cm long, in capitulate heads 2 cm across; bracts 0.7 cm long, ovate-acuminate, hirtellous; calyx 0.2 cm long, lobes rather small; corolla tube 1 cm long, lobes oblong, hirtellous without; stamens 4, didynamous, anther cells parallel; ovary glabrous, style short, stigma capitate. Drupes 0.3 cm across, globose, dehiscing into two 1-seeded pyrenes.

_Fl. & Fr._: Throughout the year.

_World distribution_: A pantropic weed.

_Specimen examined_: Rollapenta, 16-8-1972, _Ellis_ 42283.

**Gmelina** Linn.

1. Leaves about 27x12 cm; plants not thorny  
   _G. arborea_

1. Leaves about 3x2.5 cm; plants thorny  
   _G. asiatica_


_Trees, about 10 m tall; young branches brown-pubescent. Leaves about 27x12 cm, ovate-acuminate, acute, obtuse or truncate at base, glabrous above, tomentose beneath; petals up to 8 cm long. Flowers pale brown with lower petal yellow, about 4 cm long, in cymes disposed in terminal racemes about 12 cm long; bracts 1 cm long, linear; corolla densely pubescent without, lobes unequal, oblong, tube about 1 cm long; stamens 4, didynamous, included, anther cells parallel; ovary glabrous, style slender, stigma bifid. Drupes about 1.5 cm across, ovoid; endocarp bony._

_Fl. & Fr._: March-July.

_World distribution_: India, Sri Lanka, Burma, Malay Peninsula and Philippines.

_Specimen examined_: Chelama, 20-3-1965, _Ellis_ 23736.

_G. asiatica_ Linn. Sp. Pl. 626. 1753; Schauer in DC. Prodr. 11: 679, 1847; C. B. Cl. in Hook. f. FBl 4: 582. 1885; Gamble. FPM 6: 1096. 1924.
Shrubs or small trees, about 3 m tall; rarely scendent; stems terete, glabrous, often transformed into thorns. Leaves about $3 \times 2.5$ cm, ovate-oblong, sometimes 3-lobed, acute at base, glabrous; petioles 1 cm long. Flowers yellow, 4.5 cm long, in terminal racemes 10 cm long, bracteate; pedicels small; calyx 0.5 cm long, cupular, shortly 4-lobed, pubescent without; corolla tube 2.5 cm long, lobes obtuse; stamens 4, didynamous, anther cells parallel; ovary glabrous. Drupes 1 cm across, obovoid; endocarp bony.

Fl. & Fr.: Almost throughout the year.

World distribution: India, Sri Lanka, Burma and Malaysia.

Specimens examined: Diguvametta, 6-8-1972, Ellis 42163.

**PREMUNA** Linn. **nom. cons.**

1. Petioles about 10 cm long
   1. Petioles about 5 cm long:
   2. Plants stellate-pubescent
   2. Plants not stellate-pubescent


Trees, about 10 m tall; young branches striate, puberulous-tomentose. Leaves about $20 \times 10$ cm, ovate, elliptic-acuminate, rounded or obtuse at base, sparsely puberulous above, tomentose beneath; petioles about 10 cm long; transverse nervules prominent. Flowers pale green, 0.3 cm long, in cymes, in terminal panicles 15 cm long, rachises puberulous; calyx 0.15 cm long, 2-lipped, puberulous without, accrescent, lobes unequal, ovate; corolla 0.2 cm long, 2-lipped; stamens 4, didynamous, included, anther cells parallel; ovary glabrous, style filiform, stigma faintly bident. Drupes 0.4 cm long, globose; endocarp of 1 pyrene.

Fl. & Fr.: July-September.

World distribution: India.

Specimens examined: Gundlahrahmeswaram, 21-7-1963, Ellis 16952; Rollaapenta, 14-8-1972, Ellis 42246.

Trees, about 10 m tall; young branches densely stellate-tomentose. Leaves about 17 x 12 cm, ovate-acuminate, rounded or obtuse or acute at base, glabrescent above, densely so beneath; petioles up to 5 cm long. Flowers 0.5 cm long, in cymes, in terminal panicles up to 10 cm long, bracteate; calyx 0.3 cm long, densely tomentose without, lobes shallowly ovate; corolla 0.5 cm long, lobes ovate, tomentose without; stamens 4, didynamous, included; ovary tomentose. Drupes 0.5 x 0.5 cm, globose, ripening purple; pyrene 1, rugose.

Fl. & Fr.: February-August.

World distribution: India and Sri Lanka.

Specimens examined: Basavapuram, March 1883, J. S. Gamble 10919; Chelama, 4-7-1963, Ellis 16727; Chelama, 21-3-1965, Ellis 23743; Mahanandi, 21-8-1965, Ellis 25468; Diguvametta, 6-8-1972, Ellis 42149.


Trees, about 8 m tall; young branches terete, striate, pubescent. Leaves about 5.5 x 4 cm, ovate, obtuse, rounded or obtuse at base, pubescent; petioles 1.3 cm long. Flowers white, 0.3 cm long, in cymes, in terminal corymbs about 4 cm long, bracteate; calyx 1.5 cm long, lobes 5, almost equal, pubescent without; corolla 0.3 cm long, densely pubescent without, lobes ovate, tube 0.2 cm long; stamens 4, didynamous, exserted, anther cells parallel; ovary glabrous, stigma bilobed. Drupes 0.3 x 0.3 cm, globose, endocarp rugose.

Fl. & Fr.: May-October.

World distribution: Peninsular India.

Specimens examined: Diguvametta, 28-10-1906, C. A. Barber 8012; Srisailam, 12-7-1963, Ellis 16826A; Ahobilam, 29-8-1965, Ellis 25551.

*Vitex* Linn.

1. Leaflets sessile; flowers in clustered cymes
1. Leaflets petiolate; flowers in simple cymes

*Vitex altissima* Linn. f. Suppl. 294. 1781; Schauer in DC. Prodr. 11: 685. 1847; Wt. t. 4: t. 1466. 1850; C. B. Cl. in Hook. f. FBI 4: 584. 1885; Gamble, FPM 6: 1102. 1924. *V. alata* Heyne ex Roth, Nov. Sp. Pl. 316. 1821; C. B. Cl. loc. cit.
Trees, about 15 m tall; young branches angled, brown-pubescent. Leaves 3-foliate; common petioles up to 7 cm long, often winged; leaflets 16×5 cm, elliptic-acuminate, acute at base, puberulous below, sessile; nerves and reticulations prominent below. Flowers pale pink, 0.4 cm long, in clustered cymes, in terminal panicles about 25 cm long; bracts small; calyx 0.1 cm long, pubescent without, lobes ovate; corolla 0.4 cm long, obscurely 2-lipped, lobes ovate, pubescent on both surfaces; stamens 4, didynamous, exerted; ovary glabrous, style slender, stigma bilabiate. Drupes 0.5 cm across, globose, subtended by accrescent calyx, puberulous; endocarp bony; seeds 4, oblong.

Fl. & Fr.: April-October.

World distribution: Peninsular India and Sri Lanka.

Specimens examined: Gazulapalle, 11-9-1917, Rangachari s.n.; Upper Ahobilam, 29-8-1965, Ellis 25554.


Trees, about 10 m tall; young branches glabrous. Leaves 3-5-foliolate; common petioles about 10 cm long; leaflets about 15×4 cm, glaucous beneath, elliptic-ovate, acuminate, acute at base, coriaceous, puberulous along nerves below; reticulations prominent. Flowers white, 0.7 cm long, in cymes, in axillary, dichotomously branched panicles 13 cm long, bracteate; calyx 0.3 cm long, puberulous, lobes shallowly ovate; corolla white, 0.7 cm long, 2-lipped, pubescent without, a few purple-haired within; ovary glabrous, stigma 2-lobed. Drupes 1.2×0.8 cm, obovoid, seated on orbicular calyx; seeds 4, oblong.

Fl. & Fr.: March-June.

World distribution: India and Sri Lanka.

Specimens examined: "Nallamalais", March 1883, Gamble 10935; Chelama, 18-3-1965, Ellis 23727.

NYCTANTHACEAE

NYCTANTHES Linn.

Nyctanthes arboristis Linn. Sp. Pl. 6. 1753; DC. Prodr. 8: 314. 1844; C. B. Cl. in Hook. f. BFI 3: 603. 1882; Gamble, FPM 5: 792. 1923.
Trees, about 6 m tall; branches quadrangular, scaberulous, especially along angles. Leaves about 14 x 7 cm, elliptic-acuminate, rounded at base, scabrous-puberulous; nerves prominent beneath; petioles 0.5 cm long. Flowers white, 1.5 cm across, in terminal and axillary, dichotomous cymes 1 cm long; peduncles about 2 cm long; calyx 0.8 cm long, sparsely pubescent, lobes small; petals white, spreading, tube 1.5 cm long, orange-coloured; ovary glabrous, style slender, stigma bifid; stamens 2, filaments very short. Capsules 1.5 x 1.5 cm, orbicular, flattened, notched or shortly apiculate at apex; seeds 1 cm across, flattened, glabrous.

Fl. & Fr.: May-December.

World distribution: India, Siam and Malaysia.

Specimens examined: Diguvametta, 11-11-1906, C. A. Orcher 8096; Gundlabrahmeswaram, 20-7-1963, Ellis 16940; Gundlabrahmeswaram, 24-10-1964, Ellis 22192; Diguvametta, 17-11-1969, Ellis 32455.

Remarks: B. C. Kundu and Anima De (in Bull. bot. Surv. Ind. 10: 397-408. 1968) have discussed at length the position of the genus Nyctanthes Linn. after working on cytology, general anatomy, wood anatomy, floral anatomy, palynology, etc. of the genus. Their findings support that the genus is rightly placed in a separate family, Nyctanthaceae. Hutchinson (1973) and Airy Shaw (Kew Bull. 1952: 271-272, 1953), however, treat it under the Verbenaceae. R. N. Kapil and R. S. Vani (in Phytomar. 16: 553-563. 1967) on embryological evidence, have shown that the genus Nyctanthes should be retained in the Oleaceae. Kundu and De (loc. cit.) suggest that "... The proper phylogenetic position of Nyctanthaceae seems to be in between Strychnaceae and Oleaceae under the order Loganiales of Hutchinson."

LABIATAE (LAMIACEAE)

1. Calyx lobes densely plumose in fruits;
   plants suffrutescent, about 2.5 m high

1. Calyx lobes not plumose in fruits;
   plants herbaceous, up to 1.5 m high:

2. Inflorescences capitate

2. Inflorescences spicate, verticillate or whorled:

3. Flowers scarlet red or orange

3. Flowers white, purplish or pink:

4. Flowers in long racemes:

5. Stigmas 2-nd:

6. Calyx lobes erect

6. Calyx lobes deflexed

.. Colebrookea

.. Acrocephalus

.. Leunutis

.. Ocimum

.. Anisochilus
5. Stigma entire

4. Flowers in whorls or verticillasters or a few-flowered umbela:

7. Calyx 5-toothed, straight:

8. Inflorescences umbellate

8. Inflorescences verticillate

7. Calyx 6-10-toothed, slightly falcate

**ORTHOSTÉPHION**

**HYPTIS**

**ANISOMERIS**

**LEUCAS**

**COLEBROOKEA Smith**


Shrubs, about 2 m high; stems subquadrangular, grooved, woolly-pubescent. Leaves about 20 × 6 cm, generally ternate, elliptic-acuminate, attenuate at base, crenate-serrulate, densely pubescent beneath, less so above; petioles 1.5 cm long. Flowers pale green, 0.5 cm long, in clusters, along branched panicles about 12 cm long, bracteate; calyx about 0.5 cm long, segments subulate, becoming feathery in fruits; tube small; corolla 0.2 cm long, lobes 4; stamens exserted in male flowers, included in female flowers; filaments glabrous, anthers globose; ovary glabrous, 4-partite, style 2-fid. Nutlets small, obovoid, densely pubescent.

**Fl. & Fr. : November-March.**

**World distribution :** India, Burma and China, generally in moist deciduous forests.

**Specimens examined :** Gundlupetrahmeswaram, 31-3-1965, Ellis 23822; Gundlupetrahmeswaram, 28-11-1969, Ellis 32642.

**ACROCEPHALUS Benth.**


Erect herba, about 40 cm high; stems quadrangular, grooved, sparsely hairy. Leaves about 4 × 1 cm, elliptic-obtuse or acute, cuneate at base, crenate-serrate, sparsely puberulous, glandular beneath; petioles up to 2 cm long. Flowers white, purplish at tips of lobes, 0.4 cm long,
in terminal, capitate heads about 1.5 cm long; bracteate; calyx 0.9 cm long, 2-lipped, upper entire, spatulate, lower 3-lobed, hirtellous along margin, sparsely hairy without, prominently 3-veined; corolla 1.5 cm long, upper lip 4-lobed, lower entire; stamens 4, didynamous, included, filaments slender; ovary 4-partite, style filiform, stigma bifid. Nutlets 0.1 cm long, ellipsoid.

*Fl. & Fr.*: September-December.

*World distribution*: Afghanistan, India, Burma, China and Malaysia.

*Specimens examined*: Chelama, 7-12-1963, Ellis 17977; Diguavametta, 17-11-1969, Ellis 32444.

**Leonotis** (Pers.) R. Br.


Suffrutescence herbs, about 2 m high; stems sharply quadrangular, grooved, puberulous. Leaves up to 13 x 10 cm, ovate, acute or obtuse or abruptly cuneate at base, crenate-serrate or dentate, puberulous on both surfaces; petioles about 4 cm long. Flowers scarlet, 2.5 cm long, in many-flowered, globose verticillasters 6 cm across; bracts 0.5 cm long, spinous-lobed; calyx tube 2 cm long, upper portion pubescent, lower sparsely pubescent or glabrous, mouth oblique, teeth about 9, spinous; corolla 2 cm long, 2-lipped, densely scarlet red-pubescent without, glabrous within except for three rows of hairs; stamens 4, didynamous, included, anthers with cells divergent, filaments dilated; disks equal; ovary 4-partite. Nutlets 0.3 cm long, obliquely truncate.

*Fl. & Fr.*: October-January.


*Specimens examined*: Diguavametta, 15-11-1906, C. A. Barber 8111; Chelama, 7-12-1963, Ellis 17934; Diguavametta, 16-11-1969, Ellis 32394.

**Ocimum** Linn.

Erect herbs, about 40 cm high; stems striate, sparsely pubescent, woody at base. Leaves about 3 × 2 cm, elliptic-ovate or oblong, obtuse or acute at base, serrate, pubescent; petioles 1 cm long, pubescent, glandular. Flowers white, 0.5 cm long, in interrupted spikes, in whorls about 1 cm across; spikes 10 cm long, terminal; pedicels about 0.3 cm long; calyx 0.2 cm long, accrescent in fruits, sparsely hirsute, prominently reticulate, upper lip obovate, lower 4-toothed, awned; corolla 0.5 cm long, upper lip pubescent; stamens 4, didynamous; exerted, filaments hairy at base, anthers 1-celled, ovary glabrous, 4-petite, style filiform, stigma 2-fid. Nutlets 0.3 cm long, ovoid, smooth.

Fl. & Fr.: Throughout the year.

World distribution: Middle East, India, Sri Lanka, Malaysia and Australia.

Specimen examined: Bairanidokku, Eastern Nallamalais, 12-8-1972, Ellis 42233.

Anisochilus Wall.


Erect herbs, about 40 cm high; stems bluntly 4-angled, glabrescent. Leaves about 10 × 10 cm, ovate, obtuse or orbicular, cordate or obtuse at base, crenate-dentate, puberulous, rather coriaceous; petioles about 10 cm long. Flowers violet, 0.5 cm long, in terminal spikes about 4 cm long; bracts 0.2 cm long, ovate, puberulous, ciliate along margins, glandular; calyx 0.8 cm long, 2-lipped, upper deflexed, entire, lower truncate; corolla 0.8 cm long, pubescent without, tube narrow, upper lip erect, lower concave; stamens 4, didynamous, filaments glabrous; ovary 4-petite, glabrous; style slender, stigma bifid. Nutlets 4, 0.2 cm long, ovoid, compressed.

Fl. & Fr.: October-December.

World distribution: India, Sri Lanka and Burma, in dry tracts.

Specimens examined: Way to Pathalaganga, Srisailam, 20-10-1964, Ellis 27716; Srisailam, 6-12-1969, Ellis 37715.

Remarks: Dixthie [Fl. Upper Gang. Pl. 2: 104, rep. ed. 1960 (1903)] treats Anisochilus eriocephalus Benth. as synonymous to A. carnosus (Linn.) Wall. This has not been followed by subsequent workers.
like Gamble, Mukerjee and others; both the taxa are kept as distinct species. From the present studies it is apparent that though they appear to be one and the same, some characters separate them.

**Orthosiphon Benth.**

1. Calyx densely villous within at throat
   - O. diffusus
2. Calyx glabrous within:
   1. Leaves about 5 × 3.5 cm, ovate
   - O. glabrous
   2. Leaves about 1.5 × 0.8 cm, oblance-oblance
   - O. pallidus


Erect herbs, about 30 cm high; stems terete, strigate, strigose. Leaves 2 × 1.5 cm, obtuse, orbicular, obtuse or rounded at base, strigose above, more so below especially on the nerves, coriaceous; petioles 0.6 cm long, villous. Flowers pink, 0.8 cm long, in whorls along terminal racemes 15 cm long; bracts 0.2 × 0.2 cm, ovate; calyx 0.5 cm long, 2-lipped, upper spathulate, lower acute 3-lobed, hairy without, densely so near the throat within; corolla 0.6 cm long, glabrous without, hairy within on tube; stamens included, 4, didynamous, filaments glabrous, anther cells parallel, ovary glabrous, 4-partite, style filiform, stigma capitate. Nutlets 0.2 cm long, oblong, smooth.

*Fl. & Fr.*: May-December.

*World distribution:* Peninsular India, in dry tracts.


*Remarks:* Hooker f.'s var. *hispidus* described under *O. diffusus* Benth. is treated by Gamble (*op. cit.*) as a variant of the *typica*; this has also been the treatment of S. K. Mukerjee (*loc. cit.*). The present studies lend support for the same treatment.


Erect herbs, about 30 cm high; stems subquadrangular, grooved,
pubescent in lines; rootstocks woody. Leaves 5 × 3.5 cm, ovate-acuminate, obtuse at base, crenate-dentate, sparsely hirtellous on nerves beneath, glabular; petioles 2 cm long. Flowers white, 1 cm long, in whorls, along terminal spikes about 15 cm long; pedicels 0.3 cm long; bracts 0.2 cm long, ovate, recurved; calyx 0.5 cm long, accrescent in fruits, 2-lipped, upper oblong, lower 3-lobed, prominently awned, glabrescent; corolla 1 cm long, glabrous; stamens 4, didynamous, included, filaments glabrous; ovary 4-partite, glabrous, style slender, stigma capitulate. Nutlets 0.3 cm long, ovoid, glabrous.

_Fl. & Fr._: March-September.

_World distribution_: India and Sri Lanka.

_Specimens examined_: Chefama, 4-7-1963, _Ellis_ 16710; Vishnunandi, Mahanandi, 21-8-1965, _Ellis_ 25404.


_Erect herbs, about 20 cm high; stems quadrangular, sparsely puberulous, woolly at base. Leaves 1.5 × 0.8 cm, oblong, orbicular, cuneate at base, glabrous, sparsely puberulous along nerves, glandular. Flowers white, 0.5 cm long, in distantly disposed whorls along terminal racemes 6 cm long; pedicels 0.3 cm long, puberulous; bracts 0.1 × 0.1 cm. ovate, recurved; calyx 0.4 cm long, accrescent in fruits, 2-lipped, upper orbicular, lower 3-lobed, awned, puberulous, prominently reticulate; corolla 0.5 cm long, upper lip shorter than lower; stamens 4, didynamous, included; ovary 4-partite, glabrous, style slender, stigma bifid. Nutlets 0.2 cm long, ovoid, flattened, smooth.

_Fl. & Fr._: May-October

_World distribution_: Middle East, Baluchistan and India.

_Specimens examined_: Mahanandi, 23-8-1965, _Ellis_ 25513.

_Hyptis Jaq. nom. cons._


_Erect herbs, about 60 cm high; stems quadrangular, sparsely
glandular-hirsute. Leaves about 8 x 6 cm, broadly ovate, rounded at base, dentate-serrulate, sparsely hispid, glandular beneath. Flowers pale blue, about 1.2 cm long, secund in axillary umbels 2 cm long, sometimes solitary, bracteate, pedicellate, pedunculate; calyx lobes 0.4 cm long, unequal, tube 0.5 cm long, accrescent in fruits, sparsely hispid without, densely so at throat within, prominently ribbed; corolla 2-lipped, upper erect, spreading, lower deflexed, hairy without, densely so within; stamens 4, didynamous, slightly exserted, anther cells parallel, filaments glabrous; ovary 4-partite, style slender, stigmas bifid. Nutlets 4, oblong, smooth, raphe white.

Fl. & Fr.: Throughout the year.

World distribution: Native of tropical America, a weed from Africa, India, Sri Lanka, Indonesia and Malaysia.

Specimen examined: Chelama, 12-12-1963, Ellis 18080.

ANISOMELES R. Br.


Robust herbs, about 1 m high; stems quadrangular, pubescent. Leaves up to 10 x 7 cm, ovate, truncate or cordate at base, crenate-serrate, puberulous; petioles 3 cm long. Flowers pale purple, 1.8 cm long, in axillary clusters or in terminal spikes about 5 cm long, bracteate; calyx 0.5 cm long, hirsute without, lobes equal, tube 0.2 cm long, pilose within; corolla 1.8 cm long, upper lip rounded, lower 3-lobed, densely hairy within at throat; stamens 4, didynamous, exserted, anther cells 2 in upper, parallel, 1 in lower; ovary glabrous, 4-partite, style filiform, bifid. Nutlets 4, flattened, smooth.

Fl. & Fr.: October-March.

World distribution: Mauritius Islands, India and Malay Peninsula.

Specimens examined: Giddalur, 9-11-1906, C. A. Barber 3080; Chelama, 8-12-1963, Ellis 18029; Diguva matta, 17-11-1969, Ellis 32482.

R. Br. are congeneric. The specimens in Herb. Adanson (Paris) are a mixtum and in my opinion *Anisomeles* is not represented!

**Leucas R. Br.**

1. Leaves ovate, about 10 x 8 cm, crenate-dentate
   - *L. mollisima*
     - var. *seaberula*

1. Leaves linear-elliptic, up to 8 x 1.3 cm, entire or distantly serrulate:
   2. Leaf margins excurved; corolla 1 cm long
   - *L. stricta*
   2. Leaf margins not excurved; corolla 2 cm long
   - *L. aspera*


Straggling herbs, about 1.5 m long; stems quadrangular, striate, puberulous with deflexed hairs. Leaves about 10 x 8 cm, ovate, rounded or obtuse at base, crenate-dentate, pubescent; petioles about 2.5 cm long, pubescent. Flowers white, about 1.3 cm long, in verticillasters 2 cm across; bracts about 1 cm long. Linear; calyx 0.8 cm long, villous without and halfway down within, teeth about 9, 0.1 cm long, erect; corolla 1 cm long, upper hooded, densely silky-pubescent, lower glabrous; stamens 4, didynamous, included, lower longer, filaments glabrous, anthers-parallel; ovary glabrous, 4-partite, style slender, entire. Nuts 0.2 cm long, obovoid, trigonous, smooth.

**Fl. & Fr.:** October-January.

**World distribution:** India and Burma.

**Specimens examined:** Gundlabrahmeswaram, 25-10-1964, Ellis 22203; Gundlabrahmeswaram, 28-11-1969, Ellis 32649.


Erect herbs, about 40 cm high; stems quadrangular, grooved, sparsely hirtellous. Leaves about 5 x 0.8 cm, linear-elliptic, ovate, attenuate at base, margin excurved, coriaceous, hirsute, glandular beneath, subsessile. Flowers white, 1.5 cm long, in verticillasters about 2 cm across; bracts 0.5 cm long, linear, sparsely hirsute; calyx 0.7 cm long, pubescent without, densely hirsute near mouth, mouth oblique, teeth 0.1 cm long, spinous; corolla 1 cm long, 2-lipped, upper densely pubescent without,
lower sparsely hirsute; stamens 4, didynamous, included, anthers parallel; ovary 4-partite, glabrous, style slender, bifid at top. Nutlets 0.3 cm long, triangular, glabrous.

Fl. & Fr.: Throughout the year.

World distribution: India and Burma, in dry localities.

Specimens examined: Chelama, 15-10-1964, Ellis 22017; Ahobilam, 28-8-1965, Ellis 25537.


Erect herbs, about 40 cm high; stems subquadrangular, grooved, pubescent in juvenile ones. Leaves up to 8×1.3 cm, linear-elliptic, ovate-elliptic, acute at base, distantly serrate, hirtellous, glandular. Flowers white, about 1.4 cm long, in verticillasters about 2 cm across; bracts about 1.5 cm long, pubescent at top, glabrous below without, glabrous within, ribbed, mouth oblique, teeth 8-9; corollas about 2 cm long, 2-lipped, upper densely pubescent near the mouth, lower glabrous, faintly lobed; stamens 4, didynamous, included, anthers parallel; ovary 4-partite, style slender, bifid at top. Nutlets 0.2 cm long, oblong, smooth.

Fl. & Fr.: Throughout the year.

World distribution: Mauritius Islands, India, Sri Lanka and Malaysia.


NYCTAGINACEAE

1. Flowers about 4.5 cm long
1. Flowers up to 1.2 cm long

MIrabilis Linn.


Herbs about 60 cm high; stems succulent, subquadrangular, faintly grooved, striate. Leaves up to 15×6 cm, ovate-acuminate, cordate at base, epistomiths present; petioles 4 cm long. Flowers pink, 4.5 cm long, in terminal cymes 3 cm across; bracts about 1×0.5 cm, oblong; calyx 0.6 cm long, ovate, glabrous; stamens about 5, exerted, filaments
glabrous, anther cells parallel; ovary glabrous, style filiform, stigma small. Fruits 1 cm across, globose, sculptured; seeds about 5.

Fl. & Fr. : Throughout the year.

World distribution: A native of South America, introduced in the gardens; generally wild as escapes.

Specimen examined: Bogota, 18-11-1969, Ellis 321457.

Boerhavia Linn.

1. Flowers 0.2 cm long; fruits 0.2 cm long . . . . . B. diffusa
1. Flowers 0.2 cm long; fruits 0.6 cm long . . . . . B. chinensis


Procumbent or trailing herbs; stems terete, striate, puberulous; rootstocks woody. Leaves in unequal pairs, larger about 3.5×3.5 cm, broadly ovate, cordate at base, smaller 1.5×1.5 cm, ovate-orbicular, puberulous; petioles 1.5 cm long. Flowers pale pink, 0.2 cm long, in umbels in axillary and terminal panicles 8 cm long, bracteate, bracteolate; calyx 0.2 cm long, limb campanulate, 5-lobed, pale pink; stamens 5, slightly exerted. Filaments glabrous; ovary glabrous. Style slender, stigma small. Fruits 0.6 cm long, enclosed in turbinate, ribbed, glandular perianth tube; seed with adherent testa.

Fl. & Fr. : April-October.

World distribution: Pantropic.

Specimens examined: ‘Dupad’. Kurnool Dt., February 1887, J. S. Gamble 18667; Nandyal, 25-8-1917, K. C. Jacob 15004; Rudravaram, 7-9-1917, K. C. Jacob 15005; Chelama, 7-12-1963, Ellis 17984.


Decumbent herbs, extending up to 2 m long; stems terete, striate, sparsely hirtellous. Leaves about 7×6 cm, broadly ovate, repandly
lobulate, cordate at base, glabrous; petioles 2.5 cm long. Flowers pink, 1.2 cm long, in axillary umbles 3 cm across, bracteate; pedicels 1.6 cm long; peduncles 8 cm long; calyx 0.6 cm long, campanulate, lobes 5, emarginate; stamens 5, slightly exserted, filaments glabrous, equal; ovary glabrous, style slender, stigma small. Fruits 0.6 cm long, enclosed in turbinate, ribbed, glandular perianth-tube; seed with adherent testa.

**Fl. & Fr.**: Throughout the year.

**World distribution**: Baluchistan, India, Sri Lanka, Burma, China and Australia.

**Specimens examined**: Dupad, Kurnool Dr., February 1887, Gamble 18675; Rudravaram, 7-9-1917, K. C. Jacob 14997; Diggavatetla, 16-11-1969, Ellis 32393.


**AMARANTHACEAE**

1. Inflorescences in axillary clusters of spikes:
   2. Plants prostrate or clambering, sometimes decumbent ........ **ALTERNANTHERA**
   2. Plants erect:
      3. Leaves opposite ........ **NOTHSABAeva**
      3. Leaves alternate ........ **ABRAVA**

1. Inflorescences in terminal spikes:
   4. Leaves opposite:
      5. Mature flowers directed downwards; bracts and bracteoles smooth in fruits ........ **ACHYRANTHES**
      5. Mature flowers not directed downwards; bracts and bracteoles of staminodes hooked ........ **PUPALIA**

4. Leaves alternate:
   6. Inflorescences globular ........ **ALLMANIA**
   6. Inflorescences elongate:
      7. Spikes spinous ........ **AMARANTHUS**
      7. Spikes not spinous ........ **CELOSIA**

**ALTERNANTHERA** Forsk.

1. Clambering, prostrate herbs; bracts and bracteoles spinous ........ *A. pungens*

1. Erect or decumbent herbs; bracts and bracteoles not spinous ........ *A. sessilis*

Clambering herbs, running up to 60 cm or more; stems slightly grooved, ciliate, often rooting at nodes. Leaves about 2.5 × 1.5 cm, oblong-orbicular, obovate, glabrous or sparsely hirsute. Flowers yellow, 0.3 cm long; bracteoles 0.3 cm long, ovate-lanceolate, acuminate, spinous, glumaceous; perianth 0.4 cm long, horned, ventral lanceolate, coarsely serrulate at apex, densely hairy laterally at base, dorsal 2 joined at base, prominently spinous-mucronate, marginally sparsely pubescent at base; stamens 5, included, filaments connate at base, glabrous, anthers l-celled; ovary glabrous, style small, stigma capitate. Utricles 0.1 × 0.1 cm, flattened, brown, shining.

