THE

FLORA OF BRITISH INDIA.

BY

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ASSISTED BY VARIOUS BOTANISTS.

VOL. IV.

ASCLEPIADEÆ TO AMARANTACEÆ.

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THE OAST HOUSE, BROOK, ASHFORD, KENT
1885.
Order XCV. ASCLEPIADEAE. (By J. D. Hooker.)

Herbs or shrubs, usually twining. Leaves opposite or obsolete, very rarely alternate, quite entire, exstipulate. Inflorescence various, usually an axillary umbelliform cyme; flowers regular, hermaphrodite, 5-merous. Calyx inferior, lobes or segments imbricate. Corolla lobes or segments valvate or overlapping to the right, very rarely to the left; tube or throat often with a ring of hairs, scales, or processes (the outer or corolline corona). Stamens at the base of the corolla, filaments free in Periploceae with or without interposed glands; in other tribes, connate into a generally very short fleshy column, which usually bears a simple or compound ring or series of scales or processes (inner or staminal corona) that are attached to the filaments or to the back of the anthers, or to both; anthers crowning the column, connate or free, adnate by the connective to the stigma, 2-celled; tip often produced into an inflexed membrane; pollen forming one or two granular or waxy masses in each cell, the masses united in pairs or fours to a gland (corpuscle) which lies on the stigma. Ovary of two distinct superior carpels, enclosed within the staminal column; styles 2, short, uniting in the stigma, which is 5-angled short and included between the anthers, or is produced beyond them into a long or short simple or 2-fid column; ovules many, rarely few, 2-seriate in each carpel. Fruit of 2 follicles. Seeds compressed, usually flat ovoid winged and surmounted with a dense long brush of hairs (coma) (absent in Sarcochus); albumen copious, dense; embryo large; cotyledons flat, radicle short, inferior.—Distrib. Species about 1,000, chiefly tropical.

The analysis of the plants of this order is most difficult, and in dried specimens never satisfactory, from the fleshiness and complexity of the coronal processes and anthers. I have spent many months over the Indian ones, and have kept pretty close to the generic limits adopted in the "Genera Plantarum." I have, however, been obliged to abandon the tribe Stapelieae, to suppress Vincetoxicum, and to propose several new genera.

Suborder I. Periploceae. Filaments usually free; anthers acuminate or with a terminal appendage; pollen-masses granular, in pairs in each cell.

Tribe I. Periploceae. Characters of the Suborder.

* Coronal scales or processes 0.
Anthers with bearded appendages . . . . . . . . . 1. Pantanuma.

** Coronal scales corolline, free, short, thick.
Corolla very small, rotate, lobes valvate . . . . . . . 2. Hemidesmus.
Corolla small, rotate, lobes overlapping  3. Cryptolepis.
Corolla large, funnel-shaped, lobes overlapping  3 Cryptostigia.

*** Coronal scales 5, free, close to or adnate to the filaments.
† Coronal scales short, broad; filaments without interposed glands.
A pubescent twining shrub; leaves opposite  4. Brachylepis.
An erect tree; leaves alternate  5. Utteria.

†† Coronal scales filiform or subulate.

a. Filaments free without interposed glands.

β. Filaments free, with interposed teeth or glands.

††† Coronal scales short, broad; filaments connate, with interposed glands.

***** Coronal scales connate into a lobed ring; filaments without interposed glands.
Corolla rotate, lobes overlapping  13. Periploca.

Suborder II. Euasclepiadæ. Filaments connate; pollen-masses waxy.

Tribe II. Secamoneæ. Anthers with a membranous inflexed tip; pollen-masses in pairs in each cell (20 in all), sessile in fours (2 pairs) on the corpuscle.
Corolla rotate, lobes overlapping to the right  14. Secamone.
Corolla rotate, lobes overlapping to the left  15. Toxicarpus.

Tribe III. Cynancheæ. Anthers with a membranous inflexed tip; pollen-masses solitary in each cell (10 in all), sessile or pedicelled in pairs on the corpuscle, pendulous.
* Corona single, corolline, 5-cleft  17. Glossonema.
** Corona double, corolline and staminal  18. Oxytelma.
*** Corona staminal, of 5 processes adnate to the anthers; or 0.
† Stem erect.

†† Stem twining. Corolla-lobes overlapping.
*** Corona single, staminal, cupular or annular. Corolla rotate.

Corona of a 10-lobed ring, and 5 horny processes behind the
anthers ........................................ 25. Holostemma.
Corona annular. Leafy erect or twining herbs or shrubs 26. Cynanchum.
Corona annular. Leafless straggling shrubs 27. Sarcostemma.

TRIBE IV. Marsdenieae. Anthers with a membranous inflexed tip
(absent in Physostelma and rarely in Hoyia); pollen-masses solitary in each cell
(10 in all), sessile, or pedicelled in pairs on the corpuscle, erect (rarely horizontal
or pendulous in Tylophora).

* Corolla-lobes overlapping. Corona 0, or corolline.

Stem twining. Corolla-lobes short. Corona on the corolla-
tube ........................................... 30. Gymnema.

** Corolla-lobes overlapping. Coronal processes on the staminal column,
rarely 0.

† Corolla urceolate compamulate or salver-shaped.

Corolla urceolate. Coronal processes minute or 0. Stigma
Corolla urceolate or salver-shaped. Coronal scales on the
back of the anthers, simple ........................................ 32. Marsdenia.
Corolla rotate or salver-shaped. Coronal scales on the back
of the anthers, notched ........................................ 33. Pergularia.
Corolla salver-shaped, coriaceous. Coronal scales 0 (in
Indian species) ........................................ 34. Stephanotis.
Corolla-lobes long, doubled down inwards in bud 35. Lygisma.

†† Corolla rotate.

Cymes umbelliform. Column large; coronal processes simple 37. Treutlera.
Cymes racemiform. Column minute, fleshy; coronal pro-
cesses 2-fid ........................................ 38. Cosmostigma.
Cymes umbelliform, pendulous. Coronal scales spreading,
cuspidate ........................................ 39. Dregoa.

*** Corolla valvate. Coronal processes adnate to the staminal column.

Corolla small, rotate. Column short, corona stellate. Fol-
llices slender ........................................ 40. Heterostemma.
Corolla large, rotate. Column short, corona stellate. Fol-
llices stout ........................................ 41. Dictaceras.
Corolla urceolate or disciform. Corona cupular, fleshy 42. Oianthus.
Corolla minute, urceolate. Coronal scales membranous, erect 43. Discidia.
Corolla rotate. Corona very large, stellate 44. Hoyia.
Corolla cupular. Corona large, stellate 45. Physostelma.
Corolla-tube short, lobes long subulate. Ovary sunk in the
calyx-tube ........................................ 46. Pycnorhachis.

TRIBE V. Ceropogeieae. Anthers incumbent on the stigma, without a
membranous tip; pollen-masses one in each cell (10 in all) sessile in pairs on
the corpuscle, erect or horizontal. Corolla-lobes valvate in all.
* Corona double; corolline lining the corolla-tube and forming minute processes in the sinus of its lobes, staminal annular.

Calyx turbinate, 5-lobed. Corolla rotate 47. Leptadenia.

** Corona staminal, simple or compound, annular, 5–10 lobed, with 5 processes from its inner face which overlap the anthers.

† Leafy herbs with terete stems and branches.
Corolla rotate, lobes very narrow. Stem very slender, erect or twining 49. Brachystelma.
Corolla-tube long. Stem stout or slender, erect or twining 50. Ceropogia.

†† Leafless herbs, with fleshy 4-angled stems and branches.
Corolla rotate, lobes very narrow. Flowers latéral, subsolitary 52. Caralluma.
Corolla rotate, lobes very broad. Flowers terminal, umbelled 53. Boucerosia.

GENUS KNOWN BY NAME ONLY.


TRIBE 1. PERIPLOCEAE.

1. PENTANURA, Blume.

Twining glabrous shrubs. Leaves opposite, elliptic, strongly nervèd. Flowers small, fascicled on a short axillary peduncle, purplish. Calyx small, 5-glandular within. Corolla subcampanulate, fleshy; lobes concave, overlapping to the right. Coronal scales 0. Filaments free, arched, bases distant; anthers oblong, adherent below to the stigma, tipped with bearded appendages; pollen-masses granular; appendages of the corollae stipitate, flabellate. Stigma capitate, 5-angled. Follicles divaricate, cylindric. Seeds comose.—Species 2; a Sumatran and the following.