Fl. & Fr.: June-November.

World distribution: Pantropic, a native of America.

Specimen examined: Bogada, 19-11-1969, Ellis 32531.


Erect or decumbent herbs; stems subquadrangular, groove, sparsely hirsute especially in grooves and near nodes. Leaves up to 4 × 0.8 cm, elliptic, oblong, linear-elliptic, ovate, cuneate at base, almost sessile. Flowers white, 0.2 cm long, in axillary, globose or slightly elongated heads about 1 × 0.5 cm; racemes ciliate; bracteoles 0.5 cm long; perianth 0.2 cm long, ovate-lanceolate; stamens 5, filaments connate at base, anthers l-celled; ovary glabrous, style short, stigma capitate. Utricles 0.2 × 0.3 cm, depressed at apices.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka, Burma and Malaysia.

Specimens examined: Chelama, 7-12-1963, Ellis 17967; Diguavemetta, 17-11-1969, Ellis 32473.

Erect herbs, about 40 cm high, growing in marshy places; stems terete, glabrous. Leaves 3 × 1.7 cm, ovate-spathulate, acute, cuneate or acute at base, glabrous; petioles up to 1 cm long. Flowers white, 0.1 cm long, in axillary, clustered spikes about 1.5 cm long; bracts and bracteoles scarious, glabrous; perianth 4, 0.1 × 0.5 cm, ovate, tomentose-villous without; stamens 2, small; ovary glabrous, style slender. Utricles 0.5 cm across; seeds black, shining.

*Fl. & Fr.*: August-January.

*World distribution*: Tropics in Africa; India, Sri Lanka, Burma and Malaysia.

*Specimen examined*: Chelama, 12-12-1963, *Ellis* 18073.

### 1. Leaves fasciculate, linear

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### Aerva Forsk. *nom. cons.*

1. Leaves fasciculate, linear

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### 1. Leaves not fasciculate:

2. Flowers 0.1 cm long; leaves obovate-oblong or orbicular

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### A. lanata

3. Flowers 0.4 cm long; leaves ovate-acuminate

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### A. sanghuhalenta


Decumbent or prostrate herbs, about 50 cm long; stems angled, grooved, woolly; rootstocks woody with deep tap roots. Leaves 1.5 cm long, fascicled at nodes, linear or filiform, shortly spinous at top, margins excurved; midrib prominent beneath. Flowers pale pink, 0.2 cm long, in terminal and axillary, cylindric spikes 1.8 cm long; bracteoles 0.2 cm long, scarious, aristate, pilose; perianth 0.3 cm long, ovate-acuminate, aristate, scarious, densely pilose along margins; stamens 5, filaments connate at base; ovary glabrous, style slender, stigma 2-fid. Utricles 0.1 cm long; seeds brown, shining.
Fl. & Fr.: July-February.

World distribution: India and Burma, in dry localities.

Specimens examined: Srisailam, 16-7-1963, Ellis 16903; Diguvametta, 17-11-1969, Ellis 32451.


Erect herbs, about 60 cm high; stems terete, striate, pubescent. Leaves about 5×3 cm, generally smaller, obovate-oblong or orbicular, cuneate at base, sparsely pilose above, densely so beneath; petioles 0.5 cm long. Flowers whitish, 0.1 cm long, in axillary, cylindrical spikes about 1 cm long; bracts ovate-caudate, sparsely pilose without; perianth 0.1 cm long, ovate, scarious, densely pilose without; stamens 5, included, filaments slender, connate at base; ovary glabrous, style slender, stigma bifid. Utricles very small; seeds black, shining.

Fl. & Fr.: Throughout the year.


Specimens examined: Chelama, 7-12-1963, Ellis 17985; Chelama, 16-10-1964, Ellis 22043; Bogada, 19-11-1969, Ellis 32523.


Straggling undershrubs, about 2 m high; stems terete, striate, puberulous to tomentose. Leaves about 8×3 cm, ovate-acuminate, apiculate, acute at base, puberulous above, densely so beneath, subsessile. Flowers white, 0.4 cm long, in terminal and axillary cylindrical spikes about 2 cm long, often clustered at ends of panicles about 25 cm long; bracts and bracteoles 0.3 cm long, ovate, mucronulate, scarious, sparsely pilose; perianth 0.4 cm long, ovate-acuminate, aristate, scarious-margined, pilose without; stamens 5, filaments connate at base; ovary glabrous, style slender, stigma 2-fid. Utricles 0.1 cm across; seeds black, shining.
Fl. & Fr.: November-February.

World distribution: Tropics in Africa, India, China, Malaysia and Philippines.

Specimens examined: Chelama, 10-12-1965, Ellis 18076; Upper Abobilam, 22-11-1969, Ellis 32582.

ACHYRANTHES Linn.


Erect herbs, about 80 cm high; stems terete, striate, puberulous to tomentose. Leaves about 9 x 6 cm, ovate, oblong, obovate, orbicular, obtuse or rounded at base, puberulous above, pubescent beneath; petioles about 1.5 cm long. Flowers white, 0.5 cm long, in terminal spikes about 35 cm long, deflexed towards base; bracts 0.6 cm long, scarious; bracteoles 2, 0.3 cm long, spinous, winged at base; perianth 0.6 cm long, scarious, hyaline-margined; fertile stamens 4, included, staminodes laciniate. Filaments connate at base forming a tube; ovary glabrous, style slender, stigma capitate. Utricles 0.5 cm long, ovoid; seeds shining.

Fl. & Fr.: July-December.

World distribution: Pantropical.

Specimen examined: Chelama, 12-12-1963, Ellis 18078.

Remarks: How far the varieties of J. D. Hooker (op. cit. p. 730) are really distinct needs more study; Gamble (op. cit. p. 1176) recognises two, viz., var. rubro-fusca and var. porphyristachya. Haines [Bot. Bihar and Orissa 2: 806. rep. ed. 1961 (1924)] speaks of var. porphyristachya Hook. f. thus, "...whether it is really a variety or the differences only the result of its forest habitat is uncertain." C. A. Backer in Steenis, Flora Malesiana ser. 1. 4(2): 88. 1949] apparently does not speak of the varieties; his description of leaves runs thus: ‘...Leaves oval-obovate or elliptic-oblong, from an acute or obtuse base, acuminate or not, acute, obtuse or rounded.’ (p. 88), thereby indicating the range of variability:

PUPALIA Juss. nom. cons.


Erect or straggling undershrubs, about 1.5 m long; stems terete, striate, pubescent to glabrescent. Leaves up to 11 x 5.5 cm, elliptic-ovate, ovate, shortly acuminate, rounded or acute or cuneate at base; petioles 0.8 cm long. Flowers pale green or whitish, 0.5 cm long, in terminal spikes about 20 cm long; bracts 0.3 cm long, broadly ovate, spinous at apices, sparsely pilose without; perianth 0.5 cm long, elliptic-lanceolate, horny, densely pilose without, of sterile with spreading hooked awns; stamens 5, included, filaments dilated and connate at base; ovary glabrous, style slender, stigma capitate. Utricles 0.2 cm long; seeds brown, shining.

Fl. & Fr.: Throughout the year.

World distribution: Tropics in Africa, India, Sri Lanka and Malaysia.

Specimens examined: Srisailam, 15-7-1963, Ellis 16589; Chelama, 7-12-1963, Ellis 17991; Chelama, 16-10-1964, Ellis 22057; Upper Ahobilam, 29-8-1965, Ellis 25588; Diguwametta, 16-11-1969, Ellis 32390.

Allmania R. Br. ex Wt.


Erect or decumbent or trailing herbs, up to 60 cm long; stems subquadrangular, grooved, striate, sparsely hirtellous. Leaves 7 x 0.8 cm, linear, spathulate, apiculate, sparsely asperulous or not; petioles short. Flowers pale green, 0.5 cm long, in terminal or leaf-opposed, cylindrical heads about 2 cm long; bracts and bracteoles 0.4 cm long, ovate-lanceolate, ciliate, asperulous on midrib without; perianth 0.4 cm long, ovate-lanceolate, scarious; stamens 5, filaments connate at base, glabrous, ovary glabrous, style filiform, stigma capitate. Utricles glabrous; seeds 0.2 cm across, black, shining.

Fl. & Fr.: March-July.

World distribution: Tropics in India, Sri Lanka, Malaysia and Philippines.

Specimen examined: Mahanandi, 23-8-1972, Ellis 42333.
Remarks: Hooker f. (op. cit.) has treated 6 varieties under Allmania nodiflora R. Br. viz., angustifolia, dichotoma, roxburghii, aspera, procumbens and esculenta. Gamble (op. cit.) has given 4 varieties, reducing var. roxburghii Hook. f. under the typica. It is obvious that Allmania nodiflora R. Br. ex Wt. is a variable taxon. In fact, it is felt that Allmania longipedunculata (Trimen) Gamble is one of the forms; except for the length of peduncles which perhaps is dependent on the type of soil and climate it cannot be differentiated qualitatively. Pending an examination of the Type Material of Trimen, it has not been taken up.

Amaranthus Linn.


Erect herbs, about 60 cm high; stems glabrous, terete. Leaves 4 × 2 cm, ovate-elliptic, spathulate, apiculate, cuneate or acute at base; petioles about 4.5 cm long. Flowers pale green, 0.2 cm long, in axillary clusters or in terminal, branched spikes about 10 cm long; bracts 1.2 cm long, spinous, grooved above; bracteoles 0.2 cm long, ovate, acuminate, scarious; perianth 0.2 cm long, elliptic-lanceolate, spathulate; stamens 5, included, filaments free; ovary glabrous, styles 2. Utricles 0.1 cm across, flattened, with circumscissile dehiscence; seeds black, shining.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka, Malaysia, in waste lands; sometimes cultivated.

Specimen examined: Bogada, 19-11-1969, Ellis 32529.

Celosia Linn.

1. Flowers in uninterrupted spikes; bracts and perianth shining
   C. argentea
1. Flowers in interrupted spikes; bracts and perianth not shining
   C. polygonoides


Erect herbs, about 80 cm high; stems grooved, glabrous. Leaves about 7 × 1.5 cm, very variable, obovate, elliptic-ovate or linear, acute or cuneate at base, glabrous. Flowers white, 0.7 cm long, in uninterrupted
spikes about 10 cm long; bracts and bracteoles 0.3 cm long, ovate-acuminate; perianth 0.4 cm long, elliptic-lanceolate, scarious, shining; stamens 5, included, filaments united; ovary glabrous, styles faintly bilab at apices. Utricles 0.2 cm across, circumscissilely dehiscing; seeds 0.1 x 0.1 cm, black, shining.

Fl. & Fr.: Throughout the year.

World distribution: Pantropic—cultivated and run wild.

Specimens examined: Gundlhabrahameswararam, 26-10-1964, Ellis 22214; Bogada, 19-11-1969, Ellis 32522.


Erect herbs, about 40 cm high; stems grooved, puberulous. Leaves about 3 x 3 cm, broadly ovate, abruptly cuneate at base, sparsely hirtellulous along veins below; petioles about 1.5 cm long. Flowers pale green, 0.2 cm long, in interrupted spikes 2.6 cm long; bracts scarious; perianth 0.2 cm long, ovate-lanceolate, scarious along margins; stamens 5, included, filaments connate at base forming a tube; ovary glabrous, stigmatic bilab. Utricles 0.4 cm long, flabell-shaped, thickened at top, dehiscing circumscissilely below the middle; seeds small, numerous, alveolate.

Fl. & Fr.: April-December.

World distribution: India and Sri Lanka.

Specimen examined: Srisailam, 13-7-1963, Ellis 16864.

POLYGONACEAE

POLYGONUM Linn.

1. Erect herbs
   1. Prostrate herbs


Erect herbs, about 1 m high; stems terete, strigate, glabrous. Leaves about 16 x 2.5 cm, elliptic-lanceolate, acuminate, acute at base, sparsely hirsute, more on nerves beneath, sessile or shortly petiolate; stipules 2 cm long, thin, strigose without, fimbriate at apices. Flowers white, 0.3 cm long, in spikes 10 cm long; pedicels articulate; bracts small, obovate,
shortly strigose at apex; perianth lobes 0.2 cm long, lanceolate, tube 0.1 cm long, stamens 5, included, filaments dilated and connate at base; ovary trigonous, glabrous, styles 3, stigmas capitate. Utricles 0.3 cm long; seeds trigonous, shining.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Tropics from Africa, India, Sri Lanka, China, Japan, Burma, Malaysia and Australia.

*Specimens examined*: Gundlabrahmeswaram, 24-10-1964, Ellis 22159; Bairani, Diguvasmetta, 17-11-1969, Ellis 32464.


Prostrate, diffusely branched herbs; stems running to about 30 cm, angled, grooved, striate, faintly hirtellulous; rootstocks woody. Leaves about 1 cm long, linear-ovate, oblong, obovate-lanceolate, acute at base; stipules scarious, limbriate at apex. Flowers pale white, 0.4 cm long, in axillary, 3-4-flowered clusters; perianth lobes 0.1 cm long, lanceolate-acuminate, tube 0.2 cm long, midrib prominent at back; stamens 5, included, filaments dilated at base; ovary glabrous, trigonous, stigma 3-lobed. Capsules 0.2 cm across, acutely 3-angled.

*Fl. & Fr.*: January-July.

*World distribution*: Pantropic.

*Specimens examined*: Chelama, 9-7-1963, Ellis 16807; Chelama, 20-3-1965, Ellis 23735.

*Remarks*: Hooker f. (op. cit. pp. 27-29) has given at length a critical review of the species, *plebeium*, and recognises 10 varieties, of which Gage (op. cit. p. 386) treats what he proposes to give under *plebeium* 4 species and 7 varieties from Peninsular India. Cooke (*Fl. Pres. Bombay* 3; 4-5. rep. ed. 1938) records 8 varieties from his area. Prain (*Beng. Pl.* 2: 661-663. rep. ed. 1963) includes 5 varieties even in the key. Gamble (op. cit. p. 1189) recognises just 2 varieties under the species, *plebeium* from the former Presidency of Madras. For the time being the treatment of Gamble as given in his *Flora* is followed. Cooke (op. cit. p. 4) calls *P. plebeium* a polymorphic plant.
ARISTOLOCHIACEAE

ARISTOLOCHIA Linn.

Aristolochia indica Sp. Pl. 960. 1753; Duchart. in DC. Prodr. 16 : 479. 1849; Hook. f. FBI 5 : 75. 1886; Gamble, FPM 7 : 1202. 1925. A. lanceolata Wt. & Dr. t. 1858. 1852.

Shrubby twiners; stems grooved, glabrous. Leaves about 15 x 6 cm, ovate-acuminate, obovate, abruptly acuminate, obtusely truncate or sometimes linear-ovate, rounded and cordate at base, glabrous; reticulations prominent below. Flowers green with reddish tinge near mouth, about 3 cm long, in axillary racemes about 15 cm long; bracts 0.2 cm long, ovate-acuminate, serrulate; perianth about 3 cm long, bulbous at base, tube bent, mouth funnel shaped, obliquely passing on to spathulate lip, hairy within; stamens 4, adnate to ovary; ovary inferior, clavate, ribbed. Capsules 3 x 2 cm, dehiscing from base upwards along pedicels forming ribs; seeds many, flattened, winged.

Fl. & Fr.: September-March.

World distribution: India and Sri Lanka.


Piperaceae

Piper Linn.

1. Leaves crisply hairy beneath; lateral nerves on leaves arising almost from base:
2. Leaves elliptic-acuminate, acute or obtuse at base; nerves arising from base and also from above the base
   ... P. hymenophyllum

2. Leaves broadly ovate-acuminate, obtuse or cordate at base; nerves arising almost from base
   ... P. attenuatum

1. Leaves glabrous on both surfaces; lateral nerves arising at least 1 cm above base
   ... P. nigrum

Piper hymenophyllum Miq. in Hook. Journ. Bot. 5 : 554. 1853; Wt. & Dr. t. 1942. 1853; Cas. DC. Prodr. 16 (1) : 364. 1868; Hook. f. FBI 5 : 93. 1886; Gamble, FPM 7 : 1207. 1925.

Climbing herbs; stems terete, grooved, glabrous, nodes swollen. Leaves about 13 x 6 cm, elliptic-lanceolate, shortly acuminate, acute or obtuse at base, coriaceous, sparingly crispa-hairy beneath; nerves 5-7 from base, the last 2 from above the base; petioles about 1.8 cm long.
Flowers green, 0.1 cm long, in slender spikes 10 cm long; bracts small, oblong, orbicular or truncate; stamens 2, 0.05 cm long; ovary glabrous, stigma 2-lobed. Berries 0.4 cm across, orbicular; seed one, globose.

Fl. & Fr.: February-December.

World distribution: Peninsular India.

Specimen examined: Gundlabrahmeswaram, 21-7-1963, Ellis 16957.


Climbing herbs; stems terete, striate. Leaves about 12 × 9 cm, ovate, acuminate, rounded and cordate at base, crisply hairy beneath; nerves 5-7 almost from base; petioles 1.5 cm long. Flowers green, 0.05 cm long, in leaf-opposed spikes about 11 cm long; bracts small, ovate-orbicular; stamens 2, filaments short; ovary glabrous, style simple. Berries 0.3 cm across, globose.

Fl. & Fr.: July-September.

World distribution: India.

Specimen examined: Gundlabrahmeswaram, 20-7-1963, Ellis 16912.


Climbing herbs, often reaching great lengths; stems terete, grooved, swollen at nodes, sometimes rooting at nodes. Leaves about 18 × 9 cm, elliptic-abruptly acuminate, obtuse at base, coriaceous, glabrous; nerves about 6, basai 3 paired, rest alternate, obliquely reaching apices; reticulations parallel; petioles about 2.5 cm long. Flowers unisexual, green, 0.1 cm long, in leaf-opposed spikes about 10 cm long; bracts small, semilunar; stamens 2, 0.05 cm long; ovary glabrous, styles 4. Berries 0.7 cm across, globose, glabrous; seed one.

Fl. & Fr.: May-December.

World distribution: India, often cultivated. A plant of humid tropics.

Specimen examined: Gundlabrahmeswaram, 26-10-1964, Ellis 22210.
LAURACEAE

Cassytha Linn.

Cassytha filiformis Linn. Sp. Pl. 35. 1753; Wt. Jc. 5 : t. 1847, 1852; Meisn. in DC. Prodr. 15 : 1. 1864; Hook. f. FBI 5 : 188. 1886; Gamble, FPM 7 : 1241. 1925.

Extensive, wiry, twining, parasitic herbs, attached to hosts by suckers; stems puberulous. Leaves of minute scales or leafless. Flowers white, 0.2 cm long, in lateral spikes about 1.5 cm long; bracts small, ovate, ciliolate along margins; perianth 3+3, in 2 rows, outer smaller, inner 0.1 cm long, ovate-lanceolate, glabrous, tube short, turbinate; stamens 9, in 3 rows, innermost eglandular; ovary glabrous, style short, stigma capitate. Drupes 0.7×0.7 cm, ovoid or globose with persistent calyx; seeds ovoid or globose.

Fl. & Fr. : July-December.

World distribution : Panto tropic.


GYROCARPACEAE

Gyrocarpus Jacq.


Trees, about 6 m tall; branches glabrous, tomentose in very young branches. Leaves about 15×15 cm, broadly ovate, often 3-lobed, rounded and cordate at base, glabrous above, tomentose to puberulous beneath; nerves and reticulations prominent, petioles about 20 cm long. Flowers pale yellow, minute, unisexual, in clustered cymes 0.3 cm across, in dichotomously branched inflorescences; peduncles about 4 cm long, puberulous; perianth in male 5-partite, in female 2-lobed, densely hairy; stamens about 5, alternating with staminodes, filaments hairy, anthers with valvular dehiscence; ovary glabrous, stigma sessile. Samaras about 8×2 cm, drupaceous, persistent perianth lobes wing-like; seeds solitary.
Fl. & Fr.: March-September.

World distribution: Throughout the tropics.

Specimens examined: Diguvametta, June 1905, C. A. Barber s.n.; Chelama, 20-3-1965, Elits 23732.

LORANTHACEAE (sensu stricto)

1. Leaves alternate ........................................ Taxillus
1. Leaves opposite ........................................ Dendrophthoe

TAXILLUS van Tiegh.


Semi-parasitic shrubs, on branches of other plants; stems terete, thinnest, rusty-tomentose when young. Leaves alternate, about 2 x 2 cm, orbicular, coriaceous, tomentose; nerves rather prominent on both surfaces; petioles about 0.8 cm long, densely pubescent. Flowers green, 2 cm long, in 2-3-flowered, axillary, short, umbellate cymes, falcate, shortly pedicellate; calyx 0.2 cm long, pubescent within; corolla 2 cm long, tomentose without, lobes linear, recurved, tube about 1.5 cm long, falcate; stamens about 6, included, anther cells parallel; ovary glabrous, style angled, grooved, stigmas capitellate. Drupes 0.5 cm across, oblong, puberulous; seed 1.

Fl. & Fr.: June-September.

World distribution: Peninsular India.

Specimen examined: Chelama, 9-7-1963, Elits 16791.

Remarks: In spite of Danser's (op. cit.) recognition of Taxillus heymeanus and T. tomentosus van Tiegh. as 2 distinct species, the studies both in the field and at MI and CAL show a range of variation in the amount of tomentum and other characters which imperceptibly pass from one to another species. Thus these two forms are of one variable taxon. Therefore, Gamble's (op. cit.) treatment of these two forms is followed.

DENDROPHTHOE Mart.


Semi-parasitic shrubs, on branches of other plants; branches glabrous. Leaves opposite, about 12 x 8 cm, ovate, elliptic, often linear, generally falcate, acute at base, glabrous; lateral nerves obscure; petioles about 1 cm long. Flowers pale yellow, about 3 cm long, lobes green, tube falcate, in axillary racemes about 8 cm long, bracteate; calyx 0.3 cm long, cupular, lobes minute; corolla about 3 cm long, lobes linear, reflexed, tube narrow; stamens about 6, included, filaments slender, anthers red, linear; ovary glabrous, style filiform, stigma ovoid. Drupes 1 cm across, ovoid; seeds many.

Fl. & Fr.: February-July.

World distribution: India and Sri Lanka.

Specimens examined: Chelama, 5-7-1963, Ellis 16768; Diguametta, 17-11-1969, Ellis 32434.

VISCAEAE

[S. N. Dixit's (in Bull. bot. Surv. Ind. 4 : 49-55. 1962) opinion in treating Viscum Linn. under the family, Visceae, is followed in raising the subfamilial status to a family as propounded earlier by Miers in 1851; Dixit (op. cit.) takes into cognisance floral structure, development of embryo sac, endosperm, embryo, etc.)

1. Leaves absent or very much reduced;
   stems flattened
   .

1. Leaves present, not reduced;
   stems terete or angied:
   2. Leaves usually 5-nerved from base;
      berries smooth, truncate at apex
      .

Viscum Linn.

2. Leaves 3-nerved from base; berries
   very minutely granulate, ellipsoid
   .

Flora of Hallamalais


Suffrutescent, semi-parasitic herbs; stems articulated, terete in main, flattened in lateral ones, grooved. Leaves much reduced, scale-like, obtuse. Flowers green, 0.2 cm long, in 3-4-flowered fascicles about 1.2 cm long, central female, laterale male, sub sessile; bracts in pairs, connate to form a cup; male smaller, perianth small; stamens 3-4, attached to perianth lobes, anthers introrsely dehiscing; female larger, ovary glabrous, styles small. Drupes 0.5 cm across, globose, smooth.

*Fl. & Fr.*: August-February.

*World distribution*: India, Sri Lanka and Burma.

*Specimen examined*: Chelama, 15-7-1963, *Ellis* 16882.


Semi-parasitic shrubs, on other plants, about 50 cm long; stems dichotomously branched, main terete, others angled, grooved, nodes swollen. Leaves about 5×2.5 cm, oblong-obovate, ovate, attenuate at base, sometimes falcate, sessile, chartaceous; nerves 5 from base. Flowers green, in axillary or lateral clusters or cymes; bracts 2, connate; terminal flower female, laterale male; perianth small, 4-lobed, ovate; stamens 4, attached to perianth lobes at base; ovary glabrous, stigmas sub sessile. Berries about 0.4×0.2 cm, truncate at apex, smooth; seed 1.

*Fl & Fr.*: February-August.

*World distribution*: India, Sri Lanka and Indonesia.


Semi-parasitic shrubs, on branches of other plants; main stems terete, younger angled, internodes swollen. Leaves about 4.5×3 cm, obovate oblong, cuneate at base, coriaceous; nerves 3 from base. Flowers green, 0.2 cm long, about 5, in axillary cymes 0.7 cm long; peduncles 0.2 cm long; bracts 0.1 cm long, in opposite pairs, broadly ovate; middle 3 flowers female, laterale male, female larger than male; perianth small, 4-lobed, ovate; stamens 4, attached to perianth at base. Berries 0.3 cm long, ellipsoid, minutely granular.
Fl. & Fr.: April-August.

World distribution: India, Sri Lanka, China, Burma, Malaysia and Australia.

Specimen examined: Rollapeneta, 16-8-1972, Ellis 42273.

SANTALACEAE

Santalum Linn.


Trees, about 6 m tall; bark cracked; young branches purplish, striate. Leaves about 9 x 3 cm, elliptic lanceolate, acute at base, chartaceous, glabrous; petioles about 1 cm long. Flowers maroon, within, green without, 0.3 cm long, in axillary, panicled cymes about 4 cm long; bracts small, deciduous; perianth lobes 4, 0.1 cm long, tube 0.2 cm long; stamens 4, exserted, alternating with rounded scale of disks; filaments dilated; ovary half-inferior, stigmas shortly 3-lobed. Drupes 0.6 cm long, ovoid, turning purplish on ripening, edible; seed 1.

Fl. & Fr.: January-October.

World distribution: Peninsular India, both on Eastern and Western Ghats, at low altitudes.

Specimens examined: Diguwametta, 18-11-1969, Ellis 32494; Chinnamantrala, 17-8-1972, Ellis 42294.

Remarks: A semi-parasitic tree on roots of neighbouring plants. This is, however, one of the most important oil-yielding plants of India. Also the heartwood is in great demand for carvings.

The plant is an evergreen tree in open dry deciduous and scrub forests.

EUPHORBIAEAE

1. Flowers in cyathia
1. Flowers not in cyathia:

2. Leaves 3-5-lobed, or sometimes unlobed:

3. Herbs with stinging hairs
3. Shrubs or small trees without stinging hairs:

4. Capsules red-glandular; nervules on leaves parallel
4. Capsules glabrous, nervules on leaves not parallel

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3. Shrubs or small trees without stinging hairs:

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4. Capsules glabrous, nervules on leaves not parallel

EUPHORBIACEAE

1. Flowers in cyathia
1. Flowers not in cyathia:

2. Leaves 3-5-lobed, or sometimes unlobed:

3. Herbs with stinging hairs
3. Shrubs or small trees without stinging hairs:

4. Capsules red-glandular; nervous on leaves parallel
4. Capsules glabrous, nervous on leaves not parallel
2. Leaves not lobed:
   5. Leaves (simple) appearing on branchlets as pinnate
   5. Leaves simple:
   6. Leaves linear or linear-oblung:
   7. Herb; male spikes 1 cm long
   7. Shrub; male spikes about 10 cm long
   8. Trees or shrubs:
   9. Leaves as long as broad, up to
      25 × 25 cm, prominently dentate
   9. Leaves longer than broad, less than
      20 × 10 cm, entire or faintly crenulate:
   10. Petals present:
       11. Fruits drupaceous
       11. Fruits capsular
   10. Petals absent:
       12. Male flowers in axillary fascicles:
       13. Styles prominent, united or free:
           14. Styles united
           15. Disk present
           15. Disk absent
       13. Styles inconspicuous:
           16. Fruits capsular
           16. Fruits drupaceous
           17. Male flowers in axillary spikes
     17. Male flowers not globose; disk absent

EUPHORBIA Linn.
1. Succulent shrubs or small trees, spiny
   1. Non-succulent herbs, not spiny:
     2. Leaves about 3 × 4 cm:
        3. Leaves radical
        3. Leaves not radical
     2. Leaves up to 5 × 1.8 cm:
        4. Decumbent or prostrate herbs:
           5. Prostrate herbs; leaves generally
              retuse at axils
           5. Decumbent herbs; leaves not retuse:
              6. Stems pubescent or shaggy; stipules linear
6. Stems glabrous; stipules ovate
   \[ E. deccanensis \]
   var. nallamalayana

4. Erect herbs:

7. Foliar bracts very prominent, enclosing inflorules
   \[ E. elegans \]

7. Foliar bracts inconspicuous:

3. Limbs of glands multifid
   \[ E. longissyla \]

8. Limbs of glands entire:

9. Flowers greenish or white;
   capsules sparsely pubescent
   \[ E. parviflora \]

9. Flowers pinkish; capsules glabrous
   \[ E. xengapuica \]


Large, succulent shrubs or small trees about 3 m high; branches 3-4-sinuate-winged, jointed, succulent. Leaves 0.5 cm long, oblong, obovate, orbicular, cuneate at base, glabrous; petioles short; stipules spinous. Flowers yellowish-green, 0.2 cm long, in cyathia along pedunculate cymes about 0.8 cm long, bracteate; involucral glands 5, orbicular; stamens solitary, filaments jointed, anthers 2-celled; ovary glabrous, styles 3, stigma 2-fid. Capsules 0.5 cm across, of 3, 2-valved cocci, glabrous; seeds one in each coccus, ovoid.

Fl. & Fr.: September-January.

World distribution: India and Sri Lanka, in very dry localities.

Specimen examined: Srisailam, 5-12-1969, Ellis 32692.


Acaulescent herbs, about 8 cm high; rootstocks cylindrical, fusiform, about 18×5 cm, laticiferous. Leaves about 10×4, radical, dark pink below, linear-elliptic, obovate, cuneate at base, curled along margins, fleshy; petioles 0.5 cm long. Flowers green, 0.5 cm long, in cyathia 0.5 cm across, on peduncles about 10 cm long; involucral bracts hemispheric; male flowers glabrous; ovary glabrous, stigma recurved. Capsules 0.4 cm across, glabrous; seeds ovoid.

Fl. & Fr.: March-August.
World distribution: India, in arid localities.

Specimen examined: Lukki, Diguvametta, 9-8-1972, Ellis 42218.


Erect herbs, about 40 cm high; stems terete, striate, glabrous. Leaves about 8 x 4 cm, elliptic-ovate or obovate, obtuse or acute at base, glabrescent; petioles up to 1.5 cm long. Flowers greenish-white, 0.4 cm long, in axillary clusters confined to ends of branches; floral leaves white at base, narrowly ovate; involucral bracts 0.5 cm long, lobes many, ovate; glands external, oblong, stalked; bracteoles fimbriate, hairy; male slightly exserted; ovary prominently exserted, glabrous, stigmas peltate. Capsules 0.4 cm across, glabrous; seeds angled, faintly furrowed.

Fl. & Fr.: August-December.

World distribution: A native of Tropical America, growing as weed elsewhere. Although seen in other parts of India earlier, it is a very recent introduction in Nallamalais.

Specimen examined: Ahobilam, 29-8-1965, Ellis 25571.


Prostrate herbs, running to about 40 cm long; stems terete, grooved, glabrous. Leaves about 0.5 x 0.4 cm, oblong, orbicular, retuse, unequally oblong or cordate at base; reticulations prominent; petioles 0.1 cm long; stipules interpetiolar, ovate, slightly laciniate. Flowers pale pink, 0.1 cm long, in axillary cyathia 0.1 cm long; involucral bracts acute, glands oval; stamens included; ovary exserted, glabrous, styles 3. Capsules 0.15 cm long, glabrous; seeds 4-angled, smooth.

Fl. & Fr.: Throughout the year.

World distribution: A native of West Africa—now a weed in India.

Specimen examined: Pathalaganga, Srisailam, 4-12-1969, Ellis 32690.

Erect or decumbent, robust herbs, up to 50 cm in length; stems terete, striate, glandular-pubescent, sometimes shaggy. Leaves about 4 x 1.8 cm, elliptic, ovate-oblong, almost rhomboidal, unequally obtuse or acute at base, serrulate, sparsely hirtellous, chartaceous; petals 0.2 cm long, pubescent; stipules interpetiolar, of 2 linear structures. Flowers greenish, 0.1 cm long, in axillary, cymose cyathia about 0.8 cm across; peduncles 0.5 cm long; male slightly exserted; ovary pilose, exerted; limb of stalked gland minute or sometimes absent, entire. Capsules 0.1 cm across, pilose; seeds angled, shallowly furrowed.

*Fl. & Fr.* Throughout the year.

*World distribution:* Panropical.

*Specimen examined:* Chelama, 6-7-1963, Ellis 16799.


Decumbent herbs, about 20 cm long or less, depending on seasons; stems terete, glabrous, internodes swollen; rootstocks woody. Leaves up to 5 x 1.2 cm, linear-lanceolate, ovate, obtuse, apiculate, rounded at base, faintly serrulate; reticulations prominent beneath; petals short; stipules ovate, elliptic along margins. Flowers pink, 0.3 cm long, in terminal or axillary cyathia 0.5 cm long; peduncles 0.5 cm long; involucral bracts 5, margins fringed; glands 4, oval, limbs 0.3 x 0.2 cm, orbicular, sinuate; male flowers exerted, glabrous; ovary 0.3 cm long, glabrous, styles 3, bifid. Capsules 0.3 cm across, glabrous; seeds quadrangular, smooth.

*Fl. & Fr.* March-November.

*World distribution:* Peninsular India.

*Specimens examined:* Chelama, 6-7-1963, Ellis 16774; Chelama, 18-3-1965, Ellis 23711; Abobilam, 23-11-1969, Ellis 32591; Bairainidokku, Eastern Nallamalais, 12-8-1972, Ellis 42238.

*Remarks:* V.S. Raju (*op. cit.*) has worked out the nomenclature of this taxon indicating that Roth’s name in 1821 is a later homonym of
Willdenow's in 1799, proposing a new name, *Euphorbia deccanensis*, and treating the variety under it. K. Seshagiri Rao and M. N. V. Prasad (loc. cit.) have questioned Raju's treatment of the variety under the genus *Euphorbia* Linn. when earlier he had accepted the segregation of *Chamaesyce* from *Euphorbia*, following Webster (in *Taxon* 24: 593-601. 1975), treating the variety under *Chamaesyce*. As Roth's specific epithet (Nov. Sp. Pl. 224. 1821) is illegitimate under *Euphorbia*, K.S. Rao and Prasad have made a new combination under *Chamaesyce*.

From the summation of over-all characters marking *Euphorbia* Linn., it is apparent that the segregation of *Euphorbia* and *Chamaesyce* into separate genera is still not settled beyond questionable doubt. The variety is therefore retained under *Euphorbia*, and Raju's (loc. cit.) treatment is followed.

*Euphorbia elegans* Spreng., Syst. 3: 794. 1826; Boiss. in DC. Prodr. 15: 19. 1866; Hook. f. FBI 5: 246. 1887; Gamble, FPM 7: 1274. 1925.


Erect herbs, about 12 cm high; stems terete, striate, pilose. Leaves up to 2.2×1.2 cm, oblong-obovate or ovate, unequally rounded at base, serrulate, excurved along margins, sparingly pilose; nerves about 6 from base, reticulations prominent beneath; petioles 0.1 cm long, pilose. Flowers pink, 0.5 cm across, in terminal, condensed spikes about 1 cm long; floral leaves distichous, imbricate, enclosing cyathia; involucral limbs obovate, sinuate, cuneate at base; ovary glabrous, styles elongate, bifid. Capsules 0.2 cm across, pilose; seeds angied, grooved.

*Fl. & Fr.*: August-January.

*World distribution*: India, in dry localities.

*Specimens examined*: Diguwamatta, 7-12-1963, Ellis 17943; Chelama, 15-10-1964, Ellis 22009; Diguwamatta, 17-11-1969, Ellis 32431 & Ellis 32439.


Erect herbs, about 35 cm high; stems terete, striate, glabrous. Leaves up to 2×1.2 cm, oblong, elliptic-oblong, apiculate, obliquely rounded at base, serrulate; reticulations prominent beneath; petioles 0.1 cm long; stipules lanciate. Flowers pinkish, 0.2 cm long, in terminal
cyathia about 0.2 cm long; involucral bracts 5, lobes small; glands 4, capitate, limbs of glands multilocular; male flowers exserted; ovary glabrous, styles 3, filiform. Capsules about 0.2 cm across, glabrous; seeds angled, furrowed.

Fl. & Fr.: August-February.

World distribution: Peninsular India.


Erect herbs, about 40 cm high; stems terete, striate, glabrescent. Leaves up to 3.2 x 1.5 cm, oblong-ovate, unequally rounded at base, faintly serrulate, glabrescent; nerves prominent beneath; petioles 0.2 cm long; stipules interpetiolar, ovate. Flowers greenish or white, 0.2 cm long, in axillary and terminal cyathia 1 cm long; peduncles 1 cm long, bracteolate; involucral bracts puberulous without, lobes small, lanceolate, limbs of glands sinuate; male flowers slightly exserted; ovary pubescent, styles glabrous, stigmas bident. Capsules 0.2 cm long, sparsely pubescent; seeds angled, rugose or furrowed.

Fl. & Fr.: Throughout the year.

World distribution: Pantropic.

Specimen examined: Srisailam, 12-7-1963, Ellis 16840.

Remarks: Euphorbia hypericifolia Linn. is a new world species which is separable from E. parviflora Linn. in being entirely glabrous.


Erect herbs, about 20 cm high; stems terete, striate, glabrous. Leaves about 2 x 1.4 cm, oblong, orbicular, obliquely rounded at base, faintly crenulate, glabrous; reticulations prominent beneath; petioles 0.1 cm long; stipules slightly fimbriate. Flowers pinkish, 0.1 cm long, in
axillary and terminal cyathia 0.25 cm long; peduncles 0.15 cm long; involucral bracts 0.1 cm long, ovate, slightly fimbriate; limbs of glands oblong; male flowers slightly exerted; ovary glabrous, styles 3. Capsules 0.3 cm across, glabrous; seed obtusely angled, furrowed.

Fl. & Fr.: September-December.

World distribution: Peninsular India, in dry localities.

Specimens examined: Ramanapenta, 27-8-1917, K. C. Jacob 14953; Mahanandi, 22-8-1965, Ellis 25462; Srisailam, 6-12-1969, Ellis 32713; Mahanandi, 23-8-1972, Ellis 42331.

Ttragia Linn.

1. Leaves simple
2. Leaves palmately 3-lobed


Climbing herbs, about 1.5 m long, often robust; stems terete, striate, hispid with stinging hairs. Leaves up to 8 x 5 cm, ovate or elliptic, acuminate or cuneate-acuminate, rounded or obtuse at base, serrate, hispidly hairy; petioles up to 2.5 cm long; stipules ovate-acuminate. Flowers pale green, in axillary racemes about 2.5 cm long, bracteate; male included; female with accrescent calyx; ovary 3-celled, styles united into a column. Capsules 0.5 x 0.8 cm, 3-lobed, sparingly hairy; seeds globose, smooth.

Fl. & Fr.: March-November.

World distribution: India, Sri Lanka, Burma and China.

Specimen examined: Pathalaganga, Srisailam, 25-3-1965, Ellis 23735.


Erect or climbing herbs or undershrubs; stems terete, striate, hispid with stinging hairs, often woody. Leaves 6 x 3.5 cm, palmately, deeply 3-lobed, middle lobe larger than laterals; lobes crenate-dentate, acute, truncate or rounded or cordate at base, sparingly hispid generally along nerves. Flowers greenish-yellow, in axillary spikes 3 cm long, bracteate; rachises hispid; male flowers minute, calyx small, lobes ovate, entire; female flowers at base, 0.9 cm long, calyx accrescent in fruits, laciniate,
hispidly hairy along margins; ovary glochidiate, sparsely hispid, styles 4, glabrous, styles united into a column. Capsules 0.4 x 0.7 cm, lobed, hispid; seeds globose.

Fl. & Fr.: May-December.

World distribution: India and Sri Lanka, in very dry localities.

Specimen examined: Maddipenta, Eastern Nallamalais, 11-8-1972, Ellis 42227.

Mallotus Lour.


Trees, about 10 m tall; branchlets tawny-tomentose. Leaves about 20 x 10 cm, glaucous beneath, elliptic-acuminate, glabrous above, stellate-puberulous and glandular beneath; nerves 3 from base, nervules parallel; petioles about 9 cm long. Flowers pale yellow, 0.2 cm long, in terminal racemes 8 cm long in male, shorter in female; calyx 0.2 cm long, lobes ovate, tomentose without, thicker in female; stamens numerous, filaments glabrous, anthers parallel; ovary reddish, stellate-puberulous, styles free, plumose above. Capsules 0.8 x 0.8 cm, of 3 cocci, tubercled, red-glandular; seeds greyish, globose.

Fl. & Fr.: August-February.

World distribution: India, Sri Lanka, China, Malaysia and Australia.

Specimens examined: Srisailam, 15-7-1963, Ellis 16885; Ramana- penta, Gundibrabhameswaram, 25-10-1964, Ellis 22208; way to Krishnanandi, Mahanandi, 21-8-1965, Ellis 25448; Upper Ahobilam, 22-11-1969, Ellis 32580; Krishnanandi, 9-12-1969, Ellis 32725.

Jatropha Linn.

1. Leaf margins stipitately glandular;
   stipules prominently incised
   
1. Leaf margins eglandular; stipules capillary

1. J. gossypifolia

1. J. heynei

Shrubs, about 1 m high; branchlets glabrous. Leaves about 10 x 14 cm, 3-5-lobed below the middle; lobes ovate, margins entire with stipitate glands, cordate at base, glabrous, hispate above the joint of nerves; petioles about 10 cm long, stipitately glandular along the groove above; stipules laciniate, glandular. Flowers crimson red, 0.5 cm long, in axillary, paniculate cymes about 9 cm long; peduncles about 8 cm long; bracts 1 cm long, ovate, stipitately glandular along margins; calyx lobes 0.4 cm long, ovate, stipitately glandular and hairy along margins; corolla 0.5 cm long, lobes oblong; ovary glabrous, style bifid, stigmas obtusely laciniate, glandular-tipped. Capsules 1 cm across, faintly rugose; seeds oblong, aril furrowed.

Fl. & Fr.: Throughout the year.

World distribution: Tropics from Africa, India and Sri Lanka, generally in crooked places.

Specimen examined: Srisailam, 13-7-1963, Ellis 16843.


Undershubs, about 80 cm high; stems glabrous; rootstocks tuberous. Leaves about 12 x 7 cm, deeply 3-lobed; lobes oblong, ovate, cuneate at base, uneven along margins; nerves 3 almost from base; petioles about 2.8 cm long; stipules 0.8 cm long, capillary. Flowers green, 0.4 cm long, in terminal, cymose panicles 3 cm long, bracteate; calyx lobes 0.1 cm long, tube 0.1 cm long; petals 0.2 cm long, glabrous; stamens numerous, included; ovary glabrous, styles 2-fid. Capsules about 1.5 cm across, globose, slightly 3-lobed; seeds oblong.

Fl. & Fr.: June-August.

World distribution: Peninsular India, in dry localities, generally on black-cotton soil.

Specimens examined: Nallaymalays, no date, 48448; Diguvarigetta, 11-8-1921, C.E.C. Fischer 4655; Srisailam, 15-7-1963, Ellis 16891.
Phyllanthus* Linn. emend. Gaertn.

1. Fruits of berries; trees or shrubs:
   2. Berries with stony endocarp; leaves up to 0.6 cm broad; trees:
      3. Berries about 5×5 cm; leaves about 1.5×0.3 cm
         \[ P. emblicid \]
      3. Berries about 2.5×2.5 cm; leaves about 1.9×0.6 cm
         \[ P. Indofischeri \]
   2. Berries without stony endocarp; shrubs
      1. Fruits capsular; herbs or undershrubs:
         4. Capsules verrucose or rugose:
            5. Seeds distinctly muriculate; leaves not prominently distichous
               \[ P. virgatus \]
            5. Seeds grooved, not muriculate; leaves distichous
               \[ P. utilis \]
      4. Capsules smooth:
         6. Seeds sparingly pitted
         6. Seeds furrowed or grooved:
            7. Leaves ovate; flowers white
               \[ P. polyphyllus \]
            7. Leaves obovate; flowers greenish:
               8. Leaves about 2.5×0.8 cm, cuneate at base, not distichous
                  \[ P. madrasapatensis \]
               8. Leaves up to 1×0.8 cm, obtuse at base, distichous:
                  9. Calyx lobes accrescent in fruits
                     \[ P. debills \]
                  9. Calyx lobes not accrescent in fruits
                     \[ P. omanus \]


Trees, about 10 m tall; young branchlets puberulous. Leaves up to 1.5×0.3 cm, linear, rounded at base, excurred along margins, subsessile, distichous, stipulate. Flowers pale green, 0.1 cm long, in axillary clusters, bracteate, male shortly pedicellate; calyx lobes 0.1 cm long, ovate-oblong; stamens 3, filaments united in a column, anther-cells parallel, connectives excurrent; disk cupular; ovary glabrous, styles free at top. Berries about 5×5 cm, globose, fleshy, endocarp stony, vertically 6-furrowed; seeds 6, trigonous.

Fl. & Fr.: March-November.

World distribution: India, Sri Lanka, China and Malaysia.

Specimens examined: Chelama, 21-3-1965, Ellis 23747; Ahobilam, 22-11-1969, Ellis 32576.


Trees, about 8 m tall; young branchlets generally glabrous; bark reddish within. Leaves about 1.9×0.6 cm, linear-oblong, rounded at base, margins excurred, chartaceous; subsessile. Flowers 0.2 cm long, in axillary clusters, bracteate; pedicels 0.3 cm long, filiform; calyx lobes 0.1 cm long, obovate-oblong; anthers parallel, filaments united in a column; female flowers fewer, larger, ovary glabrous, styles connate at base, bifid at apices. Fruits 2.5×2.5 cm, globose; endocarp stony, vertically furrowed; seeds 6, trigonous

Fl. & Fr.: March-October.

World distribution: Peninsular India, in dry localities.

Specimen examined: Mahanandi, 22-8-1965, Ellis 25475.


Shrubs, about 2 m high; branchlets striate, puberulous to pubescent. Leaves about 2.5×1.8 cm, oblong, orbicular, obtuse or rounded at base, sparsely puberulous on prominent reticulations above; petioles 0.1 cm long, pubescent; stipules small, ovate. Flowers greenish, 0.1 cm long, 2 or 3, axillary; pedicels 0.3 cm long, puberulous; calyx lobes 0.1 cm long in male, larger in female, ovate-orbicular, stamens 5, outer two filaments not connate at base, anther cells parallel; ovary glabrous, stigmas bifid. Berries 0.4×0.3 cm, globose; seeds wedge-shaped.

Fl. & Fr.: July-October.

World distribution: Tropics from Africa, India, Sri Lanka, China and Malaysia.

Specimen examined: Chelama, 6-7-1963, Ellis 16800.

Erect herbs, about 50 cm high; branches rather compressed, faintly winged, striate; rootstocks woody. Leaves up to 1.9 × 0.5 cm, ovo-elliptic, oblong, apiculate, linear, rounded at base, margins recurved, subsessile; stipules petiolo. Flowers greenish, about 0.2 cm long, axillary, solitary; pedicels up to 0.7 cm long; calyx lobes 0.1 cm long, ovate-orbicular, tube small; stamens 3, filaments sometimes connate at base, anther cells parallel; ovary glabrous, styles 3, 2-fid at apices. Capsules 0.3 × 0.3 cm, globose, faintly rugose; seeds wedge-shaped, finely muriculate.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka, China, Malaysia and Pacific Islands.

Specimens examined: Chelama, 5-7-1963, Ellis 16750; Sunnipenta, Srisailam, 21-10-1964, Ellis 22132; Mahanandi, 21-8-1965, Ellis 25410; Mahanundl, 22-8-1965, Ellis 25458; Diguvumetta, 18-11-1969, Ellis 32511.


Erect herbs, about 20 cm high, sometimes decumbent; branches obscurely-angular, grooved, branchlets angled, faintly winged, hispid. Leaves 1 × 0.3 cm, linear-ovate, obovate, apiculate, obtuse or rounded at base, subsessile, in lateral branchlets, glabrous, stipulate. Flowers greenish, 0.2 cm long, axillary, solitary; male small, filaments connate; female larger; calyx lobes 0.05 cm long, linear-oblong, connate at base; ovary glabrous, styles 3, 2-fid. Capsules 0.2 × 0.2 cm, globose, verrucose; seeds wedge-shaped, transversely grooved.

Fl. & Fr.: July-October.

World distribution: India, Sri Lanka, Burma and Malaysia.

*Phyllanthus polyphyllus* Willd. Sp. Pl. 4: 586. 1805; Wt. Ic. 5: 1. 1895, fig. 2. 1852; Muell.-Arg. in DC. Prodr. 15: 352. 1866; Hook. f. FBI 5: 290. 1887; Gamble, FPM 7: 1288. 1925.

Shrubs, about 1 m tall; juvenile branchlets angled. Leaves up to 1.8 × 0.5 cm, linear-oblong, rounded at base, margins excurred; nerves rather prominent. Flowers green, 0.2 cm long, in axillary clusters generally towards ends of branchlets, bracteate, pedicellate; calyx 0.1 cm long, lobes ovate; stamens 3, filaments forming a column, anthers parallel; ovary glabrous, styles 3, 2-fid. Capsules 0.4 cm across, smooth, seeds trigonous, sparingly pitted.

*Fl. & Fr.*: July-December.

*World distribution*: Peninsular India and Sri Lanka, in dry localities.

*Specimen examined*: Srisailam, 15-7-1963, *Ellis* 16887.

*P. rheedii* Wt. Ic. 5: 1. 1895. 1852; Muell.-Arg. in DC. Prodr. 15: 363. 1866; Hook. f. FBI 5: 293. 1887; Gamble, FPM 7: 1289. 1925.

Erect herbs; branches woody, terete. Leaves about 2.3 × 1.2 cm, ovate, obtuse or rounded at base, glaucous beneath, shortly pectiollate, stipulate. Flowers white, male small, fascicled, female larger; pedicels of female rather thick; calyx 5-lobed, lobes ovate, green with white margins; stamens 3, filaments connate to form a column; ovary glabrous, styles 2-fid. Capsules 0.4 × 0.4 cm, globose, smooth; seeds wedge-shaped, concentrically minutely striated and with minute cross-bars.

*Fl. & Fr.*: July-August.

*World distribution*: Tropics from Africa and India.


Erect herbs, up to 10 cm high; stems terete, glabrous. Leaves 1 × 0.8 cm, glaucous beneath, elliptic, obovate, acute or rounded at base; petioles short; stipules ovate. Flowers greenish, 0.3 cm long, axillary;
pedicels longer in female; calyx 0.1 cm long, lobes obovate-orbicular, scarious along margins, accrescent; stamens 3, filaments free; ovary glabrous, styles 3, recurved, bifid at ends. Capsules 0.2 × 0.2 cm, globose; seeds wedge-shaped, concentrically furrowed with very minute tubercles joined by minute cross-bars.

*Fl. & Fr.*: July-August.

*World distribution*: Tropics from Africa and India.


Erect herbs or undershrubs, about 50 cm high; branches terete or obtusely angled, striate, sometimes grooved; rootstocks woody. Leaves about 2.5 × 0.8 cm, oblong-ovate, cuneate at base, shortly petiolated, stipulate. Flowers pale green, 0.3 cm long, axillary, solitary; pedicels of female flowers filiform; calyx 6-lobed, lobes 0.2 × 0.2 cm, orbicular-ovate, scarious-margined; stamens 3, filaments connate, anthers parietal; ovary glabrous, styles 3, bifid. Capsules 0.3 × 0.3 cm, ovoid; seeds 6, wedge-shaped, striately muricate-grooved.

*Fl. & Fr.*: August-February.

*World distribution*: Tropics from Africa, India, Sri Lanka, Malaysia and Australia.

*Specimen examined*: Chelama, 9-7-1963, *Ellis* 16786.


Erect herbs, about 15-20 cm high; branches terete, glabrous. Leaves about 0.9 × 0.3 cm, disposed alternately on branchlets about 3 cm long, oblong-ovate, obovate, rounded at base, subsessile, stipulate. Flowers greenish, 0.05 cm long, in axillary or lateral pairs, shortly pedicellate, cymes mostly bisexual, terminal 1 or 2 male, the other axils with 1 male and 1 female flowers; calyx lobes 5, greenish with white margins; disk small; stamens 3, filaments columnar; ovary glabrous, styles 3, bifid at tips. Capsules 0.1 × 0.1 cm, globose; seeds 6, wedge-shaped, ribbed.
Fl. & Fr.: Throughout the year.

World distribution: Native of tropical America, a weed in India and several other tropical countries.

Specimen examined: Chelama, 9-7-1963, Ellis 16802.

Remarks: Brenan (op. cit. 217) has given some important characters in the key to *P. amarus*, distinguishing it from *P. niruri*. Webster (op. cit. pp. 309-315) has discussed at length the confusion regarding 4 plants, viz. *P. asperulatus* Hutchinson, *P. fraternus* Webster, *P. niruri* Linn., and *P. amarus* Schum. & Thonn. He states (p. 311), "...I acted too hastily in reducing *P. fraternus* to the status of a synonym of *P. asperulatus* Hutchinson." and "...*P. fraternus* and *P. asperulatus* are by no means identical and had best be kept separate for the time being." He concludes that what occur in India are 2 species, viz. *P. fraternus* Webster and *P. amarus* Schum. & Thonn. The distribution of *P. fraternus* is in "...west Pakistan and western India,..." The ubiquitous plant occurring in India is *P. amarus* Schum. & Thonn. commonly reported as *P. niruri* Linn. Webster and Burch (in *Ann. Miss. bot. Gardn.* 54: 226. 1967) conclude, "...This weedy plant, the most widespread and abundant species of *Phyllanthus*, has until recently been confused with *P. niruri*;...It is easily distinguished from *P. niruri*, however, by its equilateral leaf bases, bisexual cymules, and ribbed instead of verrucose seeds....".

**SEBASTIANIA Spreng.**


Erect herbs, about 30 cm high; lateral branches decumbent, terete in older, angled in younger, grooved, glabrous or ciliate. Leaves up to 6×1 cm, linear-oblong, obtuse, acute or obtuse at base, glabrescent, hirtellous along excurved margins; petioles 0.1 cm long. Flowers greenish yellow; male flowers minute, in axillary or leaf-opposed spikes 1 cm long; calyx minute, ovate, ciliate along margins; stamens 3, filaments free, anther cells parallel; female flowers larger, solitary, axillary or at base of male spikes; calyx ovate, ciliate along margins; ovary glabrous, glochidiate. Capsules 0.5×0.4 cm, globose, angular, with two rows of spikes on the cocci; seeds ellipsoid, carunculate.

Fl. & Fr.: June-December.

World distribution: Tropics from Africa, India, Sri Lanka, China, Malaysia and Australia.
Specimens examined: Chelama, 5-7-1963, Ellis 16757; way to Upper Abobilam, 29-8-1965, Ellis 25561; Diguvamatta, 19-11-1969, Ellis 32548.

HOMONOIA Lour.


Shrubs, about 1.5 m high, along river beds on rocky boulders; branchlets pubescent. Leaves up to 17 x 2 cm, linear-acuminate, apiculate, acute at base, entire, sometimes serrulate, glabrous above, peltate-glandular beneath, sparsely puberulous beneath; petioles up to 1 cm long, pubescent. Flowers pale pink, about 0.2 cm long, in axillary and terminal spikes about 10 cm long, bracteate, bracteoles; calyx lobes 0.4 cm long. in male flowers 3, valvate, in female flowers about 6, smaller. puberulous; stamens numerous, in globose clusters of branched filaments about 0.5 cm across; ovary pubescent, styles 3, papillate. Capsules 0.2 x 0.2 cm, globose, pubescent; seeds slightly angled on inner face and rounded on outer face.

Fl. & Fr.: March-August.

World distribution: India, Sri Lanka and Malaysia.

Specimens examined: Nandikanama Pass, March 1883, J. S. Gamble 10833; Upper Abobilam, 29-8-1965, Ellis 25557 (female) and Ellis 25559 (male); Mahanandhi, 22-8-1972, Ellis 42326 (female).

GIVOTIA Griff.


Trees, about 10 m tall; branchlets white with stellate-tomentum, sap reddish. Leaves about 25 x 25 cm, ovate, cordate at base, dentate, glabrescent above, densely whitish-brown stellate-tomentose beneath; nerves 5 from base, reticulations parallel; petioles about 20 cm long, dense-tomentose. Flowers pale yellow, 0.5 cm long, in cymes about 2 cm across, bracteate, along panicles 20 cm long; calyx lobes 5, 0.4 cm long,
densely tomentose without; petals slightly longer than calyx, connate at base; disk glands globular in male, disk in female cupular; stamens many, included, filaments connate at base, hairy; ovary hairy, styles 3, short, bifid. Drupes about 2 x 1.5 cm, ovoid; endocarps stony; seeds ellipsoid.

_Fl. & Fr.:_ March-December.

_World distribution:_ India and Sri Lanka, in dry localities of deciduous forests.

_Specimens examined:_ Kurnool, 1886, J. S. Gamble s.n.; Chelama, 13-7-1963, Ellis 16867; Chelama, 12-12-1963, Ellis 18070; Mahanandi, 23-8-1965, Ellis 25502.

_Remarks:_ Steenadhiav (op. cit.) has argued for reinstating the Linnean epithet, _mahecranum_ for this species which Smith (op. cit.) earlier had considered as a _nomen confusum._

**Bridelia Willd. corr. Spreng.**


_Trees, about 15 m tall; young branches puberulous. Leaves about 17 x 7 cm, glaucous beneath, elliptic-ovate obtuse, sometimes retuse, rounded at base, coriaceous, faintly puberulous beneath; lateral nerves about 20 pairs, parallel, nervules parallel, reticulations prominent; petioles 1 cm long, thick. Flowers reddish yellow, 0.2 cm across, in clusters along terminal and axillary paniculate spikes about 15 cm long, bracteate; rachis tomentose; calyx reddish, lobes 0.1 cm long, ovate, tube pubescent; petals 5, 0.05 cm long, ovate, cucullate in male, spathulate in female; disk flat; stamens 5, on gynophore; ovary glabrous, styles 2. Drupes 0.4 x 0.4 cm, globose; pyrenes 2, grooved without.

_Fl. & Fr.:_ August-October.

_World distribution:_ Tropics from Africa, India, Sri Lanka, Malaysia and Philippines.

_Specimens examined:_ Mahanandi, 21-8-1965, Ellis 25438; Mahanandi, 8-12-1969, Ellis 32723; Diguavetta, 7-8-1972, Ellis 42173.
Cleistanthus Hook. f. & Planch

1. Leaves oblong-obovate or orbicular; shortly acute, sometimes emarginate; capsules 2.5 x 2.5 cm

. . C. collinus
1. Leaves elliptic-acuminate; capsules 0.7 x 0.7 cm . . C. patulus


Trees, about 8 m tall; branchlets terete, glabrous. Leaves 8 x 6.5 cm, oblong-obovate, orbicular, shortly acute, sometimes emarginate, obtuse or acute at base, chartaceous to coriaceous; lateral nerves and reticulations prominent; petioles 0.5 cm long, thick, pubescent. Flowers 0.5 cm long, in axillary clusters or spikes 2 cm long; rachises pubescent; calyx 0.4 cm long, ovate, pubescent without; petals 0.3 cm long, ciliate at tips; stamens 5, included; disk glabrous, styles 3, stigmas bifid. Capsules 2.5 x 2.5 cm, orbicular-depressed, 3-locular; seeds 0.5 cm across, shining black, globose.