P. khasiana, Kurz in Herb. Calcutt.; glabrous, leaves elliptic-lanceolate acuminate at both ends, petiole slender. Pentanura sp., in regione Yunan and Periploca khasiana, Benth. in Gen. Pl. ii. 740 and 746.


Branches smooth. Leaves 4–5 by 1½–1½ in., reddish when dry beneath and finely reticulated, midrib stout; nerves 8–10 pairs, arched; petiole ¼–½ in. Peduncle stout, ½ in. in the Khasian specimen, 1 in. in the Yunan ones. Corolla about ¼ in. diam.; lobes pubescent within, pink. Filaments and back of anther pubescent as in Phylanthera (which is perhaps not generically distinct) in the Yunan specimens, glabrous in the Khasian. Style elongate; stigma 2-lobed at the top. Follicles (young) in Khasian specimen ½–¾ in. long, ovoid, incurved, obtuse.—I have not seen the Sumatran species which is the type of the genus.

2. HEMIDESMUS, Br.

Twining shrubs. Leaves opposite, hoary or pubescent beneath. Flowers small, in opposite crowded subsessile cymes, greenish-purple. Sepals glandular within, acuminate. Corolla rotate; lobes thick, valvate. Coronal scales 5, on the corolla-throat, alternate with its lobes, short, thick. Filaments distinct; anther-tips connate, indented, membranous; pollen-masses cohering in pairs in

**Northern India;** from Banda to Oudh and Sikkim, and southwards to Travancore and Ceylon.

Leaves most variable in form, length, and breadth, the shorter and broader 1-1½ by 1-1 ¼ in., the longer 4 by ½ in., the broadest sometimes retuse at the tip, the narrowest finely acuminate, those on the young shoots often white along the midrib; petiole ½ in. Pedicels clothed with ovate acute imbricating bracts. Corolla ½ in. diam., green without, purple within. Follicles 4-5 in. Seeds ½ in., ovate-oblong, flattened, black; coma 1 in.

Var. pubescens; stem and leaves beneath and sometimes above pubescent. H. pubescens; Wight & Arn. Contrib. 63; Wight Ic. t. 1320; Wall. Cat. 8244; Dene. in DC. Prodr. viii. 495.—Behar on the Soane river, J. D. H.; Deccan Peninsula, Wight, &c.

### 3. CRYPTOLEPIS, Br.

Twining glabrous shrubs. Leaves opposite. Flowers in very lax slender dichotomous few-flowered peduncled terminal or axillary cymes. Calyx with 5 scales within. Corolla-tube short, cylindric or bell-shaped; lobes linear, overlapping and twisted to the right. Coronal scales 5, about or above the middle of the tube, linear or clavate, conniving. Flowers subconnate by their broad bases; anthers short, adhering by their base to the stigma, tips conniving, acuminate; pollen-masses cohering in pairs in each cell, granular, appendages oblong. Stigma broadly conic. Follicles divaricate, terete, smooth. Seeds comose.—DISTR. Species 14; Tropical Asiatic and African.


Throughout India, from Western Kashmir to Assam and Birma, ascending the Himalaya to 4000 ft.; and southwards to Travancore and Ceylon.

Leaves 3-6 by 1-2½ in., coriaceous, shining above, sometimes obovate, apiculate or acuminate, base acute; petiole ½ in. Cymes very shortly peduncled, paniculate; branches short, divaricate. Sepals short, acute. Corolla yellow, ½ in. diam.; tube very short, lobes lanceolate. Coronal scales clavate. Follicles 2-4 in., straight, rigid, gradually narrowed from about the middle where they are ½-⅓ in. diam. Seeds ¼ in. long, oblong-ovate, contracted below the tip, compressed; coma 1 in.

2. **C. grandiflora**, Wight Ic. t. 831, and Ill. ii. 169, t. 155 b, f. E; glabrous, leaves obovate oblong or elliptic obtuse or mucronate, pale beneath,
nerves 5–6 pairs arched, cymes axillary and terminal few- or many-flowered. C. Wightiana, Wall. Cat. 4457. Echites coriacea, Heyne in Herb. Rottler.

Decan Peninsula; the Mount, Madras, Heyne, &c.; Balaghat Mts., Wight.