Fl. & Fr.: March-October.

World distribution: India and Sri Lanka.

Specimen examined: Diguavametta, 11-11-1906, C. A. Barber 8089; Chelama, 4-7-1963, Ellis 16702; Chelama, 19-3-1965, Ellis 23720; Mahanandi, 21-8-1965, Ellis 25420; Mahanandi, 23-8-1965, Ellis 25500; Diguavametta, 7-8-1972, Ellis 42172.


Trees, about 8 m tall; branchlets terete, glabrous. Leaves 10 x 3.5 cm, elliptic-acuminate, obtuse or rounded at base, coriaceous, red when young; petioles 0.4 cm long, rather thick, glabrous. Flowers 0.4 cm long, in axillary spikes about 2 cm long, bracteate; calyx 0.4 cm long, lobes ovate; petals 0.2 cm long, obovate; disk flat; stamens 5, on gynophore; ovary villous, styles 3, bifid. Capsules 0.7 x 0.7 cm, pilose to glabrous; seeds reniform.

Fl. & Fr.: March-July.

World distribution: India and Sri Lanka.

Specimen examined: Gundiabrahmeswaram, 30-3-1965, Ellis 23803.

1. Leaves and capsules glabrous
   G. zeylanicum
2. Leaves and capsules pubescent
   G. velutinum


Trees, about 8 m tall; branchlets zig-zag, puberulous. Leaves glaucous above, copper-coloured beneath, about 15 x 6 cm, slightly falcate, elliptic-acuminate, ovate, unequally rounded at base, glabrous, rather coriaceous; petioles 0.5 cm long, thick; stipules acuminate, recurved. Flowers greenish, 0.3 cm long, in axillary clusters; pedicels 0.3 cm long; bracts small, recurved; calyx 0.2 cm long, lobes oblong-orbicular, coriaceous; stamens about 6, included, filaments connate, anther cells parallel, connectives extended; ovary glabrous, styles connate. Capsules 0.6 x 1 cm, globose, longitudinally grooved; seeds shining, wedge-shaped.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka and Malaysia.

Specimens examined: Sannipenta, Srisailam, 21-10-1964, Ellis 22134; Mahanandi, 10-12-1969, Ellis 32733; Rollapenta, 14-8-1972, Ellis 42254.


Trees, about 7 m tall; branchlets slightly zig-zag, velutinous. Leaves up to 10 x 4 cm, ovate, obovate, obtuse or acute at base, sparsely puberulous above, densely tumenose beneath. Flowers greenish, 0.3 cm long, in axillary clusters; pedicels about 0.4 cm long, slender in male; sepals 0.15 cm long, ovate, pubescent without on the back; anthers syngenesious; ovary pubescent, styles connate, slightly toothed at apices. Capsules 0.4 x 0.7 cm, oblong, furrowed, pubescent; seeds orange, flattened.

Fl. & Fr.: September-March.

World distribution: India and Burma.

Specimen examined: Gundlabrahmeswaram, 21-7-1963, Ellis 16941.

Securinega Comm. ex Juss., nom. cons.


Shrubs to small trees, about 4 m tall; stems obscurely angled, grooved, sparsely puberulous or glabrous. Leaves glaucescent beneath, very variable in size, generally 3 x 2 cm, but up to 8 x 4 cm, obovate, orbicular, elliptic-ovate, retuse, acute or obtuse at base; petioles up to 0.5 cm long; stipules ovate, faintly ciliolate along margins. Flowers pale yellow, 0.1 cm long, male smaller than female, in axillary clusters, pedicelled, many-bracteate; calyx lobes ovate, craspate along margins; stamens exerted; ovary glabrous, styles bifid. Berries 0.3 x 0.3 cm, globose, smooth; seeds reddish, wedge-shaped.

 фл. фл. : March-September.

*World distribution*: Tropics from Africa, India, Sri Lanka, China, Malaysia and Australia.

*Specimens examined*: Chelama, 4-7-1963, *Ellis* 16705 (male), 16707 (female); Mahanandi, 23-8-1965, *Ellis* 25511 (female).

**BREYNI A J. R. & G. Forst, nom. cons.**


Shrubs, about 2 m high; juvenile branches reddish, rather angular. Leaves about 2 x 1.5 cm, ovate-elliptic, orbicular, obtuse or rounded at base; petioles 0.2 cm long; stipules 0.15 cm long, acuminate. Flowers greenish, axillary, pedicellate; male 0.4 cm long, calyx 0.1 cm long, lobes minute; stamens 3, filaments connate; female larger, calyx 0.4 cm long, lobes rather orbicular; ovary glabrous, styles 3, bifid. Capsules 0.8 x 1 cm, globose, seceded on accrescent calyx cup, yellow when ripe; seeds about 6, 0.4 cm long, wedge-shaped.

 фл. фл. : February-July.

*World distribution*: India, Sri Lanka and Burma.

*Specimen examined*: Rollapenta to Pecharavu, 16-8-1972, *Ellis* 42277.
SUREGADA Roxb. ex Rotbl.


Trees, about 8 m tall; branchlets terete, glabrous. Leaves up to 16 x 6 cm, rather shining, elliptic-ovate, obovate or oblong, acute at base, entire, repand, excurved along margins, coriaceous; reticulations prominent; petioles 0.2 cm long. Flowers green, 0.3 cm long, in axillary, shortly racemose clusters, bracteate; pedicels 0.2 cm long; perianth 0.2 cm long, oblong-orbicular, puberulous without; stamens numerous, exserted; ovary glabrous. Capsules 0.6 x 0.9 cm, glabrous; seeds ovoid, hollow-pitted.

*Fl. & Fr.*: March-December.

*World distribution*: Peninsular India and Sri Lanka—along perennial water courses.


DRYPETES Vahl


Trees, about 6 m tall; branchlets pale, glabrescent. Leaves up to 9 x 4 cm, elliptic-ovate, ovate, oblong or orbicular, rounded at base, faintly distantly serrate, glaucous beneath, coriaceous; nerves rather inconspicuous; petioles 0.5 cm long, thick, puberulous. Flowers 0.5 cm long, in axillary clusters; pedicels 0.4 cm long, pubescent; calyx 0.2 cm long, ovate, pubescent without; stamens about 8, filaments glabrous; ovary glabrous, stigmas peltate. Drupes 0.5 x 0.5 cm, globose, endocarp bony; seeds solitary.

*Fl. & Fr.*: February-July.
World distribution: India and Sri Lanka, in dry ever-green localities.

Specimens examined: Dornal, February 1887, J. S. Gamble 18685; Srisailam, 16-7-1963, Ellis 16902; Srisailam, 26-3-1963, Ellis 23772.

**Antidesma fimbriata**

1. Leaves ovate-obtuse, rounded and cordate at base; petioles 0.3 cm long; inflorescence racemes pubescent
   A. shaesembilla

1. Leaves obovate, acute at base; petioles 1 cm long; inflorescence racemes glabrous
   A. acutum


Trees, about 10 m tall; young branches brown-tomentose. Leaves up to 10 x 6 cm, ovate-obtuse, orbicular, abruptly acute, rounded at base, rather coriaceous, more puberulous below; petioles 1 cm long. Flowers pale green, both male and female 0.15 cm long, in axillary, clustered, paniculate spikes about 4 cm long; racises hairy; calyx densely brown-pubescent; stamens about 5, filaments glabrous, anthers curved; ovary pubescent, stigma 3-lobed. Drupes 0.3 x 0.3 cm, globose or slightly flattened, orange-coloured when ripe, prominently rugose when dry; seeds covered with dried albumen.

Fl. & Fr.: May-August.

World distribution: India, Sri Lanka, Malaysia and China.

Specimens examined: Cheiama, 3-7-1963, Ellis 16760; Mahanandí, 23-8-1965, Ellis 25443; Mahanandí, 23-8-1965, Ellis 25499; Bairani, Diguwamet, 7-8-1972, Ellis 42174.


Trees, about 6 m tall; young branches glabrescent. Leaves up to 9 x 4 cm, obovate, acute or acuminate, acute or obtuse at base, glabrous or sparsely puberulous; petioles 0.3 cm long. Flowers greenish, 0.3 cm long, in terminal spikes about 4 cm long, bracteate; racinés glabrous; calyx 0.1 cm long, sparsely puberulous, rather cupular in male, lobes
minute in female; stamens about 2, much exserted, filaments glabrous, anthers curved; ovary glabrous, stigma 3, recurved. Drupes 0.3 x 0.3 cm, globose, slightly flattened, prominently ribbed.

Fl. & Fr.: April-December.

World distribution: India, Sri Lanka and Burma.

Specimens examined: Gundlabrahmeswaram, 24-10-1964, Ellis 22189; Gundlabrahmeswaram, 29-11-1969, Ellis 32652.

Batispermum Bl.


Herbs or undershrubs, about 1 m high; branches terete, glabrous. Leaves about 20 x 10 cm, ovate-elliptic, abruptly acuminate, rounded at base, distantly dentate, glabrous above, sparsely hairy beneath; midrib, lateral nerves and reticulations prominent; petioles about 19 cm long, hirtellous. Flowers greenish, 0.5 cm across, in axillary racemes about 8 cm long, bracteate; pedicels about 1 cm long, slender in male; calyx of male flowers glabrous, of female hirtellous without; stamens many, connectives broad; ovary pubescent styles 2, glabrous. Capsules 0.8 x 0.6 cm, ovoid, smooth; seeds ovoid.

Fl. & Fr.: October-February.

World distribution: India, Burma and Malaysia.

Specimens examined: Gazulapalle, 8-11-1906, C. A. Barber 8066; Ramanapenta, Gundlabrahmeswaram, 25-10-1964, Ellis 22198; Ramanapenta, Gundlabrahmeswaram, 31-3-1964, Ellis 23823; Gundlabrahmeswaram, 28-11-1969, Ellis 32654.

Acalypha Linn

1. Petioles up to 5 cm long.  
   A. alnifolia

1. Petioles more than 5 cm long:
   2. Bracts of female flowers simbriate
      A. oitata
   2. Bracts of female flowers dentate
      A. lanceolata

Suturutescent herbs, about 60 cm high; stems tomentose, glabrescent, ciliate. Leaves about 3×1.8 cm, ovate, oblanceolate, crenate-serrate, sparsely ciliate; nerves 5 from base, nerves and reticulations prominent; petioles up to 2 cm long. Flowers greenish, minute, in axillary spikes (male) about 4 cm long, and in terminal, shorter spikes (female), shortly pedicellate; bracts small, linear, ciliate; perianth minute; stamens many; ovary hirsute, style laciniate. Capsules 0.5 cm across, globose; seeds globose, smooth.

Fl. & Fr.: July-December.

World distribution: Peninsular India, in dry localities.

Specimen examined: Way to Pathalaganga, Srisailam, 12-7-1963, Ellis 16827.


Erect herbs, about 30 cm high; branches terete, striate, puberulous. Leaves about 5×3.5 cm, elliptic-acuminate, rounded at base, crenate-serrate, sparsely setose on both surfaces; nerves 3 from base; petioles pale pink, about 6 cm long. Flowers greenish, in axillary spikes about 1.5 cm long, male very minute at top, sessile, female many, clustered at base; bracts of female 0.5 cm long, fimbriate, ovate-elliptate, hispid, tube glabrous or long-ciliate. Capsules 0.2×0.2 cm, glabrous; seeds single in each locule, globose, smooth.

Fl. & Fr.: November-February.

World distribution: Tropics from Africa, India and Sri Lanka.

Specimens examined: Ramanapenta, Gundlaphalmeswaram, 31-8-1917, Rangachari 14980; Diguvametta, 6-8-1972, Ellis 42154.


Erect herbs, about 50 cm high; stems glabrous, pubescent when young. Leaves up to 6×3 cm, ovate-elliptic, acute or obtuse at base, crenate-serrate, sparsely pilose; nerves 3-5 from base; petioles about 5 cm long, ciliate. Flowers greenish, in axillary spikes about 4 cm long, both male and female on the same spike, male very small, filaments hairy; female enclosed in a prominent bract; bracts dentate; ovary glabrous. Capsules 0.2×0.2 cm, globose, locules 1 seeded; seeds globose, smooth.
Flora of Nallamalais

Fl. & Fr. : April-August.

World distribution : India, Sri Lanka and Malaysia.

Specimen examined : Mahanadi, 22-8-1965, Ellis 25479.

ULMACEAE

1. Leaves 3-nerved from base; fruits drupaceous:
   Trema
2. Leaves serrulate, chartaceous
   Celtis
2. Leaves entire, coriaceous
   Holoptelea
1. Leaves 1-nerved from base; fruits samaroid

TREMA LOUR.


Trees, about 10 m tall; branchlets terete, sparsely pubescent. Leaves pale or whitish beneath, about 13 x 7.5 cm, ovate-acuminate or caudate, unequally cordate at base, scabrous above, serrulate, tomentose beneath, chartaceous; nerves of first lateral ones reaching to the top, nervules parallel; petioles about 0.8 cm long, pubescent. Flowers greenish, 0.15 cm long, in axillary, pedunculate cymes 1.5 cm long, bracteate, bracteolate; sepals 0.1 cm long, ovate, densely white-pubescent along margins; stamens 4, slightly exerted; disk hairy; ovary faintly puberulous. Drupes 0.3 cm long, ovoid.

Fl. & Fr. : Throughout the year.

World distribution : India, Sri Lanka, Malaysia, along perennial streams in moist deciduous forests.

Specimens examined : Gundlabrahmeswaram, 27-10-1964, Ellis 22215; way to Upper Ahobilam, 22-11-1969, Ellis 32581.

Remarks : Soepadmo (op. cit. p. 52) recognises 3 entities of this taxon, depending on geographic distributions. However, he concludes (loc. cit.), 'Several intermediates are present however, making formal infra-specific distinction not advisable.'

CELTIS LINDL.


Trees, about 20 m tall; young branchlets puberulous or glabrous, lenticellate. Leaves up to 15×6 cm, ovate, elliptic, acuminate, generally unequally rounded or acute at base, coriaceous; nerves 3 from base, nerves and reticulations prominent below; petioles 1 cm long, grooved above, thick; stipules 0.8 cm long, softly pilose. Flowers greenish, 0.15 cm long, in axillary, paniculate cymes about 1 cm long, bracteate; calyx 0.15 cm long, lobes oblong, scarious, softly pilose without; male flowers at base, stamens 4, included; disk villous; female flowers higher up, ovary sparingly villous, styles divided, recurved, stigmas bifid. Drupes 0.8×0.5 cm, pisciform; seeds single, slightly flattened.

Fl. & Fr.: December-March.

World distribution: India, Sri Lanka, Burma and Malaysia.

Specimens examined: Dornal, February 1887, J. S. Gamble 18695; Pathalaganga, Srisailam. 25-3-1965, Ellis 23753.

Holoptelea Planch.


Trees, about 30 m tall; branchlets terete, glabrous, lenticellate. Leaves about 14×8 cm, ovate-abruptly acuminate, rounded and cordate at base, chartaceous, puberulous along main nerves; petioles about 1.2 cm long; stipules scarious, puberulous. Flowers greenish, 0.3 cm long, in axillary racemes about 2 cm long; calyx 0.2 cm long, pubescent without, lobes ovate; stamens about 4, exserted, anthers pubescent; ovary stipitate, compressed, glabrous, styles bifid, stigmatose within. Samaras about 2×2 cm, orbicular, flattened, winged, puberulous.

Fl. & Fr.: February-April.

World distribution: India, Sri Lanka, Burma and South Vietnam.

Specimen examined: Chelama, 19-3-1965, Ellis 23730.
MORACEAE

Ficus Linn.

1. Leaves opposite
   1. Leaves alternate:

   2. Syconia glabrous:
      3. Petioles about 5.5 cm long
      3. Petioles about 0.7 cm long

   2. Syconia puberulous to pubescent:
      4. Leaves glabrous
      4. Leaves puberulous to tomentose beneath:

      5. Syconia 2 x 2 cm
      5. Syconia 0.8 x 0.8 cm


Trees, about 8 m tall; branchlets terete, hispid; aerial roots absent. Leaves up to 25 x 14 cm, opposite, elliptic-ovate, obovate, abruptly acuminate, obtuse or rounded at base, sometimes cordate, serrate, crenate-serrulate, coriaceous, bullate above, hispidulous below; nerves and nervules prominent below; petioles up to 5.5 cm long, hispid; stipules 1.5 x 0.6 cm, ovate-caudate, glabrous or hispid along the back. Syconia green, 1.8 x 1.5 cm, ovoid, sparingly hispid, in axillary peduncles 2 cm long; bracts small, glabrous.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka, Burma, North Australia, in moist deciduous tracts, along perennial streams.

Specimen examined: Srisailam, 15-7-1963, Ellis 16886.

Trees, about 20 m tall; young branchlets glabrous. Leaves 13 × 8.5 cm, ovate, abruptly acuminate, rounded and cordate at base, coriaceous; nerves and nervules prominent; petioles about 5.5 cm long; stipules 0.5 cm long, tomentose without. Syconia green, 1 × 1 cm, globose, glabrous; bracts 0.3 long, ovate; peduncles 0.3 cm long, angled.

Fl. & Fr.: Throughout the year.

World distribution: India and Sri Lanka.

Specimen examined: Srisailam, 13-7-1963, Ellis 16852.


Trees, about 15 m tall; young branchlets glabrous; aerial roots few. Leaves about 9 × 4 cm; elliptic-ovate, obovate, acute or obtuse at base, coriaceous, glabrous; lateral nerves and reticulations prominent beneath, the basal pair of lateral nerves prominent, arched, joining all the rest near margin; petioles 0.7 cm long; stipules 1 cm long, ovate-acuminate. Syconia white, 0.6 × 0.8 cm, globose, glabrous; bracts ovate.

Fl. & Fr.: January-June.

World distribution: India, China and Malaysia.


Remarks: The recognition of nitida even at varietal status seems to be untenable, for there is a range in variability and characters merge one with another imperceptibly. Examination of the type is a desideratum.


Trees, about 20 m tall; young branchlets tomentose to glabrescent. Leaves about 13.5 × 8 cm, ovate, elliptic, obtuse, acute or rounded at base, last basal pair of lateral nerves arched reaching half of lamina; nerves
and reticulations prominent below; petioles about 4 cm long, puberulous; stipules ovate-acuminate, pilose. Syconia green, up to 2 x 2 cm, globose, tomentose; bracts small, ovate, pubescent without.

Fl. & Fr. : Throughout the year.

World distribution : India and Sri Lanka.

Specimens examined : 'Kurnool', 1886, J. S. Gamble 49197; Chetama, 10-12-1963, Ellis 18050; Chetama, 21-3-1965, Ellis 23748.


Trees, about 30 m tall; branches spreading, pubescent when young; aerial roots several. Leaves about 18 x 10 cm, elliptic-ovate or obtuse orbicular, rounded at base, coriaceous, glabrescent above, puberulous beneath, glandular near petiole; nerves generally 3-7 from base, reticulations prominent; stipules puberulous, caducous; petioles about 4 cm long. Syconia bright red, up to 2 x 2 cm, globose, in axillary pairs, pubescent; bracts orbicular; receptacles almost nil.

Fl. & Fr. : Almost throughout the year.

World distribution : India; perhaps never truly wild, almost always planted and venerated.

Specimen examined : Mahanandi, 23-8-1972, Ellis 42344.


Trees about 15 m tall; young branches densely tomentose, pubescent; aerial roots several. Leaves generally about 11 x 8 cm, broadly ovate, rounded and cordate at base. glabrous above, densely tomentose beneath; lateral nerves and nervules prominent beneath, main nerves 3-7 from base, glandular near petiole beneath; petioles about 1.8 cm long, tomentose. Syconia green, about 0.8 x 0.8 cm, in pairs, globose, tomentose; bracts small, ovate or orbicular.

Fl. & Fr. : Almost throughout the year.

World distribution : India and Sri Lanka, in dry localities.
Specimens examined: Srisailam, 13-7-1963, Ellis 16844; Pathalaganga, Srisailam, 20-10-1964, Ellis 22297; way to Sunnipenta, Srisailam, 5-12-1969, Ellis 32706.

URTICACEAE

POUZOLZIA Gaud.

1. Stipules broadly ovate, few-haired P. zeylanica
1. Stipules linear, pubescent P. auriculata


Weak-stemmed herbs, about 30 cm high; stems obscurely 4-angled, grooved, hirsute. Leaves up to 3.5 x 1.8 cm, gradually reducing in size, very variable, ovate, acute or acuminate, rounded at base, pilose below, less so above, linolate, 3-nerved from base; petioles about 0.4 cm long; stipules scarious. Flowers white, 0.15 cm long, in axillary clusters; bracts ovate-caudate, scarios, ciliate along margins; perianth lobes linear-ovate, sparingly hirsute without; stamens 4 in male flowers, exerted ovary with filiform style and stigmas. Utricles 0.15 cm long, ovoid, shining.

Fl. & Fr.: July-December.

World distribution: India, Sri Lanka, China and Malaysia.

Specimens examined: Chelama, 12-12-1963, Ellis 15075; Chelama, 15-10-1964, Ellis 22019; Ramanapenta, Gundlabrahmeswaram, 28-11-1969, Ellis 32623.

P. auriculata Wt. Ic. 6: t. 1850. 1853; Weddd. in DC. Prodr. 16 (1): 225. 1887; Hook. f, FBI 5: 582. 1888; Fischer, FPM 8: 1383. 1928.

Herbs to undershrubs, about 80 cm high; stems woody, young branches angled, pubescent. Leaves up to 13 x 4 cm, elliptic-acuminate, acute to rounded at base, pilose below, sparsely so and linolate above; petioles 4 cm long, puberulous; stipules linear. Flowers greenish. 0.2 cm long, in axillary clusters; bracts ovate-acuminate, pubescent on midrib without; calyx lobes ovate. pubescent without, tube short; stamens 4 in male, exerted, filaments glabrous; ovary pubescent, styles feathery. Achenes white, 0.1 cm long, shining.
Fl. & Fr.: March-December.

World distribution: India and Sri Lanka.

Specimens examined: Srisailam, 12-7-1963, Ellis 16932; Upper Ahobilam, 29-8-1965, Ellis 25581; Bairani, Diguvalmetta, 7-8-1972, Ellis 42182.

Remarks: Fischer (op. cit.) has treated both the species, zeylanica and auriculata assigning them a broad circumscription for each; several of Wight’s species have been treated as just two taxa envisaging a broad spectrum of variability for each taxon. Merrill (op. cit.) apparently is instrumental in understanding these two taxa better. Merrill is followed in treatment of the taxa.

HYDROCHARITACEAE

1. Leaves broadly ovate

1. Leaves linear

Ottelia


Aquatic herbs, length depending on depth of water, generally about 20 cm long; roots fibrous. Leaves about 10 x 12 cm, broadly ovate, oblong, orbicular, cordate at base, sinus large; petioles up to 25 cm long. Flowers white, yellowish towards centre, up to 5 cm long, axillary, solitary; spathes about 3.5 cm long, about 5, crisply winged on the back; sepals about 1.5 cm long, oblong; petals 1.5 cm long, almost orbicular; stamens about 10, slightly exerted, anthers erect; ovary glabrous, styles about 6, bifid. Fruits oblong, enclosed in spathes; seeds several, small, oblong.

Fl. & Fr.: August-December.

World distribution: India, Sri Lanka and Australia.

Specimens examined: Mahanandi, 21-8-1965, Ellis 25436; Mahanandi, 8-12-1969, Ellis 32724; Mogulutla, Chinnamantrala, Eastern Ghats, 17-8-1972, Ellis 42287.

Blyxa Noronha ex Thouars.

Aquatic herbs, glabrous; stemless. Leaves about 45 cm long, 0.5 cm broad, linear, glabrous. Flowers greenish, 0.4 cm long, on scapes up to 30 cm long; male many, enclosed in spathes, stamens about 9, anthers erect; female and bisexual solitary, sessile, enclosed in spathes; sepals 3, 0.5 cm long, linear; petals about 1 cm long, linear; ovary slender, beaked, stigmas 3, filiform. Fruits about 5 x 0.2 cm, linear; seeds many, tuber cles, elongated on either ends.

Fl. & Fr.: August-February.

World distribution: India and Australia.

Specimen examined: Chinnamanthara, Eastern Nallamalais, 17-8-1972, Ellis 42288.

Remarks: C. D. K. Cook and Ruth Luond (in Aquatic Bot. 15: 20. 1983) have worked on the herbarium specimen cited, identifying it as Blyxa ahmanii L.C. Richard var. echinosperma (C. R. CL) Cook & Luond, treating under it 8 synonyms, four of which are from India, the plant's distribution being Sri Lanka, West Coast of India, "...but is absent from S.India;" (p. 13), E., Asia, up to Japan and Northern and Eastern Australia. Obviously there appears to be some confusion about the plant's circumscription. It is felt that some more studies are required before a definite opinion is cast.

**ORCHIDACEAE**

1. Epiphytic herbs

1. Terrestrial herbs:

2. Inflorescence lateral

2. Inflorescence terminal:

3. Leaves radical:

4. Flowers long-spurred

4. Flowers not spurred

3. Leaves caulescent

**VANDA**


Epiphytic, robust herbs; stems woody, terete, covered by fallen leaf bases. Leaves about 23 × 3 cm, linear, falcate, unequally 2-lobed at apices, sheathing at base, coriaceous, parallel-veined. Flowers about 5 cm across, yellowish-brown, in axillary racemes about 17 cm long; bracts small; pedicels 3 cm long; sepals about 2 cm long, unequal, oblong, tessellated within, crisped along margin; petals oblong, clawed at base; lip 3-lobed, spur conical, column clavate, foot short; anthers obovate; ovary twisted. Capsules about 8 × 1.5 cm, clavate, ribbed.

*Fl. & Fr.*: April-August.

*World distribution*: India and Sri Lanka.

*Specimen examined*: Chelama, 8-7-1963, *Ellis* 16781.

**Geodorum Jackson**


Erect herbs, about 40 cm high; pseudobulbs about 4 × 2 cm, rather conical. Leaves about 35 × 9 cm, acute at base, elliptic, glabrous, prominently 8-nerved from base; perioles sheathing forming pseudostems about 20 cm long. Flowers whitish, about 1.5 cm long, in lateral spikes about 60 cm long, pedicellate; bracts about 1.4 cm long, sheathing at base; sepals 1 × 0.4 cm, oblong, abruptly, shortly acuminate; petals about 1.2 × 1 cm, slightly 3-lobed, middle crenulate, emarginate; column about 0.5 cm long; anthers 2; stigmas broad. Capsules 4 × 2.5 cm, oblong-ovoid, smooth.

*Fl. & Fr.*: May-December.

*World distribution*: India, Sri Lanka and Malaysia.


**Habenaria Willd.**


Erect herbs, about 30 cm high; roots tuberous. Leaves radical, about 8 x 7 cm, lying flat on ground, oviolate-ovular, sessile; petioles sheathing. Flowers white, about 4 cm long, in terminal spikes up to 40 cm long, confined to ends of spikes; bracts 0.8 cm long, linear-acuminate; sepals unequal, about 1 x 0.6 cm; petals about 0.6 x 2 cm, linear-spatulate, lip 3-lobed, midlobe triangular, laterals orbicular, spur 1.5 cm long, linear-clavate; anther cells spreading; ovary 1.8 cm long, linear-ovoid, beaked, stigmas clavate. Capsules 1.8 x 0.3 cm, ovoid.

Fl. & Fr.: July-September.

World distribution: India, in lateritic-clayey soil.

Specimens examined: Mahanandi, 21-8-1965, Ellis 25401 ; Diguva-metta, 7-8-1972, Ellis 42165 ; Mahanandi, 22-8-1972, Ellis 42322.

Fischer (op. cit. 14/1) has recorded Habenaria marginata Coleb. from "...Nallamalai Hills at 1,500 ft (Fischer)." It is rather surprising that this has not been collected from Nallamalais; as such it has not been taken up for a detailed study.


Erect herbs, about 15 cm high; tubers about 1 cm across; stems about 2 cm long, underground, sheathed. Leaves 2-5, about 17 x 10 cm, radical, ovate, caudate-acuminate, plicate, glabrous, about 7-9-nerved from base, sheathing into short petioles. Flowers greenish-orange, about 0.8 cm across, in terminal spikes about 16 cm long, pedicellate; bracts about 0.8 cm long, deflexed, linear-ovate; sepals 0.8 x 0.3 cm, lanceolate, dorsal deflexed, laterals straight petals about 0.9 x 0.2 cm, spatulate, lip-clawed, limb about 0.7 cm long, bent back, oblong-orbicular, faintly emarginate; column bent; anthers oblong. Capsules about 1.5 x 0.6 cm, obovoid, ribbed.

Fl & Fr.: August-December.

World distribution: Peninsular India and Burma.

Specimen examined: Gundlabaehmeswaram, 29-11-1969, Ellis 32666.

Remarks: This is a new record for the Eastern Ghats.
Peristylus Bl. nom. cons.


Erect herbs, about 90 cm high; root tubers about 5 cm long, roots fibrous. Leaves about 20 × 6 cm, elliptic-ovate, obtuse at base, margins minutely papillate; petioles short, sheathed at base. Flowers pale green, about 1 cm long, sessile, in terminal spikes about 40 cm long; bracts 2 cm long, ovate-acuminate, minutely papillate along margins; sepals about 4 × 1.5 cm, unequal, obovate, entire; petals 0.3 cm long, lip 3-fid, spur 0.2 cm long, saccate; anthers oblong; ovary twisted. Capsules 1 cm long, oblong, ribbed.

*Fl. & Fr.*: August-November.

*World distribution*: India, Sri Lanka, China and Malaysia.

*Specimen examined*: Gundlabrahmeswaram, 24-10-1964, *Ellis* 22180.

**ZINGIBERACEAE**

1. Capsules about 1.8 × 1.2 cm; herbs suffrutescent, about 1.5 m high
   
   **Costus**

2. Capsules about 0.5 × 0.3 cm; herbs not suffrutescent, about 60 cm high
   
   **Globba**

**Costus** Linn.


Suffrutescent herbs, about 1.5 m high; stems covered with leaf-sheaths, spirally twisted; rootstocks horizontal, tuberous. Leaves about 22 × 7 cm, obovate-acuminate, cuspidate, obtuse or attenuate at base, pubescent beneath; lateral nerves parallel; petioles 0.2 cm long, sheaths broad, about 5 cm long. Flowers white, yellowish-tinged at centre, about 5 cm long, in terminal, condensed almost globose racemes about 8 cm across; bracts bright red, about 2.5 × 1.2 cm, ovate-oblong, cuspidate; calyx 2 × 1 cm, lobes cuspidate; corolla tube slightly bent, lip broad; filaments broad, petaloid; anthers linear; ovary glabrous, style filiform. Capsules about 1.8 × 1.2 cm, ovoid; seeds angular, pitted at apices.
Fl. & Fr.: July-December.

World distribution: India, Sri Lanka, Malaysia, in most deciduous forests.

Specimens examined: Gundlabrahmeswaram, 29-7-1963, Ellis 16906; Gundlabrahmeswaram, 24-10-1964, Ellis 22155; Rollapenta, 14-8-1972, Ellis 42245.

Remarks: This genus is sometimes treated under the Costaceae, thus taking a restricted view of the Zingiberaceae.

The plant, Costus speciosus has a reputation in having alkaloids of medicinal value.

Globba Linn.


Erect herbs, about 60 cm high; stems covered by sheaths, glabrous; rootstocks fibrous. Leaves 16×5 cm, pale beneath, sheaths about 25 cm long, ligules ciliate along margins. Flowers orange, 1 cm long, in terminal spikes about 8 cm long; rachises pubescent; bracts about 1.8×0.6 cm, obovate, glabrous; calyx 0.5 cm long, obconical, lobes acute; corolla about 0.8 cm long, lobes unequal, oblong, lip 2-fid, deflexed; anthers linear, winged, filaments slender; ovary glabrous. Capsules about 0.5×0.3 cm, ovoid, smooth; seeds ovoid.

Fl. & Fr.: August-October.

World distribution: India, Sri Lanka and Malaysia.

Specimens examined: Ramuapenna, Gundlabrahmeswaram, 26-8-1917, K. C. Jacob 14958; Gundlabrahmeswaram, 21-7-1963, Ellis 16958; Gundlabrahmeswaram, 24-10-1964, Ellis 22170; way to Upper Ahobilam, 29-8-1965, Ellis 25574.

HYPOXIDACEAE

Curculigo Gaertn.

Drept herbs, about 8 cm high; rootstocks tuberous, covered with leaf-bases, roots fibrous. Leaves about 10 × 3 cm, linear-elliptic, acute at apices, plicate, glabrescent; nerves prominent. Flowers yellow, up to 4 cm long, axillary, solitary, or in simple racemes about 8 cm long; male generally terminal; perianth lobes 0.3 cm long, elliptic-acuminate, sparsely long-haired without, tube about 1.5 cm long, linear, hairy; stamens 6, anthers linear; ovary glabrous, style filiform, stigmas clavate. Capsules 0.8 cm long, ovoid; seeds about 4, globose, black, grooved.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka and Malaysia.

Specimens examined: Diguvaunetta, 5-11-1906, C. A. Barber 8050; Chelama, 4-7-1963, Ellis 16708; Mahanandi, 23-8-1965, Ellis 25505.

TACCACEAE

Tacca J. R. & G. Forst. non. cons.


Drept herbs, about 1 m high; rootstocks tuberous. Leaves about 80 cm across, 3-partite, each irregularly pinnatifid, glabrous; petioles about 40 cm long, grooved, glabrous. Flowers green, 1 cm across, drooping, in umbels 8 cm across; bracts about 8, about 3 × 1 cm; bracteoles several, 10 cm long, filiform; perianth green, 1 cm long, segments oblong; stamens 6, included, filaments expanded at base, dilated and hooded above anthers at top; ovary glabrous, styles short, stigmas 3, 2-lobed. Berries about 2 × 1.2 cm, ovoid, with persistent perianth; seeds numerous, striate.

Fl. & Fr.: July-September.


Specimens examined: Ramanapenta, Gundlabrahemswaram, 26-8-1917, K. C. Jacob 14955; Gundlabrahemswaram, 21-7-1963, Ellis 16939; Krishnananda, 11-8-1965, Ellis 25440; Lukki, Diguvaunetta, 9-8-1972, Ellis 42220.
**BOTANICAL SURVEY OF INDIA**

**DIOCOREACEAE**

**Dioscorea** Linn.

1. Leaves simple:
   2. Bulbs present; stems twining to left  
      **D. bulbillera**
   2. Bulbs present; stems twining to right  
      **D. wallichii**

1. Leaves compound:
   3. Lateral leaflets prominently gibbous on one side; 
      petioles up to 21 cm long; capsules 5 x 2 cm 
      **D. hispida**
   3. Lateral leaflets not prominently gibbous; petioles 
      about 10 cm long; capsules 2.5 x 1.5 cm

4. Leaflets glabrous  
   **D. pentaphylla**
4. Leaflets densely tomentose beneath  
   **D. tomentosa**

**Dioscorea bulbifera** Linn. Sp. Pl. 1033. 1753 : Wt. 1c. 3 : t. 878. 1844 ;
Kunth in Engler, Pflanzenr. 87 : 88. 1924 ; Fischer, FPM 8 : 151. 1928 ;
Thunb. Fl. lap. 1784 (non Linn.) ; Hook f. Fl. Brit. Ind. 5 : 795. 1897

Climbing herbs; stems twining to left, terete, grooved, glabrous; 
rootstocks tuberous; bulbs round, several, in leaf axils. Leaves up 
to 15 x 14 cm, broadly ovate, abruptly acuminate, cordate at base, sinuses 
large, glabrous; nerves 7 from base, nervules parallel; petioles about 
6 cm long, purplish. Flowers white, male 0.3 cm long, in axillary, 3-4 
spikes about 12 cm long; rachises angled; perianth lobes 0.2 cm long, 
linear-ovate; stamens 6, alternating with 6 staminodes; female flowers 
0.6 cm long, in axillary spikes about 25 cm long; ovary glabrous, 
3-gonous, styles 3, bracts 0.15 cm long, broadly ovate. Capsules about 
2.2 x 1 cm, oblong-ovoid, wings rounded, glabrous; seeds 2 in each cell, 
flattened, winged.

Fl. & Fr.: September-December.


Specimen examined: Diguvametta, 8-8-1972. Ellis 42195.

Remarks: Prain and Burkhill (Op. cit, 111) have distinguished some 
varieties which are separable depending on cultivated and wild varieties. 
working on Malaysian plants further speaks of this taxon thus: ‘...It is 
convenient to distinguish some varieties...’. Studies of the taxon both in 
the field as also in MFL and CAL indicate that it is impossible to distin-
guish this highly variable taxon into distinct varieties. However, a 
monographic work is necessary to differentiate various taxa.

Climbing herbs; stems terete, sometimes grooved, twining to right; bulbs absent. Leaves up to 12 x 10 cm, broadly ovate and abruptly acuminate, cordate at base, sinus large, glabrous; nerves 9 from base, nerves and nervules prominent below; petioles about 1 cm long, grooved. Flowers yellowish, 0.1 cm long, globose, in axillary spikes about 10 cm long, bracteate; rachises anguished; perianths 0.1 cm long, ovate; stamens 6 fertile alternates with 6 sterile, included; ovary in female flowers glabrous. Capsules about 2 x 2 cm, apices depressed; seeds 4, winged.

Fl. & Fr. : October-January.

World distribution : India, Burma and Malaysia.

Specimens examined : Gundlabrahmeswaram, 24-10-1964, *Ellis* 22156 (male) and *Ellis* 22175 (female); Gundlabrahmeswaram, 28-11-1969, *Ellis* 32656 (female).


Extensive climbers; stems twining to left, glabrous, grooved; rootsstocks tuberous. Leaves 3-foliolate; leaflets about 14 x 10 cm, ovate-abruptly acuminate, laterals gibbous on one side, obtuse at base; nerves 5 from base, prominent as are reticulations; petiolules 0.7 cm long, hairy; petioles about 23 cm long, puberulous, grooved. Flowers greenish, 0.1 cm across, in spikes 0.8 cm long, several, along racemess about 50 cm long, bracteate; rachises pubescent; female flowers in solitary spikes directed downwards. Capsules 5 x 2 cm, obtuse at apices; seeds 4, winged.

Fl. & Fr. : April-November.

World distribution : India and Malaysia.

Specimens examined : Gazulapalli, 3-9-1917, K. C. Jacob 14984; Gundlabrahmeswaram, 24-10-1964, *Ellis* 22179; Krishnanandi, 21-8-1965, *Ellis* 25411 (male) and *Ellis* 25451 (female); Diguvametta, 8-8-1972, *Ellis* 42202 (female).

Climbing herbs; stems terete, grooved, twining to left, often prickly, glabrous; roots tuberous. Leaves 3-5-foliolate; petioles up to 10 cm long; middle leaflet about 10×3 cm, elliptic, suddenly acuminate, acute at base, laterals broader, gibbous on one side, obtuse at base; petiolules short, villous. Flowers greenish, in panicles about 40 cm long, unbranched in male, male 0.15 cm long, perianth 0.2 cm long, ovate, sparsely hairy; ovary pubescent. Styles 3. Capsules about 2.5×1.5 cm, winged, oblong, glabrous.

*Fl. & Fr.*: September-November.

**World distribution**: India, Sri Lanka, Malaysia and Australia.

**Remarks**: The following varieties which had been described by Prain and Burkhill (1914) have also been recognised by Fischer (*op. cit. pp. 1511-1514*), depending mainly on the nature of tubers and leaves, viz. shining in var. *linnaei* Prain & Burkhill, dark in var. *rheedei* Prain & Burkhill and rusty-pubescent in var. *communis* Prain & Burkhill. How far these varieties are distinct is rather not clear—at least from the present studies of the plants both in the field and in MH and CAL. Apparently they seem to merge imperceptibly into one another. Burkhill (*op. cit.*), incidentally, treats 5 varieties under *D. pentaphylla* from Malaysia! It is obvious that this taxon is highly variable. This being an economically important plant it is likely that these varieties are perpetuated by human interference; some might have escaped from cultivation. As this requires some detailed critical studies, this problem has not been taken up.


Climbing herbs; stems twining to left, grooved, tomentose and brown-villous; rootstocks tuberous. Leaves triphyllous, rarely 5-phyllous; petioles up to 8 cm long, tomentose; lateral leaflets up to 11×7 cm, elliptic-ovate, abruptly acuminate, gibbous on one side, middle obovate, acute at base, densely tomentose below; petioles. Flowers white, in axillary, simple (in female) or branched (in male) panicles about 30 cm long, pendulous; racibes densely pubescent; male 0.1 cm long, perianth villous; stamens 6 fertile alternating with 6 sterile, included; female
0.3 cm long, perianth villous; ovary tomentose. Capsules 2.5 x 1.5 cm, oblong; brown tomentose.

Fl. & Fr.: September-November.

World distribution: India and Sri Lanka.

Specimen examined: Gundlabrahmeswaram, 20-7-1963, Ellis 15905.

LILIACEAE

1. Climbing herbs or undershrubs:
   2. Flowers about 10 cm across; fruits oblong
   3. Flowers about 0.2 cm across; fruits globose
   1. Erect herbs:
      3. Racemes about 25 cm long, spicate; flowers white
      3. Racemes about 4 cm long, corymbose; flowers purplish-pink

Gloriosa Linn.


Climbing herbs, often extensive; stems grooved, glabrous; rootstocke tuberous. Leaves about 15 x 5 cm, ovate-acuminate, caudate, cirrhous, rounded at base, glabrous, sessile. Flowers red towards top, yellowish towards base, about 10 cm across, solitary, by the side of leaves; pedicels about 12 cm long; perianth petaloid, about 7 x 1 cm, undulate crisped along margins, united at base; stamens 6, shorter than perianth, anthers linear; ovary glabrous, style reflexed, 3-branched at apex. Capsules about 3 x 0.8 cm, oblong; seeds globose.

Fl. & Fr.: July-October.

World distribution: India, Sri Lanka, Malaysia and Australia.

Specimens examined: Chelama, 17-10-1964. Ellis 22084; way to Vishnunandi, Mahanandi, 21-8-1965, Ellis 25407.

Asparagus Linn.


Climbing undershrubs; stems terete or faintly angled, spinous, glabrous; rootstocks tuberous, often creeping. Cladodes about 3 cm long,
in clusters, acicular, triquetrous or flattened, falcate; stipules scarious; leaves modified into scales. Flowers white, 0.2 cm long, in axillary racemes up to 12 cm long, bracteate; pedicels 0.2 cm long, jointed; perianth 0.2 cm long, oblong; stamens 6, included, filaments dilated; ovary trigonous, style columnar, stigmas 3. Berries 0.5 × 0.5 cm, globose, ripen red; seed 1.

Fl. & Fr.: July-October.

World distribution: Africa, India, Sri Lanka, Malaysia and Australia.

Specimens examined: Chelama, 5-7-1963, Ellis 14743; Gundalabraheswaram, 24-10-1964, Ellis 22186.

**Chlorophytum** Ker-Gawl.

1. Leaves 40×5 cm; anthers longer than filaments
   1. Leaves 25×1.5 cm; anthers as long as filaments


Erect herbs, about 50 cm high; rootstocks fibrous. Leaves about 40×5 cm, radical, linear-ovate or obovate, sheathed at base into petioles, glabrous. Flowers white, about 1 cm long, in spikes about 35 cm long, bracteate; pedicels jointed below the middle; perianth 1.2 cm long, elliptic-ovate; stamens 6, filaments shorter than anthers; ovary glabrous. Capsules 0.8×0.8 cm, depressed-globose, 3-winged; seeds black, flattened.

Fl. & Fr.: May-October.

World distribution: India and Burma.

Specimen examined: Gundalabraheswaram, 20-7-1963, Ellis 16920.


Erect herbs, about 35 cm high; roots cylindric, tuberous. Leaves 25×1.5 cm, radical, linear-lanceolate, acuminate, sheathing at base, glabrous. Flowers white, 0.5 cm across, in terminal scapes about 30 cm long; pedicels jointed at the middle; bracts lanceolate; perianth 6, about 0.5 cm long, oblong, parallel-nerved; stamens 6, filaments as long as anthers; ovary glabrous, style slender, stigmas simple. Capsules 0.6 cm across, obovoid, glabrous; seeds black, flattened.
Fl. & Fr.: June-October.

World distribution: Middle East, India and Burma.

Specimens examined: Chelama, 5-7-1963, Ellis 16742; Lukki, Diguvametta, 9-8-1972, Ellis 42223.

IPHIGENIA KUNTH, nom. cons.


Erect herbs, about 20 cm high; rootstocks tuberous. Leaves about 20 x 1 cm, linear-acuminate, sheathing at base, glabrous. Flowers purplish-pink at base and green at top, 0.5 cm long, terminal, solitary or in corymb 1 cm long; pedicels up to 6.5 cm long; bracts linear; perianth 0.8 cm long, linear-acuminate, obovate, narrowed at base; stamens 6, filaments flattened, anthers 2-celled; ovary glabrous, styles 3, stigmas globose. Capsules 1.5 x 0.5 cm, oblong; seeds orbicular.

Fl. & Fr.: July-September.

World distribution: India, Sri Lanka, Philippines and Australia.

Specimens examined: Diguvametta, 11-8-1921, C.E.C. Fischer 4654; Mahanandi, 22-8-1965, Ellis 25501; Chinnamantrala, Eastern Nallamalai, 17-8-1972, Ellis 42293.

AGAVACEAE

SANSEVIERIA THUMB, nom. cons.


Fleshy, erect herbs about 70 cm high; stemless; rootstocks rhizomatous. Leaves about 70 x 3.5 cm, more or less cylindric, channelled above, sheathed at base. Flowers pale green, 1.5 cm long, in clusters of about 4, along a terminal scape about 70 cm long, shortly pedicellate; bracts about 0.5 cm long, scarious; perianth tube 1 cm long, lobes linear; stamens 6, epiphyllous on perianth lobes; ovary glabrous, style filiform. Capsules about 0.6 x 1 cm, prominently hilobed; seeds angled, hairy.

Fl. & Fr.: June-August.

World distribution: India, in dry localities.

Specimen examined: Srissailam, 16-7-1963, Ellis 16901.
SMILACACEAE

Smilax Linn.


Shrubby, tendrillar climbers; stems zig-zag, angled, grooved, sparingly prickly. Leaves about 13 × 8 cm, ovate, orbicular or elliptic-acuminate or emarginate, rounded or cordate or acute at base, coriaceous, glabrous; nerves 3-5 from base, reticulations prominent; petioles 1 cm long, curved; stipules winged; leaf base modified into tendrils. Flowers pale green, 0.3 cm long, pedicellate in pedunculate umbels about 3 cm across, bracteate; perianth 0.5 × 0.15 cm, linear-ovate, generally recurved; stamens in male flowers 6, included, anthers recurved; ovary in female flowers glabrous, stigmas recurved. Fruits 0.8 × 0.8 cm, globose; seeds 1-2.

Fl. & Fr.: September-March.

World distribution: India, Sri Lanka, Burma and Malaysia.

Specimen examined: Gundlabrahmeswaram, 21-7-1963, Ellis 16936.

COMMELINACEAE

1. Inflorescences terminal

1. Inflorescences axillary:

2. Bracteoles biseriate:

3. Inflorescences enclosed in leaf-sheaths

3. Inflorescences not enclosed in leaf-sheaths

2. Bracteoles not biseriate

MURDANNIA Royce, nom. cons.

1. Sheaths very prominently winged

1. Sheaths not prominently winged

Erect herbs, about 18 cm high; stems tufted, sheathed at base; roots tuberous. Leaves about 16 x 3 cm, linear, acute, apiculate, often filiform, slightly tunicate; sheaths up to 3 cm long, prominently winged. Flowers violet, 0.3 cm long, in terminal panicles about 6 cm long, scariously ochraceo-bracteate, bracteolate; pedicels about 0.8 cm long; sepals 0.2 cm long, elliptic; petals 0.3 cm long, obovate; stamens 3, included, filaments connate at base; ovary glabrous, style slender. Capsules 0.3 cm long, ovoid, shining; seeds many, angled, smooth.

Fl. & Fr.: August-January.

World distribution: India and Sri Lanka.

Specimen examined: Way to Sunnipenta, Srisailam, 5-12-1969, Ellis 32704.


Erect or procumbent herbs, about 20 cm high; stems glabrous, often rooting at nodes; roots fibrous. Leaves up to 8 x 0.5 cm, linear, acute, rounded at base, glabrous; sheaths sparsely hairy. Flowers pale purple, 0.5 cm across, in terminal, panicleate cymes about 8 cm long, bracteate; sepals 0.2 cm long, ovate; petals 0.4 cm long, orbicular stamens included, 2 fertile, filaments hairy; ovary glabrous. Capsules 0.3 cm across, globose; seeds 2 in each cell, truncate at one end and orbicular at the other, tuberculat.

Fl. & Fr.: June-October.

World distribution: India, Sri Lanka, China and Malaysia.

Specimen examined: Ramanapenta, Gundlabrahmeswaram, 31-8-1917, K. C. Jacob 14977; Chelama, 17-10-1964, Ellis 22077; Gundlabrahmeswaram, 24-10-1964, Ellis 22167; Mahanandi, 22-8-1965, Ellis 25488.

Amischophacelus Rolla Rao & Kammathy


Prostrate to procumbent herbs, running to about 40 cm long; branches glabrous, often rooting at nodes. Leaves up to 12×1 cm, linear-acuminate, rounded at base, often falcate, glabrous; sheaths 0.6 cm long, scarious, ciliate along margins. Flowers purple, 1 cm long, in axillary fascicles about 1.5 cm long, bracteolate; sepals 0.8 cm long, spatulate-acuminate, ciliate along margins at apices; corolla lobes ovate, tube 0.4 cm long; stamens 6, filaments blue, bearded; ovary glabrous. Capsules 0.6 cm long, oblong, beaked; seeds about 4, 4-angled, conical, truncate at base, prominently pitted.

Fl. & Fr.: August-December.

World distribution: Tropics from India, Sri Lanka and Australia.

Specimens examined: Srisailam, 13-7-1963, Ellis 16851; Chelama, 7-12-1963, Ellis 17966; Chelama, 16-10-1964, Ellis 22049; Ahobilam, 29-8-1965, Ellis 25568.

Remarks: Rolla Rao and Kammathy (loc. cit.) have erected the genus Amischophaceus, separable from Cyanotis D. Don depending on, (i) sessile inflorescences enclosed in leaf-sheaths, (ii) a transparent, linear, inconspicuous bracteole, and (iii) capsules pointed or depressed. They adduce also the chromosomal evidence, viz. 2n=20 in Amischophaceus, and 2n=24 in Cyanotis D. Don. Bakhuizen (Fl. Java 3: 14 et 659. 1968), however, treats it still under Cyanotis D. Don.

Cyanotis D. Don, nom. cons.

1. Plants cobwebby-woolly throughout
1. Plants not cobwebby-woolly:
   2. Roots tuberous; plants pubescent;
      leaves up to 15 cm long
   2. Roots not tuberous; plants almost glabrous;
      leaves about 5 cm long

Erect or decumbent herbs, about 10 cm long (rarely up to 30 cm long); stems terete, striate, sparsely cobwebby-woolly. Leaves up to 4x0.7 cm, linear-oblanceolate, acute, rounded at base, cobwebby-glabrescent; sheaths 0.6 cm long. Flowers pinkish, 0.3 cm long, enclosed in falcate, linear-ovate, cottony-woolly bracteoles about 0.5 cm long, in terminal and axillary, scorpionid cymes about 1 cm long; bracts 1.5 cm long; bracteoles ovate, falcate, cobwebby; filaments hairy. Capsules 0.6 cm across, almost glabrous; seeds 2, oblong, rugose.

Fl. & Fr.: July-December.

World distribution: India.

Specimens examined: Way to Puthalagunga, 20-10-1964, Ellis 22112; Upper Ahobilam, 29-8-1965, Ellis 25586.


Erect or procumbent herbs, up to 90 cm long; stems densely pubescent; roots fibrous, pubescent, often tuberous. Leaves up to 15x2 cm, dark pink on lower surface, radical and cauline, linear-acuminate, apiculate, obtuse at base, softly pilose; sheaths up to 2.5 cm long, prominent. Flowers purple, 0.3 cm long, enclosed in 2-seriate, foliaceous, falcate, softly pilose, bracteoles 0.5x0.2 cm, in axillary and terminal, scorpionid cymes 2.5 cm long; peduncles 1 cm long; sepals small, linear, villous; corolla lobes 0.5 cm long, ovate, tube short; filaments villous; ovary glabrous, styles rather thickened. Capsules 0.3x0.2 cm, hairy; seeds 2 in each cell, brown.

Fl. & Fr.: July-December.

World distribution: India and Sri Lanka.

Specimens examined: Chelama, 4-7-1963, Ellis 16711; Lukki, Diguwametta, 9-8-1972, Ellis 42219.


Prostrate or procumbent herbs, about 20 cm long; stems glabrous or sparsely ciliate, often rooting at nodes. Leaves up to 5x0.8 cm, ovate,
rounded at base, hairy along margins; sheaths about 0.6 cm long. Flowers blue, 0.3 cm long, in scorpoid cyms about 2.5 cm long; bracteoles 1 cm long, falcate, linear-ovate, ciliate along margins; sepals 0.3 cm long, linear-ovate, sparsely hairy; petals ovate, connate at base; stamens 6, included, filaments bearded; ovary glabrous. Capsules 0.3 cm long, triangular; seeds conical, 4-sided, pitted, ridged.

Fl. & Fr.: August-December.

World distribution: Tropical Africa, India, Sri Lanka, Burma and Malaysia.

Specimen examined: Mahanandi, 22-8-1965, Ellis 25461.

COMMELINA Linn.

1. Leaves almost as broad as long, broadly ovate . . . . C. benghalensis

1. Leaves longer than broad:

2. Spathes funnell-shaped:

3. Inflorescences subtended by 2 smaller leaves; leaf-sheaths rufous-haired along margins . . . . C. erecta

3. Inflorescences not subtended by 2 smaller leaves; leaf-sheaths rufous-haired along margins . . . . C. paludos a

2. Spathes broadly cordate at base, boat-shaped:

4. Seeds ovoid:

5. Seeds smooth . . . . C. hatskarill

5. Seeds tuberculate . . . . C. difusa

4. Seeds broader than long, truncate at both ends with appendages . . . . C. attenuata


Diffuse, procumbent or prostrate herbs, often rooting at nodes; stems grooved, sparsely pilose. Leaves up to 8x6 cm, ovate, rounded to cordate at base, pilose, shortly petiolate; sheaths 1.5 cm long, hairy, hirsute along margins. Flowers blue, 0.6 cm across, in axillary cyms 1 cm long, enclosed in spathaceous, puberulous, sparsely hirsute bracts about 1.5 cm broad; sepals small; petals blue, ovate-orbicular, clawed at base; ovary glabrous. Capsules 0.6 cm across, ovoid, membranous; seeds 5, pitted.

Fl. & Fr.: July-December.


Remarks: Cleistogamous flowers which are subterranean have been reported in this species by several workers.


Erect or procumbent herbs, about 40 cm high, rather robust, sometimes slender; stems glabrous. Leaves up to 17 x 4 cm, elliptic-acuminate, rounded at base, glabrous or softly pilose; sheaths about 2.5 cm long, sometimes linear-loose along margins. Flowers pale violet, in 3-6-flowered racemes 1 cm long; spathe about 1 cm across, cuculate, about 5, towards ends of branches, along with 2-4 smaller leaves; sepals small, ovate; petals 0.3 cm long, ovate-orbicular, clawed at base; stamens included; ovary glabrous. Capsules about 0.6 cm across, 2-celled, with one seed in each; seeds hemispherical, pitted.

*Fl. & Fr.*: July-December.

World distribution: India.


Erect or procumbent, robust herbs, rooting at nodes; stems branched, glabrous; roots fibrous, rufous-haired. Leaves up to 15 x 4 cm, ovate-acuminate, acute or obtuse at base, glabrous; sheaths 2.5 cm long, rufous-haired along margins towards apexes. Flowers blue, 0.6 cm long, in about 6-flowered racemes 1 cm long, enclosed in spathe; spathe about
2×2.5 cm, crowded, triangular, sessile; peduncles small, sepals small, ovate; petals 0.6 cm long, ovate-elliptic, clawed at base; stamens included; ovary glabrous. Capsules about 0.5 cm across, ovoid, 3-loculed with one seed in each; seeds smooth.

Fl. & Fr.: August-December.

World distribution: India, Sri Lanka and Malaysia.

Specimens examined: Ramanapenta, Gundlabrahmeswaram, Jacob 14967; Chelama, 16-10-1964, Ellis 22039.


Prostrate or decumbent herbs, often rooting at nodes; stems glabrous or glabrescent. Leaves up to 7×2 cm, elliptic-ovate, rounded at base, glabrous; sheaths about 1 cm long, rather inflated. Flowers blue, in axillary cymes about 1 cm long, 3-flowered; spathes 1.5 cm long, rounded at base; peduncles short; sepals small, ovate-spathulate, glabrous; petals 0.6 cm long, ovate-elliptic, clawed at base; stamens included, filaments glabrous; ovary glabrous. Capsules 0.6 cm across, membranous; seeds ovoid, conical, smooth.

Fl. & Fr.: September-December.

World distribution: India.

Specimen examined: Chelama, 8-12-1963, Ellis 1949.


Decumbent to prostrate herbs, running to about 60 cm long; stems glabrous, rooting at nodes. Leaves about 6.5×2.5 cm, elliptic-acuminate, rounded at base; sheaths about 1.5 cm long, glabrous, ciliate along margins. Flowers blue, 0.5 cm across, generally solitary, sometimes 2-3, in lateral cymes 0.7 cm long, enclosed in spathes; peduncles about 2 cm long, puberulous; spathes about 2 cm long, ovate-lanceolate or acuminate, rounded at base; calyx small, ovate; petals orbicular, clawed at base; ovary glabrous. Capsules 0.4 cm across, glabrous; seeds about 5, tubercled.

Fl. & Fr.: October-December.

World distribution: South Africa, India, Sri Lanka, China and Malaya Peninsula.

Specimen examined: Chelama, 16-10-1964, Ellis 22039.

Prostrate or procumbent herbs, up to 30 cm long; stems profusely branched, glabrous, often rooting at nodes. Leaves about 10 × 0.6 cm, linear-acuminate, rounded or obtuse at base, glabrous; sheaths 1 cm long, ciliate along margins. Flowers blue, 0.3 cm across, solitary or 2, in cymes enclosed in spathes; spathes up to 4.5 × 1.6 cm, ovate-acuminate, glabrous without, sparsely hairy within; peduncles up to 2 cm long; calyx 0.15 cm long, ovate; petals small; stamens included; ovary glabrous. Capsules 0.5 cm across; seeds 2, doliform with appendages on either side and with one large pit in the centre.

**Fl. & Fr.**: June-December.

**World distribution**: India and Sri Lanka.

**Specimens examined**: 'Nallamalai Hills', 13-8-1921, C. E. C. Fischer 4660; Chelama, 16-10-1964, Ellis 22056; Mahanandi, 22-8-1965, Ellis 25463; Upper Ahobilam, 29-8-1965, Ellis 25565.