Leaves 2–4 by 1–2 in., very variable in form, coriaceous, hardly glaucous beneath, base acute; petiole ½ in. Cymes sparingly branched, usually long-peduncled; branches stout, predominantly distinctly scarred by the fallen bracts. Sepals large, ovate, acute. Corolla 1 in. diam.; tube ventricose, lobes falcate lanceolate. Coronal scales clavate. Follicles 2–4 in., curved and conviving or straight and divericate. Seeds very large, ¾ in. long, linear-oblong; coma a little longer.


—the mss. name of Apocynum orizense, in Rottler's Herbarium, indicates the Orissa habitat of this plant. Flower fragrant.

3. CRYPTOESTEGIA, Br.


Cultivated in various parts of India.

Branches stout. Leaves 3–4 by 1½–2 in., coriaceous, glossy above; nerves many, spreading, arched, faint, base acute; petiole ½–¾ in. Cymes short, spreading, peduncle and branches leafy, hoary or glabrous; bracts caducous. Sepals ½–¾ in. Corolla-pale pinkish purple, tube and throat 1½–2 in. long, limb often 2 in. diam., lobes acute. Follicles 4–5 by 1½ in., broadest near the base, straight, woody. Seeds ½ in. long, oblong-ovate, compressed, narrowed upwards; coma 1½ in., very fine.—Supposed to be a native of Africa or Madagascar, from which latter country another species is described with leaves pubescent beneath and entire coronal scales, but this is only known from Mauritian garden specimens. Schweinfurth found C. grandiflora cultivated at Khartum on the Nile.

A pubescent or tomentose twining shrub. **Leaves** opposite. **Flowers** small, villous, in terminal or axillary dichotomous cymes. **Sepals** ovate, glandular within. **Corolla** rotate, 5-cleft; lobes short, overlapping and twisted to the right. **Coronal scales** 5, broad, membranous, close to the stamens. **Anthers** sessile, cohering in a fleshy ring, tips acute conniving; pollen-masses in pairs in each cell, granular; appendages of the corpuscles orbicular. **Stigma** 5-angled, top flat. **Follicles** divaricate, acuminate, thick, smooth.

**B. nervosa**, Wight & Arn. Contrib. 64; Wight Ic. t. 1284; Done. in DC. Prodr. viii. 495; Deless. Ic. Sel. v. t. 56.—Tylophora sp., Miquel in Pl. Hohen. n. 1389.

**Nigherry Mts.**, alt. 5-7500 ft., common, Wight, &c.

**Leaves** 3-4 by 1-2 in., elliptic or ovate, acuminate, base acute or rounded, coriaceous, glabrous and glossy above; nerves 8-10 pairs, spreading and arched; petiole stout, ½ in. **Cymes** villous, peduncles and pedicels short, stout; bracts persistent; bracteoles numerous, imbricate. **Corolla** ⅛ in. diam., green outside, purple within, lobes ovate. **Follicles** not seen.

5. **UTLERIA**, Beddome.

A glabrous tree. **Leaves** scattered, narrow, subcrenulate. **Flowers** minute, towards the ends of the long branches of terminal peduncled dichotomous cymes. **Sepals** rounded, glandular within. **Corolla** subrotate, 5-cleft, lobes overlapping and twisted to the right. **Coronal scales** 5, small, opposite and close to the stamens. **Filaments** short; anthers ovate, conniving over and adnate to the stigma; pollen-masses in pairs in each cell, granular; appendages of the corpuscles dilated. **Stigma** convex. **Fruit** unknown.

**U. salicifolia**, Beddome mss.

**Deccan Peninsula**; Anamallay Mts., alt. 3-4000 ft., Reddome.

**Branches** stout. **Leaves** crowded at the ends of the branches, 7-9 by ¼-1 in., narrowly lanceolate, acuminate, coriaceous, margin thickened waved or crenulate, base very acute; nerves many, very slender, nearly horizontal, reticulations fine; petiole 1-2 in. **Cymes** 4-6 in., sparingly branched; bracts on the terminal branches numerous, imbricate, obtuse; pedicels short. **Corolla** ⅓ in. diam., lobes ovate, acute.

6 **FINLAYSONIA**, Wall.