### PALMAE (ARECACEAE)

1. Climbing shrubs
2. Erect shrubs or trees:

1. Leaflets broadly obovate; stems smooth
2. Leaflets linear; stems covered with persistent perioles

**Calamus**


Shrubby, extensive climbers, reaching lengths of several metres; stems spinous or prickly. Leaves pinnatisect, about 1 m long; leaf-sheaths spinous, rachises flattened, strongly armed below; leaflets about 40 × 2 cm, linear-acuminate, ciliate and bristly along margins. Flowers small, unisexual, in spikelets 2.5 cm long. Biseriate in male, bracteolate; calyx 0.5 cm long. Cupular, 3-toothed; petals 3, free or connate; stamens 6, filaments connate; ovary in female flowers retrosely scaly, stigmas 3. Fruits 0.9 × 0.9 cm, globose, covered by rhomboidal, shortly toothed scales; seed 1, subglobose.

**Fl. & Fr.**: March-August.
World distribution: India and Sri Lanka.

Specimens examined: Mahanandi, 24-8-1965, Ellis 25527; Mahanandi, Nallamalais, March 1883, J. S. Gamble 10930.

Remarks: It is remarkable that Calomys ratang Linn is confined to Krishnanandi near Mahanandi; it is not seen anywhere else in Nallamalais. Krishnanandi is fed by the stream formed from the hot spring at Mahanandi.

CARYOTA Linn.


Palms about 10-15 m tall; stems about 40 cm in diameter, smooth, marked with scars of fallen leaves. Leaves about 5 x 3 cm, bipinnate; pinnae about 1.5 m long; leaflets about 18 x 13 cm, alternate, truncate at top with margins irregularly serrate, cuneate at base, terminal trapeziform. Flowers yellow, about 1 x 0.8 cm, unisexual, in pendulous spadix about 3 m long; spathes long; male flowers—stamens numerous; female flowers ovary glabrous. Fruits 1.5 x 1.5 cm long, globose; seed 1.

Fl. & Fr.: October–December.

World distribution: India, Sri Lanka and Malaysia.


PHOENIX Linn.


Gregarious shrubs to stunted trees, about 2 m tall; stems short, covered with persistent leaf-sheaths. Leaves about 1.5 m long; rachis angular; leaflets about 25 x 0.8 cm, linear-acuminate, obtuse at base, pulvinate, basal ones turning spinous. Flowers pale yellow, 0.8 cm long, in spadix about 30 cm long, encased in leathery spathes about 35 cm long; male flowers—calyx cupular, 3-toothed; petals 3, 0.5 cm long, ovate; stamens about 6; female flowers—rather orbicular, petals orbicular; staminodes present; ovary with 3 distinct carpels. Drupes about 1.5 cm long, oblong, ripen black; seeds grooved ventrally.
Pl. & Fr.: March-May.

World distribution: India.

Specimens examined: Gundlabrahmeswaran, 31-3-1965, Ellis 23817 (male) and Ellis 23818 (female).

Remarks: At CAL Beddome's collection from 'Nalliyamallys', dt. '7/81', is present, annotated in pencil as "Ph humilis R."

ARACEAE

1. Aquatic, floating herbs

   1. Terrestrial herbs:
      2. Leaves 3-partite with segments pinnatisect
      3. Leaves entire

Pistia Linn.


Floating, stoloniferous herbs; stems absent; roots tufted, profuse. Leaves about 5 x 4 cm, several, spirally arranged, obovate-ovate, rounded or retuse at apex, puberulous on both surfaces. Flowers pale green, unisexual; spathes 0.3 cm long, tubular below, cucullate above; spadix 0.8 cm long, adnate to tube within; male flowers at top of spadix, stamens connate; neuters in a whorl below the male; female flowers solitary, naked; ovary glabrous, stigmas discoid. Berries 0.5 cm long, avoid; seeds 4-5, doliform, rugose.

Fl. & Fr.: September-December.

World distribution: Pantropic.

Specimen examined: Srisailam, 15-7-1963, Ellis 16855.

Plesmonium Schott


Erect herbs, about 80 cm high; roots tuberous. Leaves about 60 x 40 cm, 3-partite, each segment pinnatisect, glabrous; petioles about 45 cm long; spathes purple within, about 11 cm long, ovate, convolute-cucullate, glabrous. Flowers pale green, unisexual, 0.5 cm long; on
stipitate spadix about 4 cm long; peduncles about 15 cm long; male flowers 0.1 cm long, towards apex of spadix, stamens 5, anthers connate, adnate to connectives; female flowers 0.4 cm long, towards base of spadix, ovary glabrous, stigmas capitate; neuters white, ovoid, in the centre of spadix. Berries 0.6 × 0.6 cm, ovoid, glabrous; seeds 2, angled.

*Fl. & Fr.*: March-August.

*World distribution*: India, in rather dry localities, in dry deciduous forests.

*Specimen examined*: Dhongabhavikonda, Chelama, 6-7-1963, *Ellis* 16772.

**Theriophorum Bl.**


Erect herbs, about 30 cm high; roots tuberous. Leaves about 7 × 4 cm, triangular, trifoliate, hastate or sagittate, glabrous; petioles pinkish, up to 15 cm long, channelled above. Flowers purple, on shortly stipitate spadix about 5 cm long; spathe greenish, about 11 cm long, cucullate, cuspidate, truncate at base, margins undulate, crenate; male flowers with 2 stamens, anthers beaked; female flowers with ovaries glabrous, stigmas sessile; neuters about 0.15 cm long, elongated. Berries 0.5 cm long; seeds globular.

*Fl. & Fr.*: July-August.

*World distribution*: India.

*Specimen examined*: Chelama, 5-7-1963, *Ellis* 16766.

**APONOGETONACEAE**

**Aponogeton Linn. f. nom. cons.**


Submerged, aquatic herbs; rhizomes up to 3 cm across; roots fibrous. Leaves radical, about 14 × 3 cm, floating, linear-oblong, oblong,
obtuse or cordate at base, glabrous, punctate; midrib broad, about 6 from base, nerves parallel; petioles up to 50 cm long. Flowers pale purple, 0.3 cm long, in terminal spikes about 8 cm long; peduncles about 25 cm long; perianth segments 1-3, 0.2 cm long, spatulate, tube 0.1 cm long; stamens 6, in two whorls, included; ovary apocarpous, 3-6 carpelled, styles coiled. Follicles 0.3 cm long, 3-6, beaked; seeds oblong, striate.

Fl. & Fr.: July-December.

World distribution: Tropics from India, Sri Lanka and Australia.

Specimens examined: Rudravaram, 31-8-1911, K. C. Jacob 14995; Inagundum river, Diguva Matta, 16-11-1969, Ellis 32387; Diguva Matta, 6-8-1972, Ellis 42150.

NAJADACEAE

Najas Linn.


Submerged, extensive herbs; stems profusely branched, filiform, faintly angled, grooved, glabrous. Leaves about 1.5 x 0.1 cm, alternate, opposite or ternate, linear, spinulose along margins, auricled at base. Flowers greenish, 0.3 cm long, unisexual, solitary or in clusters of 2-4; male flowers with two whorls of perianth lobes, stamen 1, attached to inner perianth; female flowers—perianth tubular when present, ovary 1-carpellate, glabrous, stigmas 2. Achenes 0.3 cm long, oblong with persistent style, arculate.

Fl. & Fr.: June-October.

World distribution: India and Sri Lanka.

Specimen examined: Srisailam, 13-7-1963, Ellis 16856.

ERIOCAULACEAE

Eriocaulon Linn.


Marshy plants, erect, about 10 cm high; stems very short or absent. Leaves pinkish, about 10 x 1.5 cm, linear- acuminate, acute at base,
membranous, about 7-nerved from base. Flowers white, often with a black tinge, unsexual, in globose heads about 0.6 cm across; peduncles up to 10 cm long, about 5 ribbed; involucral bracts 0.3 cm long, obovate, scarious; male with sepals 0.2 cm long, ovate, hairy at top, petals minute, stamens 6; female with sepals 3, 0.2 cm long, linear, hairy at apexes; ovary stipitate, 3-lobed, styles 3. Capsules 0.3 cm long; seed 1, smooth.

Fl. & Fr.: Almost throughout the year.

World distribution: Pakistan, India, Sri Lanka and Burma.

Specimens examined: Srisailam, 15-7-1963, Ellis 16892; Sunnipenta-vagu, Srisailam, 21-10-1964, Ellis 22129; Srisailam, 1 12 1969, Ellis 32703.

**Cyperaceae**

1. Nuts pearly-white, shining, 0.5 cm across, globose
   2. Leaf-blades absent
   3. Leaf-blades present:
   4. Stems filiform, tufted
   5. Stems not filiform:
   6. Glumes spirally arranged
   7. Glumes not spirally arranged

**Scleria Berg.**

1. Nuts smooth; leaves 0.4 cm broad; leaf-sheaths clasping the stems
   2. Nuts faintly rugose; leaves 0.8 cm broad; leaf-sheaths loose, not clasping the stems


Erect, marshy herbs about 60 cm high; stems trigonous; roots rhizomatous. Leaves 12×0.4 cm, linear, sparsely scabrous below; sheaths about 10 cm long, clasping the stem, faintly puberulous. Flowers greenish, unsexual, in terminal, loose panicles about 30 cm long; bracts 0.5 cm long, filiform; glumes in female 0.5×0.3 cm, ovate, apiculate, keeled on back; male flowers with narrower glumes. Nuts 0.5 cm long, pearly-white, shining, globose or faintly trigonous.

Fl. & Fr.: June-October.

* Kern is followed in this treatment of the Cyperaceae.
World distribution: India, Sri Lanka and Malaysia.

Specimens examined: Gundlabrahmeswaram, 24-10-1964, Ellis 22185; Chinnamantrala, Eastern Nallamalais, Ellis 42289.


Erect, marshy herbs, about 60 cm high, stems slender, triangular, scabrous on angles; roots fibrous. Leaves 40 × 0.8 cm, linear, scabrous beneath; sheaths loose, hyaline, hirsute or glabrous. Flowers greenish, unisexual, in terminal panicles 12 cm long; bracts 2 cm long, filiform; male spikelets oblong-lanceolate; female ovate; glumes 0.6 cm long, ovate acuminate, keeled on back. Nuts white, shining, globose or obscurely trigonous, faintly rugose.

Fl. & Fr.: June-October.

World distribution: India, Sri Lanka, Malaysia and Queensland.

Specimen examined: Gundlabrahmeswaram, 21-7-1963, Ellis 16948.

**ELEOCHARIS R. BR.**


Rigid, erect, marshy herbs, about 20 cm high; stems about 20 cm high, tufted, striate; sheaths pinkish at base, appressed. Flowers greenish, several, in terminal, globose spikelets about 0.5 × 0.3 cm; bracts bristle at base; glumes 0.2 × 0.1 cm, broadly ovate, membranous; stamens 2–3; styles 2–fid. Nuts 0.1 cm across, biconvex, obovate, smooth.

Fl. & Fr.: Throughout the year.

World distribution: Pantropic.

Specimen examined: Bairani, Diguvmatte, 7 & 2 1972, Ellis 42185.

**BULBOSTYLIS Kunth, nom. cons.**


Erect herbs, about 30 cm high; stems tufted, terete, grooved, filiform. Leaves about 10 cm long; capillary; sheaths long-ciliate along oblique mouth. Spikelets 0.3 cm long, in terminal clusters about 0.8 cm across; bracts up to 2 cm long, capillary; glumes brown, 0.2 cm long, keeled, ovate, mucronate, obtuse at base, scarios, faintly puberulous; stamens 3, small; ovary trigonous, glabrous, stigmas 3. Nuts white, 0.1 cm long, trigonous.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Throughout the world.


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**Fimbristyli** Vahl, nom. cons.

1. Leaves filiform; spikelets solitary, compressed
   2. Leaves linear; spikelets several, ovoid


Erect herbs, about 40 cm high; stems tufted, about 40 cm high, base thickened with leaf-sheaths. Leaves about 30 x 0.1 cm, filiform, scabrous or not. Flowers greenish, in a single, terminal, compressed spikelets 1.5 x 0.6 cm; glumes distichous, ovate, mucronate, keeled without, lowest awned; styles trigonous, stigmas 3. Nuts 0.3 x 0.2 cm, trigonous, trabeculate.

*Fl. & Fr.*: July-January.

*World distribution*: Pantropic.


Erect herbs, about 30 cm high; stems trigonous, striate; rootstocks hbrous. Leaves about 15 cm long, linear, glabrous. Flowers greenish, in terminal, dichotomously branched panicles about 15 cm across; peduncles about 5 cm long; bracts about 4 cm long; spikelets 1 x 0.5 cm, oblong-ovoid; glumes 0.3 x 0.2 cm, pale brown, mucronate; stamens 3; styles ciliolate, stigmas 2. Nuts pale white, 0.1 x 0.1 cm, obovate, biconvex, striate.

Fl. & Fr. : April-October.

World distribution : Pantropic.

Specimens examined : Chelama, 8-12-1963, Ellis 18006; Chelama, 17-10-1964, Ellis 22079.

Cyperus Linn.

1. Inflorescences of condensed heads :

2. Inflorescences pedunculate :

3. Glumes prominently winged on back .. C. pseudohylism- 5iodes

3. Glumes not prominently winged on back .. C. compactus

2. Inflorescences not pedunculate :

4. Glumes prominently many parallel-nerved, 0.5 x 0.4 cm .. C. dubius

4. Glumes faintly few-nerved, 0.3 x 0.2 cm :

5. Glumes faintly serrulate and pilose along margin; heads not lobed .. C. kyllingia

5. Glumes entire, glabrous; heads 3-lobed .. C. tricpes

1. Inflorescences of elongated spikes :

6. Inflorescences simple .. C. cyperinus

6. Inflorescences compound :

7. Stems spongy .. C. pangorei

7. Stems not spongy :

8. Inflorescences prominently compressed :

9. Inflorescences greenish or greyish-brown; glumes faintly apiculate :

10. Inflorescences with flowers close; glumes brown .. C. polystachyos

10. Inflorescences with flowers distant; glumes white .. C. compressus
9. Inflorescences reddish-brown; glumes prominently apiculate
   \hspace{1cm} C. castanens

8. Inflorescences not prominently compressed:
   11. Inflorescences with distant flowers \hspace{1cm} C. distans
   11. Inflorescences with closely arranged flowers:
      12. Glumes prominently apiculate, slightly falcate \hspace{1cm} C. nutans
      12. Glumes not apiculate, not falcate:
         13. Glumes very prominently scarios, as long as broad \hspace{1cm} C. iria
         13. Glumes slightly scarios alone margins, longer than broad:
    14. Nuts papillose \hspace{1cm} C. tenusispica
    14. Nuts smooth:
    15. Spikelets 3 cm long \hspace{1cm} C. corunobus
    15. Spikelets 1 cm long \hspace{1cm} C. helianus


Erect, marshy herbs, about 40 cm high; stems simple, tufted. Leaves about 40 x 0.7 cm, linear, sheathing at base. Flowers 0.3 cm long, in globose, umbellate spikelets 0.8 cm across; common peduncle up to 10 cm long; individual peduncles up to 2 cm long; bracts up to 2 cm long, foliar; bracteoles ovate-caudate, hyaline towards margins; glumes brownish, keeled, strongly winged on the back, scarios along margins; stamens as long as glumes, filaments dilated; ovary triangular. Nuts 0.3 cm long, linear, prominently triangular.

\textit{Fl. & Fr.}: Throughout the year.

\textit{World distribution}: Madagascar, India and Burma.

\textit{Specimen examined}: Chenchukunta, Diguwametta, 18-11-1969, Ellis 32512.


Erect herbs, about 1 m tall; stems terete, striate, spongy; rootstocks fibrous. Leaves about 50 x 0.8 cm; sheaths pinkish, up to 25 cm long.
Spikelets 0.8 cm long, several, in almost globose heads about 2 cm across, in compound umbels 15 cm across; peduncles up to 5 cm long, common one up to 20 cm long; foliar bracts about 15 × 1 cm, spongy, linear, scabrous along margins; glumes brown, 0.4 cm long, oblong, hyaline towards margin. Nuts muriculate.

Fl. & Fr.: Throughout the year.

World distribution: Mauritius Islands, India, Sri Lanka, China and Malaysia.

Specimens examined: Krishnanand, 24-8-1965, Ellis 25529; Mahanandi, 21-8-1972, Ellis 42317.


Erect, marshy herbs, about 30 cm high; stems about 30 cm high; stems about 30 cm high, triquetrous, base bulbous with sheaths. Leaves 15 × 0.4 cm, linear; sheaths pinkish. Flowers green, 0.5 cm long, in dense, lobed heads about 2 × 1.5 cm; floral bracts up to 30 cm long; spikelets many; glumes 0.4 × 0.3 cm, broadly ovate, parallel-nerved; stamens 3; stigmas 3. Nuts 0.2 × 0.1 cm, trigonous, ellipsoid, apiculate.

Fl. & Fr.: Throughout the year.


Specimen examined: Gundljabrahmeswaram, 29-11-1969, Ellis 32670.


Erect, marshy herbs, about 30 cm high; stems about 20 cm high; trigonous, glabrous; rootstocks rhizomatous, reddish. Leaves about 15 × 0.5 cm, linear; sheaths 5 cm long, glabrous. Flowers green, 0.2 cm long, several, in terminal, ovoid heads 1 cm long; foliar bracts about 15 × 0.4 cm, linear; glumes 0.2 cm long, ovate-acuminate, 2-toothed at apices, slightly serrulate and hairy along margins. Nuts brown, biangular.

Fl. & Fr.: Throughout the year.
World distribution: Africa, India, Sri Lanka and Malaysia.

Specimen examined: Sunnipentavagu, Srisailam, 27-10-1964, Ellis 22131.


Erect, marshy herbs, about 20 cm high; stems tufted, slightly trigonous, base with sheaths. Leaves 10 x 0.3 cm, linear. Flowers greenish, 0.2 cm long, in capitate, sessile, often 3-lobed heads about 1 cm long; foliar bracts 5 cm long, linear; glumes about 0.15 cm long, ovate-oblong, acuminate, about 7-nerved; stamens 2; stigmas 2, glabrous. Nuts 0.1 x 0.05 cm, biconvex, laterally compressed, apiculate.

Fl. & Fr.: Throughout the year.

World distribution: Africa, India, South China and Australia.

Specimen examined: Chelama, 9-7-1963, Ellis 16816.


Marshy herbs, up to 45 cm long; stems glabrous; rhizomes woody. Leaves about 30 x 0.5 cm, sheathing at base, pinkish. Spikelets 2 cm long, in umbels about 4 cm long; foliar bracts about 15 x 0.5 cm; glumes brown, 0.3 cm long, rather falcate, prominently nerved. Nuts 0.2 cm long, faintly angled, oblong.

Fl. & Fr.: June-September.

World distribution: India, Sri Lanka and Pacific Islands.

Specimens examined: Chelama, 4-7-1963, Ellis 16733; Chelama, 6-7-1963, Ellis 16771.

op. cit. 42, t. 7. f. 4. 1773 var. pangorei (Rottb.) C. B. Cl. in Hook. f. FBI 6: 612. 1893.

Frequent, marshy herbs, about 1 m high; stems trigonous; roots rhizomatous, woody. Leaves about 8 cm long, linear-ovate, prominent sheaths at base pinkish, about 25 cm long. Spikelets brown, up to 2 cm long, in terminal, umbrilicate pedicels 15 cm long; peduncles up to 10 cm long; bracteate leaves 15 x 0.4 cm, linear-ovate, rounded at base; glumes pinkish-brown, 0.3 cm long, obovate-oblong, obtuse at base, scarious along margins; filaments dilated: ovary glabrous. Nuts 0.2 cm long, triangular.

Fl. & Fr.: September-December.

World distribution: India, Sri Lanka and Malaysia.

Specimen examined: Bairani river, Diguva, 17-11-1969, Ellis 32466.


Erect, marshy herbs, about 60 cm high; stems about 60 cm high; tufted, trigonous. Leaves 10 x 0.4 cm, linear-acuminate. Flowers green, 0.5 cm long, in simple or compound, contracted inflorescences about 10 cm across; floral bracts up to 29 cm long; spikelets about 50 flowered; glumes 0.2 x 0.1 cm, elliptic-ovate, keeled, hyaline; stamens 2; stigmas 2. Nuts 0.15 x 0.5 cm, laterally compressed, ovoid.

Fl. & Fr.: Throughout the year.

World distribution: Mediterranean, India, South China, Japan, Malaysia and Australia.

Specimen examined: Srisailam, 12-7-1963, Ellis 16835.


Erect herbs, up to 40 cm high; stems about 30 cm high, trigonous, glabrous. Leaves about 2.5 cm long, linear; sheaths pinkish. Spikelets
about 1.5 cm long, several, in terminal umbels; peduncles about 10 cm long; glumes green with a brown tinge, 0.4 cm long, broadly ovate, apiculate, rounded at base, scarious along margins, keeled; stamens 3, filaments dilated; ovary glabrous. Nuts strongly trigonous, smooth.

*Fl. & Fr.*: July-December.

*World distribution*: Pantropic.

*Specimen examined*: Mahanandi, 22-8-1965, *Ellis* 25433.


Erect herbs, about 10 cm high; stems angled, grooved. Leaves about 5 cm long, linear, sheathed at base. Spikelets deep brown, 0.15 cm long, in umbels 1 cm long; rachises rather thick; bracts up to 5 cm long, linear; glumes deep brown, oblong, apiculate, rounded at base, compressed, keeled; stamens 2; ovary glabrous. Nuts brown, 0.1 cm long, trigonous, faintly granulate.

*Fl. & Fr.*: Throughout the year.

*World distribution*: India and Sri Lanka.

*Specimens examined*: Way to Pathalaganga, Srisailam, 20-10-1964, *Ellis* 22115; way to Pathalaganga, Srisailam, 4-12-1969, *Ellis* 32686.

*Remarks*: A plant occurring on boulders with little soil, in dry localities.


Erect, marshy herbs, about 80 cm high; stems prominently trigonous, glabrous. Leaves up to 60 x 0.8 cm, linear, sheaths at base pinkish. Spikelets 1.5 cm long, spicate, in terminal umbels 4 cm long; floral bracts several, as long and broad as leaves; bracteoles small; glumes brown, 0.2 cm long, oblong, rounded at base, hyaline along margins; stamens 3, filaments dilated; ovary glabrous, styles 3. Nuts 0.15 cm long trigonous.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Pantropic.
Specimens examined: Chianamantrala, Eastern Nallamalais, 17-8-1972, Ellis 42290.


var. nutans

Erect, marshy herbs up to 1 m high; stems trigonous, glabrous; rootstocks rhizomatous. Leaves about 40×0.8 cm, linear; sheaths pinkish, up to 20 cm long. Spikelets 0.6 cm long, about 10-flowered, in spikes about 3 cm long, in umbellate panicles about 40 cm long; bracteate leaves about 40×1 cm, robust; floral bracts small, linear; peduncles 20 cm long; glumes 0.2 cm long, ovate-acuminate, obtuse at base, scarios along margins, slightly falcate; styles slightly exerted. Nuts obovate, triangular.

Fl. & Fr.: August-December.

World distribution: India and Sri Lanka.

Specimen examined: Gundlabrahmeswaram, 20-7-1963, Ellis 16913.


Erect, marshy herbs, up to 1 m high; stems prominently trigonous; rootstocks woody. Leaves about 50×0.8 cm, linear, prominently sheathing at base, glabrous. Spikelets up to 4 cm long, several, in terminal umbels: bracts about 6×0.8 cm, scarios along margins; peduncles about 25 cm long; glumes brownish 0.2 cm long, oblanceolate, thinly hyaline along margins; stamens 3, filaments thin; ovary glabrous. Nuts pale, trigonous.

Fl. & Fr.: April-October.

World distribution: Africa, India and Australia.

Specimens examined: ‘Kurnool’, July 1884, J. S. Gamble 17739; Vishnunandi, Mahanandi, 21-8-1965, Ellis 25449; Rollapenta, 14-8-1972, Ellis 42253.


Erect, marshy herbs, up to 50 cm high; stems trigonous, glabrous. Leaves about 25 x 0.5 cm, glabrous; sheaths at base pink. Spikelets 0.7 cm long, alternate, in terminal, umbellate panicles; bracts capillary; peduncles up to 13 cm long; bracteate leaves about 25 x 0.8 cm; glumes 1.5 x 1.5 cm, ovate-orbicular, apiculate, obtuse at base, hyaline along margins towards top, keeled at back. Nuts brown, obovoid, trigonous.

Fl. & Fr. : June-December.

World distribution : Middle East, India, Sri Lanka and Australia.

Specimen examined : Chenchukunta tank, Diguvametta, 18-11-1969, Elits 32515.


Erect, marshy herbs, up to 20 cm high; stems tufted, trigonous. Leaves about 20 x 0.5 cm, linear; sheaths at base pinkish. Spikelets about 0.7 cm long, in umbellate racemes; peduncles about 7 cm long; foliar bracts up to 10 x 0.5 cm, vaginate at base; glumes 0.1 cm long, oblong, slightly keeled, scarious along margins. Nuts 0.05 cm long, globose, papillate.

Fr. & Fr. : May-January.

World distribution : India, in dry localities.

Specimens examined : Chelama, 8-12-1963, Elits 18012; Chelama, 16-10-1964, Elits 22053; Ahobilam, 24-11-1969, Elits 32608.


Erect herbs about 40 cm high; stems triangular, glabrous; main rootstocks tuberous, aromatic, laterals fibrous. Leaves about 30 x 0.4 cm, linear; sheaths about 30 cm long. Spikelets brown, up to 3 cm long, in umbels about 10 cm long; peduncles 5 cm long; foliar bracts about 15 x 0.4 cm; glumes 0.3 x 0.15 cm, ovate, rounded at base, scarious along margins, keeled on back. Nuts 0.2 cm long, obovoid, trigonous.
Fl. & Fr.: Throughout the year.

World distribution: Pantropic.

Specimens examined: 'Nandial' (Nandyal), March 1833, J. S. Gamble 10886; Bairani, Diggavanettu, 7-8-1972, Ellis 42191.


Erect, marshy herbs, about 35 cm high; stems tufted, trigonous, glabrous; roots rhizomatous. Leaves 15 x .03 cm, linear; sheaths at base pinkish; spikelets up to 1 cm long, brownish, in terminal umbels; peduncles 10 cm long, glumes 0.1 cm long, oblong, scarious along margins; stamens 3, filaments thin; ovary trigonous, styles 3. Nuts white, 0.05 cm, trigonous.

Fl. & Fr.: Throughout the year.

World distribution: Pantropic.

Specimen examined: Sunnipentavagu, Srisailam, 15-7-1963, Ellis 16894.


**POACEAE (GRAMINEAE)**

1. Arborescent
2. Herbs or shrubs:
3. Spikelets awnless:
4. Spikelets digitate:
5. Glumes prominently 1-2-dotted
6. Glumes not dotted

4. Awns prominently geniculate:
5. Glumes prominently 1-2-dotted
6. Glumes not prominently geniculate:
7. Awns not prominently geniculate:
8. Bracts sheathing the racemes
9. Bracts not sheathing the racemes

3. Spikelets not digitate:
4. Awns prominent, often geniculate:

**DENDROCALAMUS**
8. Leaves prominently convolute: Aristida
8. Leaves not convolute:

9. Awns twisted, glabrous:
   10. Outer glumes horny, ridged: Ischaemum
   10. Outer glumes chartaceous, not ridged: Semma

9. Awns not twisted, puberulous:
   11. Spikelets clustered, sheathed by bracts: Themeda
   11. Spikelets clustered, not sheathed by bracts:
      12. Spikelets in loose panicles: Chrysopogon
      12. Spikelets in spikes:
         13. Lemmas chartaceous: Oryza
         13. Lemmas hyaline: Heteropogon

4. Awns not prominent:

14. Spikes second: Melanocenchrus
14. Spikes not second:

15. Spikes uninterrupted:
   16. Spikes more than 15 cm long: Perotis
   16. Spikes up to 15 cm long:
      17. Leaves more than 15 cm long, flat: Setaria
      17. Leaves up to 8 cm long, convolute: Pogonatherum

15. Spikes interrupted:
   18. Leaves about 25 x 6 cm; panicles dichotomous, more than 25 cm long: Sorghum
   18. Leaves about 15 x 4 cm; panicles not dichotomous, less than 15 cm long:

19. Panicles solitary: Oplismenus
19. Panicles not solitary:

20. Spikelets clustered:
   21. Leaves with oil glands, scented when crushed: Cymbopogon
   21. Leaves without oil glands, not scented when crushed: Apluda

20. Spikelets in loose panicles:
   22. Awns about 2 cm long: Capillipedium
   22. Awns less than 0.5 cm long: Arundinella

2. Spikelets not awned:
   23. Inflorescences lustrous-pubescent:
   24. Inflorescences of simple spikes: Imperata
   24. Inflorescences of dichotomous panicles:
      25. Densest ciliate or barbate near ligules; leaves generally convolute: Saccharum
      25. Glabrous near ligules; leaves flat: Phragmites
   23. Inflorescences not lustrous-pubescent:
26. Common bracts broadly winged enveloping spikes
26. Common bracts not broad, nor enveloping spikes:

27. Grains alveolate
27. Grains smooth:

28. Inflorescences of cylindric, spiciform racemes
28. Inflorescences of compressed, racemes:

29. Spikelets pedicellate:
30. Leaves flat:

31. Callus thick, swollen
31. Callus absent

30. Leaves convolute

29. Spikelets sessile:
32. Rachises prominently flattened:
33. Spike of about 5 cm long:

34. Outer glumes acuminate or aristate
34. Outer glumes orbicular:

33. Spike less than 3 cm long:

35. Inflorescences digitate
35. Inflorescences not digitate

32. Rachises not or faintly flattened:
36. Outer glumes marginally prominently pubescent
36. Outer glumes not marginally pubescent:

37. Inflorescences of alternate, spiciform racemes:
38. Inflorescences glabrous
38. Inflorescences puberulous:

39. Paleas smooth, shining, horny
39. Paleas rugulose, dull, slightly horny:

40. Leaf-sheaths pilose
40. Leaf-sheaths glabrous

37. Inflorescences of solitary, second spikes or dichotomous panicles or digitate:
41. Spikelets prominently compressed:

42. Inflorescences of panicles
42. Inflorescences of solitary, second spikes

41. Spikelets not compressed

Chionochloa
Hackelia
Rottilobus
Eriochloa
Cenchrus
Sporobolus
Dactylolctenium
Digitaria
Echinochloa
Urochloa
Brachiaria
Eragrostis
Eragrostisella
Digitaria
Dendrocalamus Nees


Trees, about 20 m tall, in dense clumps; culms about 20 cm across, hollowed in centre, sheaths auricled; root-stocks branched. Leaves about 15 x 1.5 cm, ovate-acuminate, glabrescent, shortly petioled; ligules short; sheaths about 7 cm long, faintly puberulous. Spikelets about 1 cm long, several, in clustered heads 2 cm across, along branched panicles about 50 cm long; flowers yellow; glumes 0.5 cm long, ovate, puberulous without; paleas spinously apiculate. Grains 0.4 cm long, beaked at top, shining, puberulous at top and on beak.

Fl. & Fr.: Throughout the year during the flowering period.

World distribution: India and Malaysia.

Specimens examined: 'Kurnool', without date, Beddome s.n.; 'Nallamalai', March 1883, J. S. Gamble 10949; Mantrakaranana, Feb. 1884, J. S. Gamble 18698; Chelama, 9-12 1963, Ellis 18038; way to Upper Ahobilam, 27-11-1969, Ellis 32572.

Bothriochloa Ktze.

1. Herbs; leaves 0.4 cm broad; lower glumes prominently dotted  
   1. Shrubby; leaves 0.8 cm broad; lower glumes faintly dotted or not


Decumbent herbs, about 30 cm high; stems terete, glabrous, often rooting at nodes; rootstocks woody. Leaves 5 cm long, linear-ovate; ligules scarious, pubescent; sheaths 5 cm long. Spikelets 0.5 cm long, in terminal, umbellate spikes 3 cm long; peduncles 5 cm long, glumes 0.4 cm long, ovate, lower prominently dotted on the back, awned; pedicels pubescent. Grains oblong, faintly flattened.

Fl. & Fr.: October-December.
World distribution: Tropics from Africa, India, Sri Lanka and Australia.

Specimen examined: Rollapenta, 16-8-1972, Eills 42266.


Decumbent herbs, about 90 cm high; stems terete, glabrous, often rooting at nodes; rootstocks woody. Leaves 13 × 0.8 cm, linear-ovate, obtuse at base, sparsely hairy, pubescent near ligules; sheaths 10 cm long. Spikelets 0.3 cm long, in spikes 3 cm long, along panicles 14 cm long; rachises pubescent; glumes 0.3 cm long, oblong, with twisted awns, faintly dotted on back. Grains oblong.

Fl. & Fr.: October-January.

World distribution: Africa, India, Sri Lanka, China and Malaysia.

Specimen examined: Gundlabrahmeswaram, 20-7-1963, Ellis 16931.

EULALIA KURTH

1. Leaves densely crispately pubescent below; rootstocks covered with brown-pubescent... E. phacothrix
   1. Leaves sparsely ciliate below; rootstocks not covered with brown-pubescent... E. trispicata


Erect herbs, about 80 cm high; stems tufted, glabrous; roots fibrous, stocks covered by rusty-brown pubescence. Leaves about 30 × 0.6 cm, linear-acuminate, obtuse at base, crispately brown-pubescent below; ligules densely ciliate; sheaths about 10 cm long, curved-pubescent without. Spikelets 0.4 cm long, in digitately 3-5-spiked racemes about 12 cm long; rachises densely brown-pubescent; upper glumes 0.4 cm long, linear-ovate, densely brown-hirsute without; lemmas hyaline, slightly pubescent at top, upper with an awn 1 cm long. Grains oblong.

Fl. & Fr.: July-December.

World distribution: India and Sri Lanka, generally at high altitudes.
Specimen examined: Ramanapenta, Gundlabrahmeswaram, 28-11-1969, Ellis 32627.


Erect herbs, about 1 m high; stems glabrous; roots fibrous. Leaves about 25 × 0.6 cm, linear-acuminate, sparsely hairy below; ligules scarios; sheaths up to 12 cm long, glabrous. Spikelets 0.5 cm long, in digitate racemes about 15 cm long; rachises pubescent; peduncles about 40 cm long; glumes 0.5 cm long, linear-ovate, convolute, sparsely ciliate at base; lemmas hyaline; awns 2 cm long. Grains oblong.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka and Australia.

Specimen examined: Chelama. 5-7-1963, Ellis 16751.

Arthraxon Beauv.


Diffuse, erect or decumbent herbs, about 20 cm high; roots fibrous. Leaves up to 3 × 0.8 cm, ovate-acuminate, rounded at base, pilose; ligules of tufted hairs; sheaths 1 cm long, puberulous. Spikelets of 2 florets, one pedicelled, other sessile, in terminal, umbellate racemes 2 cm long; peduncles about 5 cm long. puberulous; lower glumes of sessile spikelets 0.2 cm long, puberulous; upper glumes of sessile spikelets 0.1 cm long, microramate; pedicelled spikelets awnless. Grains linear.

Fl. & Fr.: July-November.

World distribution: Africa, India, Sri Lanka and Burma.

Specimen examined: Gundlabrahmeswaram, 24-10-1964, Ellis 22165.

Remarks: A plant confined to moist deciduous forests, especially under the shade.
CHLORIS SW.

1. Spikelets unilateral; rachilla awned at base; glumes not awned
   C. dolichostachya

1. Spikelets bilateral; rachilla not awned; glumes awned
   C. barbata

Chloris dolichostachya Lagasca, Gen et Sp. Pl. 5. 1816; Bor, Grasses, 466. 1960. C. in completa Roth, Nov. Pl. Sp. 60. 1821; Hook. f. FBI 7: 290. 1897; Rangachari, South Indian Grasses, 258. 1921; Fischer, FPM 10: 1838. 1934.

Erect herbs, about 1 m high; stems glabrous; roots fibrous. Leaves up to 40 × 0.8 cm, linear-acuminate, obtuse at base, scaberulous; ligules ciliate; sheaths 6 cm long, glabrous. Spikelets 0.5 cm long, unilateral, in digitate spikes up to 17 cm long; peduncles up to 40 cm long; rachilla hairy at base, awned slightly at top; glumes 0.5 cm long, linear-ovate, hyaline, apiculate. Grains brown, 0.3 cm long, linear-oblong.

Fl. & Fr.: October-February.

World distribution: Afghanistan, India, Sri Lanka, China and Burma.

Specimen examined: Gundlabrahmeswaram, 24-10-1964; Ellis 22164.


Erect herbs, about 30 cm high; stems glabrous, sometimes rooting at nodes. Leaves up to 20 cm long, linear, glabrous; ligules small, ciliate; sheaths about 10 cm long. Spikelets about 0.3 cm long, in terminal, digitately arranged spikes about 6 cm long, enclosed in buds by leaf-sheaths; glumes 0.2 cm long, linear-elliptic, hyaline; floral glumes densely hairy along margins above the middle, awned; barbed glumes 0.2 cm long, obsolete, awned. Grains oblong.

Fl. & Fr.: October-February.

World distribution: Panropical.

Specimen examined: Chelama, 17-10-1964, Ellis 22066.

ARISTIDA LINN.

1. Glumes oblong, not bristly at top; panicles loose
   A. depressa

1. Glumes ovate, bristly at top; panicles contracted
   A. setacea

Erect herbs, about 30 cm high, tufted; stems often decumbent, glabrous; roots fibrous. Leaves 12 cm long, filiform, convolute at base; ligules scarious; sheaths 2 cm long, scarious. Spikelets several, in loosely branched panicles up to 15 cm long; glumes blunt; lower glumes awned; lemmas keeled. Grains elongated.

*Fl. & Fr.:* Throughout the year.

*World distribution:* Tropical Africa, India, Sri Lanka and Burma.

*Specimens examined:* Chelama, 17-10-1964, Ellis 22072.


Erect herbs, about 60 cm high; stems glabrous; roots fibrous. Leaves about 15 cm long, linear, convolute, glabrous; ligules of tufted hairs; sheaths about 5 cm long. Spikelets 2 cm long, in contracted panicles about 20 cm long; lower glumes 1 cm long, awned, upper minutely 2-toothed; lemmas not keeled. Grains elongate.

*Fl. & Fr.:* Almost throughout the year.

*World distribution:* Middle East, India and Sri Lanka.

*Specimens examined:* Ramanapenta, Gundlabrahmeswaram, 30-8-1917, K. C. Jacob 14973; Gundlabrahmeswaram, 20-7-1963, Ellis 16933; Jabakulavagu, Mahanandi, 22-8-1965, Ellis 25495; Gundlabrahmeswaram, 30-11-1969, Ellis 32679; Mahanandi, 23-8-1972, Ellis 42340.

Ischaemum Linn.


Erect herbs, about 80 cm high; stems erect, glabrous, pubescent at nodes; roots fibrous. Leaves about 30 x 1 cm, linear-elliptic, acuminate at base, pilose to glabrescent; ligules scarious, sparsely ciliate near them; sheaths up to 13 cm long, membranous, extended at top into 2 linear appendages. Spikelets 0.7 cm long, in terminal spikes about 6 cm long, base ciliate; outer glumes 0.6 cm long, horny, ovate, transversely ridged,
top scarious; lemmas 2-lobed, hyaline, awned in between lobes; awns about 3 cm long. Grains oblong.

*Fl. & Fr.*: August-February.

*World distribution*: India, Sri Lanka, Burma, China and Malaysia.

*Specimen examined*: Gundlabrahmeswaram, 24-10-1964, *Ellis* 22160.

**Sesima Forssk.**


Erect herbs, about 75 cm high, tufted; stems glabrous; rootstocks rather woody. Leaves about 25×0.5 cm, linear-acuminate, rounded at base, puberulous-seaberulous; ligules densely pubescent; sheaths about 10 cm long. Spikelets 0.8 cm long, in terminal spike-like racemes about 12 cm long, pedicellate, sessile; pedicels flat, laterally densely pubescent; callus ciliate; glumes 0.8 cm long, linear-elliptic, 2-lipped, obtuse at base, prominently nervated, inner rather scarious, pilose at top; lemmas hyaline, awns up to 3 cm long, twisted. Grains oblong.

*Fl. & Fr.*: August-December.

*World distribution*: East Africa, India, Sri Lanka and Australia.


**Themeda Forssk.**


Erect, robust herbs, about 1 m high, tufted; stems glabrous; roots fibrous. Leaves about 20×0.3 cm, linear, scaberulous; ligules scarious; sheaths about 6 cm long, broadened. Spikelets 1 cm long, in fascicled racemes 4 cm long, along panicles about 15 cm long; peduncles 4 cm long; bracts about 5 cm long, enclosing spikelets, linear, generally
sparingly hirsute; callus pubescent; outer glumes 1.2 cm long, elliptic, 
hyaline along margins, pubescent or not at top; lemmas unequal, lower 
yhyaline, upper stipitate, horny towards apices, geniculately awned above.
Grains 0.5 cm long, linear-ovoid, shining.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka and Burma.

Specimens examined: Chelama, 16-10-1964, Ellis 22046; Ramana-
penta, Gundlabrahmeswaram, 28-11-1969, Ellis 32624.

Cymbopogon Spreng.

1. Spikelets fascicled and clustered
   C. coloratus
1. Spikelets loosely branched, not clustered:
   2. Leaves obtuse at base, hairy without and within
      near ligules
       C. flexuosus
   2. Leaves subcordate at base, not hairy near ligules
      C. marthinii

Cymbopogon coloratus (Nees) Stapf in Kew Bull. 1906: 321. 1906;
Fischer, FPM 10: 1756. 1934; Bor, Grasses, 126. 1960. Andropogon
 coloratus Nees in Wt. Cat. 1706. 1833, nomen nudum. A. nardus Linn.
var. coloratus (Nees) Hook. f. FBI 7: 206. 1896. A. nardus var. gleme-
ratus Hack. in DC. Monogr. Phan. 6: 604. 1889.

Robust, erect herds, about 1.5 m high; stems glabrous; rootstocks
rhizomatous. Leaves 40×1.2 cm, linear-acuminate, rounded at base,
scabrously puberulous below; ligules glabrous; sheaths about 8 cm long.
Spikelets pale brown, about 1.5 cm long, in interrupted, clustered pan-
icles about 12 cm long, geniculately awned; rachilla white-pubescent;
bracts pubescent towards margins; lower glumes 0.5 cm long, 2-keeled,
keels winged; lemmas hyaline, ciliate along margins. Grains oblong.

Fl. & Fr.: October-February.

World distribution: India

Specimens examined: Diguvametta, 9 11 1955, S. C. Agrawal 117;
Chelama 7-12-1963, Ellis 17962.

India 392. 1882; Fischer, FPM 10: 1756. 1934; Bor, Grasses, 126. 1960.
A. nardus Linn. subsp. flexuosus (Nees) Hack. in DC. Monogr. Phan.
6: 603. 1889; Hook. f. FBI 7: 207. 1897.

Erect herbs, about 1.5 m high; stems glabrous; rootstocks robust.
Leaves about 50×1.5 cm, linear, obtuse at base, scaberulous, densely
hairy without and within near ligules; ligules scarious, glabrous; sheaths about 20 cm long. Spikelets 2 cm long, in spikes about 4 cm long, along panicles about 35 cm long; rachilla pubescent; glumes 0.3 cm long, linear-ovate, faintly 2-keeled without, faintly bifid at tips; geniculate awns about 1.5 cm long; glumes linear-ovate, glabrous; lemmas scarious. Grains oblong.

*Fl. & Fr.*: Almost throughout the year.

*World distribution*: India, Burma and Thailand.

*Specimens examined*: ‘Nallamalais’, 21-9-1951, V. S. Raman 94233; Chelama, 7-7-1963, Ellis 16788.


Robust, erect herbs, about 1 m high; stems glabrous; roots rhizomatous. Leaves about 30×0.8 cm, linear-acuminate, subcordate or rounded at base, glabrous or puberulous; ligules stiff, glabrous. Spikelets 1.5 cm long, in loose panicles about 12 cm long; bracts faintly puberulous; rachises densely pubescent; outer glumes 0.3 cm long, linear, winged at apices, finely puberulous, 2-keeled within; lemmas scabrous. Grains oblong.

*Fl. & Fr.*: October-February.

*World distribution*: India, Sri Lanka and Malaysia.

*Specimen examined*: Gundlabrahmeswaram, 20-7-1963, Ellis 16925.

**Dactyloctenium Wild.**


Erect or prostrate herbs, about 40 cm long, rooting at nodes. Leaves about 12×0.5 cm, linear-acuminate, obtuse at base, sparsely pilose, scabrous along margins; ligules small, scarious, faintly hairy along margins; sheaths about 5 cm long. Spikelets 0.3 cm long, compressed,
in 2 rows, in 3-4-digitately arranged spikes about 2.5 cm long; peduncles about 8 cm long; rachilla produced beyond spikes; glumes 0.2 cm long, keel slightly bent, excurrent; lemmas scarious. Grains globose.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka and Burma.

Specimen examined: Bairani, Diguavetatta, 7-8-1972, Ellis 42181.

Chrysopogon Trin. nom. cons.


Erect herbs, about 60 cm high; culms glabrous; roots fibrous. Leaves about 18 × 0.5 cm, linear-acuminate, rounded at base, scurrately scabrous along margins; ligules ciliolate along margins; sheaths about 6 cm long. Spikelets 0.5 cm long, 2-flowered, in terminal panicles about 8 cm long; peduncles about 30 cm long; pedicels rufous-hairy; upper glumes 0.5 cm long, shortly aristate; lemmas geniculately awned. Grains linear.

Fl. & Fr.: October-February.

World distribution: South Africa, Middle East, India, Sri Lanka and Burma.

Specimens examined: Chelama, 17-10-1964, Ellis 22083; Bairanidokku, Diguavetatta, 12-8-1972, Ellis 42242.

Oryza Linn.

1. Erect herbs, on dry land, about 80 cm high:
   1. O. sativa
   2. Outer lemmas awned; panicles compound
      2. O. meyeriana var. granulata
   1. O. minuta

Erect herbs, about 1 m high, tufted; stems glabrous; roots fibrous. Leaves about 60 × 1.5 cm, linear-acuminate, glabrous, scaberulous along margins; ligules prominent, fimbriate. Spikelets 0.8 cm long, in terminal panicles about 15 cm long; pedicels 0.2 cm long; glumes 0.15 cm long, scarious, hairy along margins; lemmas 0.8 cm long, oblong, horny, outer with awns about 3 cm long, inner rigidly apiculate, both hispidulous. Grains 0.5 cm long, oblong.

_E._ & _Fr._: September-December.


_Specimen examined*: Elephant Walk, Gundlabrahmeswaram, 26-10-1964, Ellis 22209.

*Remarks*: Clearly an accidental occurrence due to man’s activities in this part of the forest.


Erect herbs, about 80 cm high, tufted, densely gregarious; stems glabrous; rootstocks rather robust. Leaves up to 24 × 2 cm, linear, elliptic-acuminate, acute at base, finely scaberulous, especially along margins; ligules scarious, glabrous, hairy without; sheaths about 7 cm long. Spikelets 0.5 cm long, in terminal panicles 9 cm long, pedicellate; glumes 2, less than 0.1 cm long; lemmas 0.6 cm long, densely irregularly granulate, ovate, coriaceous. Grains oblong.

_E._ & _Fr._: July-October.

*World distribution*: Africa, India and Australia.

_Specimen examined*: Gundlabrahmeswaram, 21-7-1963, Ellis 16953.

*Remarks*: According to some _O. granulata_ Nees et Arn. ex Steudel ex Hook. f. is quite distinct from the Indonesian _O. meyeriana_ Baillon. Recent taxonomical studies indicate that the Indian plant may be considered as a separate sub-species. (*Anon. Wealth of India* 7 : 113. 1966).


Perennial, decumbent herbs, about 1.5 m tall. Leaves 53 x 1.4 cm, linear, glabrous; ligules with a fringe of fine hairs at apices. Spikelets about 0.6 x 0.3 cm, black when mature, in panicles about 43 cm long; peduncles slightly woolly-pubescent at base, rest scabrous; glumes minute; lemmas slightly chartaceous; lemma awned, awns up to 3.6 cm long, sterile lemmas shorter than fertile, bristly over surface; stamens 6; styles 2. Grain 0.4 cm long, brown, oblong.

*Fl. & Fr.*: September-November.

*World distribution*: Peninsular India.


*Remarks*: The present collection of this species extends its distribution to the Eastern Ghats of peninsular India; it is a new record. A new tetraploid species separable from *U. officinalis* by hairy ligules, longer spikelets and tetraploidy, treated as a subspecies by Tateoka (1962).

**Heteropogon Pers.**


Breech herbs, about 80 cm high; stems glabrous, pubescent at nodes; rootstocks woody. Leaves up to 30 x 0.8 cm, linear-acuminate, obtuse at base, softly, sparsely ciliate, more ciliate near ligules; ligules fimbriate, pubescent; sheaths about 9 cm long, sparsely inrolled. Spikelets 0.7 cm long, in terminal spikes up to 15 cm long; rachises jointed; peduncles about 15 cm long; glumes 0.5 cm long, lower white-margined, hisputely hairy from bulbous bases without, keeled within; lemmas hyaline, softly pilose; awns 9 cm long, pubescent. Grains oblong.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Middle East, India, Sri Lanka and Malaysia.

MELANOCENCHRIS NEES

1. Herbs up to 10 cm high; spikelets up to 6
2. Herbs more than 25 cm high; spikelets more than 10

... *M. jacquemontii*

... *M. monoica*


Erect herbs, about 10 cm high, profusely tufted; stems angular, grooved, faintly puberulous; roots fibrous. Leaves about 3.5 cm long, linear, convolute, distantly, sparingly bristly along margins; ligules pubescent; sheaths about 2 cm long, hirtellous with bulbous bases; spikelets 0.7 cm long, up to 6, in second, terminal racemes 2.5 cm long; peduncles 7 cm long; glumes 0.7 cm long, linear-elliptic, aristate, outermost densely ciliate, inner hyaline; lemmas hyaline, flat, 3-aristate. Grains oblong.

**Fl. & Fr.** : August-December.

**World distribution** : India.

**Specimen examined** : Chetama, 16-10-1964, Ellis 22061.


Erect herbs, about 35 cm high, sparsely tufted; stems angular, finely puberulous; roots fibrous. Leaves about 8 x 0.3 cm, linear-acuminate, generally convolute, sparsely hirtellous along margins; ligules pubescent; sheaths 3 cm long, glabrous. Spikelets 1 cm long, more than 10, in terminal, second spikes about 10 cm long; peduncles up to 20 cm long; outer glumes about 1 cm long, linear-acuminate, aristate, densely ciliate along margins, sparsely so without; lemmas 0.5 cm long, broadly ovate, scarious, puberulous; paleas horny, rather channelled. Grains oblong.

**Fl. & Fr.** : June-December.

**World distribution** : India and Sri Lanka, in dry localities.

**Specimens examined** : Diguvametta, 18-11-1969, Ellis 32487; Bairani-dokku, Eastern Nallamalais, 12-8-1969, Ellis 42237.
PEROTIS Aiton


Erect herbs, about 30 cm high; stems tufted, glabrous; rootstocks often stout. Leaves 4×0.8 cm, ovate, amplexicaule at base, distantly barbate along margins; ligules scarious; sheaths about 3 cm long, glabrous. Spikelets purplish, 0.3 cm long, in terminal spikes about 7 cm long; rachises puberulous; glumes 0.2 cm long, linear, convolute, keeled, puberulous, 2-awned at top; lemmas linear, hyaline. Grains linear.

*Fl. & Fr.*: Throughout the year.


**SETARIA Beauv.** nom. cons.

1. Inflorescences cylindric; bristles faintly retrose; leaves 0.5 cm broad

   1. Inflorescences not cylindric; bristles prominently retrose; leaves more than 0.5 cm broad

   *S. pallidefusca*

   *S. verticillata*


Erect herbs, up to 80 cm high, tufted; stems glabrous, often rooting at nodes towards base; roots fibrous. Leaves about 18×0.5 cm, linear-acuminate, obtuse at base, puberulous; ligules pubescent; sheaths glabrous. Spikelets 0.2 cm long, in terminal, solitary, cylindric spikes about 5 cm long; callus bristly; rachises puberulous; peduncles about 40 cm long; outer glumes 0.1 cm long, scarious; lower lemmas longer, scarious, upper horny, transversely rugose, enclosing grain. Grains oblong.

*Fl. & Fr.*: July-December.

*World distribution*: Pannotropic, extending to warm temperates.


Erect or decumbent herbs, about 1.5 m high, tufted; stems glabrous; roots rather thick. Leaves about 30 x 2 cm, linear-acuminate, acute or obtuse at base, softly sparsely pilose, scabrous along margins; ligules scarious, fimbriate; sheaths up to 10 cm long, glabrous. Spikelets 0.2 cm long, in spikes about 1.2 cm long, in terminal, closely knit racemes about 14 cm long; rachises retrorsely puberulous, ending in long bristles; peduncles 12 cm long; outer glumes 0.1 cm long, ovate, inner longer; outer lemma scarious, inner horny, transversely rugose, enclosing grains.

Fl. & Fr.: July-December.

World distribution: Pantrropic and temperate.

Specimens examined: Chelama, 16-10-1964, Ellis 22042; Pathalaganga, Srisailam, 25-3-1965, Ellis 23757; Upper Ahobilam, 29-8-1965, Ellis 25585; Diguwameta, 8-8-1972, Ellis 42201.

Pogonatherum Beauv.


Erect herbs, about 20 cm high, tufted; stems glabrous; rootstocks thick. Leaves about 4.5 x 0.3 cm, linear-acute, rounded at base, scaberulous, convolute; ligules ciliate; sheaths 3 cm long, glabrous. Spikelets 0.1 cm long, in terminal spikes up to 3 cm long; callus and pedicels ciliate; glumes scarious; lemmas hyaline, awned. Grains oblong.

Fl. & Fr.: Throughout the year.

World distribution: India, Sri Lanka, Burma, China and Malaysia.

Specimen examined: Gundlakamma, Gundlabrahmeswaram, 1-4-1965, Ellis 23822.

Sorghum Moench. nom. cons.

in Hook. f. FBl. 7: 183. 1897, ['var. genuinus (Hack.) Stapf']. *A. sorghum* (Linn.) Brot. var. *jutepense* Hack. in DC. Monogr. Phan. 6: 501. 1889.

Erect, marshy herbs, along streams, about 2 m high; stems glabrous; roots stoloniferous. Leaves about 75 × 6 cm, elliptic-acuminate, obtuse at base, glabrous, scaberulous along margins; ligules densely pubescent; sheaths 40 cm long, glabrous. Spikelets 0.5 cm long, cymose with 2 laterals pedicelled and central sessile, in terminal, whorled panicles about 40 cm long, joints densely pubescent; glumes 0.5 cm long, of pedicelled linear-ovate, of sessile ovate and horned, softly pilose; lemmas scarious, softly pilose, inner shortly, geniculately awned. Grains oblong.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Pantropic.


**OPLIS MENUS Beauv.**

1. Leaves about 14 × 2.5 cm, scaberulous; spikes up to 12 cm long
2. Leaves 5 × 1.2 cm, pilose on both surfaces; spikes up to 1.3 cm long

.. *O. compositus*

.. *O. burmannii*


Erect or decumbent herbs about 1 m high; stems glabrous, sparsely ciliolate in grooves; roots rather long, less fibrous. Leaves up to 14 × 2.5 cm, elliptic-acuminate, rounded at base, scaberulous. Spikelets 0.4 cm long, several, alternate in spikes up to 12 cm long; rachises triquetrous, puberulous; outer glumes 0.5 cm long, linear-ovate; scarious towards margins, ciliate; lemmas broadly ovate; lemmas and paleas horny enclosing grains. Grains oblong.

*Fl. & Fr.*: August-January.

*World distribution*: Pantropic.


Erect or decumbent herbs, about 50 cm high; stems glabrous to sparingly pilose in grooves especially towards base, often rooting at nodes; roots fibrous. Leaves up to 5 × 1.2 cm, elliptic-acuminate, obtuse at base, softly pilose on both surfaces; ligules scarios, fimbriate-ciliate along margins; sheaths up to 3 cm long, densely ciliate along margins, glabrous at top to sparsely ciliate with bulbous-based hairs at base; roots fibrous. Spikelets 0.3 cm long, in distant spikes 1.3 cm long, in racemes 10 cm long; peduncles 12 cm long; rachises ciliate; glumes 0.3 cm long, ovate, long-aristate, pilose, keeled; lemmas unequal, aristate. Grains oblong, surrounded by horny paleas.

*Fl. & Fr.*: August-January.

*World distribution*: Tropics from Africa, India, China, Japan and Malaysia.


**Apluda** Linn.


Erect herbs, about 1.5 m high; stems terete, glabrous. Leaves 30 × 1.5 cm, elliptic-acuminate, obtuse at base, sparingly pilose below, margins scarios; ligules pubescent; sheaths 7 cm long. Spikelets 0.8 cm long, in compound panicles about 20 cm long, one sessile, two pedicellate, slightly falcate; bracts ovate, apiculate, convolute; lower glumes ovate, bicuspidate, upper 3-5-nerved; lemmas hyaline, awned. Grains oblong, slightly flattened.

*Fl. & Fr.*: Throughout the year.

*World distribution*: India, Sri Lanka, Malaysia, Australia and Pacific Islands.


**Capillipedium** Stapf

Erect herbs, often suffrutescent, 1 m high; stems glabrous, nodes prominently bearded. Leaves 15 x 1.2 cm, linear-acuminate, acute at base, sparingly setose and puberulous beneath, serrately scabrous along margins; ligules pubescent; sheaths 15 cm long. Spikelets of 2 florets, one pedicellate, the other sessile, in loose panicles 15 cm long; pedicels hairy; glumes 0.6 cm long, ovate-convolute, softly setose; upper lemmas spirally awned; stigmas plumose. Grains oblong, flattened.

Fl. & Fr.: September-January.

World distribution: India.

Specimens examined: Chelama, 7-12-1963, Ellis 17949; Diguvametta 19-11-1969, Ellis 32545.

Remark: Panicles are scented when bruised.

ARUNDINELLA Raddi

1. Herbs up to 30 cm high; stems sparsely hairy; upper lemmas without setae
   A. pumilla

1. Herbs about 1 m high; stems glabrous; upper lemmas with 2 setae
   A. setosa


Erect herbs, up to 30 cm high; stems sparsely hairy; roots fibrous. Leaves about 13 x 1.5 cm, elliptic-acuminate, acute at base, setose; ligules scarious, fimbrillate; sheaths 16 cm long. Spikelets 0.4 cm long, 2-flowered, in panicles about 15 cm long; rachises slender; pedicels slender; outer glumes 0.2 cm long, glabrous; upper lemmas without setae. Grains oblong.

Fl. & Fr.: September-February.

World distribution: Western Africa, India, Sri Lanka and Burma.

Specimen examined: Gundlabrahmeswaram, 25-10-1964, Ellis 22202.

Erect herbs, about 1 m high; stems glabrous; roots rhizomatous. Leaves about 20×0.8 cm, ovate-acuminate, rounded at base, hirtellous with bulbous-based hairs; sheaths about 4.5 cm long, hirtellous. Spikelets 0.5 cm long, 2-flowered, in terminal panicles about 30 cm long; rachises angled, puberulous; upper flowers longer, pedicellate; outer glumes 3-nerved, bulbous-based hairs along nerves; ovary with 2 styles, comose at base. Grains cylindric, scaberulous at top.

_Fl. & Fr._: October-January.