A lofty glabrous climber. **Leaves** opposite. **Flowers** in 2-3-chotomous axillary cymes, yellowish and purple. **Sepals** rounded, short. **Corolla** rotate, 5-cleft; lobes ovate, overlapping to the right. **Coronal scales** 5, close to the stamens, filiform. **Stamens** on the throat of the corolla, filaments slender; anthers adnate by the middle to the stigma, beardless, tip membranous inflexed acute. **Pollen-masses** in pairs in each cell, granular; tips of the corpuscles slightly dilated. **Stigma** 5-angled, top flat. **Follicles** divaricate, turgid, narrowed at both ends, 1-3 winged, tip with a revolute beak. **Seeds** margined with soft retrorse hairs.

From the Sunderbunds to Tenasserim and Malacca; Wallich, &c.

Branches stout. Leaves 3–4 by $1\frac{1}{2}$-$2\frac{1}{2}$ in., obovate-oblong or oblanceolate, obtuse or apiculate, thickly coriaceous, reticulate beneath, base acute; nerves very numerous, horizontal, very slender; petiole $\frac{3}{4}$–1 in. Cymes 2–3 in. long; peduncle and branches very thick; bracts short, persistent; pedicels short, thick. Corolla $\frac{1}{4}$ in. diam., lobes bearded within. Pedicles 3 by 2 in., distantly ribbed between the wings, pericarp thin. Seeds $\frac{1}{4}$ in. long, flat, obovate-oblong, hairs brown.—Flowers fespid (Voigt).

7. ATEROSTEMON, Blume.

A very slender glabrous twining shrub. Leaves opposite. Flowers in axillary and terminal slender peduncled dichotomous cymes. Calyx minute, tube turbinate, eglandular within. Corolla rotate; lobes long, slender, overlapping to the right, straight and forming an oblong-cylindric bud. Corona processes 5, filiform, at back of the bases of the filaments. Stamens at the base of the corolla; filaments very short, distinct, without interposed glands or teeth; anthers conniving over and adnate to the stigma, tips membranous, acute; pollen-masses in pairs in each cell, granular; appendages of the corollas dilated. Stigma rounded. Fruit unknown.

A. javensis, Blume Mus. Bot. i. 126, t. 23.

Tenasserim; banks of the Gyna, Moulmein, Lobb.—Distr. Java.

Leaves 2–3$\frac{1}{2}$ by $\frac{3}{4}$–1$\frac{1}{4}$ in., oblong-elliptic or linear-oblong, apiculate, glaucous beneath, base obtuse or rounded; nerves 6–10 pairs, very slender, arched; petiole slender, $\frac{1}{2}$–$\frac{3}{4}$ in. Cymes much longer than the leaves; peduncle long and slender, branches filiform; bracts minute; flowers very few, distant; pedicels capillary, tip turbinate. Calyx-lobes small, rounded, membranous, with sometimes a very obscure scale in the sinuses. Corolla-lobes long, linear, obtuse, $\frac{3}{4}$ in. long, erect and recurved. Stamens very minute.


A pubescent slender climber. Leaves opposite, very narrow, membranous. Flowers very small, in very short few-flowered axillary pubescent cymes. Calyx $\frac{1}{2}$-superior, tube turbinate; lobes short, eglandular within. Corolla rotate; lobes triangular, overlapping to the right. Corona scales 5, subulate, at the back of the stamens. Stamens at the base of the corolla; filaments very short, distinct, with interposed rounded glands; anthers oblong, conniving over and adherent to the stigma, tips obtuse, connate; pollen-masses in pairs in each cell, granular; appendages of the corollas dilated. Ovary half sunk in the calyx-tube and adherent to it; stigma small, tip obtuse. Fruit unknown.


Pruv. at Prome, Wallich; Rangoon, Mc-Clelland.

Branches glabrous below. Leaves 3–7 by $\frac{3}{4}$–1$\frac{1}{4}$ in., narrow, oblong or linear-lanceolate, acute or acuminate, puberulous above, softly pubescent beneath; base acute; nerves rather distant, spreading, slightly arched, very slender; petiole $\frac{3}{4}$ in. Cymes shorter than the petioles; bracts minute; pedicels very short, top turbinate. Corolla $\frac{1}{2}$ in. diam., shortly conic in bud, lobes glabrous within. Filaments alternating with obscure low glands.—The habit, foliage, inflorescence, eglandular calyx, obtuse anthers and short stigma well distinguish this from Atherandra.