_World distribution:_ India, Sri Lanka and Malaysia.

_Specimens examined:_ Chelama, 7-12-1963, _Ellis_ 17961; Chelama, 10-12-1963, _Ellis_ 18057; Chelama, 16-10-1964, _Ellis_ 22031.

**Imperata Cylindrica**


Erect herbs, about 50 cm high; stems glabrous, densely ciliate near nodes; rootstocks robust, fibrous. Leaves about 30×1.8 cm, linear-acuminate, acuminate at base, glabrous; ligules scarious, densely ciliate near them; sheaths up to 18 cm long, glabrous. Spikelets about 0.8 cm long, in terminal, dense spikes about 18 cm long, densely silvery white ciliate on callus, pedicellate; glumes linear-elliptic, ciliate at tips; stigmas long, feathery. Grains oblong.

_Fl. & Fr._: February-August.

_World distribution:_ Pantropic.

_Specimens examined:_ Gundalabrahmeswaram, 20-7-1963, _Ellis_ 16916 and _Ellis_ 16952.

**Saccharum Linn.**

_Saccharum spontaneum_ Linn. Mant. Pl. Ait. 183. 1771; Hook. f. FBI 7: 118. 1897; Rangachari, South Indian Grasses, 149. 1921; Fischer, FPM 10: 1709. 1934; Bor, Grasses, 214. 1960.

Robust, erect herbs, about 2 m high; stems glabrous, densely pubescent near nodes; rootstocks woody. Leaves about 50×0.5 cm,
linear-acuminate, obtuse at base, hirtellous along margins; ligules rather thick, pubescent at top; sheaths about 16 cm long, glabrous. Spikelets 0.3 cm long, in terminal panicles about 26 cm long; callus, rachises and pedicels densely ciliate; glumes 0.4 cm long, linear-ovate, scarios; lemmas scarios. Grains oblong.

Fl. & Fr.: August-February.

World distribution: Southern Europe, India, Sri Lanka and East Australia.

Specimen examined: Gundlabrahmeswaram, 24-10-1964, Ellis 72189; Bairani Falls, Diguwametta, 17-11-1969, Ellis 72465.

Pirragmites Trin.


Erect, marshy, suffrutescent herbs, up to 2 m high; stems stout, glabrous; roots rhizomatous. Leaves about 60 x 3 cm, linear-acuminate, obtuse to rounded at base, scaberulous; ligules pubescent; sheaths 20 cm long. Spikelets 0.8 cm long, in terminal, branched panicles 30 cm long; rachilla silky; outer glumes 0.2 cm long, inner 0.8 cm long; linear, scarios, keeled; lemmas linear, hyaline; callus silky hairy. Grains oblong.

Fl. & Fr.: March-December.

World distribution: Tropics from Africa, India, Sri Lanka, Burma, Japan and Australia.

Specimen examined: Bairani falls, Diguwametta, 17-11-1969, Ellis 32468.

Chionachne R. Br.


Erect herbs, suffrutescent, about 2 m high; stems glabrous. Leaves about 40 x 1 cm, linear-acuminate, obtuse at base, scabrous-serrate along margins; ligules glabrous; sheaths about 10 cm long, glabrous. Spikelets 1 cm long, 2-flowered, in terminal spikes 3.5 cm long, enclosed in spathaceous bracts; glumes 0.5 cm long, convolute, scabrous along
margins at top; lemmas similar. Grains compressed, enclosed in hardened lower glume.

*Fl. & Fr.*: Almost throughout the year.

*World distribution:* India, Sri Lanka and Malaysia.


**Hackelochloa** O. Ktze. nom. cons.


Erect herbs, about 50 cm high; tufted; stems terete, sparsely barbate with bulbous-based hairs; roots fibrous. Leaves 16 × 0.8 cm, linear-ovate, rounded at base, hirsute with bulbous-based hairs; ligules densely hairy on limbricate margin; sheaths up to 4 cm long, sparsely barbate, pubescent along margin. Spikelets 0.3 cm long, of 2 types, in axillary and terminal spikes about 1 cm long; peduncles about 3 cm long; glumes 0.1 cm long, brown, margins white, chartaceous, keeled within, scaberulous along margin; lemmas hyaline; glumes of sessile, bisexual ones globose, scrobiculate. Grains globose.

*Fl. & Fr.*: July-December.

*World distribution:* India, Sri Lanka and Burma.


**Rottboellia** Linn. f. nom. cons.


Erect herbs, about 1.5 m high; stems glabrous; rootstocks robust. Leaves about 30 × 1.5 cm, linear-acuminate, rounded at base, scaberulous; ligules pubescent; sheaths sparingly hispid with bulbous-based hairs. Spikelets 0.5 cm long, in spiciform racemes about 12 cm long, in loose panicles about 50 cm long; rachises fragile, break at joints having
concavities to hold spikelets; glumes 0.5 cm long, oblong, retuse at apices, incurved within; lemmas scariosus. Grains oblong.

Pl. & Fr.: August-December.

World distribution: Tropics from Africa, India, Sri Lanka, Malaysia and Australia.

Specimens examined: Chelama, 16-10-1964, Ellis 22041; Gundlabrahmeswaram, 28-11-1969, Ellis 32621.

**Eriochloa Kunth**


Erect herbs, about 50 cm high; tufted; stems glabrous; roots fibrous. Leaves about 20 × 0.8 cm, ovate-acuminate, obtuse at base, glabrous; ligules pubescent; sheaths 7 cm long, glabrous. Spikelets 0.3 cm long, alternate, in spikes 6 cm long, along panicles about 17 cm long, pedicellate; callus thickened; peduncles about 20 cm long; rachises puberulous; upper glumes 0.3 cm long, ovate, softly pilose without, lower reduced, lemmas chartaceous; ovary reddish. Grains flattened.

Pl. & Fr.: August-February.

World distribution: Panropical.

Specimen examined: Chelama, 8-12-1963, Ellis 18013.

**Centotheca Desv.**


Erect herbs, about 1 m high; stems glabrous; roots fibrous. Leaves up to 15 × 3.5 cm, elliptic-acuminate, obtuse at base, transverse nervules between veins prominent beneath; ligules hirsute; sheaths about 7 cm long. Spikelets 0.5 cm long, 1-3-flowered, compressed, in terminal panicles about 22 cm long, shortly pedunculate; rachises puberulous;
glumes 0.2 cm long; upper lemmas with deflexed, tubercled bristles; styles 2. Grains ovoid.

Fl. & Fr.: Throughout the year.

World distribution: Tropics from Africa, India, Sri Lanka, China and Malaysia.

Specimens examined: Gundlabrahmeswaram, 30-3-1965, Ellis 23799; Gundlabrahmeswaram, 28-11-1969, Ellis 32659.

Remarks: Monod, de Froideville (op. cit. p. 58) argues that Desvaux (1810) based his specific epithet on Linnaeus' name, not realising that Helcog latifolius Osb. was older. Trinatus (1820) realised this and made new combination which he repeated in 1831. Froideville concludes, '...I therefore agree with Merrill (1933) that the type species should be called C. latifolia (Osb.) Trin.'

**Sporobolus R. Br.**

1. Spikelets 0.1 cm long; leaf sheaths up to 8 cm long  
*S. tenuissimus*

1. Spikelets 0.3 cm long; leaf sheaths more than 8 cm long  
*S. wallichii*


Erect herbs, about 40 cm high, tufted; stems glabrous; roots fibrous. Leaves 20×0.3 cm, glabrous, often convolute; ligules minute; sheaths about 8 cm long, glabrous. Spikelets minute, in loose panicles 25 cm long; pedicels capillary; peduncles about 13 cm long; callus glabrous; glumes 0.1 cm long, oblong-elliptic, scarious; lemmas longer, acute. Grains rather greyish, obovoid, flattened.

Fl. & Fr.: August-December.

World distribution: India and Sri Lanka.

Specimen examined: Gundlabrahmeswaram, 20-7-1963, Ellis 16919.
glabrescent; ligules slightly limbrillate along margin; sheaths about
11 cm long, glabrous. Spikelets 0.2 cm long, in terminal panicles about
30 cm long; pedicels capillary, sinuate; peduncles about 25 cm long;
outer glumes about half as long as the inner, oblong, inner 0.2 cm long,
elliptic, both scarious; lemmas 0.2 cm long, elliptic, scarious. Grains
ovoid, flattened, faintly rugose.

*Fl. & Fr.*: August-December.

*World distribution*: India, Sri Lanka and Burma.

*Specimen examined*: Gundlabrahmeswaram, 24-10-1964, *Ellis 22169*.

**Acraichne** Wt. & Arn. ex Chiov.

*Acraichne racemosa* (Heyne cx Roem. & Schult.) Ohwi in Bull. Tokyo
Fl. Ind. 1: 346. 1820; *Hook. f. FBI* 7: 295. 1897; *Fischer*, FPM 10:

Erect herbs, up to 60 cm high; stems glabrous; roots fibrous. Leaves
23 × 0.8 cm, ovate acuminate, rounded at base, scaberulous along mar-
gins; ligules hairy; sheaths about 6 cm long, glabrous to glabrescent.
Spikelets about 0.5 cm long, 4-5-flowered, in spikes in whorled racemes
20 cm long, laterally compressed; glumes 0.2 cm long, broadly ovate,
keeled on back, 3-nerved, each ending in an arista. Grains oblong,
brown, transversely rugose.

*Fl. & Fr.*: June-August.

*World distribution*: Africa, India, Sri Lanka and Australia.

*Specimen examined*: Pecharla range, Nallamalais, 26-9-1951, *V. S.
Raman* s.n.; Srisailam, 12-7-1963, Pathalaganga, *Ellis 16833*

**Paspalum** Linn.

*Paspalum scrobiculatum* Linn. Mant. Pl. 29. 1767; *Hook. f. FBI* 7:
10. 1897; *Rangachari*, South Indian Grasses, 49. 1921; *Fischer*, FPM

Erect, marshy plants, about 40 cm high; stems glabrous; roots
fibrous. Leaves 20 × 0.5 cm, linear-acuminate, glabrous; ligules ciliate;
sheaths up to 15 cm long, often enclosing panicles. Spikelets 0.3 cm long,
several, biserrate in digitate or racemose spikes about 8 cm long; glumes
0.3 cm long, orbicular-ovate, glabrous; lemmas horny, enclosing grains. Grains oblong.

*Fl. & Fr.*: Throughout the year.

*World distribution*: Pantropic.

*Specimens examined*: 'Mitalapad near Nandial', 1855, Beddome s.n.; Rudravaram, Sirvel, 7-8-1917, Rangachari s.n.; Chelama, 8-11-1955, S. C. Agrawal 104; Chelama, 7-12-1963, Ellis 17969.

**Dinebra Jacq.**


Erect herbs, about 40 cm high; stems tufted; roots fibrous. Leaves about 6 x 0.3 cm, linear; ligules finely fimbriate; sheaths 5 cm long. Spikelets 0.3 cm long, in deflexed spikes 1.5 cm long along racemes about 15 cm long; rachises 4-angled; glumes 0.4 cm long, ovate-acuminate, long-cuspidate, very finely puberulous; lemmas 0.2 cm long, broadly ovate. Grains ovoid, trigonous.

*Fl. & Fr.*: Almost throughout the year.


*Specimen examined*: Srisailam, 4-12-1969, Ellis 32691.

**Alloteropsis J. S. Presl ex C. B. Presl**


Erect or decumbent herbs, about 1 m high; stems striate; roots fibrous. Leaves 10 x 1.5 cm, ovate-lanceolate, distantly hisrate along margins; sheaths up to 13 cm long, sparsely hisrate. Spikelets brown, 0.3 cm long, in terminal, umbellate spikes 13 cm long, articulate; glumes upper 0.3 cm long, densely ciliate along margins, slightly aristate. Grains ovoid, flattened.

*Fl. & Fr.*: June-December.
World distribution: India, Sri Lanka, China, Burma and Malaysia.

Specimens examined: Chelama, 17-10-1964, Ellis 22071; Vishaunandi, Mahanandi, 21-8-1965, Ellis 25417; Mahanandi, 23-8-1972, Ellis 42331.

Paspalidium Stapf


Erect or decumbent marshy herbs, about 50 cm high; stems glabrous; roots fibrous. Leaves up to 22×0.8 cm, linear-acuminate, spatulate, rounded at base, scaberulous along margins; ligules ciliate; sheaths about 10 cm long, glabrous. Spikelets 0.3 cm long, in spikes about 2.5 cm long, in racemes up to 40 cm long; glumes 0.2 cm long, broadly ovate, glabrous, scarious; lemmas rather hairy. Grains enclosed in horny lemma and palea.

Fl. & Fr.: Throughout the year.

World distribution: Tropics from Africa, India, Sri Lanka and Burma.

Specimens examined: Chelama, 5-7-1963, Ellis 16754; Chelama, 17-10-1964, Ellis 22067.

Echinochloa Beauv.


Erect or decumbent, marshy herbs, about 40 cm high; stems tufted, glabrous, often rooting at nodes. Leaves up to 20×0.8 cm, linear-acuminate, rounded at base; ligules absent; sheaths glabrous. Spikelets 0.3 cm long, ovate, biseriate, in spikes up to 2.5 cm long, along racemes 20 cm long; rachises puberulous; upper glumes 0.3 cm long, ovate, puberulous, lower shorter; lemmas unequal, upper crustaceous, ovate, convex without, shining, lower scarious. Grains elliptic, flat on one side, convex on the other.

Fl. & Fr.: Throughout the year.

World distribution: Pantropic.
Specimens examined: Chelama, 9-7-1963, Ellis 16787; Maddipenta, Eastern Nallamalais, 11-8-1972, Ellis 42225.

UROCHLOA BEAUV.


Erect or decumbent herbs, about 50 cm high; stems glabrous, nodes pubescent; roots fibrous. Leaves about 9 x 1.5 cm, ovate-elliptic, rounded at base, crispatate along margins, sparsely hirsute; ligules pubescent; sheaths 7 cm long, densely hirsute. Spikelets 0.5 cm long, in spikes about 4 cm long, in terminal racemes about 6 cm long; rachillae flattened, puberulous; outer glumes 0.15 cm across, orbicular, puberulous without, inner 0.5 cm long, ovate, prominently nerved, pubescent; upper lemmas 0.5 cm long, enclosing inner, horny-rugose, cuspidate at apices. Grains oblong.

Fl. & Fr.: July-December.

World distribution: Panropical.

Specimen examined: Diguavemetta, 6-8-1972, Ellis 42152.

BRACHIARIA GRISEB.


Erect or decumbent herbs, about 20 cm high; culms puberulous; roots fibrous. Leaves up to 15 x 1.5 cm, elliptic-acuminate, rounded at base, glabrous or glabrescent; sheaths 8 cm long. Spikelets 0.3 cm long, in terminal, branched racemes 12 cm long; rachises trigonous, grooved, puberulous, sparsely ciliate; glumes of 2 type, outer smaller, orbicular, inner larger, ovate, puberulous. Grains ovate, transversely rugose.

Fl. & Fr.: May-August.

World distribution: Middle East and India.

Specimen examined: Gundlbrahimswaram, 20-7-1963, Ellis 16909,
1. Racemes whorled along panicles.
2. **Racemes spicate, close**
   3. Spikelets about 7; ligules faintly fimбриate
   4. Spikelets 10-12; ligules pubescent and ciliate near margin

1. **Racemes not whorled, but dichotomously branched**
4. Lemmas ciliolate along margins
5. Lemmas not ciliolate along margins:
   5. Spikelets broadly ovoid, prominently compressed
   6. Spikelets linear, not prominently compressed:
      6. Grains oblong; glumes slightly greyish; rachises puberulose
      7. Grains globose; glumes pale green; rachises glabrous


Erect herbs, up to 1 m high, tufted; stems glabrous; roots fibrous. Leaves up to 18 x 0.5 cm, linear-acuminate, obtuse at base, finely puberulous; ligules scarious, fimбриate at top; sheaths about 9 cm long, glabrous. Spikelets 0.1 cm long, about 12, laterally compressed spikes about 0.4 cm long, in interrupted, whorled racemes 6 cm long, along panicles about 30 cm long; rachises puberulous; pedicels about 25 cm long; glumes 0.1 cm long, oblong obtuse, keeled on back; lemmas similar to glumes, acuminate. Grains brown, small, obvoid.

*Fl. & Fr.*: August-December.

**World distribution**: Africa, India, Sri Lanka and Burma.

**Specimens examined**: Chelama, 8-11-1955, S. C. Agrawal 112 (ICAR Grassland Survey Scheme); Iskagundum riverside, Diguvamatta, 19-11-1969, Ellis 32547.

Erect herbs, about 40 m high; diffusely tufted; stems glabrous; roots fibrous. Leaves up to 25 × 0.4 cm, linear-acuminate, puberulous; ligules faintly fimbriate; sheaths about 8 cm long, glabrous. Spikelets minute, about 7, 0.1 cm long, in whorled racemes 3 cm long, along panicles 25 cm long; rachises angular, grooved, puberulous; glumes small, ovate-oblong, unevenly apiculate at apices, scariosus. Grains brown, minute, ovoid.

Fl. & Fr.: August-January.

World distribution: India and Sri Lanka, in rather dry localities.

Specimen examined: Chelama, 12-12-1963, Ellis 18074.


Erect herbs, about 40 cm high, tufted; stems glabrous; roots fibrous. Leaves about 18 × 0.5 cm, linear-acuminate, obtuse at base; ligules pubescent, ciliate near margins; sheaths about 6 cm long, glabrous. Spikelets 0.1 cm long, 10-12 in spikes 0.5 cm long, in whorled racemes about 12 cm long, along panicles about 25 cm long; pedicules 15 cm long; rachises sparsely puberulous; glumes 0.1 cm long, ovate, faintly falcate, puberulous along margins and keel, lemmae scariosus. Grains reddish, oblong.

Fl. & Fr.: October-January.

World distribution: Subtropical and tropical Europe, India, Sri Lanka and Malaysia.

Specimen examined: Chelama, 9-7-1963, Ellis 16805.


Erect or decumbent herbs, about 35 cm long; tufted; stems faintly angled, sparsely puberulous; roots fibrous. Leaves about 5.5 × 0.4 cm, linear-acuminate, obtuse at base, slightly convolute, finely puberulous within; ligules ciliate; sheaths 3.5 cm long, finely puberulous. Spikelets
0.1 cm long, 6-9, in compressed spikes 0.3 cm long, along dichotomous racemes 12 cm long; peduncles 6 cm long; rachises angled, glabrous but for a few hairs near dichotomy; glumes 0.1 cm long, ovate; lemma ciliolate along margins. Grains brown, gibbose.

*Fl. & Fr.*: Throughout the year.

*World distribution*: India, Sri Lanka and Burma.

*Specimens examined*: Bairani, Diguvametta, 17-11-1969, Ellis 32478.


Erect, marshy herbs, about 45 cm high; stems glabrous; roots fibrous. Leaves about 10 x 0.5 cm, linear-ovate, obtuse at base, glabrous; ligules small, glabrous; sheaths glabrous. Spikelets 0.2 cm long, many, in flattened spikes 0.5 cm long, along panicles about 12 cm long; peduncles about 20 cm long; rachises angled, glabrous. Glumes 0.2 cm long, broadly ovate, compressed, scariosus, 3-nerved; lemma hyaline, puberulous along margins. Grains brownish-red, oblong.

*Fl. & Fr.*: August-November.

*World distribution*: India, Sri Lanka and Burma.

*Specimens examined*: Chelama, 8-12-1963, Ellis 18014; Chelama, 17-10-1964, Ellis 22065.


Erect herbs, about 60 cm high, tufted; stems glabrous; roots rather thickly fibrous, often stilted. Leaves about 25 cm long, linear, convolute; ligules small, filbrillate, ciliata; sheaths 8 cm long, glabrous. Spikelets 0.2 cm long, about 12, in flattened spikes 0.5 cm long, in panicles up to 25 cm long; rachises angled, puberulous; glumes slightly greyish, compressed, ovate, puberulous, ciliolate along margins; lemma scariosus, puberulous. Grains reddish-brown, oblong.

*Fl. & Fr.*: Throughout the year.

*World distribution*: India, Sri Lanka and Burma.
Specimens examined: Sunnipenta, Srisailam, 27-10-1964, Ellis 22130; Gundlakamma, Gundlabrahmmswararam, 1-4-1965, Ellis 23838; Bairani, Diguvarmetta, 7-8-1972, Ellis 42180.


Erect, marshy herbs, about 45 cm high; stems glabrous; roots fibrous. Leaves about 20 x 0.3 cm, linear, glabrous; ligules puberulous; sheaths about 5 cm long. Spikelets 0.2 cm long, in branched spikes 0.5 cm long, along panicles about 12 cm long; rachises glabrous. Glumes 0.2 cm long, greyish, ovate, glabrous; lemmas slightly bent. Grains reddish, globose.

Fl. & Fr.: August-December.

World distribution: Tropical Africa, India, Sri Lanka and Burma.

Specimen examined: Chenchukunta ponds, Diguvarmetta, 18-11-1969, Ellis 32513.

Eragrostiella Bor

1. Leaves puberulous above, convolute
2. Leaves glabrous, not convolute

E. bifaria

E. brachyphylla


Erect herbs, about 35 cm high; culms tufted, glabrous, covered at base with persistent fibrous leaf-sheaths; roots fibrous. Leaves 12 cm long, linear, convolute, puberulous above; ligules long-ciliate; sheaths 5 cm long, finely puberulous. Spikelets 0.2 cm long, compressed, in alternate spikes about 1 cm long, along racemes about 18 cm long; peduncles up to 30 cm long; rachises angled, puberulous; glumes 0.2 cm long, ovoid, scarious and puberulous along margins; lemmas 0.2 cm long, ovate-acuminate, falcate, finely puberulous along margins. Grains small, longitudinally faintly striate.
Fl. & Fr.: August-December.

World distribution: India and Burma, in dry localities.

Specimens examined: Gopalapalli, 30-8-1936, K. C. Jacob 32132; Dignavametta, 9-11-1955, M. P. Guha 115 (ICAR Grassland Survey Scheme); Srinivasa, Srisailam, 27-10-1964, Ellis 22141; Mahanandi, 21-8-1965, Ellis 25474; Srisailam, 6-12-1969, Ellis 32717; Rairani, Dignavametta, 7-8-1972, Ellis 42178.


Erect herbs, about 50 cm high; culms tufted, glabrous, surrounded at base with persistent fibrous leaf-sheaths; roots fibrous. Leaves 10 x 0.3 cm, linear-obtuse, obtuse at base, flat, glabrous; ligules truncate, long-ciliate; sheaths up to 8.5 cm long. Spikelets 0.2 cm long, in flattened spikes up to 1.5 cm long, along racemes 18 cm long; peduncles 25 cm long; glumes 0.2 cm long, ovate, scarious and puberulous along margins; lemmas ovate, puberulous along margins. Grains ovoid, angled, obscurely reticulate.

Fl. & Fr.: August-December.

World distribution: India.

Specimens examined: Chelama, 4-7-1963, Ellis 16737; Chelama, 5-7-1963, Ellis 16746.

Digitaria Haller, nom. cons.

1. Inflorescences of loose panicles
   1. Inflorescences of digitate racemes:
      2. Pedicels hairy at top
      3. Lower glumes present, of pedicellate spikelets densely hairy along margins
      4. Lower glumes absent, upper glumes of both spikelets glabrate


Erect herbs, about 50 cm high; stems tufted, glabrous; roots fibrous.
Leaves up to 15 x 1 cm, ovate, linear-acuminate, rounded at base, puberulous or glabrate, softly pilose; ligules scarious; sheaths 6 cm long, puberulous, setose along margins. Spikelets 0.2 cm long, in loose panicles about 15 cm long; pedicles about 1.5 cm long, filiform; peduncles up to 20 cm long, rachises slightly wavy; glumes absent; lemmas 0.2 cm long. Grains greyish-purple, ovoid.

*Fl. & Fr.*: August-January.

*World distribution*: "Endemic in Madras State" (Bor, *op. cit.* p. 307), meaning the present Tamil Nadu and Andhra Pradesh.


Erect to decumbent herbs, about 50 cm high; stems tufted, striated. Leaves 14 x 0.3 cm, linear, glabrous; ligules scarious, hairy near attachment; sheaths glabrous. Spikelets 0.1 cm long, in sub-digitate to alternate racemes about 6 cm long; peduncles up to 30 cm long; rachises triquetrous; pedicels short, hairy at top; lower glumes absent, upper small, slightly hairy. Grains ovoid.

*Fl. & Fr.*: August-January.

*World distribution*: Tropics in India, Sri Lanka and Burma.

*Specimen examined*: Gundlaphameswaram, 24-10-1964, *Ellis* 22183.


Erect herbs, about 80 cm high; stems glabrous, often rooting at lower nodes. Leaves up to 25 x 0.8 cm, linear-ovate, rounded at base, sparsely strigose; ligules scarious; sheaths up to 10 cm long, sparingly strigose.
Spikelets 0.3 cm long, in digitate racemes about 12 cm long; rachises triquetrous, slightly winged; lower glumes 0.3 cm long, larger than inner, sparingly hairy along margins, of pedicellate flowers densely hairy along margins. Grains oblong.

Fl. & Fr.: July-January.

World distribution: Africa, India, Sri Lanka and Malaysia.

Specimen examined: Gundlaphahmeswaram, 20-7-1963, Ellis 16929.


Erect herbs, about 40 cm high; stems tufted, often creeping, striated, often rooting at nodes. Leaves up to 10 x 0.5 cm, linear-acuminate to ovate, sparingly pilose above; ligules scarious; sheaths up to 7 cm long, glabrous. Spikelets 0.1 cm long, in digitate racemes up to 9 cm long, shortly pedicellate; rachises winged; upper glumes 0.1 cm long, ovate, glabrate, lower absent. Grains ovoid.

Fl. & Fr.: August-November.

World distribution: Plains of India, Sri Lanka and Malaysia.

Specimen examined: Diguvametta, 6-8-1972, Ellis 42156.
FLORA OF NALLAMALAIS

FERNS AND FERN-ALLIES

ACTINIOPTERIDACEAE

Actiniopterus Link


Erect herbs, about 10 cm high.

Specimens examined: Chelama, 16-10-1964, Ellis 22058; Srisailam, 5-12-1969, Ellis 32699.

Remark: Plants of dry localities.

ADIANTACEAE

Adiantum Linn.


Erect herbs, about 8 cm high.

Specimens examined: Chelama, 5-7-1963, Ellis 16759; Ahobilam, 28-8-1965, Ellis 25535; Diguvarpetta, 17-11-1969, Ellis 32456.

Remark: A common plant throughout the hills.


Erect or slightly decumbent herbs, about 12 cm high.

Specimens examined: Gundlabrahmeswaram, 21-7-1963, Ellis 16935; Ramanapenta, Gundlabrahmeswaram, 28-11-1969, Ellis 32653.

Remark: The plants are generally confined to moist deciduous forests.

ASPIDIACEAE

Tectaria Cav.


Erect herbs, about 15 cm high.

ATHYRIACEAE


Erect herbs, about 4 cm high.

Specimen examined: Gundlaphrahmeswaram, 21-7-1963, Ellis 16947; Ramanapenta, Gundlaphrahmeswaram, 25-10-1964, Ellis 22206; Bakarimangohela, Gundlaphrahmeswaram, 28-11-1969, Ellis 32647.

Remark: Plants of very moist localities.

CHEILANTHACEAE

Cheilanthes Swartz, nom. cons.


Erect herbs, about 8 cm high. Fronds white beneath.

Specimen examined: Gundlaphrahmeswaram, 21-7-1963, Ellis 16942; Gundlaphrahmeswaram, 27-10-1964, Ellis 22219; Gundlaphrahmeswaram, 30-11-1969, Ellis 32683.

Remarks: Generally plants of moist localities, though often seen in drier localities.


Erect herbs, about 4 cm high.

Specimen examined: Gundlaphrahmeswaram. 25-10-1964. Ellis 22199.

Remark: Plants of wet localities.

NEPHROLEPIDACEAE

Nephrolepis Schott


Erect herbs, about 24 cm high.
Specimen examined: Ramanapenta, Gundlabrahmeswaram 25-10-1964, Ellis 22207.

Remarks: Generally plants are confined to banks of small, perennial streams under shade.

POLYPODIACEAE

LEPTOCHILUS Kaulf.


Erect herbs, about 25 cm high; generally epiphytic.

Specimen examined: Gundlabrahmeswaram, 1-4-1965, Ellis 23833.

Remark: Plants of moist localities.

THELYPTERIDACEAE

CHRISTELLA Leveille emend. Hott. tub


Erect herbs, about 40 cm high.


Remark: Plants of very moist localities under shade.

LYGODIACEAE

LYGODIUM Swartz, nom. cons.


Climbing herbs.

Specimens examined: Gundlabrahmeswaram, 20-7-1963, Ellis 16932
Gundlabrahmeswaram, 28-11-1969, Ellis 32639; Chinnamantrala, 17-8-1972, Ellis 42292.
Remarks: Restricted to moist deciduous forests, generally in the cleared forests.

PARKERIACEAE

CERATOPTERIS BRONG.


Aquatic herbs, in fairly fast moving streamlets.

Specimen examined: Srisailam, 13-7-1963, Ellis 16850.

Remark: Generally growing in moist deciduous forests.

MARSILACEAE

Marsilea Linn.

Marsilea quadrifolia Linn. Sp. Pl. 1099. 1755.

Aquatic or marshy plants, about 8 cm high.

Specimen examined: Srisailam, 13-7-1963, Ellis 16858.

OPHIOGLOSSACEAE

Ophiorhizosum Linn.


Erect herbs, about 6 cm high.

Specimen examined: Gundlabrahmeswaram, 21-7-1963, Ellis 16950.

SELAGINELLACEAE

Selaginella Beauv. nom. cons.


Erect or decumbent, weak-stemmed herbs, about 7 cm high.

Specimen examined: Gundlabrahmeswaram, 27-10-1964, Ellis 22229.
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